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2011

### 2011-2012 Undergraduate Bulletin

Rochester Institute of Technology

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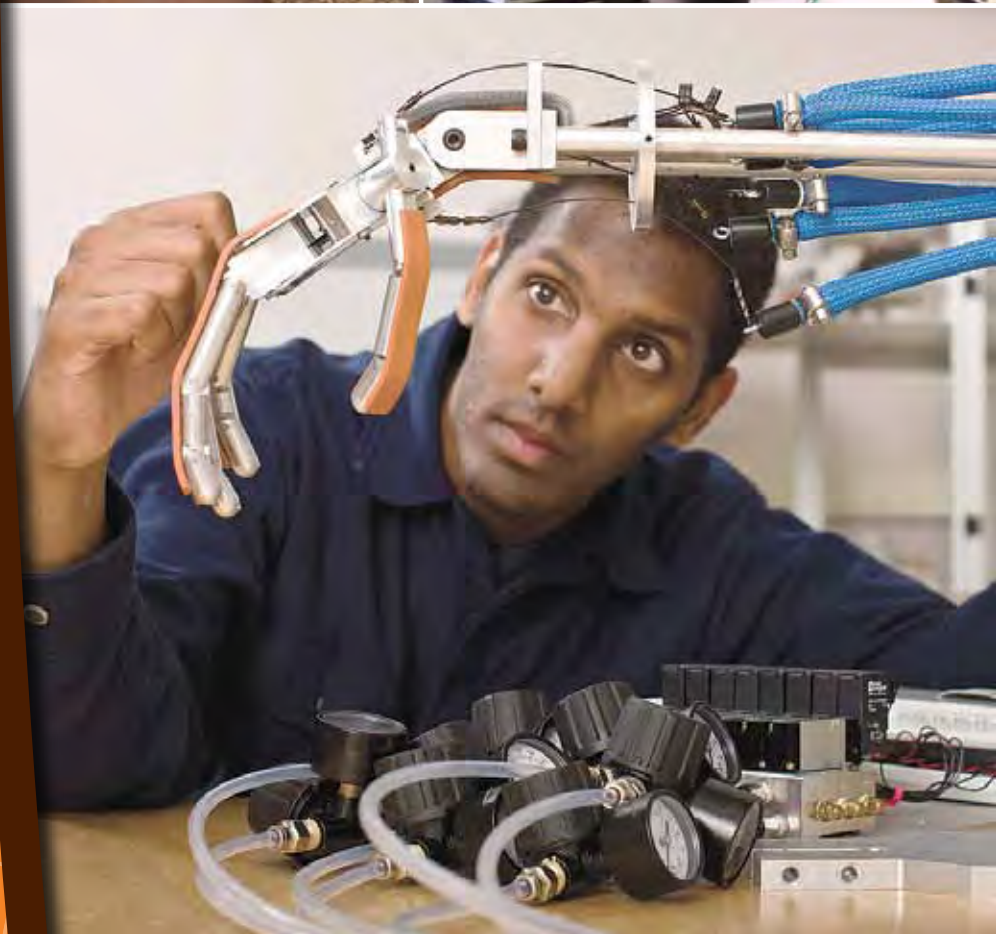
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# R·I·T

## UNDERGRADUATE BULLETIN

2011-2012



## About this Bulletin

The academic programs, course curricula, policies, and standards described in this *Undergraduate Bulletin* are in effect for students admitted to RIT during the 2011–2012 academic year. The purpose of this bulletin is to provide students with a comprehensive source of information to use in planning their undergraduate education.

Descriptions of all undergraduate courses offered at Rochester Institute of Technology are available at [www.rit.edu/ugrad\\_courses](http://www.rit.edu/ugrad_courses). Students may also request an *Undergraduate Course Descriptions* book from their college's academic advising office or the Undergraduate Admissions Office.

Graduate degree programs and other post-baccalaureate offerings are described in the *Graduate Bulletin*, available through the Office of Graduate Enrollment Services.

The *Undergraduate Bulletin* does not constitute a contract between the university and its students on either a collective or individual basis. It represents RIT's best academic, social, and financial planning at the time of publication. Course and curriculum changes; modification of tuition, fees, dormitory, meal plan, or other charges; and unforeseen changes in other aspects of RIT sometimes occur after the bulletin has been printed, but before the changes can be incorporated in a later edition. Because of this, Rochester Institute of Technology does not assume a contractual obligation with its students for the contents of this *Undergraduate Bulletin*.

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*RIT promotes and values diversity within its workforce and provides equal opportunity to all qualified individuals regardless of race, color, creed, age, marital status, gender, religion, sexual orientation, gender identity, gender expression, national origin, veteran status, or disability.*

# An Introduction to Rochester Institute of Technology

Respected internationally as a world leader in career-oriented, technological education, Rochester Institute of Technology has been setting an innovative pace since 1829, when Colonel Nathaniel Rochester became the first president of the Rochester Athenaeum. In 1891, the Athenaeum merged with Mechanics Institute, which had been founded by a group of businessmen to instruct in “drawing and such other branches of studies as are most important for industrial pursuits.” In 1944, recognizing the increasingly specialized professional nature of its programs, the university adopted the name it holds today.

A private, coeducational university in upstate New York, RIT offers academic programs that combine outstanding teaching, a strong foundation in the liberal arts and sciences, modern classroom facilities, and work experience gained through the university’s cooperative education program, internships, and other opportunities.

Few universities provide RIT’s variety of career-oriented studies. Our 10 degree-granting entities offer outstanding programs in business, engineering, art and design, science and mathematics, the liberal arts, photography, computing, hospitality management, and many other areas.

More than 200 programs—including such distinctive offerings as microelectronic and software engineering, imaging science, film and animation, biotechnology, physician assistant, new media, international business, telecommunications, and the programs of RIT’s School for American Crafts and National Technical Institute for the Deaf (NTID)—draw students from all 50 states and more than 100 foreign countries.

As a major university, RIT offers academic opportunities that extend far beyond science and technology, including more liberal arts courses and faculty than are found at most liberal arts colleges. With a strong foundation in the humanities and social sciences, RIT graduates understand both technological developments and the larger philosophical and ethical issues presented by technology.

Approximately 13,800 full-time undergraduate students, 2,500 part-time undergraduate students, and 2,600 graduate students attend RIT. More than 106,000 alumni can be found around the globe.

Almost one-third of our undergraduates are transfer students from two-year colleges or other four-year institutions, and adult students make up a significant portion of the total enrollment. Our full-time undergraduate student body includes more than 1,200 deaf and hard-of-hearing students who share the same residence halls and classes on campus.

RIT’s cooperative education program is the fourth-oldest and one of the largest in the world. We place more than 3,600 students in co-op work positions with approximately 2,000 employers every

year. In addition, more than 600 companies visit RIT to conduct employment interviews on campus.

The world in which RIT graduates live and work is composed of people from many backgrounds, lifestyles, and cultures. Therefore, RIT encourages the appreciation of diversity through a variety of liberal arts courses, campus events, and special programs, including the annual International Banquet, Black History Month, Martin Luther King Jr. celebration, and Hispanic Heritage Week.

RIT has been recognized by *U.S. News & World Report* magazine as one of the nation’s leading comprehensive universities and one of America’s Best College Values. Many college guidebooks have ranked RIT among the nation’s top schools, including “Kaplan’s Unbiased Guide to the 320 Most Interesting Colleges” and “The Princeton Review’s Best 345 Colleges.”

## Accreditation

Rochester Institute of Technology is accredited by the Middle States Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19014, (267) 284-5000. The Middle States Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

## Quarter to semester conversion

Beginning in the fall of 2013, RIT will convert from three 10-week quarters to two 16-week semesters. Students beginning academic programs in the fall of 2011 will begin in the current quarter system and complete their degrees in the new semester-based calendar.

William Destler, president of RIT, has made the following commitment to students: “Principle number one in the transition will be to protect all students from any harm during the change from quarters to semesters. Specifically, we must ensure that no student suffers any loss of progress toward a degree during the transition; that no student’s graduation will be delayed as we make the change from quarters to semesters; and that no student will see any increase in tuition or fees related to the transition. As part of the transition process, every student on campus will be personally advised to ensure that this principle is upheld in every case.”

For more information on the quarter-to-semester conversion, please visit [www.rit.edu/conversion](http://www.rit.edu/conversion).

## RIT’s colleges and degree-granting entities

The College of **Applied Science and Technology** offers bachelor of science programs in civil engineering technology; electrical, computer, and telecommunications engineering technology; manufac-



turing and mechanical engineering technology; electrical mechanical engineering technology; international hospitality and service management; packaging science; and environmental sustainability, health and safety. The college also offers a wide variety of degrees, diplomas, and certificates to full- and part-time students. Programs and courses are offered during the day and evening, and by online learning. Many of the college's programs are also offered as master's degrees. Certificates are offered in several areas and are especially appropriate for part-time adult students looking for convenience, quality, and practicality. All of the college's engineering technology programs have received accreditation by the Accreditation Board for Engineering Technology (ABET).

The E. Philip Saunders College of **Business** offers seven majors leading to the bachelor of science degree: accounting, finance, international business, management, management information systems, marketing, and new media marketing. With an emphasis on innovation, the commercialization of technology, and a global focus, these programs combine specialized courses in a major, along with courses in the liberal arts and sciences, with cooperative education experience. The college is consistently ranked in *U.S. News & World Report's* Top Undergraduate Business Programs and also is accredited by the Association to Advance Collegiate Schools of Business (AACSB International). The Saunders College also awards MBA and MS degrees. An accelerated BS/MBA option offers outstanding undergraduates the opportunity to complete both degrees in five years.

The B. Thomas Golisano College of **Computing and Information Sciences** is one of the largest and most comprehensive colleges in the nation devoted to the study of computing and information sciences. Eight bachelor of science degree programs are available in applied networking and system administration, computer science, game design and development, information technology, information security and forensics, medical informatics, new media interactive development, and software engineering. In 1972, RIT was among the first universities in the United States to offer a full undergraduate degree program in computer science. Academic innovation has continued in recent years, as RIT developed the nation's first undergraduate degree programs in information technology and software engineering. The college awards BS and MS degrees in a variety of computer disciplines as well as a doctoral degree in computing and information sciences. All of the college's BS degree programs require cooperative education.

The Kate Gleason College of **Engineering** offers BS degrees in biomedical, chemical, computer, electrical, industrial, mechanical, and microelectronic engineering. Specialized options within these programs also are offered for students interested in areas such as aerospace, automotive, energy and the environment, ergonomics, lean six-sigma, manufacturing, robotics, software engineering, and supply-chain management. For those who need time to decide on a particular major, the college also offers an engineering exploration program in the first year. Starting after the second year, students in all engineering programs are required to participate in the cooperative education program. The college also offers a number of accelerated dual degree options (combined BS/MS or BS/MEng degrees). Recognized as one of the premier engineering colleges dedicated to undergraduate teaching and cooperative education, the college also offers the nation's only doctoral program in microsystems engineering.

The College of **Health Sciences and Technology** is RIT's newest college. It was created to respond to the growing need for well-

educated professionals in the health care field. The college provides a focused, interdisciplinary, and systems approach to innovative health care education with undergraduate degrees offered in the following programs: biomedical sciences, diagnostic medical sonography (ultrasound), nutrition management, and physician assistant.

The College of **Imaging Arts and Sciences** includes the schools of American Crafts, Art, Design, Film and Animation, Photographic Arts and Sciences, and Print Media. Specialized labs and darkrooms, studios, computer facilities, photo and graphic design archives, and a broad range of high-tech equipment are provided for students. RIT is recognized as one of the nation's top-ranked universities for design, print media, and the study of photography.

The College of **Liberal Arts** offers bachelor of science degree programs in advertising and public relations, criminal justice, economics, international studies, journalism, museum studies, professional and technical communication, philosophy, political science, psychology, public policy, and urban and community studies. A one-year undeclared option is offered for students who wish to pursue a liberal arts degree but are undecided about which program to pursue. The college also provides a comprehensive program of liberal arts education that is the foundation for all RIT students' educational experience. In addition to core requirements, students select a concentration or minor from a wide variety of disciplines in the humanities, social sciences, or behavioral sciences.

The Center for **Multidisciplinary Studies** provides an opportunity for students to customize their own associate, bachelor's, and master's degree programs to relate directly to their personal and professional objectives and aspirations. The center also offers a variety of certificate programs for students interested in gaining expertise in a specific area of study.

The **National Technical Institute for the Deaf** provides technical and professional programs for approximately 775 deaf and hard-of-hearing students enrolled in associate degree programs. The college also provides extensive educational access services for approximately 525 deaf students who are pursuing bachelor's or master's degrees or taking courses in RIT's other colleges. Within NTID, students may pursue either career-focused associate degree programs leading directly to employment or associate degree programs designed to facilitate seamless transition to RIT's baccalaureate programs. Students choose from a variety of associate degree options/concentrations in accounting technology, administrative support technology, applied computer technology, applied liberal arts, applied mechanical technology, arts and imaging studies, business, business technology, computer-aided drafting technology, computer-integrated machining technology, hospitality and service management, and laboratory science technology. The college also enrolls hearing students in its ASL-English interpretation programs.

The College of **Science** emphasizes the practical aspects of science and mathematics along with applied research opportunities for undergraduate and graduate students. The college offers a variety of degree programs in the sciences; mathematics and statistics; imaging science; molecular bioscience and biotechnology; bioinformatics; and other unique programs. A general science exploration option is popular with students who want more time to decide on their major. Many of the college's bachelor of science degree programs offer an optional cooperative education program. The college awards bachelor of science and master of science degrees. Doctoral degrees are awarded in astrophysical sciences and technology, color science, and imaging science.

# Undergraduate Programs of Study

| Undergraduate Programs of Study                   |   | Degree and HEGIS Code |         |      |      |      |      |         |        |
|---|---|-----------------------|---------|------|------|------|------|---------|--------|
|   |   | Certificate           | Diploma | AOS  | AS   | AAS  | BFA  | BS      | Page # |
| <b>Art, Design, and Crafts</b>                    |   |                       |         |      |      |      |      |         |        |
| 3D Digital Graphics                               | Imaging Arts and Sciences                 |                       |         |      |      |      | 1009 |         |        |
| Ceramics and Ceramic Sculpture                    | Imaging Arts and Sciences                 |                       |         |      |      | 5610 | 1009 |         |        |
| Fine and Applied Arts†§                           | Imaging Arts and Sciences                 |                       | 5012    |      |      |      |      |         |        |
| Fine Arts Studio                                  | Imaging Arts and Sciences                 |                       |         |      |      | 5610 | 1002 |         |        |
| Glass*  | Imaging Arts and Sciences                 |                       |         |      |      | 5012 | 1009 |         |        |
| Graphic Design                                    | Imaging Arts and Sciences                 |                       |         |      |      | 5012 | 1009 |         |        |
| Illustration                                      | Imaging Arts and Sciences                 |                       |         |      |      | 5610 | 1002 |         |        |
| Industrial Design                                 | Imaging Arts and Sciences                 |                       |         |      |      |      | 1009 |         |        |
| Interior Design                                   | Imaging Arts and Sciences                 |                       |         |      |      |      | 1009 |         |        |
| Medical Illustration                              | Imaging Arts and Sciences                 |                       |         |      |      |      | 1299 |         |        |
| Metalcrafts and Jewelry*                          | Imaging Arts and Sciences                 |                       |         |      |      | 5012 | 1009 |         |        |
| New Media–Design and Imaging*                     | Imaging Arts and Sciences                 |                       |         |      |      |      | 0605 |         |        |
| Woodworking and Furniture Design                  | Imaging Arts and Sciences                 |                       |         | 5317 |      | 5012 | 1009 |         |        |
| <b>Business and Management</b>                    |   |                       |         |      |      |      |      |         |        |
| Accounting*                                       | Business                                  |                       |         |      |      |      |      | 0502    |        |
| Accounting Technology                             | National Technical Institute for the Deaf |                       |         |      |      | 5002 |      |         |        |
| Administrative Support Technology                 | National Technical Institute for the Deaf |                       |         |      |      | 5005 |      |         |        |
| Business  | National Technical Institute for the Deaf |                       |         |      | 5001 |      |      |         |        |
| Business Administration†                          | Applied Science and Technology            |                       |         |      |      | 5001 |      |         |        |
| Business Technology                               | National Technical Institute for the Deaf |                       |         | 5004 |      |      |      |         |        |
| Disaster and Emergency Management‡                | Applied Science and Technology            | 5508                  |         |      |      |      |      |         |        |
| Finance   | Business                                  |                       |         |      |      |      |      | 0504    |        |
| General Management†                               | Applied Science and Technology            |                       |         |      |      | 5004 |      |         |        |
| Health Systems Administration†‡                   | Applied Science and Technology            | 5299                  |         |      |      |      |      |         |        |
| Hospitality and Service Management                | National Technical Institute for the Deaf |                       |         |      | 5011 |      |      |         |        |
| Human Resource Administration†                    | Applied Science and Technology            |                       |         |      |      | 5004 |      |         |        |
| Human Resource Development†*                      | Applied Science and Technology            | 5004                  |         |      |      |      |      |         |        |
| International Business*                           | Business                                  |                       |         |      |      |      |      | 0513    |        |
| International Hospitality and Service Management* | Applied Science and Technology            |                       |         |      |      |      |      | 0510.10 |        |
| Management† *                                     | Business                                  |                       |         |      |      |      |      | 0506    |        |
| Management Development†                           | Applied Science and Technology            | 5004                  | 5004    |      |      |      |      |         |        |
| Marketing*  | Business                                  |                       |         |      |      |      |      | 0509    |        |
| New Media Marketing                               | Business                                  |                       |         |      |      |      |      | 0509    |        |
| Nutrition Management                              | Health Sciences and Technology            |                       |         |      |      | 5404 |      | 1306    |        |

|   |   |      |      |       |      |       |      |      |  |
|---|---|------|------|-------|------|-------|------|------|--|
| Organizational Change and Leadership†                         | Applied Science and Technology            | 5004 |      |       |      |       |      |      |  |
| Small Business Management†                                    | Applied Science and Technology            | 5004 |      |       |      |       |      |      |  |
| <b>Communications, Film, and Photography</b>                  |   |      |      |       |      |       |      |      |  |
| Advertising Photography*                                      | Imaging Arts and Sciences                 |      |      |       |      |       | 1011 |      |  |
| Arts and Imaging Studies                                      | National Technical Institute for the Deaf |      |      | 5012  |      | 5012  |      |      |  |
| ASL-English Interpretation                                    | National Technical Institute for the Deaf |      |      |       |      | 5506  |      | 1199 |  |
| Biomedical Photographic Communications                        | Imaging Arts and Sciences                 |      |      |       |      | 5299  |      | 1217 |  |
| Film and Animation*   | Imaging Arts and Sciences                 |      |      |       |      |       | 1010 |      |  |
| Fine Art Photography*   | Imaging Arts and Sciences                 |      |      |       |      |       | 1011 |      |  |
| Graphic Communication‡  | Applied Science and Technology            | 5008 |      |       |      |       |      |      |  |
| Imaging and Photographic Technology                           | Imaging Arts and Sciences                 |      |      |       |      | 5007  |      | 1011 |  |
| Media Arts and Technology*                                    | Imaging Arts and Sciences                 |      |      |       |      |       |      | 0605 |  |
| Motion Picture Science*                                       | Imaging Arts and Sciences                 |      |      |       |      |       |      | 1010 |  |
| Performing Arts   | National Technical Institute for the Deaf | 5610 |      |       |      |       |      |      |  |
| Photojournalism*  | Imaging Arts and Sciences                 |      |      |       |      |       | 1011 |      |  |
| Professional and Technical Communication                      | Liberal Arts                              |      |      |       |      |       |      | 0601 |  |
| Professional Writing‡   | Applied Science and Technology            | 5008 |      |       |      |       |      |      |  |
| Technical Communication: Basic†‡                              | Applied Science and Technology            | 5008 |      |       |      |       |      |      |  |
| Technical Communication: Advanced†‡                           | Applied Science and Technology            | 5008 |      |       |      |       |      |      |  |
| Visual Media  | Imaging Arts and Sciences                 |      |      |       |      |       | 1009 |      |  |
| <b>Computing and Information Sciences</b>                     |   |      |      |       |      |       |      |      |  |
| Applied Computer Technology                                   | National Technical Institute for the Deaf |      | 5101 | 5101  | 0799 | 5101  |      |      |  |
| Applied Networking and System Administration†                 | Computing and Information Sciences        |      |      |       |      |       |      | 0702 |  |
| Computer Science*†  | Computing and Information Sciences        |      |      |       |      |       |      | 0701 |  |
| Game Design and Development                                   | Computing and Information Sciences        |      |      |       |      |       |      | 0799 |  |
| Information Security and Forensics                            | Computing and Information Sciences        |      |      |       |      |       |      | 0799 |  |
| Information Technology†                                       | Computing and Information Sciences        |      |      |       |      |       |      | 0699 |  |
| Management Information Systems                                | Business                                  |      |      |       |      |       |      | 0599 |  |
| Medical Informatics*  | Computing and Information Sciences        |      |      |       |      |       |      | 1217 |  |
| New Media Interactive Development                             | Computing and Information Sciences        |      |      |       |      |       |      | 0699 |  |
| Software Engineering*   | Computing and Information Sciences        |      |      |       |      |       |      | 0999 |  |
| <b>Engineering and Engineering Technology</b>                 |   |      |      |       |      |       |      |      |  |
| Applied Mechanical Technology                                 | National Technical Institute for the Deaf |      |      |       |      | 5315  |      |      |  |
| Automation Technologies§                                      | National Technical Institute for the Deaf |      |      | 5399§ |      | 5399§ |      |      |  |
| Biomedical Engineering  | Engineering                               |      |      |       |      |       |      | 0905 |  |
| Chemical Engineering  | Engineering                               |      |      |       |      |       |      | 0906 |  |
| Chemical Engineering/Science, Technology and Public Policy*   |   |      |      |       |      |       |      | 0906 |  |
| Civil Engineering Technology                                  | Engineering / Liberal Arts                |      |      |       |      |       |      |      |  |
| Computer-Aided Drafting Technology                            | Applied Science and Technology            |      |      |       |      |       |      | 0925 |  |
| Computer Engineering*   | National Technical Institute for the Deaf |      |      | 5303  |      | 5303  |      |      |  |
| Computer Engineering Technology†                              | Engineering                               |      |      |       |      |       |      | 0999 |  |
| Computer Engineering Technology†                              | Applied Science and Technology            |      |      |       |      |       |      | 0925 |  |
| Computer-Integrated Machining Technology                      | National Technical Institute for the Deaf |      |      | 5312  |      |       |      |      |  |
| Electrical Engineering*                                       | Engineering                               |      |      |       |      |       |      | 0909 |  |
| Electrical Engineering Technology†                            | Applied Science and Technology            |      |      |       |      |       |      | 0925 |  |
| Electrical/Mechanical Engineering Technology*†‡               | Applied Science and Technology            |      |      |       |      |       |      | 0925 |  |
| Electrical Technology†  | Applied Science and Technology            |      |      |       |      | 5310  |      |      |  |
| Engineering Science†  | Engineering                               |      |      |       | 5609 |       |      |      |  |
| Industrial Engineering*                                       | Engineering                               |      |      |       |      |       |      | 0913 |  |
| Industrial Engineering/Sustainable Engineering*               | Engineering                               |      |      |       |      |       |      | 0913 |  |
| Manufacturing Engineering Technology*†                        | Applied Science and Technology            |      |      |       |      |       |      | 0925 |  |
| Mechanical Engineering*                                       | Engineering                               |      |      |       |      |       |      | 0910 |  |
| Mechanical Engineering Technology†                            | Applied Science and Technology            |      |      |       |      |       |      | 0925 |  |
| Mechanical Engineering/Science, Technology and Public Policy* | Engineering / Liberal Arts                |      |      |       |      |       |      | 0910 |  |

|  |   |        |      |      |       |      |  |         |  |
|--|---|--------|------|------|-------|------|--|---------|--|
| Mechanical Technology†                                     | Applied Science and Technology            | 5301   |      |      |       | 5315 |  |         |  |
| Microelectronic Engineering*                               | Engineering                               |        |      |      |       |      |  | 0999    |  |
| Packaging Science  | Applied Science and Technology            |        |      |      |       |      |  | 4999    |  |
| Quality Management   | Applied Science and Technology            | 5004   |      |      |       |      |  |         |  |
| Safety Technology‡*  | Applied Science and Technology            | 5312   |      |      |       |      |  | 0420    |  |
| Software Engineering*                                      | Computing and Information Sciences        |        |      |      |       |      |  | 0999    |  |
| Structural Design‡   | Applied Science and Technology            | 5399   |      |      |       |      |  |         |  |
| Telecommunications Engineering Technology†§                | Applied Science and Technology            |        |      |      |       |      |  | 0925    |  |
| <b>Environmental Studies</b>                               |   |        |      |      |       |      |  |         |  |
| Environmental Science*                                     | Science                                   |        |      |      |       |      |  | 0420    |  |
| Environmental Sustainability, Health and Safety*†          | Applied Science and Technology            |        |      |      |       |      |  | 0420    |  |
| <b>Mathematics, Science, and Medical Sciences</b>          |   |        |      |      |       |      |  |         |  |
| Applied Mathematics*                                       | Science                                   |        |      |      | 5617* |      |  | 1703    |  |
| Applied Statistics*  | Science                                   |        |      |      |       |      |  | 1702    |  |
| Biochemistry*  | Science                                   |        |      |      |       |      |  | 0414    |  |
| Bioinformatics*  | Science                                   |        |      |      |       |      |  | 0499    |  |
| Biology  | Science                                   |        |      |      | 5604* |      |  | 0401    |  |
| Biomedical Sciences  | Health Sciences and Technology            |        |      |      |       |      |  | 0499    |  |
| Chemistry*†  | Science                                   |        |      |      | 5619* |      |  | 1905    |  |
| Computational Mathematics*                                 | Science                                   |        |      |      |       |      |  | 1703    |  |
| Diagnostic Medical Sonography                              | Health Sciences and Technology            | 5299   |      |      |       |      |  | 1299    |  |
| Echocardiography   | Health Sciences and Technology            | 5217   |      |      |       |      |  |         |  |
| Exercise Science   | Health Sciences and Technology            | 5299.3 |      |      |       |      |  |         |  |
| Imaging Science  | Science                                   |        |      |      |       |      |  | 1999.20 |  |
| Laboratory Science Technology                              | National Technical Institute for the Deaf |        |      | 5407 |       | 5407 |  |         |  |
| Molecular Bioscience and Biotechnology                     | Science                                   |        |      |      |       |      |  | 0499    |  |
| Physician Assistant  | Health Sciences and Technology            |        |      |      |       |      |  | 1299.10 |  |
| Physics*   | Science                                   |        |      |      | 5619* |      |  | 1902    |  |
| Polymer Chemistry§   | Science                                   |        |      |      |       |      |  | 1907    |  |
| <b>Multidisciplinary Studies (Individualized Programs)</b> |   |        |      |      |       |      |  |         |  |
| Applied Arts and Science‡                                  | Applied Science and Technology            |        | 5699 |      |       | 5699 |  | 4999    |  |
| <b>Social Sciences</b>                                     |   |        |      |      |       |      |  |         |  |
| Advertising and Public Relations                           | Liberal Arts                              |        |      |      |       |      |  | 0604    |  |
| Applied Liberal Arts                                       | National Technical Institute for the Deaf |        |      |      | 5699  |      |  |         |  |
| Criminal Justice   | Liberal Arts                              |        |      |      |       |      |  | 2105    |  |
| Deaf Cultural Studies/American Sign Language               | National Technical Institute for the Deaf | 5506   |      |      |       |      |  |         |  |
| Economics  | Liberal Arts                              |        |      |      |       |      |  | 2204    |  |
| International Studies                                      | Liberal Arts                              |        |      |      |       |      |  | 2210    |  |
| Journalism   | Liberal Arts                              |        |      |      |       |      |  | 0604    |  |
| Museum Studies   | Liberal Arts                              |        |      |      |       |      |  | 1099    |  |
| Philosophy   | Liberal Arts                              |        |      |      |       |      |  | 1509    |  |
| Political Science  | Liberal Arts                              |        |      |      |       |      |  | 2207    |  |
| Psychology   | Liberal Arts                              |        |      |      |       |      |  | 2001    |  |
| Public Policy*   | Liberal Arts                              |        |      |      |       |      |  | 2102    |  |
| Urban and Community Studies                                | Liberal Arts                              |        |      |      |       |      |  | 2214.00 |  |

\* Accelerated dual degree (BS/MS) option available.

† Evening option available.

‡ Online option available.

§ This program has been approved for discontinuance. No new students will be admitted in 2011-2012.



# Graduation Requirements

To earn an academic credential from RIT, students must satisfy a number of graduation requirements, which may vary significantly from program to program. All students should seek out and use the academic advising resources within their colleges to assist them in planning their academic program of study. In general, students should expect to satisfy the following requirements before they can graduate from RIT:

## **A. Completion of academic curricula**

I. Students must satisfactorily complete all of the courses in their academic program. General education requirements and specific course requirements for each program are identified in the following pages. This bulletin, and careful consultation with an academic adviser, provide the best resources for planning and completing all of the requirements necessary for graduation.

II. Program curricula may include several types of courses, including cooperative education, field experience, practicum, thesis, research, and wellness. Most students will need to satisfy a wellness requirement, and many academic programs require one or more quarters of experiential learning, including cooperative education or internships.

III. The curriculum in effect at the time of admission into a program will normally be the curriculum one must complete in order to graduate. Occasionally, with departmental approval, course substitutions and other minor curricular modifications may occur. Although there is no time limit within which students must complete their course requirements, the curriculum under which a student is certified to graduate must be no more than seven years old.

## **B. Grade-point average standard**

I. Successful candidates for an undergraduate degree, diploma, or certificate must have a program cumulative grade-point average of at least 2.0. The physician assistant program requires a program cumulative grade-point average of 2.8 or higher.

II. Graduation honors are conferred on associate and bachelor's degree recipients who achieve a 3.40 or higher cumulative program GPA.

## **C. Residency and minimum earned hours**

At least 45 of the credit hours used toward a degree program must be earned by successfully completing RIT courses. In addition, at least 30 of the final 45 hours of any program must be earned through RIT courses. Credit earned through transfer, credit by exam/experience, College-Level Examination Program (CLEP), Advanced Placement (AP), International Baccalaureate (IB), or audit is excluded from these residency calculations. RIT academic

programs vary as to the total number of credit hours required; however, under no circumstances will a student be allowed to graduate with a bachelor's degree with fewer than 180 cumulative earned hours (90 hours for associate degrees). Cumulative earned hours include RIT courses, transfer credit, credit by exam/experience, CLEP, AP, and IB credits.

## **D. Demonstration of writing skills**

Students must demonstrate, to the satisfaction of the dean of their college, the writing skills necessary for successful entry into their chosen careers. Each academic department determines the criteria and standards for evaluating abilities.

## **E. Fulfillment of all financial obligations to RIT**

### **The Liberal Arts General Education Curriculum**

Students in all baccalaureate degree programs are required to complete at least 90 credit hours of general education. This includes a minimum of 36 quarter credit hours in the humanities and social sciences taken in the College of Liberal Arts. If a student elects to complete a minor in the College of Liberal Arts, the total number of required humanities or social science credits will be 44. Students enrolled in bachelor of science programs also must complete at least 20 quarter credit hours of general education in the College of Science.

The College of Liberal Arts general education curriculum is divided into an introductory core, an Arts of Expression course, and advanced courses in a liberal arts concentration or liberal arts minor. The requirements for baccalaureate degree programs are summarized below.

I. The introductory core totals 20 credit hours and is composed of the following 200- to 300-level courses:

**A. Writing** (0502-227) (4 credit hours)

**B. Two humanities courses** (8 credit hours) taken from two different disciplines: fine arts; history; literature; philosophy; science, technology, and values; or introduction to environmental studies

**C. Two social science courses** (8 credit hours) taken from two different disciplines: anthropology, economics, political science, psychology, and sociology

II. Arts of Expression course (4 credit hours)

III. Advanced course work in a liberal arts concentration or minor (minimum 12 credit hours required in 400- to 500-level courses)

Students enrolled in associate degree programs will generally complete only a portion of the liberal arts requirements listed above. Additional information is provided in the academic program descriptions in this bulletin and through academic advisers.

## Liberal arts advising

Liberal arts requirements vary within the individual degree programs. Therefore, it is important that students carefully plan their liberal arts program to meet the specific requirements of their degree program. Advising staff are available in the College of Liberal Arts' Office of Student Services to provide assistance in planning and selecting appropriate liberal arts courses. Through this office, the college provides academic worksheets for each degree program to help students maintain records of progress toward their degree.

The College of Liberal Arts faculty recommends that students who wish to pursue their liberal arts studies beyond the minimum general education requirement consider any of the following options:

- the additional courses needed to complete a liberal arts minor,
- the additional courses needed to complete a second liberal arts minor,
- the additional courses needed to complete a liberal arts double major,
- a 500-level seminar course,
- at least one multicultural or international/global studies course,
- additional courses that feature writing,
- courses that complement or add depth to professional studies,
- courses that respond to personal interests—even if immediate ties to professional studies are not apparent, or
- the study of a foreign language to facilitate study abroad or professional development.

## The Mathematics and Science General Education Curriculum\*

*\*The mathematics and science general education curriculum requirement applies to all students pursuing the bachelor of science degree. Students in bachelor of fine arts programs need not complete this requirement.*

The general education curriculum in mathematics and science is a component of all RIT bachelor of science degree programs and is completed through one of three options. These options offer a balance between mathematics and science. A minimum of 20 credits is required. Students should consult with their program chairperson or academic adviser for specific course requirements and approved sequences.

### Plan A: Balanced

Mathematics—One three-course sequence

Science—One three-course sequence and associated laboratories

### Plan B: Emphasis on science

Mathematics—One two-course sequence

Science—One two-course sequence and associated laboratories, plus two additional science electives

### Plan C: Emphasis on mathematics

Mathematics—One two-course sequence, plus two additional mathematics electives

Science—One two-course sequence and associated laboratories

## Wellness Education Requirement

RIT recognizes the need for wellness education in today's society and offers specifically designed courses to help students develop and maintain a well-balanced healthy lifestyle. The wellness education requirement is designed to assist students in making healthy decisions to support their academic and social interactions in col-

lege and beyond. The wellness curriculum provides learning experiences that are an integral part of the educational experience at RIT.

**Students seeking a bachelor's degree:** Students seeking a bachelor's degree must successfully complete two different wellness activity courses. (*Important note: Different courses would include different levels of and/or forms of a course that may have the same course number (e.g., pilates and advanced pilates would count as two different activity courses).*)

**Students seeking an associate degree:** Students seeking an associate degree must successfully complete one wellness activity course.

**Transfer students:** Transfer students may apply course work successfully completed at a previous institution. The student's home department will determine and make decisions regarding transfer of health, wellness, or activity courses. The Center for Intercollegiate Athletics and Recreation is available for consultation.

### Exemption Scenarios

**Age:** Students who are 25 or older *at the date of matriculation* are exempt from the wellness education requirement but may enroll in any course on a space-available basis.

**Club sports participation:** Students participating in an RIT-recognized club sport may be granted one activity course credit for the year of participation. Participation on the same club team for multiple seasons (e.g., four seasons) can be counted only one time for activity course credit toward the graduation requirement. Students must see the club sports adviser before the end of the spring quarter add/drop period to facilitate the credit process.

**Credit by experience:** Retroactive credit *may* be granted for certain independent activities if completed within one year before matriculation at RIT. A formal written request must be submitted that clearly outlines the activity that is being considered for wellness education credit along with all documentation of the experience (e.g., signatures of instructors, copy of certificates, receipt from a course or seminar completion). A minimum of 16 hours of a previous activity is required. Formal requests should be submitted to the director of the Wellness Instructional Program.

**Intercollegiate athletics:** Students participating in the university's intercollegiate athletic program will be granted wellness activity course credit for the season(s) of participation.

**Intramural participation:** No credit is granted for intramural sports participation.

**Medical excuse:** A medical excuse may exempt students from participation in the activity segment of the graduation requirement, but they must still enroll in First-Year Enrichment (during their freshman year). The exemption will be granted only by a college dean with input from the associate director of wellness for the Center for Intercollegiate Athletics and Recreation. One copy of the medical excuse (signed physician's memo) should be filed with the Center for Intercollegiate Athletics and Recreation and the other copy taken to students' academic department.

**Military duty:** Students who have completed six months or more of active military duty are not required to complete the wellness education program but are encouraged to enroll in any wellness course on a space-available basis.

**Nonmatriculated status:** Nonmatriculated students are exempt from the wellness education requirement but are encouraged to enroll in any wellness course on a space-available basis.

**Prior bachelor's degree:** Students who have acquired a bachelor's degree are exempt from the wellness education requirement.

# Colleges of RIT

Students will choose one college as their home, where they will concentrate on an in-depth degree program (major), but their course work could draw from the strengths and interactions of all 10 of RIT’s colleges and degree-granting entities.

## RIT’s colleges and degree-granting entities

|  |
|--|
| College of Applied Science and Technology                        |
| E. Philip Saunders College of Business                           |
| B. Thomas Golisano College of Computing and Information Sciences |
| Kate Gleason College of Engineering                              |
| College of Health Sciences and Technology                        |
| College of Imaging Arts and Sciences                             |
| College of Liberal Arts  |
| Center for Multidisciplinary Studies                             |
| National Technical Institute for the Deaf                        |
| College of Science   |

## University Studies, Undeclared options

Some of our accepted students have interests that span two or more of our colleges. To help these students choose the academic program that best meets their career interests and goals, RIT offers the **University Studies** program. The university’s broadest and most flexible option, the program allows students up to a year to explore more than 90 bachelor’s degree programs while completing courses in general education, math, and science. University Studies students work individually with experienced advisers who make suggestions on course work and programs of study. Through advising and individual interaction with faculty and department chairs, students narrow their focus on a degree program that matches their career interests and goals.

If a student’s primary interests fall within one college, but they are unsure which major best fits their career goals, eight colleges offer **Undeclared options**. These college-based options help students discover more about their specific interests within the majors offered by the college.

# College of Applied Science and Technology

*H. Fred Walker, Dean*

[www.rit.edu/cast/](http://www.rit.edu/cast/)

## Programs of study

### Bachelor of Science degrees in:

|  |    |
|--|----|
| Civil Engineering Technology                     | 12 |
| Computer Engineering Technology                  | 14 |
| Electrical Engineering Technology                | 16 |
| Electrical/Mechanical Engineering Technology     | 17 |
| Environmental Sustainability, Health and Safety  | 23 |
| Environmental Management and Technology          | 25 |
| International Hospitality and Service Management | 26 |
| Manufacturing Engineering Technology             | 18 |
| Mechanical Engineering Technology                | 19 |
| Packaging Science                                | 22 |
| Telecommunications Engineering Technology        | 20 |

### Certificates in:

|                           |    |
|---------------------------|----|
| Health Systems Management | 28 |
| Structural Design         | 14 |

The College of Applied Science and Technology provides programs that stress technology in a variety of environments, enhance customer satisfaction in the service sector, and improve the careers of traditional and nontraditional students. Modern technology, whether in the development, integration, or implementation stages, is a focal point in each of the college's programs. This technology may be used to provide productive manufacturing and distribution of durable and consumable goods, the proper flow of information worldwide, the protection of the environment, or the enhancement of customer satisfaction in the service sector.

Through its dynamic program offerings, the college is committed to preparing graduates to be innovative, technologically advanced, and entrepreneurial. Degree programs are offered at the baccalaureate and master's degree levels. The college also includes the departments of military science (Army ROTC) and aerospace studies (Air Force ROTC) and the Center for Electronic Manufacturing Assembly (CEMA).

### Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

### Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

### Faculty

Faculty members in the college have considerable experience in their respective industrial fields, teaching experience from two- and four-year colleges, and have completed graduate programs in their various specialties. While teaching is a primary concern, they are also researchers who maintain current knowledge in their fields. They are committed to student growth and development.

### Facilities and resources

- The college's newest building supports RIT's commitment to environmentally sustainable design. It is LEED (Leadership in Energy and Environmental Design) certified and houses the William G. McGowan Student Commons; the American Packaging Corporation Center for Packaging Innovation; the William G. McGowan Center for Telecommunications, Innovation, and Collaborative Research; the REDCOM Telecommunications Systems Laboratory; the department of civil engineering technology/environmental management and safety; the department of electrical, computer,

and telecommunications engineering technology; advising and faculty offices; and laboratories.

- An adjacent building houses the department of manufacturing and mechanical engineering technology/packaging science; administrative, advising, and faculty offices; a student project area; and mechanical systems, materials, and product innovation laboratories.
- Additional laboratories are located in the Center for Integrated Manufacturing Studies, which features state-of-the-art labs in CAD/CAM systems, electronics manufacturing, instrumentation, and packaging testing.
- Henry's, the college's student-run kitchen and restaurant, which is part of the School of International Hospitality and Service Innovation, showcases some of the most sophisticated service equipment and computing resources in the country.
- Newly remodeled food product development laboratories allow students to create menu items for classes that pertain to the growing food service industry.
- Computing information laboratories provide data that enable students to assess the supply and demand for food commodities throughout the world.

### Cooperative education

All full-time engineering technology programs require students to complete five quarters of cooperative education before they can be awarded a bachelor of science degree. All part-time programs also require either cooperative education or its equivalent beyond the level of an associate degree. Many students who work full time and are enrolled part time in an engineering technology program may be able to apply a portion of their full-time employment toward cooperative education experience. The student's professional responsibilities and how they pertain to the degree program in which the student is enrolled must be reviewed to determine if co-op credit may be given.

Some engineering technology programs require an official entry into co-op, with cooperative education experience listed on the student's transcript. Part-time students in the electrical, computer, and telecommunications engineering technology programs have the same cooperative education requirements as full-time students. As part of the graduation requirement for a BS in mechanical engineering technology, electrical/mechanical engineering technology, and manufacturing engineering technology, the department requires that the work experience of all part-time and distance students must total at least 48 weeks of documented full-time work experience relevant to their major.

Co-op provides an opportunity for students to apply techniques, skills, and the latest developments in their fields in a professional environment. Students learn the day-to-day operations of an engineering technology professional while they gain valuable experience that hones their skills and makes them more marketable upon graduation.

Co-op also can provide an income that may help defray a portion of the student's educational expenses. The Office of Cooperative Education and Career Services assists students in obtaining co-op positions that relate to their career goals.

### Accreditation

The following degree programs are accredited by the Technology Accreditation Commission (TAC) of ABET (<http://www.abet.org>): civil engineering technology, computer engineering technology, electrical engineering technology, electrical/mechanical engineering technology, manufacturing engineering technology, mechanical engineering technology, and telecommunications engineering technology.

### Advising

The college provides advising services to support students throughout their academic careers. A faculty adviser, co-op adviser, professional adviser, and staff in the departmental offices all participate in the student's academic experience. A faculty adviser is uniquely prepared to offer career counseling in each student's major field of study. The Office of Cooperative Education and Career Services assigns each co-op student an adviser who assists in the placement process. In the departmental offices, all students are assured of administrative support to effectively deal with registration, records, and scheduling. Professional advisers assist in academic planning and problem solving. With a prearranged appointment, part-time students will find advisers available during the evening. Each of these advisers will also help identify appropriate support services for specific student needs.

### Academic enrichment

*The Honors Program:* Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admissions process.

*Minors:* Students may choose from more than 95 minors to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

*Study abroad:* RIT encourages all students to consider a study abroad program to enhance their understanding of globalization and other cultures. Students may study full time at a variety of host schools and are able to select both major and liberal arts classes. The Study Abroad Office has information about foreign study options and opportunities.

*Professional student organizations:* The college maintains memberships in the following professional organizations: American Society of Civil Engineers; Women in Technology; Students Innovating Technology; Institute of Packaging Professionals; Society for Manufacturing Engineers; BAJA SAE Team; American Society of Heating, Refrigerating and Air-Conditioning Engineers; and the Student Environmental Action League.

### Special opportunities

*Accelerated dual degree programs:* Some programs offer accelerated, five-year dual BS/MS degree options. These degrees offer students the opportunity to earn a bachelor's degree and a master's degree in less time than pursuing each degree individually. Please refer to individual programs for information on BS/MS options.

*Graduate study:* The College of Applied Science and Technology offers graduate programs and advanced certificates in a number of areas related to technology, the environment, health care, service management and hospitality, and manufacturing. For a complete list of programs and their curricula please refer to the *Graduate Bulletin*.

*Part-time/Evening/Online options:* Many of the college's programs may be completed on a part-time, evening, or online basis. Please refer to the Office of Part-time and Graduate Enrollment or the college's website for more information.



## School of Engineering Technology

RIT is a leader in the development of bachelor's and master's programs in engineering technology that are designed to meet the growing needs of business and industry for engineering technologists.

### Degree programs

There are seven engineering technology programs:

- civil engineering technology
- computer engineering technology
- electrical engineering technology
- electrical/mechanical engineering technology
- manufacturing engineering technology
- mechanical engineering technology
- telecommunications engineering technology

Many students choose to transfer from similar engineering technology fields to continue study in a particular engineering technology specialization, typically entering as upper-division students. Each program consists of a balance of professional studies, the liberal arts, mathematics, and cooperative education. With the selection of technical electives, students can tailor their program to enhance previous knowledge and work experience.

**Upper division:** The engineering technology programs are flexible and can easily accommodate students who currently work in full-time positions and wish to pursue a degree on a part-time basis. Part-time study in all engineering technology upper-division programs is available during the day. All programs offer part-time study in the evenings, except civil engineering technology. Many courses are available online.

The requirements for part-time study and for graduation are consistent with those for the electrical, computer, and telecommunications engineering technology full-time day programs requiring co-op experience. The part-time mechanical, electrical/mechanical, and manufacturing engineering technology programs do not require cooperative education.

**Lower division:** Engineering technology offers the following lower-division evening programs: electrical technology and mechanical technology.

Certificate programs are available during the evening and through online learning. For more information, please request a *Part-time Undergraduate Studies Guide*, an *Online Studies Guide*, or visit the Part-time and Graduate Enrollment Services website at [www.rit.edu/emcs/ptgrad/](http://www.rit.edu/emcs/ptgrad/).

## Engineering Technology, Undeclared

<http://www.rit.edu/cast/mmetps/>

**Elizabeth Dell, Undeclared Program Coordinator**  
(585) 475-6577, [emdmet@rit.edu](mailto:emdmet@rit.edu)

### Program overview

Students interested in the fields of engineering technology or packaging science but undecided about selecting a specific program of study should consider the undeclared engineering technology option. Students spend up to one year exploring the various engineering technology programs while earning course credit that can be applied to any of the programs.

## Curriculum

During the first quarter, students take basic technical skills courses in both the electrical and mechanical disciplines. They also participate in Engineering Technology Seminar (0606-101), which explores the unique characteristics of each engineering technology discipline. After the first quarter, students are expected to select a specific program of study or focus on a discipline area, such as electrical (computer, electrical, telecommunications), mechanical (manufacturing, mechanical, packaging), or civil (civil, environmental management, safety). By the spring quarter, students are required to select a program of study. In their first two years, students who chose the undeclared engineering technology program may take some courses at different times than the students who entered their first year in a declared program. In most cases, however, students who start in the undeclared option are able to begin their junior year on track with other students in their same program of study.

### Undeclared engineering technology, freshman course sequence

| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| <b>Fall Quarter</b>   |  |               |
|   | Liberal Arts*  | 4             |
| 0617-262  | Solid Modeling and Design  | 4             |
| 0618-213  | ExCiTe Introduction to ECT ET  | 4             |
| 1016-230  | Precalculus or Math Sequence   | 4             |
| 0606-101  | Engineering Technology Seminar   | 2             |
| 1720-051  | First-Year Enrichment  | 1             |
| <b>Winter Quarter</b>   |  |               |
| Choose from one of the following programs: Electrical Engineering Technology, Mechanical Engineering Technology, Electrical/Mechanical Engineering Technology, Computer Engineering Technology, Telecommunications Engineering Technology, Civil Engineering Technology, Environmental Management, Safety Technology, Packaging Science |  |               |
|   | Liberal Arts*  | 4             |
| 1720-052  | First-Year Enrichment  | 1             |
| 1016-231  | Choose from one of the following:<br>Calculus for Engineering Technology<br>or Math Sequence | 4             |
|   | Two courses from selected option (with<br>adviser approval)                                  | 8             |
| <b>Spring Quarter</b>   |  |               |
|   | Liberal Arts*  | 4             |
| 1016-232  | Calculus for Engineering Technology II<br>or Math sequence                                   | 4             |
|   | Two courses from selected option (with<br>adviser approval)                                  | 8             |
| <b>Total Quarter Credit Hours</b>   |  | <b>52</b>     |

\* Please see Liberal Arts General Education Requirements for more information.

## Civil Engineering Technology, BS

<http://www.rit.edu/cast/cetems/>

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**Scott B. Wolcott, Undergraduate Coordinator**  
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### Program overview

Using the language of codes, working drawings, and specifications, students in the civil engineering technology program will learn



how to translate the innovative concepts of the engineer into functioning systems and structures. The program prepares students for employment in the fields of civil engineering technology, construction management, or any of the many closely related fields. In addition, the program teaches the skills necessary for graduates to pursue additional education, certification, or professional licensure. The program also encourages students to grow in responsibility and leadership through course work and extracurricular activities designed to broaden their involvement in organizations within and outside their profession. These objectives are achieved through a broad-based curriculum that offers students a choice of five elective paths that meet specific career interests.

### Accreditation

The civil engineering technology program is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>, and is operated as a cooperative education program.

### Graduates

Consulting engineers; construction companies and industries; and federal, state, and local government agencies employ engineering technology graduates both nationally and internationally. Their initial job titles range from assistant project manager, structural designer, or junior engineer to construction inspector and environmental engineer. Many of our graduates continue on to pursue advanced degrees, a large number have gained registration in several states as professional engineers, and many manage their own consulting firms.

### Civil engineering technology, BS degree, typical course sequence

| COURSE                  |  | QTR. CR. HRS. |
|-------------------------|--|---------------|
| <b>First Year†</b>      |  |               |
| 0608-051                | Introduction to Civil Engineering Technology     | 1             |
| 1016-230                | Precalculus                                      | 4             |
| 0608-211                | Engineering Graphics with CAD                    | 4             |
| 0608-330                | Materials of Construction                        | 4             |
| 1016-231                | Calculus for Engineering Technology I            | 4             |
| 1017-211, 212, 271, 272 | College Physics I, II, Lab                       | 8             |
| 0608-225                | Problem Solving and Communication with Computers | 2             |
| 0610-302                | Introduction to Statics                          | 4             |
| 0608-220                | Civil Engineering Graphics                       | 4             |
|                         | Liberal Arts*                                    | 16            |
|                         | Wellness Education†                              | 1             |
| 1105-051, 052           | First-Year Enrichment                            | 2             |
| <b>Second Year</b>      |  |               |
| 1017-213, 273           | College Physics III, Lab                         | 4             |
| 0608-320                | Plane Surveying                                  | 4             |
| 0535-403                | Effective Technical Communication                | 4             |
| 0610-303                | Strength of Materials                            | 4             |
| 0608-360                | Elementary Soil Mechanics                        | 4             |
| 0608-422                | Elements of Building Construction                | 4             |
| 1016-232                | Calculus for Engineering Technology II           | 4             |
| 0608-340                | Route Surveying                                  | 4             |
| 0608-380                | Elementary Structures                            | 4             |
| 1016-304                | Differential Equations for Engineering Tech      | 4             |
|                         | Liberal Arts*                                    | 8             |
|                         | Wellness Education†                              | 0             |
| <b>Third Year</b>       |  |               |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 0608-199                          | Introduction to Civil Engineering Technology, Transfer | 1             |
| 0608-420, 421                     | Hydraulics, Lab (or Technical Elective)                | 4             |
| 0608-304                          | Structural Loads and Systems                           | 2             |
| 0608-303                          | Land Development Computer Applications                 | 2             |
|                                   | Math Elective  | 4             |
| 0608-305                          | Structural Computer Applications                       | 2             |
| 0608-404                          | Applied Mechanics of Materials                         | 4             |
|                                   | Technical Elective                                     | 2             |
| 1011-271                          | Fundamentals of Chemistry                              | 3             |
| 1011-205                          | Chemistry I Lab  | 1             |
|                                   | Liberal Arts*  | 8             |
| 0606-099                          | Co-op Preparation                                      | 0             |
|                                   | Cooperative Education (2 quarters)                     | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 0608-432                          | Water and Wastewater Transport Systems                 | 2             |
| 0608-490                          | Structural Analysis                                    | 4             |
| 1011-272, 276                     | Chemistry of Water and Wastewater, Lab                 | 4             |
|                                   | Technical Electives                                    | 8             |
| 0608-438                          | Principles of Water and Wastewater Treatment           | 4             |
| 0608-497                          | Structural Design 0608-496 or                          | 4             |
| 0608-527, 528                     | Soil Mechanics and Foundations, Lab                    | 4             |
| 0608-546                          | Professional Principles and Practices                  | 1             |
|                                   | Liberal Arts*  | 8             |
|                                   | Cooperative Education (2 quarters)                     | Co-op         |
| <b>Fifth Year</b>                 |  |               |
| 0608-530                          | Transportation Engineering                             | 4             |
|                                   | Free Electives   | 12            |
| 1017-359                          | Technology Electronics                                 | 4             |
| 0617-436                          | Engineering Economics                                  | 4             |
| 0608-570                          | Principles of Dynamics in Civil Engineering Technology | 4             |
|                                   | Liberal Arts*  | 4             |
|                                   | Cooperative Education (1 quarter)                      | Co-op         |
| <b>Total Quarter Credit Hours</b> |  | <b>206</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ The typical course sequence chart is for students who begin the program as freshmen. Transfer students will be given a program tailored to their particular needs.

### Technical electives

It is anticipated that a student will take at least two electives from one of the sequences shown below. Other electives may be chosen from within that sequence, from another sequence, or from the other electives shown. With departmental approval, technical electives may be selected from existing courses in other RIT colleges. Also, independent study projects may be pursued for credit in cases where students demonstrate unusual ability and obtain sponsorship of a faculty adviser.

| COURSES                        |   | QTR. CR. HRS. |
|--------------------------------|---|---------------|
| <b>Water Resources</b>         |   |               |
| 0608-482                       | Stormwater Management                     | 4             |
| 0608-485                       | Hydraulic Structures                      | 4             |
| 0608-480                       | Groundwater Hydraulics                    | 4             |
| <b>Environmental Controls</b>  |   |               |
| 0608-510                       | Design of Water Treatment Facilities      | 2             |
| 0608-514                       | Land Use Planning                         | 4             |
| 0608-511                       | Design of Wastewater Treatment Facilities | 2             |
| 0608-525                       | Resource Recovery/Waste Management        | 4             |
| <b>Construction Management</b> |   |               |

| COURSES                                |                                 | QTR. CR. HRS. |
|--|---------------------------------|---------------|
| 0608-500                               | Labor Relations                 | 2             |
| 0608-509                               | Cost Estimating                 | 4             |
| 0608-560                               | Construction Project Management | 4             |
| 0608-544                               | Contracts and Specifications    | 2             |
| <b>Structures</b>                      |                                 |               |
| 0608-470                               | Timber Design                   | 4             |
| 0608-496                               | Reinforced Concrete Design      | 4             |
| 0608-497                               | Structural Steel Design         | 4             |
| <b>Building and Heavy Construction</b> |                                 |               |
| 0608-460                               | Construction Equipment          | 2             |
| 0608-505                               | Construction Safety             | 2             |
| 0608-535                               | Pavement Design                 | 4             |
| 0608-444                               | Mechanical Equipment            | 2             |
| <b>Other Electives</b>                 |                                 |               |
| 1016-319                               | Data Analysis                   | 4             |
| 0610-440                               | Applied Thermodynamics          | 4             |
| 0630-370, 372                          | Environmental Geology, Lab      | 4             |

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Advisory Board

The Industrial Advisory Board is comprised of local and regional industry leaders from consulting, construction, and the municipal market. These advisory board members share their professional and technical expertise to enhance the engineering technology program and strengthen its future development.

## Structural Design, Cert.

### Program overview

The structural design certificate is for professionals who need formal training in proper design techniques to better perform the preliminary design functions that may be allocated to them under the supervision and guidance of a professional engineer. The certificate is a 20 quarter credit hour program that consists of five courses.

### Curriculum

The curriculum covers the latest techniques in steel design, designated "load and resistance factor design," which is replacing the "allowable stress design" techniques still offered in many engineering and engineering technology curricula.

Prospective students are those with an associate degree in civil engineering technology (or a similar program) employed in a design environment who need additional training, or those with a bachelor's degree in civil engineering, civil engineering technology, or architecture employed in a design environment.

## Certificate in structural design

| COURSE                            |                            | QTR. CR. HRS. |
|-----------------------------------|----------------------------|---------------|
| 0608-404                          | Applied Mechanics          | 4             |
| 0608-490                          | Structural Analysis        | 4             |
| 0608-470                          | Timber Design              | 4             |
| 0608-496                          | Reinforced Concrete Design | 4             |
| 0608-497                          | Structural Steel Design    | 4             |
| <b>Total Quarter Credit Hours</b> |                            | <b>20</b>     |

## Computer Engineering Technology, BS

<http://www.rit.edu/cast/ect>

**Michael Eastman, Department Chair**  
(585) 475-7787, [mgeiee@rit.edu](mailto:mgeiee@rit.edu)

### Program overview

Embedded systems are at the heart of devices and systems used every day. Computer engineers design embedded systems for medical diagnostic equipment, digital cameras, missile guidance systems, anti-lock braking systems, scanners, copiers, switches, routers, and cell phones. The embedded systems designer requires knowledge of computer hardware and software.

The computer engineering technology program is designed to meet industry's ever-increasing need for engineers with an in-depth knowledge of hardware and software design and development. The curriculum bridges the gap between these two disciplines by providing a solid foundation in each and integrating them with intensive classroom and laboratory experiences.

From a software perspective, students gain a strong background in cutting-edge development with programming languages currently used in industry. Students learn industry standard approaches to application software development as well as state-of-the-art problem-solving techniques. Students learn techniques for developing applications code and firmware, and they understand and appreciate the difference. Embedded "C" and assembly language programming are performed in numerous courses.

The hardware focus of the curriculum is on digital systems design and development. From low-level gate design to high-end microprocessors and current bus standards, students gain an architectural understanding of computer systems. The curriculum includes in-depth design and analysis of combinational logic, sequential logic and state machines, micro-controller systems, microprocessor systems, and state-of-the-art computer technology. Students perform schematic entry timing analysis and FPGA development in VHDL using industry standard computer-aided engineering tools.

A capstone experience in the fifth year enables students to integrate their hardware and software expertise in a quarter-long project course.

The emphasis on hardware and software design, along with a solid foundation in math, science, and the liberal arts, produces graduates who are well-prepared to enter the work force as design engineers or to pursue advanced degrees. Students will gain depth of knowledge and breadth of experience that will inspire them to pursue successful careers in their chosen professional field and embark on a path of lifelong learning.

## Accreditation

The computer engineering technology program is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>.

## Curriculum

### Computer engineering technology, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 0609-051, 052                     | Discovery, Pathways                               | 2             |
| 0618-231, 232                     | Technical Programming I, II                       | 8             |
| 0618-301                          | Digital Fundamentals                              | 4             |
| 0609-214, 215, 216                | Circuit Theory I, II, III                         | 12            |
| 1016-261, 262                     | Calculus with Foundations I, II                   | 8             |
| 1016-272                          | Calculus B  | 4             |
| 0618-303                          | Microcomputers                                    | 4             |
|                                   | Liberal Arts*                                     | 12            |
|                                   | Wellness Education†                               | 0             |
| <b>Second Year</b>                |   |               |
| 1016-319                          | Data Analysis                                     | 4             |
| 0618-233                          | Technical Programming III                         | 4             |
| 0609-360, 361                     | Electronics I, II                                 | 8             |
| 1017-211, 212, 213                | College Physics I, II, III                        | 12            |
|                                   | Liberal Arts*                                     | 12            |
| 1016-273                          | Calculus C  | 4             |
| <b>Third Year</b>                 |   |               |
| 0618-438                          | Digital Systems Design I                          | 4             |
| 0618-439                          | Electronic Design Automation                      | 4             |
|                                   | Technical Elective                                | 4             |
| 0609-407                          | Career Orientation                                | 1             |
| 0614-477                          | Networking Technologies                           | 4             |
| 1017-320                          | Principles of Optics                              | 4             |
| 1016-304                          | Differential Equations for Engineering Technology | 4             |
| 0535-403                          | Effective Technical Communication                 | 4             |
|                                   | Cooperative Education (2 quarters)                | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0618-561, 562                     | Embedded Systems Design I, II                     | 8             |
| 0609-333                          | Concepts in Systems and Signals                   | 4             |
|                                   | Professional Concentration Elective               | 4             |
| 0609-442                          | Advanced Electronics                              | 4             |
|                                   | Liberal Arts*                                     | 8             |
|                                   | Free Elective                                     | 4             |
|                                   | Cooperative Education (2 quarters)                | Co-op         |
| <b>Fifth Year</b>                 |   |               |
| 0618-563                          | Embedded Systems Design III                       | 4             |
|                                   | Professional Concentration Electives              | 8             |
|                                   | Liberal Arts*                                     | 4             |
| 0614-440                          | Ethics, Economics, and Planning for Engineers     | 4             |
|                                   | Free Electives                                    | 8             |
|                                   | Cooperative Education (1 quarter)                 | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>187</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

## Electives

There is a need in the computer industry for professionals with diversified areas of expertise. The program requires a three-course professional concentration sequence that allows students to customize their education yet ensures depth of knowledge in sub-

ject matter beyond the core curriculum. Concentrations are offered in computer science, systems administration, IT wireless networks, telecommunications, and communications systems.

### Computer Science

|          |                                |
|----------|--------------------------------|
| 4003-263 | Computer Science for Transfers |
| 4003-450 | Programming Language Concepts  |
| 4003-440 | Operating Systems I            |

### Systems Administration

|          |                          |
|----------|--------------------------|
| 4050-402 | OS Scripting             |
| 4050-421 | Systems Administration I |
| 4050-516 | Network Services         |

### IT Wireless Networks

|          |                                   |
|----------|-----------------------------------|
| 4050-351 | Network Fundamentals              |
| 4050-403 | Concepts of Wireless Networking   |
| 4050-413 | Applications of Wireless Networks |

### Telecommunications

|               |                                 |
|---------------|---------------------------------|
| 0614-271      | Telecommunications Fundamentals |
| 0614-465, 466 | Voice Communications Technology |
| 0614-475      | Switching Technologies          |

### Communication Systems

|          |                           |
|----------|---------------------------|
| 0609-363 | Electronics IV            |
| 0609-534 | Communication Systems I   |
| 0609-547 | Digital Signal Processing |

In addition to the professional concentration electives, the curriculum has three free electives that may be used to pursue minors, to provide additional technical expertise for greater career specialization, or to explore courses that fulfill personal interests.

## Cooperative education

The program requires students to complete five quarters of cooperative education. Students may begin their co-op experience in the third year of the program. Each student is assigned a co-op adviser to assist in identifying placements.

## Accelerated dual degree option

The program, in conjunction with the department of computer science in the B. Thomas Golisano College of Computing and Information Sciences, offers an accelerated dual degree option that combines the bachelor's degree in computer engineering technology and a master's degree in computer science in a cohesive, five-year curriculum.

Applications to this program are accepted from matriculated undergraduate computer engineering technology students who have completed all the courses in the first five quarters of the baccalaureate program and have maintained a cumulative grade-point average of at least 3.4 out of 4.0. At least 55 quarter credit hours must have been earned at RIT. This program requires the maintenance of at least a 3.0 cumulative grade-point average and at least a 3.0 in the 45 quarter credit hours directly applicable to the master of science degree.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

# Electrical Engineering Technology, BS

<http://www.rit.edu/cast/ect>

**Michael Eastman, Department Chair**  
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## Program overview

The bachelor of science degree in electrical engineering technology provides students with a foundation in circuits, analog and digital electronics, physics, calculus, and the liberal arts. The third and fourth years expand on the fundamental courses with more advanced course work in applied differential equations, advanced circuits and electronics, transform methods, control systems, analog and digital electronics, mechanical engineering technology, and additional liberal arts courses. Students choose free electives or mechanical/manufacturing and professional electives to round out the program. Professional electives include sequences in electric power systems, electronic communications, embedded systems, telecommunications, networking, and optics. Several electives also are available from other technical disciplines, and the student's academic adviser can assist in determining the best choices for career goals and objectives. The upper division of the program provides a viable option for students who have completed their associate degree and wish to continue their education in engineering technology.

The BS is a five-year program that includes a year of cooperative education experience for full-time students. Students are required to complete five quarters of co-op and may begin their co-op experiences in the third year of the program. A co-op counselor is assigned to each student.

## Accreditation

The bachelor of science degree in electrical engineering technology is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>.

## Curriculum

### Electrical engineering technology, BS degree, typical course sequence

| COURSE             |                                 | QTR. CR. HRS. |
|--------------------|---------------------------------|---------------|
| <b>First Year</b>  |                                 |               |
| 0618-213           | ExCiTe Introduction to ECT ET   | 4             |
| 0609-214, 215, 216 | Circuit Theory I, II, III       | 12            |
| 1016-261, 262      | Calculus with Foundations I, II | 8             |
| 0609-051, 052      | First-Year Enrichment I, II     | 2             |
|                    | Liberal Arts*                   | 12            |
| 0618-231           | Technical Programming I         | 4             |
| 1017-211           | College Physics I               | 4             |
| 0618-301           | Digital Fundamentals            | 4             |
| 1016-272           | Calculus B                      | 4             |
|                    | Wellness Education†             | 0             |
| <b>Second Year</b> |                                 |               |
| 0609-360, 361, 362 | Electronics I, II, III          | 12            |
|                    | Liberal Arts*                   | 12            |
| 0609-337           | Machines and Transformers       | 4             |
| 1017-212, 213      | College Physics II, III         | 8             |
| 1016-273           | Calculus C                      | 4             |
| 1016-319           | Data Analysis                   | 4             |
|                    | Wellness Education†             | 0             |
| 0618-303           | Microcomputers                  | 4             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>Third Year</b>                 |  |               |
| 0618-438                          | Digital Systems Design I                                 | 4             |
| 0609-363                          | Electronics IV   | 4             |
|                                   | Technical Elective                                       | 4             |
| 1016-304                          | Differential Equations for Engineering Technology        | 4             |
| 0535-501                          | Public Speaking  | 4             |
| 0609-407                          | Career Orientation                                       | 1             |
| 0502-444                          | Technical Writing  | 4             |
| 0618-439                          | Electronic Design Automation                             | 4             |
| 0609-333                          | Concepts in Systems and Signals                          | 4             |
|                                   | Cooperative Education (2 quarters)                       | Co-op         |
| <b>Fourth Year</b>                |  |               |
|                                   | Free Elective  | 4             |
|                                   | Liberal Arts*  | 8             |
| 0609-547                          | Digital Signal Processing                                | 4             |
| 0609-403                          | Advanced Circuit Theory                                  | 4             |
|                                   | Mechanical/Manufacturing Engineering Technology Elective | 4             |
| 0609-442                          | Advanced Electronics                                     | 4             |
| 0609-408                          | Transmission Lines                                       | 4             |
|                                   | Cooperative Education (2 quarters)                       | Co-op         |
| <b>Fifth Year</b>                 |  |               |
| 0609-404                          | Control Systems I  | 4             |
| 0614-440                          | Ethics, Economics and Planning for Engineers             | 4             |
|                                   | Professional Electives                                   | 8             |
|                                   | Free Electives   | 8             |
|                                   | Liberal Arts*  | 4             |
|                                   | General Education Elective                               | 2             |
|                                   | Cooperative Education (1 quarter)                        | Co-op         |
| <b>Total Quarter Credit Hours</b> |  | <b>197</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Possible professional electives

| Option                 | Course Title |   | Prerequisite(s)                               |
|------------------------|--------------|---|---|
| Power Systems          | 0609-550     | Power Systems I                           | 0609-337 or 0609-411                          |
|                        | 0609-552     | Power Systems II                          | 0609-550                                      |
| Communications Systems | 0609-534     | Communication Systems I                   | 0609-333 and 0609-363                         |
|                        | 0614-520     | Fiber Optic Telecommunications Technology | 1016 304, 1017 212 and (0614 483 or 0609 408) |
| Embedded Systems       | 0618-561     | Embedded System Design I                  | 0618-438                                      |
|                        | 0618-562     | Embedded System Design II                 | 0618-439 and 0618-561                         |
| Telecommunications     | 0614-561     | Network Engineering (3 credits)           | 1016-304, 0614-477, 0614-475                  |
|                        | 0614-562     | Network Engineering Lab (1 credit)        | < AND >                                       |
|                        | 0614-574     | Networking Planning and Design            | 0614-479, 0614-561, 562                       |

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Graduates

Graduates of the program are well-prepared to pursue careers in a number of fields related to electrical engineering technology. Graduates enter not only design and development but related disciplines, including manufacturing, research, sales and marketing, applications engineering, and education. To attain these objectives, detailed program outcomes are specified for graduates. These can be found on the department website, [www.rit.edu/ect](http://www.rit.edu/ect).

## Electrical/Mechanical Engineering Technology, BS

<http://www.rit.edu/cast/mmetps/>

**Michael J. Parthum Sr., Program Chair**  
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### Program overview

With both the increased complexity of product design and the merger of mechanical and electrical aspects of design, there is a growing need for professionals who have a strong foundation in the electrical, mechanical, and manufacturing disciplines. Graduates from the electrical/mechanical engineering technology program are able to effectively bridge the gap between coworkers with more specialized backgrounds.

### Goals

The program prepares graduates for professional careers in the broad field of engineering technology, where an integration of mechanical, electrical, and manufacturing disciplines is important. The program provides the maximum amount of flexibility in transfer from other RIT programs and a variety of two-year programs, including engineering science and engineering technology.

### Accreditation

The program is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>.

### Curriculum

The program's core consists of 66 quarter credit hours covering the disciplines of electricity, electronics, microprocessors, mechanics, materials, thermal science, solid modeling, and manufacturing processes. After completing the core, students may select a technical concentration, which consists of three courses in a particular discipline. Students may use this concentration to either tailor the degree to meet specific employment objectives or establish a technical minor. Technical concentrations are available in electrical power systems, manufacturing management, telecommunications, and structures—civil, safety technology, and environmental management. Additional concentrations may be developed to meet the needs of a student's career goals or interests. Students will also complete 24 quarter credit hours of electives (12 as free electives and 12 as technical electives). In addition, students take general education courses in mathematics, physics, chemistry, communications, programming, and the liberal arts.

## Electrical/mechanical engineering technology, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1720-051, 052                     | First-Year Enrichment I, II                       | 2             |
| 0617-220                          | Manufacturing Processes                           | 4             |
| 1016-230                          | Precalculus                                       | 4             |
| 0617-262                          | Solid Modeling and Design                         | 4             |
| 1017-211                          | College Physics I                                 | 4             |
| 1016-231, 232                     | Calculus for Engineering Technology I, II         | 8             |
|                                   | Liberal Arts*                                     | 16            |
| 0618-301                          | Digital Fundamentals                              | 4             |
| 0610-211                          | Introduction to Materials Technology              | 3             |
| 0610-304                          | Materials Testing                                 | 1             |
| <b>Second Year</b>                |   |               |
| 0610-408, 410                     | Applied Mechanics I, II                           | 8             |
| 1017-212, 213                     | College Physics II, III                           | 8             |
| 1016-304                          | Differential Equations for Engineering Technology | 4             |
| 1016-319                          | Data Analysis                                     | 4             |
| 0614-271                          | Telecommunications Fundamentals                   | 4             |
| 0609-337                          | Electrical Machines and Transformers              | 4             |
| 0609-411                          | Electrical Principles I                           | 4             |
|                                   | Liberal Arts*                                     | 8             |
| 0535-403                          | Effective Technical Communications                | 4             |
| 0610-432                          | Computers in Mechanical Engineering Technology    | 2             |
|                                   | Wellness Education†                               | 0             |
| <b>Third Year</b>                 |   |               |
| 1011-208                          | College Chemistry                                 | 4             |
| 0618-231                          | Technical Programming I                           | 4             |
|                                   | Technical Elective                                | 4             |
| 0609-413                          | Applied Microprocessors                           | 4             |
| 0606-099                          | Co-op Preparation                                 | 0             |
| 0609-412                          | Electric Principles II                            | 4             |
|                                   | Liberal Arts*                                     | 4             |
| 0660-401, 402                     | Thermal Fluid Sciences I, II                      | 5             |
| 0610-407                          | Mechanical Engineering Technology Lab I           | 2             |
|                                   | Wellness Education†                               | 0             |
| 1011-273, 277                     | Introduction to Chemistry of Materials, Lab       | 4             |
| 0660-499                          | Cooperative Education                             | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0617-470                          | Controls for Manufacturing Automation             | 4             |
| 0610-416                          | Materials Technology                              | 4             |
| 0617-440                          | Production and Operations Management I            | 4             |
| 0610-409                          | Mechanical Engineering Technology Lab II          | 2             |
| 0660-499                          | Cooperative Education                             | Co-op         |
|                                   | Liberal Arts*                                     | 8             |
| 0660-403                          | Thermal Fluid Science III                         | 3             |
|                                   | Upper-Division Technical Concentration            | 4             |
|                                   | Technical Elective                                | 4             |
| <b>Fifth Year</b>                 |   |               |
| 0610-499                          | Cooperative Education                             | Co-op         |
| 0617-436                          | Engineering Economics                             | 4             |
|                                   | Upper-Division Technical Concentration            | 7-8           |
|                                   | Free Electives                                    | 12            |
|                                   | Technical Elective                                | 8             |
|                                   | General Education Elective                        | 2             |
| <b>Total Quarter Credit Hours</b> |   | <b>202</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.



# Manufacturing Engineering Technology, BS

<http://www.rit.edu/cast/mmetps/man.php>

**Scott Anson, Program Chair**  
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## Program overview

The present shortage of qualified manufacturing engineers and technologists is between 50,000 and 100,000 people—and the need is increasing. Manufacturing engineers are retiring faster than graduates are produced, resulting in outstanding employment opportunities. In addition, industrial productivity and technological innovations are driving the demand for well-prepared manufacturing engineers.

The manufacturing engineering technology program prepares students to meet the demand for personnel well-versed in the new manufacturing technologies, which include computer-aided design, computer numerical control, microprocessor controls, robotics, computer-aided manufacturing, flexible manufacturing systems, assembly automation, and electronics manufacturing.

## Goals

The goal of the program is to prepare individuals for professional employment in the fields of product design, development, and manufacturing. The program is designed to provide the skills necessary for applying emerging manufacturing technologies. A cooperative education program enhances these skills by allowing students to gain valuable experience working in the manufacturing industries. Throughout the academic program, a significant amount of hands-on laboratory experience in manufacturing is provided.

## Accreditation

The manufacturing engineering technology program is operated on the cooperative education plan and is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>.

## Curriculum

The curriculum has been designed with the aid and consultation of professionals in the field and emphasizes computer-integrated manufacturing and product development. Courses cover traditional and nontraditional manufacturing processes, fundamentals of electronics and microprocessors, computer-aided design, computer numerical control, robotics, group technology, computer-aided process planning, materials requirements planning, surface-mount electronics design and assembly, flexible manufacturing systems, quality control, engineering economics, value analysis, plastics manufacturing, manufacturing management, and lean manufacturing.

## Manufacturing engineering technology, BS degree, typical course sequence

| COURSE            | QTR.                                 | CR. | HRS. |
|-------------------|--------------------------------------|-----|------|
| <b>First Year</b> |                                      |     |      |
| 0610-211          | Introduction to Materials Technology | 3   |      |
| 0610-304          | Materials Testing                    | 1   |      |

| COURSE                            | QTR.  | CR. | HRS.       |
|-----------------------------------|---|-----|------------|
| 0617-220                          | Manufacturing Processes I                         | 4   |            |
| 1016-231                          | Calculus for Engineering Technology               | 4   |            |
| 1720-051, 052                     | First-Year Enrichment                             | 2   |            |
| 0617-262                          | Solid Modeling and Design                         | 4   |            |
| 0617-420                          | Manufacturing Processes II                        | 4   |            |
| 1016-232                          | Calculus for Engineering Technology II            | 4   |            |
| 0610-220                          | Design Dimensioning and Tolerancing               | 4   |            |
| 1016-304                          | Differential Equations for Engineering Technology | 4   |            |
| 1017-211                          | College Physics I                                 | 4   |            |
|                                   | Liberal Arts*                                     | 12  |            |
| <b>Second Year</b>                |   |     |            |
| 0610-302                          | Introduction to Statics                           | 4   |            |
| 0610-305                          | Pneumatics and Hydraulics                         | 4   |            |
| 1016-319                          | Data Analysis I                                   | 6   |            |
| 1017-212, 213                     | College Physics II, III                           | 8   |            |
| 0609-411                          | Electrical Principles for Design I                | 4   |            |
| 0610-303                          | Strength of Materials                             | 4   |            |
|                                   | Liberal Arts*                                     | 4   |            |
|                                   | Wellness Education†                               | 0   |            |
| 0610-315                          | Principles of Mechanical Design I                 | 4   |            |
| 0610-309                          | Computational Methods for Engineering Technology  | 1   |            |
|                                   | Ethics Elective                                   | 4   |            |
| 0535-403                          | Effective Technical Communication                 | 4   |            |
|                                   | Free Elective                                     | 4   |            |
| <b>Third Year</b>                 |   |     |            |
| 0606-099                          | Cooperative Education Preparation                 | 0   |            |
| 0617-455, 457                     | Introduction to Electronics Packaging, Lab        | 5   |            |
| 0617-485                          | Robots in Manufacturing                           | 4   |            |
| 0618-231                          | Technical Programming                             | 4   |            |
| 0617-436                          | Engineering Economics                             | 4   |            |
| 0617-471                          | Computer Numerical Control                        | 4   |            |
| 1011-208                          | College Chemistry                                 | 4   |            |
|                                   | Free Electives                                    | 4   |            |
|                                   | Liberal Arts*                                     | 4   |            |
|                                   | Cooperative Education                             |     | Co-op      |
| <b>Fourth Year</b>                |   |     |            |
| 0617-440                          | Production and Operations Management I            | 4   |            |
| 0610-416                          | Materials Technology                              | 4   |            |
| 0617-470                          | Controls for Manufacturing Automation             | 3   |            |
| 0617-441                          | Production and Operations Management II           | 4   |            |
|                                   | Liberal Arts*                                     | 12  |            |
| 0610-409                          | Mechanical Engineering Technology Lab II          | 2   |            |
| 0617-472                          | Tool Engineering                                  | 4   |            |
| 1016-320                          | Data Analysis II                                  | 6   |            |
|                                   | Cooperative Education                             |     | Co-op      |
| <b>Fifth Year</b>                 |   |     |            |
| 0617-475                          | Computer-Aided Manufacturing                      | 4   |            |
|                                   | Technical Electives                               | 8   |            |
| 0617-510                          | Process Design                                    | 4   |            |
|                                   | Liberal Arts*                                     | 12  |            |
|                                   | Free Elective                                     | 4   |            |
|                                   | Cooperative Education                             |     | Co-op      |
| <b>Total Quarter Credit Hours</b> |   |     | <b>205</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.



## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Part-time option

For students who are employed full time, the upper division of this program may be taken on a part-time basis during the evening. It normally takes approximately 13 quarters for the typical evening student to complete the upper-division course requirements. In the early quarters, the fundamentals of mathematics, science, engineering, electronics, and processes are emphasized to provide a foundation for later courses in computer-integrated manufacturing and technical electives. Students also may elect certain courses from other programs.

Note: Some technical electives are offered only every other year. Please check with an adviser when planning the program's technical elective content.

## Mechanical Engineering Technology, BS

<http://www.rit.edu/cast/mmetsps/mech.php>

**William Leonard, Program Chair**  
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### Program overview

Mechanical engineering technology involves understanding how products and machinery work and how to design, make, or use them. From consumer products to high-performance automobiles, air-conditioned environments and jet aircraft, mechanical engineering technology has changed society for the better.

Students study the foundations of mechanics, materials, and energy and learn technical skills such as computer-aided design, computer-aided engineering, testing materials, and making parts. Students apply these principles and skills to the various fields of mechanical engineering technology—such as product and machine design, power generation, utilities and manufacturing—through laboratories and design projects. Full-time students gain valuable industrial experience through the required cooperative education program.

### Goals

Students are prepared for professional careers in machine design; manufacturing; test engineering; field service engineering; technical sales; thermal design; product design; utilities operations; heating, ventilating, and air-conditioning design; or plant operations. The program emphasizes the development of a design methodology and is reinforced by project-oriented assignments.

### Accreditation

The BS in mechanical engineering technology program is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>.

### Curriculum

Students first develop their skills in the fundamentals of mechanics, mathematics, materials technology, and computer-aided

design. Later, courses focus on both mechanical design and applied thermofluid engineering. The program includes five technical electives and three free electives. These courses can be used to create a specialization in such areas as product design, air conditioning, thermal power, plastics processing, and manufacturing.

A substantial amount of laboratory and product work is required. Teamwork, technical writing, and computer use are emphasized throughout the program.

### Concentrations

In the last three quarters of the program, students may select a concentration in one of the following areas:

- product design
- heat, power, and HVAC
- plastics processing

Customized concentrations may be developed with department approval.

### Mechanical engineering technology, BS degree, typical course sequence

| COURSE             | QTR.  | CR. | HRS.  |
|--------------------|---|-----|-------|
| <b>First Year</b>  |   |     |       |
| 0610-211           | Introduction to Materials Technology I            |     | 3     |
| 0610-304           | Materials Testing                                 |     | 1     |
| 0617-220, 420      | Manufacturing Processes I, II                     |     | 8     |
| 1016-231           | Calculus for Engineering Technology               |     | 4     |
| 1720-051, 052      | First-Year Enrichment                             |     | 2     |
| 0617-262           | Solid Modeling and Design                         |     | 4     |
| 1016-232           | Calculus for Engineering Technology II            |     | 4     |
| 0610-220           | Design, Dimensioning, and Tolerancing             |     | 4     |
| 1016-304           | Differential Equations for Engineering Technology |     | 4     |
| 1017-211           | College Physics I                                 |     | 4     |
|                    | Liberal Arts*                                     |     | 12    |
| <b>Second Year</b> |   |     |       |
| 0610-302           | Introduction to Statics                           |     | 4     |
| 0610-305           | Pneumatic and Hydraulic Systems                   |     | 4     |
| 1016-319, 320      | Data Analysis I, II                               |     | 10    |
| 1017-212, 213      | College Physics II, III                           |     | 8     |
| 0617-436           | Engineering Economics                             |     | 4     |
| 0609-411           | Electrical Principles for Design I                |     | 4     |
| 0610-303           | Strength of Materials                             |     | 4     |
|                    | Liberal Arts*                                     |     | 4     |
|                    | Wellness Education†                               |     | 0     |
| 0610-315           | Principles of Mechanical Design                   |     | 4     |
| 0610-309           | Computational Methods for Engineering Technology  |     | 1     |
|                    | Ethics Elective                                   |     | 4     |
| <b>Third Year</b>  |   |     |       |
| 0606-099           | Cooperative Education Preparation                 |     | 0     |
| 0535-403           | Effective Technical Communication                 |     | 4     |
| 0610-405           | Applied Dynamics                                  |     | 4     |
| 0610-460           | Applied Fluid Mechanics                           |     | 4     |
| 1011-208           | College Chemistry                                 |     | 4     |
| 0610-409           | Mechanical Engineering Technology Lab II          |     | 2     |
| 0610-416           | Materials Technology                              |     | 4     |
| 0610-440           | Applied Thermodynamics                            |     | 4     |
| 1011-273, 277      | Introduction to Chemistry of Materials, Lab       |     | 4     |
|                    | Liberal Arts*                                     |     | 4     |
|                    | Cooperative Education                             |     | Co-op |
| <b>Fourth Year</b> |   |     |       |
| 0610-403           | Failure Mechanics                                 |     | 4     |
| 0610-407           | Mechanical Engineering Technology Lab I           |     | 2     |

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Technical Elective                | 8             |
| 0610-506 Machine Design I         | 4             |
| 0610-465 Thermofluids Lab         | 3             |
| Liberal Arts*                     | 8             |
| Cooperative Education             | Co-op         |
| <b>Fifth Year</b>                 |               |
| Technical Electives               | 12            |
| Free Electives                    | 12            |
| Liberal Arts*                     | 8             |
| Cooperative Education             | Co-op         |
| <b>Total Quarter Credit Hours</b> | <b>196</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Evening option

Students who are employed full time and wish to pursue the BS in mechanical engineering technology may take the upper-division portion of this program part time during evening hours. The typical evening student requires approximately 13 quarters to complete the upper-division course requirements. Students also may elect certain courses from the computer-integrated manufacturing engineering technology and electrical engineering technology programs with department approvals.

Note: Some electives are not offered every year. Please check with an adviser when planning the program's technical electives.

## Mechanical Technology, AAS

### Program overview

The associate degree in mechanical engineering technology is designed to prepare technicians for employment in the mechanical design and manufacturing fields. The program is offered part time and in the evenings.

### Curriculum

The AAS program in mechanical technology is identical to the lower division of the full-time BS degree program in mechanical engineering technology. The curriculum prepares students to continue their studies toward a baccalaureate degree in engineering technology. The program begins with courses in mathematics, physics, computer-aided drafting and design, and manufacturing processes. The advanced portion of the technical program covers topics in mechanics, hydraulics, materials, and machine design. Courses in composition, communication, social science, and humanities round out the program.

## Mechanical technology, AAS degree, typical course sequence

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| <b>First Year</b>   |               |
| 0610-211 Introduction to Materials Technology I           | 3             |
| 0610-304 Materials Testing                                | 1             |
| 0617-220, 420 Manufacturing Processes I, II               | 8             |
| 1016-231, 232 Calculus for Engineering Technology I, II   | 4             |
| 1720-051, 052 First-Year Enrichment                       | 2             |
| 0617-262 Solid Modeling and Design                        | 4             |
| 0610-220 Design, Dimensioning, and Tolerancing            | 4             |
| 1017-211 College Physics I                                | 4             |
| Liberal Arts*   | 16            |
| <b>Second Year</b>  |               |
| 0610-302 Introduction to Statics                          | 4             |
| 0610-305 Pneumatic and Hydraulic Systems                  | 4             |
| 1016-319, 320 Data Analysis I                             | 10            |
| 1017-212, 213 College Physics II, III                     | 8             |
| General Electives   | 8             |
| Wellness Education†                                       | 0             |
| 0610-315 Principles of Mechanical Design                  | 4             |
| 0610-309 Computational Methods for Engineering Technology | 1             |
| Technical Electives                                       | 8             |
| <b>Total Quarter Credit Hours</b>                         | <b>93</b>     |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Telecommunications Engineering Technology, BS

<http://www.rit.edu/cast/ect>

**Michael Eastman, Department Chair**  
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### Program overview

The telecommunications industry drives technological innovation, giving us everything from the basic ability to transmit text and voice to the sophisticated communications systems that businesses and individuals depend upon every day. The industry has grown from providing simple telephone service to offering a wide range of audio, video, and data communication services, including voice, broadband Internet, broadcast video, and wireless services. Whether you are calling next door or exchanging data with a probe on a distant planet, telecommunication is involved.

The telecommunications engineering technology program prepares students for exciting careers in this dynamic field. Through classroom and laboratory experience, students gain in-depth knowledge of the components and systems that make up the global telecommunications network. With a basis in electronics and computing, students learn about the media and devices that transport and direct communication signals through the network. Students become familiar with current technology and develop the tools they will need to work with future technology. The program emphasizes analytical methods to plan and design networks to meet the goals of quality, reliability, and cost. Students also learn about the policies and regulations that have shaped the industry around the world.

## Curriculum

The telecommunications curriculum contains a number of electives for students to tailor their studies or pursue a minor. If students' interests lie in the applications of telecommunications equipment, opportunity exists to take courses from areas such as computer engineering technology, electrical engineering technology, and information technology. If students wish to pursue the management of telecommunications resources, a minor in business or management can provide the necessary background for the challenges they'll face as a future manager.

### Accreditation

The telecommunications engineering technology program is accredited by the Technology Accreditation Commission of ABET, <http://www.abet.org>.

### Cooperative education

The telecommunications engineering technology program requires students to complete five quarters of cooperative education. Students may begin their co-op experience in the third year of the program. Each student is assigned a co-op adviser to assist in identifying placements.

### Telecommunications engineering technology, BS degree, typical course sequence

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 1016-261, 262      | Calculus with Foundations I, II                   | 8             |
| 1016-272           | Calculus B  | 4             |
| 0618-213           | ExCiTe Introduction to ECT ET                     | 4             |
| 0609-214           | Circuit Theory I                                  | 4             |
| 0614-271           | Telecommunications Fundamentals                   | 4             |
| 0609-215           | Circuit Theory II                                 | 4             |
| 0618-301           | Digital Fundamentals                              | 4             |
|                    | Liberal Arts*                                     | 12            |
| 0609-216           | Circuit Theory III                                | 4             |
| <b>Second Year</b> |   |               |
| 0609-360, 361, 362 | Electronics I, II, III                            | 12            |
| 0609-216           | Circuit Theory III                                | 4             |
| 1016-273           | Calculus C  | 4             |
| 0618-232           | Technical Programming II                          | 4             |
| 1017-211, 212, 213 | College Physics I, II, III                        | 12            |
| 0614-465, 466      | Voice Communications Technology                   | 4             |
|                    | Liberal Arts*                                     | 12            |
|                    | Wellness Education†                               | 0             |
| <b>Third Year</b>  |   |               |
| 1016-304           | Differential Equations for Engineering Technology | 4             |
| 0609-333           | Concepts in Signals and Systems                   | 4             |
| 0614-477           | Networking Technologies                           | 4             |
| 0609-363           | Electronics IV                                    | 4             |
| 0609-407           | Career Orientation                                | 1             |
| 0535-403           | Effective Technical Communications                | 4             |
|                    | Technical Electives                               | 8             |
|                    | Cooperative Education (2 quarters)                | Co-op         |
| 1016-319           | Data Analysis I                                   | 4             |
| <b>Fourth Year</b> |   |               |
| 0614-480           | Introduction to Telecommunications Policy         | 4             |
| 0614-483, 484      | Telecommunications Transmission Systems, Lab      | 4             |
| 0614-475           | Switching Technologies                            | 4             |
|                    | General Education Elective                        | 4             |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
|                                   | Free Elective                                 | 4             |
|                                   | Liberal Arts*                                 | 8             |
|                                   | Cooperative Education (2 quarters)            | Co-op         |
| 0614-520                          | Fiber Optic Telecommunication Technology      | 4             |
| <b>Fifth Year</b>                 |   |               |
| 0614-561, 562                     | Telecommunications Network Engineering, Lab   | 4             |
| 0609-534                          | Communication Systems I                       | 4             |
|                                   | Liberal Arts*                                 | 4             |
|                                   | Free Electives                                | 8             |
|                                   | General Education Elective                    | 4             |
| 0614-574                          | Network Planning and Design                   | 4             |
| 0614-440                          | Ethics, Economics, and Planning for Engineers | 4             |
|                                   | Cooperative Education (1 quarter)             | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>197</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

### Accelerated dual degree option

Qualified students may pursue the simultaneous award of a BS degree and an MS degree in telecommunications engineering technology. This 230-quarter-credit-hour option includes a minimum of 48 quarter credit hours of graduate course work plus four quarters of cooperative education experience. The option is offered to students who have completed four quarters of study (excluding co-op) and who have attained an overall GPA of at least 3.4. The BS/MS program can be completed in five years of full-time study.

A sample schedule is shown. Note that a student may elect to complete a master's thesis for 6 credits or a master's project for 2 credits. In the latter case, the student must complete an additional graduate elective course.

### Telecommunications engineering technology, BS/MS option, typical course sequence

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 0609-051, 052      | ECT ET First-Year Enrichment I, II                | 2             |
| 0618-213           | ExCiTe Introduction to ECT ET                     | 4             |
| 1016-261, 262      | Calculus with Foundations I, II                   | 8             |
| 1016-319           | Data Analysis I                                   | 4             |
| 0609-214           | Circuit Theory I                                  | 4             |
| 1017-211           | College Physics I                                 | 4             |
| 0614-271           | Telecommunications Fundamentals                   | 4             |
| 0609-215           | Circuit Theory I, II                              | 4             |
| 1017-212           | College Physics II                                | 3             |
| 0618-301           | Digital Fundamentals                              | 4             |
|                    | Liberal Arts*                                     | 8             |
| <b>Second Year</b> |   |               |
| 0609-360, 361      | Electronics I, II,                                | 8             |
| 0609-216           | Circuit Theory III                                | 4             |
| 1016-272, 273      | Calculus B, C                                     | 8             |
| 0618-231, 232      | Technical Programming I, II                       | 8             |
| 1017-213           | College Physics III                               | 4             |
| 0614-465, 466      | Voice Communications Technology, Lab              | 4             |
|                    | Liberal Arts*                                     | 12            |
| 0609-407           | Career Orientation                                | 1             |
|                    | Wellness Education†                               | 0             |
| <b>Third Year</b>  |   |               |
| 1016-304           | Differential Equations for Engineering Technology | 4             |
| 0609-333           | Concepts in Signals and Systems                   | 4             |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 0614-477                          | Networking Technologies                       | 4             |
| 0618-303                          | Microcomputers                                | 4             |
| 0609-363                          | Electronics IV                                | 8             |
|                                   | General Education Elective                    | 4             |
|                                   | Technical Electives                           | 4             |
|                                   | Cooperative Education (2 quarters)            | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0614-780                          | Telecommunications Policy and Regulation      | 4             |
| 0535-403                          | Effective Technical Communications            | 4             |
| 0614-783                          | Telecommunications Transmission Systems       | 4             |
| 0614-479                          | Network Management                            | 4             |
| 0614-475                          | Switching Technologies                        | 4             |
|                                   | Technical Electives                           | 8             |
|                                   | Free Electives                                | 8             |
|                                   | Liberal Arts*                                 | 8             |
| 0614-440                          | Ethics, Economics, and Planning for Engineers | 4             |
|                                   | Cooperative Education (1 quarter)             | Co-op         |
| <b>Fifth Year</b>                 |   |               |
| 0614-761                          | Telecommunication Network Engineering         | 4             |
| 0614-764                          | Telecommunication Systems                     | 4             |
| 0614-720                          | Telecommunication Concepts                    | 4             |
| 0614-722                          | Telecommunication Principles                  | 4             |
| 0614-763                          | Wireless RF Telecommunications Systems        | 4             |
| 0614-774                          | WAN/LAN Planning and Design                   | 4             |
|                                   | Graduate Elective                             | 4             |
| 0614-890                          | Thesis/Project Planning                       | 2             |
| 0614-892, 893                     | Master's Thesis or Project and Elective       | 6             |
| 0614-732                          | Fiber Optic Telecommunications Tech           | 4             |
|                                   | Liberal Arts*                                 | 8             |
|                                   | Free Elective                                 | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>230</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Department of Manufacturing and Mechanical Engineering Technology/Packaging Science

**Daniel P. Johnson, Chair**

[www.rit.edu/cast/mmetps/](http://www.rit.edu/cast/mmetps/)

The manufacturing and mechanical engineering technology/packaging science department is a leader in providing innovative career-oriented education in the design, manufacturing, packaging, and distribution of goods.

Instructional and research laboratories for all of the programs are located in the College of Applied Science and Technology building and in the Center for Integrated Manufacturing Studies. Packaging laboratories include dynamics, materials, and environmental testing. Mechanical laboratories include mechanics and materials, thermofluids, plastics, pneumatics, and materials processing. Manufacturing laboratories include CAD, CIM/robotics, and surface-mount technology.

The BS programs in electrical/mechanical engineering technology, manufacturing engineering technology, and mechanical engineering technology are accredited by the Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, Maryland 21202-4012, (410) 347-7700.

### Accelerated dual degree options

Accelerated, five-year dual BS/MS degree options are for exemplary mechanical, manufacturing, and electrical/mechanical engineering technology students. (The combined BS/MS options are respectively known as the mechanical systems integration, manufacturing systems integration, and electrical/mechanical systems integration.) Graduation requires the successful completion of 230 quarter credit hours (or 229 hours for the electrical/mechanical systems integration program). After completing this requirement, the student is awarded the BS and MS degrees simultaneously. The MS degree is a master of science in manufacturing and mechanical systems integration. A student may apply to this option after receiving credit for at least 60 quarter credit hours. The most recent 30 quarter credit hours must be from RIT courses. The student must have at least a 3.2 cumulative grade point average at the time of application and must maintain a 3.0 cumulative GPA once admitted. (Students with cumulative GPAs less than 3.0 will automatically return to the BS program they started in and will not be eligible to reapply for the BS/MS program.)

The course work for the first eight quarters is the same as that for the first three years of either the mechanical, manufacturing, or electrical/mechanical engineering technology programs. However, in the spring quarter of the third year, the BS/MS student will not participate in a spring/summer co-op block. Instead, the student will take courses in the spring quarter and participate in co-op during the summer quarter. In the fourth and fifth years, the student will take more graduate-level courses. When finished, the student will meet all the graduation requirements for both the BS degree (in manufacturing, mechanical, or electrical/mechanical engineering technology) and an MS degree in manufacturing and mechanical systems integration.

The BS/MS student must complete the department's requirement of 48 weeks of cooperative education experience, which can be completed in four quarters, including the summer quarter between the second and third years. The BS/MS student may use three summer quarters and one other quarter to fulfill his or her co-op requirement. Students taking full course loads every quarter can complete the BS/MS requirements, including the co-op experience, within five calendar years. Students with significant advanced placement courses, or those who choose to take courses during their co-op assignments, may complete the BS/MS program in less than five years.

## Packaging Science, BS

<http://www.rit.edu/cast/mmetps/packaging/>

**Daniel Goodwin, Program Chair**  
(585) 475-5557, [digipk@rit.edu](mailto:digipk@rit.edu)

### Program overview

The packaging science program prepares students for employment in areas such as package development, sales, purchasing, structural design, production, research, and marketing.



Packaging is increasingly related to total marketing concepts; it has even greater dependence on new developments in materials and processes. Therefore, the industry requires management personnel with creativity and a strong background in business, engineering, and science.

The program was developed as a result of a close and long-established relationship between the packaging industry and RIT. This multi-billion-dollar industry exhibits dynamic growth and provides employment for thousands of professionals with wide-ranging skills and expertise.

### Industrial Advisory Board

The Industrial Advisory Board contributes professional and technical expertise to the packaging science program, which strengthens and develops the program to reflect the dynamics and growth of the industry.

## Curriculum

### Packaging science, BS degree, typical course sequence

| COURSE             |   | QRT. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 0607-201           | Principles of Packaging                     | 3             |
| 0607-301           | Engineering Design Graphics                 | 4             |
| 0607-312           | Packaging Materials II                      | 4             |
| 1016-204           | College Algebra and Trigonometry            | 4             |
| 1016-231           | Calculus for ET                             | 4             |
| 1011-208           | College Chemistry                           | 4             |
| 1011-273, 277      | Introduction to Chemistry of Materials, Lab | 4             |
| 1011-202, 207      | Introduction to Organic Chemistry, Lab      | 5             |
| 0511-211           | Principles of Microeconomics                | 4             |
|                    | Liberal Arts*                               | 8             |
|                    | Wellness Education†                         | 0             |
| 1720-051, 052      | First-Year Enrichment                       | 2             |
| <b>Second Year</b> |   |               |
| 0607-311           | Packaging Materials I                       | 4             |
| 0607-321           | Rigid Containers                            | 4             |
| 0607-322           | Flexible Containers                         | 4             |
| 0607-341           | Computer Applications                       | 4             |
| 0607-420           | Technical Communication                     | 3             |
| 2082-371           | Principles of Printing                      | 4             |
| 0105-363           | Principles of Marketing                     | 4             |
| 1029-301           | Introduction to Polymer Technology          | 2             |
| 1004-210           | Microbiology in Health and Disease          | 4             |
| 0511-402           | Principles of Macroeconomics                | 4             |
|                    | Liberal Arts*                               | 8             |
|                    | Wellness Education†                         | 0             |
| 0607-499           | Cooperative Education                       | Co-op         |
| <b>Third Year</b>  |   |               |
| 0607-401           | Career Seminar                              | 1             |
| 0607-431           | Packaging Production Systems                | 4             |
| 0607-432           | Packaging for Distribution                  | 4             |
| 0607-433           | Packaging for Marketing                     | 4             |
| 0607-485           | Shock and Vibration                         | 4             |
| 1017-211, 212      | College Physics I, II                       | 8             |
| 1016-319, 320      | Data Analysis I, II                         | 10            |
| 0535-501           | Public Speaking                             | 4             |
|                    | Liberal Arts*                               | 8             |
|                    | Elective                                    | 4             |
| 0607-499           | Cooperative Education                       | Co-op         |
| <b>Fourth Year</b> |   |               |
| 0607-462           | Packaging Regulations                       | 4             |

| COURSE                             | QRT. CR. HRS. |
|------------------------------------|---------------|
| Professional (Packaging) Electives | 12            |
| Liberal Arts*                      | 12            |
| Electives                          | 20            |
| <b>Total Quarter Credit Hours</b>  | <b>190</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

### Cooperative education

The packaging science program requires six months of cooperative education, in addition to the program's course work, to meet graduation requirements.

### Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Department of Civil Engineering, Environmental Management and Safety

### Environmental Sustainability, Health and Safety, BS

<http://www.rit.edu/cast/cetems>

**John Morelli, Department Chair**  
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### Program overview

The BS degree in environmental sustainability, health, and safety is focused on social responsibility for our activities and being good stewards of the products we make and the services we provide. The program prepares students to work as environmental sustainability, health, and safety professionals in both industry and government. Students gain a strong foundation in science, applied environmental, health and safety science and technology, sustainability and social responsibility, and are provided with the basic tools of financial management, team building, and leadership.

Students are ready to eliminate, reduce, and control the release of pollutants into the environment and to manage health and safety hazards associated with an organization's activities, products, and services. The program emphasizes globally sustainable and socially responsible approaches and prepares professionals to become leaders in moving toward a more sustainable and socially responsible future.

The most rewarding aspect of an environmental management and technology career is that students can start making a difference right away. There is so much that can be done at every level that students will feel good about their contributions from their first day on the job.

## Curriculum

### Environmental sustainability, health and safety, BS degree, typical course sequence

| COURSE            |              | QTR. CR. HRS. |
|-------------------|--------------|---------------|
| <b>First Year</b> |              |               |
| 0630-200          | ESHS Seminar | 1             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 0608-199                          | First-Year Experience                                  | 2             |
| 1016-225                          | Algebra for Management Science                         | 4             |
| 1011-215, 216, 205, 206           | General and Analytical Chemistry I, II and Lab         | 9             |
| 0630-201                          | Principles of ESHS                                     | 4             |
| 1004-212, 232                     | Human Biology II and Lab                               | 4             |
| 1005-210                          | Field Biology  | 4             |
| 0688-327                          | Environmental Communications                           | 4             |
| 1011-202                          | Foundations of Organic Chemistry                       | 4             |
|                                   | Liberal Arts*  | 12            |
| <b>Second Year</b>                |  |               |
| 1017-211                          | College Physics I                                      | 4             |
| 1016-226                          | Calculus for Management Science                        | 4             |
| 1017-212                          | College Physics II                                     | 4             |
| 1016-319, 320                     | Data Analysis I, II                                    | 10            |
|                                   | Economics  | 4             |
| 0608-225                          | Problem Solving and Communication with Computers       | 2             |
| 0630-370, 372                     | Environmental Geology and Lab                          | 4             |
| 0630-450, 451                     | Occupational Health and Lab                            | 4             |
|                                   | Liberal Arts*  | 12            |
|                                   | Wellness Education†                                    | 0             |
| <b>Third Year</b>                 |  |               |
| 0630-352                          | Industrial Wastewater Management                       | 4             |
| 0630-380, 382                     | Hydrology and Lab                                      | 4             |
| 0101-301                          | Financial Accounting                                   | 4             |
| 0630-454                          | Occupational Safety                                    | 4             |
| 0630-350                          | Solid and Hazardous Waste Management                   | 4             |
| 0630-354                          | Air Emissions Management                               | 4             |
| 0630-360, 362                     | Environmental Monitoring and Measurement and Lab       | 4             |
| 0509-211                          | Ethics   | 4             |
| 0606-099                          | Cooperative Education Preparation                      | 0             |
| 0630-499                          | Cooperative Education                                  | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 0630-480                          | EHS Law  | 4             |
| 0630-463                          | Social Responsibility and Environmental Sustainability | 4             |
| 0102-320                          | Organizational Behavior                                | 4             |
| 0630-450                          | Occupational Health                                    | 4             |
| 0630-461                          | EHS Accident Causation and Prevention                  | 4             |
| 0633-505, 506                     | Construction Safety/Lab                                | 4             |
|                                   | Free Elective  | 4             |
|                                   | Liberal Arts*  | 4             |
| 0630-499                          | Cooperative Education                                  | Co-op         |
| <b>Fifth Year</b>                 |  |               |
| 0630-515                          | Corporate EHS Management                               | 4             |
| 0630-590                          | ESHS Capstone Proposal                                 | 2             |
|                                   | Professional Electives                                 | 8             |
|                                   | Liberal Arts*  | 8             |
|                                   | Free Elective  | 8             |
| 0630-591                          | ESHS Capstone Project                                  | 2             |
| 0630-499                          | Cooperative Education                                  | Co-op         |
| <b>Total Quarter Credit Hours</b> |  | <b>193</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Cooperative education

A minimum of four quarters of cooperative education is required in the program. Students start their first co-op experience in the spring of their third year. Co-op provides students with the opportunity to apply their skills in multiple, real-world situations

before they graduate. Our co-op students are especially valuable to organizations because they are well-qualified and well-prepared to take on the many interesting environmental projects organizations seem never to have the time to get done otherwise. Co-ops range from field research to office work, and employers range from government to industry. Co-ops are often located in the Rochester area or near a student's hometown, but some more adventurous individuals seek jobs across the continent or overseas.

## Electives

A wide variety of electives within the curriculum permits students to develop various competency areas or pursue areas of interest in greater depth.

## Technical electives

Students will take at least three professional electives from one of the sequences shown below. With departmental approval, professional electives may be selected from existing courses in other RIT colleges. Also, independent study projects may be pursued for credit in cases where students demonstrate unusual ability and obtain sponsorship of a faculty adviser.

### Environmental Consulting

|          |   |
|----------|---|
| 0630-444 | Remedial Investigation and Corrective Action    |
| 0630-490 | Project Management                              |
| 0630-500 | Contaminant Hydrology                           |
| 0630-570 | Environmental Risk Management and Communication |

### Health and Safety

|          |                                    |
|----------|------------------------------------|
| 0633-530 | Mechanical and Electrical Controls |
| 0633-401 | Fire Protection                    |
| 0303-415 | Ergonomics                         |

### Alternative Energy

|          |   |
|----------|---|
| 1055-300 | The Greening of RIT (Honors)                |
| 1011-305 | Introduction to Hydrogen Technology         |
| 0521-451 | Energy Policy                               |
| 0630-500 | Special Topic: Alternative Energy Resources |
| 0304-629 | Renewable Energy Systems                    |
| 0304-633 | Sustainable Energy Management               |

### Sustainability

|          |  |
|----------|--|
| 0106-401 | Operations and Supply Chain Management |
| 0630-465 | Product Stewardship                    |
| 0508-490 | Biodiversity and Society               |
| 0508-491 | Sustainable Communities                |
| 0630-505 | Resource Reduction                     |

### Emergency Management

|          |   |
|----------|---|
| 0634-401 | Emergency Preparedness Law                |
| 0634-471 | Emergency Planning and Methodology        |
| 0634-474 | Counter Terrorism for the First Responder |
| 0634-481 | Emergency Operations                      |

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.



# Environmental Management and Technology, BS/MS

<http://www.rit.edu/cast/cetems/>

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## Program overview

Qualified environmental management and technology undergraduate students may pursue an accelerated, five-year, dual degree (BS/MS) option, resulting in the simultaneous award of a BS degree in environmental management and technology and an MS degree in environmental, health, and safety management. The BS/MS program requires the completion of 232 quarter credit hours, including 50 quarter credit hours of graduate course work, plus three quarters of cooperative education experience. The BS/MS program is an option for students who are already enrolled in the BS in environmental management and technology program, have completed at least four quarters of undergraduate study, and have a cumulative GPA of at least 3.2.

## Curriculum

A typical course schedule for completing the BS/MS program is shown. Students interested in pursuing this option should work with their program advisers and start following this course schedule during their freshman year.

### Environmental technology and EHS, BS/MS degree, typical course sequence

| COURSE                  | QTR. CR. HRS.  |
|-------------------------|--|
| <b>First Year</b>       |  |
| 1011-205, 206, 215, 216 | General and Analytical Chemistry I, II, and Labs 9     |
| 1016-225                | Algebra for Management Science 4                       |
| 1016-226                | Calculus for Management Science 4                      |
| 0630-200                | Environmental Management, Health, and Safety Seminar 1 |
| 0630-201                | Principles of Environmental Management 4               |
| 1011-202                | Fundamentals of Organic Chemistry 4                    |
| 1005-210                | Field Biology 4  |
| 0688-327                | Environmental Communication 4                          |
| 1004-212, 232           | Human Biology II, Lab 4                                |
|                         | Liberal Arts* 12                                       |
| 1720-051, 052           | First-Year Enrichment 2                                |
|                         | Wellness Education† 0                                  |
| <b>Second Year</b>      |  |
|                         | Wellness Education† 0                                  |
| 1016-319, 320           | Data Analysis I, II 8                                  |
|                         | Professional Elective 4                                |
| 1017-211, 212, 271, 272 | College Physics I, II, and Labs 10                     |
| 0630-370, 372           | Environmental Geology, Lab 4                           |
| 0608-225                | Problem Solving and Communication with Computers 2     |
| 0630-450, 451           | Occupational Health 5                                  |
|                         | Liberal Arts* 16                                       |
|                         | Free Elective 4  |
| 0606-099                | Cooperative Education Preparation 0                    |
|                         | Cooperative Education (1 quarter) Co-op                |

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| Third Year                 |  |               |
| 0630-380, 382              | Introduction to Hydrology, Lab                         | 4             |
| 0630-350                   | Solid and Hazardous Waste Management                   | 4             |
| 0630-454                   | Occupational Safety                                    | 4             |
| 0630-526                   | Exposure Assessment and Analysis                       | 4             |
| 0630-354                   | Air Emissions Management                               | 4             |
| 0630-352                   | Industrial Wastewater Management                       | 4             |
| 0630-360, 362              | Environmental Monitoring and Measurement, Lab          | 4             |
| 0630-461                   | Principles of EHS Accident Causation and Prevention    | 4             |
|                            | Liberal Arts*  | 8             |
|                            | Free Elective  | 4             |
|                            | Cooperative Education (1 quarter)                      | Co-op         |
| Fourth Year                |  |               |
| 0630-480                   | EHS 1  | 4             |
| 0630-515                   | Corporate EHS Management                               | 4             |
| 0630-463                   | Social Responsibility and Environmental Sustainability | 4             |
|                            | Professional Elective (graduate)                       | 4             |
|                            | Professional Electives (undergraduate)                 | 8             |
|                            | Free Elective  | 4             |
|                            | Liberal Arts*  | 8             |
| 0630-755                   | Research Methods                                       | 4             |
| 0102-701                   | Organizational Behavior and Leadership                 | 4             |
|                            | Cooperative Education (1 quarter)                      | Co-op         |
| Fifth Year                 |  |               |
| 0630-720                   | EHS Management   | 4             |
| 0630-725                   | EHS Accounting and Finance                             | 4             |
| 0630-740                   | EHS Management System Design                           | 4             |
| 0630-760                   | Integrating EHS into Business Management               | 4             |
| 0630-790                   | EHS Internal Auditing                                  | 4             |
| 0630-890                   | Thesis Planning <sup>§</sup>                           | 4             |
| 0630-891, 899              | Graduate Project/Thesis                                | 4             |
|                            | Professional Electives (graduate)                      | 8             |
| Total Quarter Credit Hours |  | 229‡          |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ The total credit hours include 181 credit hours of undergraduate course work and 48 credit hours of graduate course work.

§ If student is not completing a thesis, he or she may select a professional elective in place of thesis planning (0630-890).

## School of International Hospitality and Service Innovation

[www.rit.edu/hsm](http://www.rit.edu/hsm)

The School of International Hospitality and Service Innovation offers a bachelor of science degree in international hospitality and service management.

### Faculty

Faculty members have outstanding academic credentials and industry experience. They serve in professional and trade associations at the national level, are frequent guest speakers, and consult in their fields of expertise: travel, food marketing, hospitality operations, nutrition, human resources, and health care, to name a few.

### Advisory board

The National Advisory Board contributes professional and technical expertise to undergraduate programs to strengthen their development.

## Admission guidelines

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## International programs in Croatia

The American College of Management and Technology in Dubrovnik, Republic of Croatia, is a branch of RIT that enrolls approximately 600 undergraduate students. The college offers associate of applied science and bachelor of science degrees in international hospitality and service management. The Dubrovnik campus provides an exchange opportunity for Rochester campus students who may wish to spend a quarter studying abroad. Classes are taught by a combination of RIT faculty members and European instructors.

## Facilities

Commercial equipment and laboratories enhance the educational experience of all students in our hospitality program. Henry's, a full-service, licensed restaurant, provides an excellent training environment for students, who manage the restaurant during regular dining hours, special luncheons, and dinners. The food lab is commercially equipped for developing, testing, and evaluating new food products and equipment.

Information management is a critical element in the service industry. A computer laboratory and training studio allow students to prepare for the technology they will encounter on the job. Database, spreadsheet, and numerous other types of software are used in conjunction with classroom activities.

## International Hospitality and Service Management, BS

<http://www.rit.edu/hsm>

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## Program overview

The BS degree in international hospitality and service management prepares students for a wide variety of career choices in food management, hotel/resort management, health care management, corporate travel management, food marketing sales and distribution, and human resources. A career in the hospitality industry has become highly specialized in today's business world, and RIT graduates are in demand.

The program's concentrations provide broad-based views of service management, hospitality, travel, and client care through a common core of courses. This approach promotes an understanding of the interrelationships among the food, lodging, travel, and health care industries based on the underlying concept of quality service management. This approach allows students to retain the flexibility to switch majors or jobs if their career goals change.

These diverse and specialized fields require creative problem solving, technical knowledge, communication skills, and leadership.

RIT's program is among the nation's leading hospitality and travel management programs, recognized by *Forbes*, *Travel Weekly*, *Nation's Restaurant News*, and *Corporate Travel* magazines. The program is accredited by the Middle States Association of Colleges.

Our alumni come from around the United States and from more than 38 countries.

## Curriculum

The program's curriculum is rigorous and challenging as it provides opportunities for students to develop their full potential in a managerial environment. The program is integrated, encompassing a broad base of competencies defined in partnership with faculty, students, and industry. Students take courses that build a strong concept of the industry as a whole by studying accounting, marketing, finance, economics, business management, behavioral sciences, human resource management, service management, nutrition, food preparation, food and beverage service principles, hotel operations, travel, tourism, and other topics.

In addition, some students may opt to create their own unique concentration based upon their interests. A preplanned set of courses must be completed with an adviser.

## Cooperative education

The international hospitality and service management program requires each student to combine 1,200 hours of practical cooperative education experience with classroom theory. In co-op placements, students are introduced to hands-on learning in the service industry. Co-op usually is completed in the summer following the freshman and sophomore years and during any quarter in the junior and senior years, except the final quarter of the senior year, when students are required to be in residence on campus. Co-op is planned, monitored, and evaluated by the student, the co-op counselor, the faculty adviser, and the employing firm.

## International hospitality and service management, BS degree, typical course sequence

| COURSE             |                                | QTR. CR. HRS. |
|--------------------|--------------------------------|---------------|
| <b>First Year</b>  |                                |               |
| 0619-220           | Survey of Service Management   | 2             |
| 0619-221           | Basic Computer Applications    | 2             |
|                    | Program Concentration          | 12            |
|                    | HSM Elective                   | 4             |
| 1016-225           | Algebra for Management Science | 4             |
|                    | Science Electives with Lab     | 8             |
|                    | Liberal Arts*                  | 16            |
|                    | Wellness Education†            | 0             |
| 1105-051, 052      | First-Year Enrichment          | 2             |
| 0621-499           | Cooperative Education          | Co-op         |
| <b>Second Year</b> |                                |               |
| 0101-301           | Financial Accounting           | 4             |
| 0101-302           | Managerial Accounting          | 4             |
| 0619-320           | Global Standards               | 4             |
|                    | Program Concentration          | 12            |
| 1016-319, 320      | Data Analysis I, II            | 10            |
|                    | HSM Elective                   | 2             |
|                    | Liberal Arts*                  | 8             |
| 0511-211           | Principles of Microeconomics   | 4             |
| 0621-499           | Cooperative Education          | Co-op         |
| <b>Third Year</b>  |                                |               |
| 0105-363           | Principles of Marketing        | 4             |
| 0619-410           | Assessment of Service Quality  | 4             |
| 0619-426           | Technology in Service Systems  | 4             |
| 0619-480           | Human Resources Management     | 4             |
|                    | HSM Electives                  | 8             |
|                    | Liberal Arts*                  | 4             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
|                                   | General Education                        | 16            |
|                                   | Free Electives                           | 4             |
| 0621-499                          | Cooperative Education                    | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 0619-470                          | Leadership Management in Service Culture | 4             |
| 0619-490                          | Senior Project                           | 4             |
|                                   | Free Electives                           | 12            |
|                                   | General Education                        | 16            |
| 0621-499                          | Cooperative Education                    | Co-op         |
| <b>Total Quarter Credit Hours</b> |  | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Concentrations

Students choose one of six concentrations to fit the program to their career interests and goals.

### Food management

It takes a wide range of knowledge to manage the daily operations of restaurants (from full-service to cafeteria, quick-service, and special chain operations); hotel fine dining and catering; clubs; and contract services for business, manufacturing, recreation and sports centers, education, health care, retail stores, government agencies, and food vending.

The food management concentration prepares students for management positions through lab experience in Henry's, a full-service, beverage-licensed restaurant. Students learn essential principles and procedures for quality in food production and presentation, sanitation, nutrition, menu planning and merchandising, purchasing, product development, cost control, and service management. In addition, students develop competencies in problem solving and decision making through individual and team-based class projects, computerized exercises, and industry-related activities.

A student chapter of the New York State Restaurant Association fosters the exchange of ideas between professionals working in industry and students. The organization supports professional growth in organizational and social skills, and offers a place for students to network with professionals to make industry contacts. Students in their junior year are encouraged to attend the annual National Restaurant Association show in Chicago.

| COURSE                            |                               | QTR. CR. HRS. |
|-----------------------------------|-------------------------------|---------------|
| 0621-225                          | Principles of Food Production | 4             |
| 0621-314                          | Sanitation and Safety         | 2             |
| 0621-318                          | Food and Beverage Management  | 4             |
| 0621-331                          | Restaurant Operations         | 6             |
| 0621-334                          | Integrated Service Management | 4             |
| 0621-416                          | Product Development           | 4             |
| <b>Total Quarter Credit Hours</b> |                               | <b>24</b>     |

### Food marketing and distribution

This concentration prepares graduates for industry positions in food marketing, sales, and distribution and logistics. Graduates are uniquely qualified for positions in an array of food marketing and distribution industries worldwide. In particular, they understand a variety of issues, including food service operations and food marketing, logistics, distribution, and packaging.

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 0621-225                          | Principles of Food Production           | 4             |
| 0621-315                          | Food Service Marketing                  | 4             |
| 0621-410                          | Food Processing and Quality Assurance   | 4             |
| 0621-532                          | International Food Distribution Seminar | 4             |
| 0607-201                          | Principles of Packaging                 | 4             |
| 0621-432                          | Packaging for Distribution              | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>24</b>     |

### Health systems management

Health care is in the process of undergoing dynamic change in our country and in the global community. A successful health care professional is one with a desire to learn and the ability to adapt to change. This concentration prepares students for entry-level positions in the administrative areas of health care. When combined with another concentration that is more clinically based or hospitality oriented, the health systems management concentration can result in a level of expertise valued by health care systems today.

The concentration features a sequence of three survey courses and three specialized courses. The survey courses introduce the health care field while specialty courses explore topics in more depth. These courses are offered online only.

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <i>Survey courses:</i>            |   |               |
| 0635-310                          | Survey of Health Care Systems               | 4             |
| 0635-320                          | Health Care Administration                  | 4             |
| 0635-351                          | Health Care Economics and Finance           | 4             |
| <i>Specialty courses:</i>         |   |               |
| 0635-421                          | Legal Aspects of Health Care Administration | 4             |
| 0635-490                          | Health Care Quality                         | 4             |
| 0635-441                          | Health Planning and Program Development     | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>24</b>     |

### Hotel and resort management

This concentration is focused on preparing students for the management and operation of hotel, resort, leisure, and related enterprises. Students will understand the physical characteristics of specific properties and gain the business expertise to manage and market them.

Industry professionals regularly offer their expertise in all of the program's courses. Hospitality and service management students, in conjunction with the general manager of a local Rochester hotel, may enroll in a mentorship program sponsored by the Rochester Hotel Association. This allows students to work closely with executive managers on assigned research projects within a hotel.

Hotel and resort management students evaluate various technologies and service strategies in order to familiarize themselves with the industry's best practices.

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 0622-200                          | Hotel Operations                                  | 4             |
| 0622-210                          | Hotel Marketing and Sales                         | 4             |
| 0622-310                          | Resort Development and Management                 | 4             |
| 0622-315                          | Facilities and Property Management                | 4             |
| 0622-355                          | Financial Management for the Hospitality Industry | 4             |
| 0622-420                          | Hospitality Law                                   | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>24</b>     |

### Human resource management

All organizations share one fundamental concern: how to ensure that their employees are adequately prepared, organized, and managed to support common goals with flexibility.

The human resource management concentration provides students with the tools to recruit the most qualified applicants, help them grow and develop as an organization's needs change, and keep them satisfied enough to stay on the job in this era of frequent turnover. Students also explore the global and legal issues around employment, both to enhance the work force and to avoid the cost of lawsuits.

All students who will be hiring, supervising, or managing in their future careers will benefit from gaining human resource administration competencies.

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| 0626-234                   | Interviewing Techniques                  | 4             |
| 0626-428                   | Training Design and Delivery             | 4             |
| 0626-390                   | Benefits and Compensation                | 4             |
| 0621-554                   | International Human Resource Management  | 4             |
| 0626-434                   | Advanced Human Resource Administration   | 4             |
|                            | Related Elective (with adviser approval) | 4             |
| Total Quarter Credit Hours |  | 24            |

### Travel and tourism management

The growth of modern travel has created many technical challenges for the movement of individuals and groups in a global corporate environment. With that comes the need to consult highly qualified experts to plan, arrange, and coordinate travel. Today more than ever before, travelers are faced with many alternatives for transportation, accommodations, and other travel services and rely increasingly on the travel professional to guide them wisely and honestly. Travel agencies and corporate travel consultants have an important impact on the hospitality and travel economies, including the food service, lodging and leisure, travel and transportation, and meetings and technology industries.

Travel management combines a study of specialized courses in travel management with a sound general education that includes courses in accounting, management, marketing, and business law. The concentration is structured to provide students with a balance of hands-on experience and management theory. This is necessary to further their understanding of why the travel industry operates as it does in its business environment. Students are also versed in the communications technologies that allow them to conduct research via the Internet. This career orientation provides students with a balance of theoretical classroom instruction and experiential opportunities furnished by cooperative education.

Course work prepares students for careers in corporate travel, consulting, and professional meeting management. Employment opportunities are excellent with hotels, resorts, retail travel agencies, major corporations, and other businesses.

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| 0623-206                   | Distribution Systems                    | 4             |
| 0623-375                   | Travel Destinations                     | 4             |
| 0623-410                   | Meeting and Exposition Management       | 4             |
| 0623-418                   | Corporate Travel Marketing and Planning | 4             |
| 0623-438                   | Tourism Planning and Development        | 4             |
| 0622-420                   | Hospitality Law                         | 4             |
| Total Quarter Credit Hours |   | 24            |

## Health Systems Management, Cert.

### Program overview

Many students who have completed their associate degree consider entering the health care work force but require an orientation to health systems. These students do not wish to attain a bachelor's degree but rather to enhance their knowledge base about health care. Students who wish to pursue a certificate in health systems administration must have completed their associate degree with a minimum GPA of 2.0. To earn the certificate, students must attain a GPA of 2.5 or higher in the certificate courses. These courses are available only online.

### Curriculum

The health systems management certificate program includes six required courses.

#### Required courses

|          |   |
|----------|---|
| 0635-310 | Survey of Healthcare Systems            |
| 0635-320 | Health Systems Administration           |
| 0635-351 | Health Care Economics and Finance       |
| 0635-421 | Legal Aspects of Health Care            |
| 0635-431 | Health Care Quality Assurance           |
| 0635-441 | Health Planning and Program Development |

## Department of Military Science

### Reserve Officers' Training Corps (ROTC)—ARMY

[www.rit.edu/cast/armyrotc](http://www.rit.edu/cast/armyrotc)

The Army Reserve Officers' Training Corps prepares students for leadership in a civilian or military career. ROTC is a campus-based program that consists of classroom instruction, physical training, and practical-application laboratories designed to enhance organizational leadership, decision making, and problem-solving skills.

The first two years of ROTC classes are open to all students with the approval of the professor of military science. No military obligation is required unless a student has received an ROTC scholarship or contract. Upon graduation, and the successful completion of Army ROTC, cadets are commissioned as second lieutenants and may serve in the active Army, the Army Reserve, or the Army National Guard. Veterans and members of the Army Reserve or National Guard may be eligible for advanced placement in the program.

Those who join Army ROTC become cadets in a dynamic and challenging program. Throughout the year, the program offers a variety of activities that reinforce leadership skills, teamwork, and confidence. Students have opportunities to participate in high-adventure training weekends on U.S. military installations, where they learn skills such as map reading and land navigation, conducting marksmanship training, and completing the Army confidence course. Students may join the Ranger Challenge Team, an ROTC varsity sport that competes in military skills and physical stamina competitions with other colleges throughout the Northeast. Army ROTC has a chapter of the National Society of



Pershing Rifle, and cadets also conduct community activities and provide color guards for campus, community, and athletic events.

**Financial aid and scholarships**

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants. Army ROTC awards multi-year scholarships to assist in covering tuition, fees, books, and housing. A four-year ROTC scholarship currently covers tuition and fees, and the average cost for room and board. High school students and enlisted soldiers may apply for Army ROTC scholarships by using the online application process on the Army ROTC website (armyrotc.com). Current college students, if eligible, may apply for campus-based scholarships through the ROTC department.

**Basic course**

The Army ROTC program is a four-year program divided into two components: the Basic Course and the Advanced Course. The Basic Course occurs during the first two years of the program (normally the freshman and sophomore years) and emphasizes the development of academic and life skills to increase students’ potential as future army officers or leaders in tomorrow’s dynamic business environment. During the Basic Course, students learn time management and study skills, basic military organization, military customs and courtesies, small-unit leadership, and problem solving. Students who plan to commission through ROTC register for Leadership Lab and Army Conditioning Drills, which fulfills the wellness education credit while meeting the ROTC physical fitness requirements. Students may enroll in Basic Course classes at any time during their first two years of college. Upon completion of the Basic Course, eligible students can progress to the Advanced Course. Eligible Basic Course cadets also can compete to attend off-campus army training opportunities such as Airborne School or Air Assault School. Registration in the basic course requires the permission of the Professor of Military Science.

**Advanced course**

The Advanced Course is for students entering their last two academic years of college (co-op excluded). The Advanced Course is similar to the Basic Course in organization and style, but its focus is more on organizational leadership, decision-making, and professional skills. Although instruction in military tactics is an integral part of the Advanced Course, it is designed to serve as a vehicle for enabling cadets to apply the full range of leadership skills they are learning in the classroom. Planning, organizing, and leading others through various training activities is emphasized. Upon entering their last year in the program, Advanced Course cadets are ranked against their peers in academics, performance at the Leader Development and Assessment Course (LDAC) (the required ROTC summer program attended between junior and senior year) and general on-campus performance. Based on these factors, the Army makes duty placement and job selections for each cadet. Advanced Course cadets also have the opportunity to participate in a variety of off-campus Army training opportunities such as Army Airborne School, Air Assault School, Northern Warfare, and Mountain Warfare training courses. After completing Advanced Camp, cadets also may participate in the Cadet Troop Leadership Training Program, a paid, practical leadership experience where they are

assigned for up to three weeks to serve as leaders in an active army unit in the United States or elsewhere around the world.

**Leader’s training course**

The Leader’s Training Course (LTC) is an option for students who are considering Army ROTC, but have not completed the Basic Course requirements and are entering their last two academic years (co-op excluded). This 28-day course is held at Fort Knox in Kentucky, where students obtain the necessary skills and training to qualify for entry into the last two years of the Army ROTC program. Students learn basic military skills that emphasize leadership development. Those who successfully complete this course are offered the opportunity to formally contract into the Advanced Course for their last two years of college (co-op excluded). Interested students should contact the Army ROTC office.

**Veterans**

Qualified students with prior military service and members of the Army Reserve or National Guard who have attended Basic Training may enroll directly into the Advanced Course. However, they must have two years of academic work remaining. Those who have more than two years of academic work remaining, but wish to participate in the Army ROTC program, are encouraged to enroll in any of the Basic Course classes. Interested students should visit the department for more information.

**Leader development and assessment course**

The Advanced Course includes attendance at the ROTC Leader Development and Assessment Course at Fort Lewis, Washington, which normally occurs in the summer between the third and fourth years of college. During this course, Army ROTC cadets from across the nation gather for five weeks to demonstrate their leadership skills and potential. They are repeatedly placed in leadership positions and face problem-solving challenges that bring together all of the classroom and practical instruction they received on campus. Participants might be assigned to lead a 120-person cadet company as they prepare for training or to plan and lead a 10-person squad on a tactical night patrol. Regardless of the task, participants have the opportunity to demonstrate their leadership potential to their army evaluators. Attendees’ travel expenses are paid for and students earn a salary for participating in this challenging and greatly rewarding experience.

**Department of military science four-year program, typical course sequence**

| COURSE                                       | QTR. CR. HRS. |   |
|--|---------------|---|
| <b>First Year</b>                            |               |   |
| Introduction to Military Science 0640-201    |               | 2 |
| Introduction to Military Leadership 0640-202 |               | 2 |
| Introduction to Tactical Leadership 0640-203 |               | 2 |
| <b>Second Year</b>                           |               |   |
| Military Geography 0640-301                  |               | 2 |
| Psychology and Leadership 0640-302           |               | 2 |
| The Military and American Society 0640-303   |               | 2 |
| Survey of American Military History 0640-520 |               | 4 |
| <b>Third Year</b>                            |               |   |
| Military Tactics 0640-401                    |               | 3 |
| Military Communications 0640-402             |               | 3 |

|                                   |   |           |
|-----------------------------------|---|-----------|
|                                   | Military Operations 0640-403                              | 3         |
| <b>Fourth Year</b>                |   |           |
|                                   | Army Training Systems 0640-501                            | 3         |
|                                   | Military Administration and Logistics Management 0640-502 | 3         |
|                                   | Military Ethics 0640-503                                  | 3         |
| <b>Total Quarter Credit Hours</b> |   | <b>34</b> |

Please note: A leadership lab (1114-011), which is conducted on a weekly basis for two hours, and Conditioning Drills (1114-010) are an integral part of each course listed in the typical course sequence chart.

### Department of military science two-year program, basic camp completion/advanced placement/summer compression, typical course sequence

| COURSE                                       | QTR. CR. HRS. |
|--|---------------|
| Third Year                                   |               |
| Military Tactics 0640-401                    | 3             |
| Military Communications 0640-402             | 3             |
| Military Operations 0640-403                 | 3             |
| Survey of American Military History 0640-520 | 4             |

| Fourth Year |   |   |
|-------------|---|---|
|             | Army Training Systems 0640-501                            | 3 |
|             | Military Administration and Logistics Management 0640-502 | 3 |
|             | Military Ethics 0640-503                                  | 3 |

Please note: A leadership lab (1114-011), which is conducted on a weekly basis for two hours, and Conditioning Drills (1114-010) are an integral part of each course listed on the typical course sequence.

## Department of Aerospace Studies—Air Force

### Reserve Officer Training Corps (AFROTC)—Air Force

**Lt. Col. Mark Avery, Professor of Aerospace Studies**

[www.rit.edu/cast/afrotc/](http://www.rit.edu/cast/afrotc/)

Participation in Air Force Reserve Officer Training Corps provides students with a firsthand view of the Air Force while attending college. The program allows students to join the cadet corps and participate in varied activities, including classroom academics, leadership training, base visits, summer professional development, and physical fitness training.

#### Curriculum

The department of aerospace studies has designed a curriculum that is compatible with the four- and five-year cooperative education plans offered by most of the university's academic programs. The curriculum will develop well-rounded individuals fully prepared to enter into their chosen career fields and become future leaders in the armed forces and society.

#### Four-year program

The program has three distinct parts: the General Military Course, the Professional Officer Course, and Summer Field Training.

The General Military Course is for students entering the program directly from high school but not later than the sophomore year of college. As freshmen and sophomores, students will study Air Force Doctrine, Mission and Organization, the nature of conflict, and the development and evolution of air and space power.

Every cadet must complete a four-week Summer Field Training Course, offered during the summer between the sophomore and junior years. The field training curriculum includes leadership

training, drill and ceremony, officer training, a confidence course, tactical skills, and physical fitness training. Field training evaluates a student's leadership potential and qualifies the cadet for entry into the Professional Officer Course. Cadets who do not complete the entire General Military Course spend an extra week at Field Training completing the academic work from that program.

The Professional Officer Course is an advanced aerospace studies curriculum conducted during the junior and senior years. This curriculum prepares cadets for entry into the Air Force as second lieutenants by teaching them the fundamentals of leadership and management, ethics, staff planning and coordination, national security affairs, and foreign policy.

Leadership and management experience is gained through a series of leadership laboratories, conducted in the fall, winter, and spring quarters throughout the four- and five-year college curricula. The lab is managed by the cadet corps staff with a detachment officer overseeing all activities. Practical command and staff leadership experience, drill and ceremonies, customs and courtesies, and career decision making are all part of the curriculum.

#### Other programs

Several other programs are offered to cadets. During the academic year cadets have the opportunity to attend Air Force base visits and participate in extracurricular activities such as the drill team or honor guard, or become a member of the Arnold Air Society (a community service organization). Throughout the summer, cadets may also volunteer to attend many professional development programs such as freefall parachute school, Space Orientation, or even shadow Office of Special Investigation (OSI) agents. Opportunities also exist to travel abroad with the international, cultural, and language immersion programs.

#### Wellness education requirement

The physical training course satisfies the wellness education requirement. Students must be enrolled in AFROTC to participate in the program.

#### Qualification and selection procedure

To qualify for AFROTC, students must pass the Air Force Officer Qualifying Test, complete an interview, and pass a physical exam and a physical fitness test. Please contact the AFROTC office at (585) 475-5197 for complete details.

#### Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants. AFROTC offers multi-year scholarships in technical and nontechnical fields. Competition is selective, and the needs of the Air Force dictate which scholarships will be offered on a yearly basis to college students. High school students can apply online at [www.afrotc.com](http://www.afrotc.com) to compete for scholarships through a national board process. Every scholarship cadet and all Professional Officer Course cadets receive a tax-free monthly stipend between \$300–\$500 and \$900 in books.

#### Minor in military studies and leadership

Students completing the entire four-year AFROTC program may earn a minor in military studies and leadership. Refer to the Minors section of this bulletin for more information.



## Department of aerospace studies—AFROTC, typical course sequence\*

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| <b>First Year</b>                                       |               |
| Air Force Today I, II, III 0650-210, 211, 212           | 3             |
| Leadership Lab 1114-002                                 | 0             |
| Physical Training 1114-001                              | 0             |
| <b>Second Year</b>                                      |               |
| History of Air Power I, II, III 0519-201, 202, 203      | 4             |
| Leadership Lab 1114-002                                 | 0             |
| Physical Training 1114-001                              | 0             |
| <b>Third Year</b>                                       |               |
| Air Force Leadership and Management I, II 0102-310, 311 | 10            |
| Leadership Lab 1114-002                                 | 0             |
| Physical Training 1114-001                              | 0             |
| <b>Fourth Year</b>                                      |               |
| Leadership Lab 1114-002                                 | 0             |
| Physical Training 1114-001                              | 0             |
| <b>Fifth Year</b>                                       |               |
| National Security Affairs I, II 0513-401, 402           | 9             |
| Leadership Lab 1114-002                                 | 0             |
| Physical Training 1114-001                              | 0             |
| <b>Total Quarter Credit Hours</b>                       | <b>26</b>     |

\*NOTE: This course sequence chart is a typical flow, but junior- and senior-level academic courses can be taken in years three and five or years four and five. Five-year AFROTC students enrolled at RIT, but not taking Air Force junior- or senior-level courses, must be enrolled in Leadership Lab and Physical Training.

## College of Applied Science and Technology

**H. Fred Walker**, BS, MBA, California State University; MS, Ph.D., Iowa State University—Dean; Professor

**Linda A. Tolan**, NCC, CPLP, BS, State University College at Geneseo; MS, Rochester Institute of Technology; Ph.D., Andrews University—Senior Associate Dean, Professor

**Maureen S. Valentine**, BSCE, Tufts University; MECE, Virginia Polytechnic Institute; PE—Associate Dean; Professor

**Sean T. Bennett**, BS, Clarkson University; M.Ed., State University College at Brockport; Ed.M., Harvard University—Assistant Dean

## School of Engineering Technology

### Civil Engineering Technology/Environmental Management and Safety

#### Civil Engineering Technology

**Amanda Bao**, BS, MS, Tianjin University (China); Ph.D., University of Colorado at Boulder—Assistant Professor

**Harry G. Cooke**, BS, Northwestern University; MSCE, University of Texas; Ph.D., Virginia Polytechnic Institute; PE—Associate Professor

**G. Todd Dunn**, BS, Dartmouth College; MSCE, University of California; PE—Associate Professor

**Robert H. Easton**, BS, United States Military Academy; MSCE, Iowa State University; PE—Professor Emeritus

**Abdullah Faruque**, B.Sc., Bangladesh University of Engineering and Technology; M.A.Sc., University of Windsor (Canada); PE—Assistant Professor

**Frank Hanna**, B.Sc., M.Sc., University of Baghdad (Iraq); Ph.D., University of Wales College of Cardiff (UK)—Associate Professor

**William C. Larsen**, BS, MSCE, Dartmouth College; PE—Professor Emeritus

**Robert E. McGrath Jr.**, BCE, Rensselaer Polytechnic Institute; MSCE, Syracuse University; PE—Professor Emeritus

**Mark Piterman**, MCE, Odessa Marine Engineers Institute (Ukraine)—Professor Emeritus

**Scott B. Wolcott**, BS, MS, State University of New York at Buffalo; PE—Undergraduate Program Coordinator; Professor

**Teresa Wolcott**, BS, State University of New York at Buffalo; MS, Rochester Institute of Technology—Lecturer

### Environmental Management and Safety

**Josh Goldowitz**, BS, State University of New York at Binghamton; MS, University of Arizona—Professor

**Lisa Greenwood**, BS, Rochester Institute of Technology; MS, University of New Haven—Lecturer

**John Morelli**, BS, Syracuse University; MS, Ph.D., State University of New York College of Environmental Science and Forestry; PE—Department Chair, Professor

**Joseph M. Rosenbeck**, CSP, MS, BS, Central Missouri State University—Graduate Program Director; Professor

**Jennifer L. Schneider**, CIH, BA, Roberts Wesleyan College; MS, University of Rochester; Ph.D., University of Massachusetts—Professor

### Facility Management

**Jeffrey Rogers**, PE, CPE, BS, Virginia Polytechnic Institute and State University; MS, University of Florida; ME, Old Dominion University; Ph.D., University of Virginia—Assistant Professor

### Electrical, Computer, and Telecommunications Engineering Technology

**W. David Baker**, BSEE, Monmouth College; MS, Rochester Institute of Technology—Professor Emeritus

**Jeanne Christman**, BS, Clarkson University; MS, University of Texas at Dallas—Assistant Professor

**Richard C. Cliver**, BS, Rochester Institute of Technology; MSEE, University of Rochester—Associate Professor

**Steven A. Ciccarelli**, BS, MS, Rochester Institute of Technology—Electrical Engineering Technology Program Chair; Associate Professor

**Thomas Dingman**, BS, MS, Rochester Institute of Technology—Professor Emeritus

**Michael Eastman**, BS, MSCS, Rochester Institute of Technology—Department Chair; Professor

**Ronald Fulle**, BA, State University College at Oswego; MS, University of Colorado at Boulder—Associate Professor

**Chance M. Glenn**, BS, University of MD at College Park; MSEE, Ph.D., Johns Hopkins University—Associate Professor

**Clark Hochgraf**, BS, State University of New York at Buffalo; Ph.D., University of Wisconsin at Madison—Associate Professor

**James J. Hurny**, BSEE, Carnegie Institute of Technology; MBA, MS, Rochester Institute of Technology—Associate Professor

**Mark J. Indelicato**, BEEE, Manhattan College; MS, Polytechnic University—Associate Professor

**William P. Johnson**, BA, Kings College; BSEE, MSEE, Syracuse University; JD, University at Buffalo Law School—Professor

**Warren L. G. Koontz**, BSEE, University of MD; MSEE, Massachusetts Institute of Technology; Ph.D., Purdue University—Professor

**David Krispinsky**, BE, MSE, Youngstown State University—Associate Professor

**Eldred L. Majors**, BS, Rochester Institute of Technology—Lecturer

**Drew Maywar**, BS, MS, Ph.D., University of Rochester—Assistant Professor

**Antonio F. Mondragon**, BS, Universidad Iberoamericana (Mexico); M.Sc., Universidad Nacional Autonoma de Mexico (Mexico); Ph.D., Texas A&M University—Assistant Professor

**David M. Orlicki**, BS, Michigan State University; MS, Rochester Institute of Technology; Ph.D., Massachusetts Institute of Technology—Lecturer

**Carol Richardson**, BSEE, University of Wyoming; MSEE, Union College—Professor Emerita

**Jacob Schanker**, BEE, MEE, City College of the City University of New York, PE—Lecturer

**George H. Zion**, BS, MS, Rochester Institute of Technology—Professor

### **Manufacturing and Mechanical Engineering Technology/ Packaging Science**

**Ronald F. Amberger**, BME, Rensselaer Polytechnic Institute; ME, Pennsylvania State University; PE—Professor Emeritus

**Dianne M. Amuso**, BS, Western New England College; MS, Rensselaer Polytechnic Institute—Lecturer

**Scott J. Anson**, BSME, MSME, Ph.D., State University of New York at Binghamton; PE—Manufacturing Engineering Technology Program Chair; Associate Professor

**Beth A. Carle**, BSE, University of Pittsburgh; MS, Ph.D., University of Illinois; EIT Professional Certification—Associate Professor

**Mario H. Castro-Cedeno**, BSME, MSME, University of Puerto Rico at Mayaguez; MEMS, University of California at Berkeley—Assistant Professor

**Elizabeth M. Dell**, BSME, General Motors Institute; MS, University of Michigan—Mill Chair; Assistant Professor

**Robert D. Garrick**, BSEE, GMI Engineering and Management Institute; MBA, Rochester Institute of Technology; MS, University of Rochester; Ph.D., University of South Carolina —Assistant Professor

**Martin Gordon**, BSME, MSME, MBA, State University of New York at Buffalo; PE—Associate Professor

**Christopher M. Greene**, BS, Syracuse University; MS, Ph.D., State University of New York at Binghamton—Assistant Professor

**Daniel P. Johnson**, BS, MS, Rochester Institute of Technology—Department Chair; Professor

**Seung H. Kim**, BS, Hanyang University (South Korea); MS, Ph.D., University of Illinois—Associate Professor

**James H. Lee**, BS, California Polytechnic State University; MS, Ph.D., Texas A&M; PE—Assistant Professor

**William Leonard**, AAS, State University College at Canton; BS, MS, Rochester Institute of Technology—Mechanical Engineering Technology Program Chair; Associate Professor

**Ti-Lin Liu**, MS, Tsinghua University (China)—Associate Professor

**Carl A. Lundgren**, BS, Rensselaer Polytechnic Institute; MBA, University of Rochester—Professor

**Robert A. Merrill**, BS, Clarkson College; MS, Northeastern University; PE—Professor

**Michael J. Parthum Sr.**, BS, MS, Rochester Institute of Technology—Electrical/Mechanical Engineering Technology Program Chair; Associate Professor

**S. Manian Ramkumar**, BE, PSG, College of Technology-Bharathiar (India); ME, Rochester Institute of Technology; Ph.D., State University of New York at Binghamton —Professor

**Michael J. Slifka**, AAS, Niagara County Community College; BS, MS, Rochester Institute of Technology—Assistant Professor

**John A. Stratton**, BS, Rochester Institute of Technology; MS, Rensselaer Polytechnic Institute; PE—Professor Emeritus

**Larry A. Villasmil**, BSME, Universidad del Tachira (Venezuela); MSME, Ph.D., Texas A&M University—Assistant Professor

### **Packaging Science**

**Changfeng Ge**, BSME, MSME, Tongji University (China); Ph.D., University of Dortmund (Germany)—Associate Professor

**Daniel L. Goodwin**, BS, MS, Ph.D., Michigan State University—Professor

**Deanna M. Jacobs**, BS, State University College at Plattsburgh; MA, State University College at Geneseo; MS, Rochester Institute of Technology—Professor

**Thomas Kausch**, BS, MS, Rochester Institute of Technology—Instructor

**Karen L. Proctor**, BS, Michigan State University; MBA, Rochester Institute of Technology—Professor

## **School of International Hospitality and Service Innovation**

### **Hospitality and Service Management**

**David H. Crumb**, BS, Florida State University; MBA, Michigan State University—Associate Professor

**Francis M. Domoy**, BS, MA, State University of New York at Buffalo; Ph.D., Michigan State University—Chair Emeritus; Professor

**Lorraine E. Hems**, BS, Nazareth College of Rochester; CS, CWE—Lecturer

**Jon Horne**, BA, Colorado State University; MA, University of Phoenix; MS, Rochester Institute of Technology—Assistant Professor

**James Jacobs Jr.**, BA, Purdue University; MS, Troy State University; Ph.D., State University of New York at Buffalo—Senior Lecturer

**Richard M. Lagiewski**, BS, MS, Rochester Institute of Technology—Senior Lecturer

**Warren G. Sackler**, BA, Michigan State University; MA, New York University—Associate Professor

**Edward A. Steffens**, BS, MBA, Rochester Institute of Technology—Associate Professor

**Linda Underhill**, RD, BS, MS, Rochester Institute of Technology; Ph.D., State University of New York at Buffalo—Interim Chair; Associate Professor

**Carol B. Whitlock**, RD, BS, MS, Pennsylvania State University; Ph.D., University of Massachusetts—Interim Chair; Professor

## Reserve Officer's Training Corps

### *Army ROTC*

**Maj. Edward Whitaker**, BS,  
Norwich University; MA,  
University of MD University  
College—Professor

**First Lt. Nicholas O'Brien**, BS,  
Edinboro University—Assistant  
Professor

**Maj. Donald C. Powell**, BA, State  
University College at Geneseo;  
MA, State University College at  
Brockport—Assistant Professor

**Maj. Maurice Connelly**, BA, Rutgers  
University—Assistant Professor

**Master Sgt. Fernando Crichlow**,  
AS, Coastline Community  
College—Instructor

**Sgt. First Class Dennis Doyle**,  
Training NCO—Instructor

### *Air Force ROTC*

**Lt. Col. Mark Avery**, BA, University  
of California at Irvine; MA, Air  
University—Professor

**Capt. Patricia Skutnik**, BS,  
University of MD University  
College; MA, University of  
Phoenix—Assistant Professor

**Maj. Paul E. Cannon**, BS, Roberts  
Wesleyan College; MA, State  
University College—Empire State  
College—Assistant Professor

## Distinguished Professorships

### **Russell C. McCarthy Professorship in Engineering Technology**

Established: 1979

Purpose: The Russell C. McCarthy  
endowed chair was created in 1980  
by a group of six donors to augment  
the creation of the RIT School of  
Applied Industrial Studies. The  
endowed chair now resides in  
the College of Applied Science  
and Technology and reports to  
the college dean. The purpose of  
the chair is to build relationships  
between the college and industrial  
and professional communities  
worldwide that share the college's  
interests, goals, and values.  
Held by: Jennifer L. Schneider

### **Paul A. Miller Professorship in Continuing Education**

Established: 1981

Donor: RIT Board of Trustees  
Purpose: Established in honor  
of former RIT President Paul  
A. Miller, it recognizes RIT  
faculty making distinguished  
contributions to continuing  
education with a record of  
matching university intellectual  
and educational resources with  
the needs of students and the  
community.  
Held by: Betsy Dell

# E. Philip Saunders College of Business

Ashok Rao, Dean

saunders.rit.edu

## Programs of study

### Bachelor of Business Administration in:

|                                |    |
|--------------------------------|----|
| Accounting                     | 35 |
| Finance                        | 36 |
| International Business*        | 37 |
| Management                     | 37 |
| Management Information Systems | 38 |
| Marketing                      | 38 |
| New Media Marketing            | 39 |

\*International business requires a co-major. Please see program description for more information.

Success in today's business environment requires leadership and management attuned to rapid changes in technology and increasingly vigorous global competition. The E. Philip Saunders College of Business offers a portfolio of comprehensive, rigorous programs of study. Our curriculum produces graduates who are able to convert managerial learning into pragmatic business applications.

To achieve these educational aims, the Saunders College offers academic programs comprised of four components: business core courses, a program of study, required liberal arts and sciences courses, and cooperative education experience. The liberal arts and sciences component includes courses in the humanities, mathematics, science, and social sciences. Students are expected to display proficiency in oral and written forms of communication, and to choose a liberal arts concentration or minor.

All students in the Saunders College must complete a set of required business core courses that provide a foundation for their program of study as well as an understanding of all facets of business. These courses serve as a platform for advanced study in a specific area of interest.

The required foundation courses are:

0101-301 Financial Accounting  
0101-302 Management Accounting  
0102-260 Business 1: Ideas and Creativity  
0102-305 Careers in Business  
0102-320 Organizational Behavior  
0102-438 Business Ethics  
0102-530 Managing Innovation and Technology  
0102-551 Strategy  
0104-350 Corporate Finance  
0105-363 Principles of Marketing  
0106-401 Operations and Supply Chain Management  
0102-265 Business 2: Business Plan Development  
0112-270 Business Software Applications  
0112-285 Business 3: Commercialization  
0113-310 Global Business: An Introduction  
0511-211 Principles of Microeconomics  
0511-402 Principles of Macroeconomics  
0535-352 Professional Communication for Business  
1016-226 Calculus for Management Science  
1016-319 Data Analysis I  
1016-320 Data Analysis II and Lab

## Admission requirements

For more information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

## Faculty

The college's faculty members are actively involved in applied research and many are consultants to the business community, which enables them to bring real-world experience into the classroom. More than 40 full-time teaching professionals ensure that the educational experience is dynamic and relevant. In the classroom, faculty and students engage in case studies, problem set analyses, experiential exercises, lectures, group discussions, and team presentations.

## Facilities and resources

RIT is a national leader when it comes to incorporating computer technology into the classroom. Saunders College students have access to extensive resources and utilize the same business software used by Fortune 100 companies worldwide. The college's classrooms and study areas feature wireless access.

## Cooperative education

Cooperative education is an integral part of the college's curriculum. Students obtain paid, practical work experience in an area related to their chosen field of interest. Co-op is part of each student's career exploration and helps relate their classroom studies to the world of business.

Students are required to successfully complete two quarters of cooperative education. These work blocks take place during the junior or senior year. While RIT and the Saunders College cannot guarantee cooperative education placement, the Office of Cooperative Education and Career Services is a valuable resource in assisting students in their co-op and job search efforts.

## Accreditation

The Saunders College is accredited by the nationally recognized Middle States Association of Colleges and Schools and the Association to Advance Collegiate Schools of Business (AACSB International), the premier accrediting agency for schools of business in the U.S.

## Advising

The college's Student Services Office offers students administrative support to assist with course selection and registration, career guidance, student records, and course scheduling. In addition, the administrative staff provides students with information on additional support services within RIT. Students are assigned an individual faculty adviser, who becomes an integral part of their advising network.

## Academic enrichment

**Honors Program:** Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning

activities under the guidance of a faculty mentor. Honors students will be selected during the admission process.

**Study Abroad:** RIT encourages all students to consider a study abroad program to enhance their understanding of global business and other cultures. Students may study full time at a variety of host schools and are able to select both business and liberal arts classes. The Study Abroad Office has information about foreign study options and opportunities. All business majors may request a study abroad experience to replace one of their required cooperative education work blocks.

**Minors:** Students may choose from more than 95 minors to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

## Special opportunities

**Accelerated dual degree option:** Undergraduate business students may consider the 4+1 MBA program, an accelerated dual degree program that allows students to complete both the BS and MBA degrees in five years. Please refer to the *Graduate Bulletin* or the college's website for more information.

**Graduate study:** The college offers the following graduate degree programs: master of business administration, executive MBA, online executive MBA, master of business administration-accounting (which meets the New York state education requirements for CPA examination candidacy), master of science in finance, master of science in management, and master of science in innovation management. Please refer to the *Graduate Bulletin* or the college's website for more information.

## Accounting, BS

<http://saunders.rit.edu/undergraduate/accounting/index.php>

## Program overview

The accounting program provides broad exposure to the liberal arts as well as science and management concepts. Beyond this core, students choose an option that best fits their career interests. Students planning a career in public accounting may select undergraduate course work preparing them to enter RIT's MBA-accounting program. Completion of both the BS and MBA-accounting degrees satisfies the New York state CPA education requirements (see electives). Students may tailor the program to meet diverse career opportunities in the commercial, government, and not-for-profit sectors.

## Curriculum

### Accounting, BS degree, typical course sequence

| COURSE            |   | QTR. CR. HRS. |
|-------------------|---|---------------|
| <b>First Year</b> |   |               |
| 1720-051, 052     | Discovery/Pathways                      | 2             |
| 0102-260          | Business 1: Ideas and Creativity        | 4             |
| 0102-265          | Business 2: Business Plan Development   | 2             |
| 0112-270          | Business Software Applications          | 2             |
| 0112-285          | Business 3: Commercialization           | 2             |
| 0511-211          | Principles of Microeconomics            | 4             |
| 0511-402          | Principles of Macroeconomics            | 4             |
| 0535-352          | Professional Communication for Business | 4             |



| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 1016-226                          | Calculus for Management Science           | 4             |
| 1016-319, 320                     | Data Analysis I, II                       | 10            |
|                                   | Liberal Arts*                             | 12            |
|                                   | Wellness Education†                       | 0             |
| <b>Second Year</b>                |   |               |
| 0101-301, 302                     | Financial and Management Accounting       | 8             |
| 0101-345                          | Accounting Information Systems            | 4             |
| 0102-305                          | Careers in Business                       | 1             |
| 0113-310                          | Global Business: An Introduction          | 4             |
| 0104-350                          | Corporate Finance                         | 4             |
| 0110-319                          | Legal Environment of Business             | 4             |
|                                   | Liberal Arts*                             | 12            |
|                                   | General Education                         | 8             |
|                                   | Laboratory Sciences                       | 8             |
| <b>Third Year</b>                 |   |               |
| 0101-408                          | Financial Reporting and Analysis I        | 4             |
| 0101-409                          | Financial Reporting and Analysis II       | 4             |
| 0101-522                          | Personal and Small Business Taxation      | 4             |
| 0102-320                          | Organizational Behavior                   | 4             |
| 0102-438                          | Business Ethics                           | 4             |
| 0105-363                          | Principles of Marketing                   | 4             |
|                                   | Liberal Arts*                             | 12            |
|                                   | Free Electives                            | 8             |
|                                   | Cooperative Education‡                    | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0101-550                          | Financial Accounting and Reporting Issues | 4             |
| 0102-551                          | Strategy                                  | 4             |
| 0106-401                          | Operations and Supply Chain Management    | 4             |
| 0104-452                          | Managing Corporate Assets and Liabilities | 4             |
| 0101-431                          | Cost Accounting                           | 4             |
| 0102-530                          | Managing Innovation and Technology        | 4             |
|                                   | Free Elective                             | 4             |
|                                   | General Education                         | 8             |
| <b>Total Quarter Credit Hours</b> |   | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

## Electives

The program contains four free electives. Students planning to pursue an MBA-accounting degree and a career in public accounting should take the following electives:

|          |                     |
|----------|---------------------|
| 0101-523 | Advanced Taxation   |
| 0101-530 | Auditing            |
| 0101-540 | Advanced Accounting |
| 0110-320 | Commercial Law      |

For students seeking careers outside of public accounting, the following recommendations suggest ways in which electives may benefit additional career goals:

- Obtain a minor in management information systems.
- Select electives and other course work to strengthen communication skills and prepare for a legal co-op and/or law school, with corporate law as a career goal.
- Complete electives in accounting, business, and the liberal arts to prepare for a career in government service.

## Finance, BS

<http://saunders.rit.edu/undergraduate/finance/index.php>

## Program overview

The finance program prepares students for management positions in financial, commercial, industrial, and governmental organizations. Students are taught the principles of financial decision making and build an understanding of the economic, legal, and financial environment in which they will operate. Career options exist in government, industry, service, and not-for-profit organizations.

## Curriculum

### Finance, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1720-051, 052                     | Discovery/Pathways                        | 2             |
| 0102-260                          | Business 1: Ideas and Creativity          | 4             |
| 0102-265                          | Business 2: Business Plan Development     | 2             |
| 0112-270                          | Business Software Applications            | 2             |
| 0112-285                          | Business 3: Commercialization             | 2             |
| 0511-211                          | Principles of Microeconomics              | 4             |
| 0511-402                          | Principles of Macroeconomics              | 4             |
| 0535-352                          | Professional Communication for Business   | 4             |
| 1016-226                          | Calculus for Management Science           | 4             |
| 1016-319, 320                     | Data Analysis I, II                       | 10            |
|                                   | Liberal Arts*                             | 12            |
|                                   | Wellness Education†                       | 0             |
| <b>Second Year</b>                |   |               |
| 0101-301, 302                     | Financial and Management Accounting       | 8             |
| 0102-305                          | Careers in Business                       | 1             |
| 0113-310                          | Global Business: An Introduction          | 4             |
| 0104-350                          | Corporate Finance                         | 4             |
| 0110-319                          | Legal Environment of Business             | 4             |
|                                   | Liberal Arts*                             | 12            |
|                                   | Free Electives                            | 8             |
|                                   | General Education                         | 4             |
|                                   | Laboratory Sciences                       | 8             |
| <b>Third Year</b>                 |   |               |
| 0102-320                          | Organizational Behavior                   | 4             |
| 0102-438                          | Business Ethics                           | 4             |
| 0104-452                          | Managing Corporate Assets and Liabilities | 4             |
| 0104-453                          | Intermediate Investments                  | 4             |
| 0105-363                          | Principles of Marketing                   | 4             |
|                                   | Liberal Arts*                             | 12            |
|                                   | Free Elective                             | 4             |
|                                   | General Education                         | 4             |
|                                   | Cooperative Education‡                    | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0102-551                          | Strategy                                  | 4             |
| 0104-460                          | Financial Analysis and Modeling           | 4             |
|                                   | Finance Electives                         | 8             |
| 0104-504                          | Finance in a Global Environment           | 4             |
| 0106-401                          | Operations and Supply Chain Management    | 4             |
| 0102-530                          | Managing Innovation and Technology        | 4             |
|                                   | Free Electives                            | 4             |
|                                   | General Education                         | 8             |
| <b>Total Quarter Credit Hours</b> |   | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

## International Business, BS

[http://saunders.rit.edu/undergraduate/international\\_business/index.php](http://saunders.rit.edu/undergraduate/international_business/index.php)

### Program overview

Students in the international business program develop the foundation necessary to understand business as well as political and cultural diversity. Proficiency in a foreign language is an integral part of the program. A co-major is chosen in one of the following areas: accounting, finance, management, management information systems, or marketing. The co-major provides students with the functional tools needed in their career.

International business positions include substantial personal and professional benefits. Overseas assignments typically bring long hours and hard work, yet the reward of upward mobility within the corporate world continues to lure young executives to global assignments.

### Curriculum

#### International business, BS degree, typical course sequence

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 1720-051, 052      | Discovery/Pathways                      | 2             |
| 0102-260           | Business 1: Ideas and Creativity        | 4             |
| 0102-265           | Business 2: Business Plan Development   | 2             |
| 0112-270           | Business Software Applications          | 2             |
| 0112-285           | Business 3: Commercialization           | 2             |
| 0511-211           | Principles of Microeconomics            | 4             |
| 0511-402           | Principles of Macroeconomics            | 4             |
| 0535-352           | Professional Communication for Business | 4             |
| 1016-226           | Calculus for Management Science         | 4             |
| 1016-319, 320      | Data Analysis I, II                     | 10            |
|                    | Liberal Arts*                           | 12            |
|                    | Wellness Education†                     | 0             |
| <b>Second Year</b> |   |               |
| 0101-301, 302      | Financial and Management Accounting     | 8             |
| 0102-305           | Careers in Business                     | 1             |
| 0113-310           | Global Business: An Introduction        | 4             |
| 0104-350           | Corporate Finance                       | 4             |
| 0105-363           | Principles of Marketing                 | 4             |
|                    | Foreign Language§                       | 12            |
|                    | Liberal Arts*                           | 12            |
|                    | Laboratory Sciences                     | 8             |
| <b>Third Year</b>  |   |               |
| 0102-320           | Organizational Behavior                 | 4             |
| 0102-438           | Business Ethics                         | 4             |
|                    | Co-major Courses                        | 8             |
|                    | Liberal Arts*                           | 12            |
|                    | Choose three of the following:          | 12            |
| 0113-400           | Managing in the Global Environment      |               |
| 0113-430           | Global Business: Special Issues         |               |
| 0104-504           | Finance in a Global Environment         |               |
| 0113-450           | Marketing in the Global Environment     |               |
|                    | Cooperative Education‡                  | Co-op         |
| <b>Fourth Year</b> |   |               |
| 0113-500           | Strategy in the Global Environment      | 4             |
| 0102-551           | Strategy                                | 4             |
| 0106-401           | Operations and Supply Chain Management  | 4             |
| 0102-530           | Managing Innovation and Technology      | 4             |

| COURSE                            |                                   | QTR. CR. HRS. |
|-----------------------------------|-----------------------------------|---------------|
|                                   | Co-major Courses                  | 8             |
|                                   | Free Electives                    | 8             |
|                                   | General Education                 | 4             |
|                                   | Choose one of the following:      | 4             |
| 0102-507                          | Business, Government, and Society |               |
| 0110-319                          | Legal Environment of Business     |               |
| <b>Total Quarter Credit Hours</b> |                                   | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

§ Language credit may be used as liberal arts upper-division credit.

### Additional Information

#### Foreign language requirement

Fluency in a foreign language offered by RIT is a requirement of the program and can be met with the satisfactory completion of three quarters of language instruction or by passing a language department examination. It is strongly recommended that students take an additional three quarters of instruction in their language of choice. Entering students with fluency in one foreign language are encouraged to take at least three quarters of instruction in a second language.

## Management, BS

<http://saunders.rit.edu/undergraduate/management/index.php>

### Program overview

The management program prepares students for management and specialist careers in a variety of enterprises and organizations. Through this focused area of study, students develop the skills and concepts needed to become effective leaders, ethical decision makers, and creative innovators. The management curriculum provides both depth and flexibility in its offerings so that students can maximize their educational experience.

### Curriculum

#### Management, BS degree, typical course sequence

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 1720-051, 052      | Discovery/Pathways                      | 2             |
| 0102-260           | Business 1: Ideas and Creativity        | 4             |
| 0102-265           | Business 2: Business Plan Development   | 2             |
| 0112-270           | Business Software Applications          | 2             |
| 0112-285           | Business 3: Commercialization           | 2             |
| 0511-211           | Principles of Microeconomics            | 4             |
| 0511-402           | Principles of Macroeconomics            | 4             |
| 0535-352           | Professional Communication for Business | 4             |
| 1016-226           | Calculus for Management Science         | 4             |
| 1016-319, 320      | Data Analysis I, II                     | 10            |
|                    | Liberal Arts*                           | 12            |
|                    | Wellness Education†                     | 0             |
| <b>Second Year</b> |   |               |
| 0101-301, 302      | Financial and Management Accounting     | 8             |
| 0102-305           | Careers in Business                     | 1             |
| 0113-310           | Global Business: An Introduction        | 4             |
| 0104-350           | Corporate Finance                       | 4             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 0105-363                          | Principles of Marketing                | 4             |
|                                   | Liberal Arts*                          | 12            |
|                                   | Free Electives                         | 8             |
|                                   | General Education                      | 4             |
|                                   | Laboratory Sciences                    | 8             |
| <b>Third Year</b>                 |  |               |
| 0102-320                          | Organizational Behavior                | 4             |
| 0102-438                          | Business Ethics                        | 4             |
| 0102-455                          | Human Resource Management              | 4             |
| 0102-490                          | Entrepreneurship                       | 4             |
|                                   | Liberal Arts*                          | 12            |
|                                   | Free Elective                          | 4             |
|                                   | General Education                      | 8             |
|                                   | Cooperative Education‡                 | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 0102-460                          | Leadership in Organizations            | 4             |
| 0102-530                          | Managing Innovation and Technology     | 4             |
| 0102-507                          | Business, Government, and Society      | 4             |
| 0102-551                          | Strategy                               | 4             |
| 0106-401                          | Operations and Supply Chain Management | 4             |
|                                   | Management Elective                    | 8             |
|                                   | Free Electives                         | 8             |
|                                   | General Education                      | 4             |
| <b>Total Quarter Credit Hours</b> |  | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

## Management Information Systems, BS

<http://saunders.rit.edu/undergraduate/mis/index.php>

### Program overview

The management information systems program prepares students for careers involving leading-edge enterprise technologies and the analysis, design, and management of computer-based information systems. The curriculum provides students with the opportunity to analyze existing business processes and learn to utilize digital technologies to improve and/or design new models.

As a result of the program, students are able to apply the concepts of enterprise resource planning and work with sophisticated enterprise systems to help companies achieve their goals. Students also are able to design systems that are usable, practical, and cost-effective. Major career directions for graduates include business analysis, enterprise resource planning analysis and consulting, database application development and administration, network design and administration, website development and administration, and the management of information systems projects.

### Curriculum

#### Management information systems, BS degree, typical course sequence

| COURSE            |                                       | QTR. CR. HRS. |
|-------------------|---------------------------------------|---------------|
| <b>First Year</b> |                                       |               |
| 1720-051, 052     | Discovery/Pathways                    | 2             |
| 0102-260          | Business 1: Ideas and Creativity      | 4             |
| 0102-265          | Business 2: Business Plan Development | 2             |
| 0112-270          | Business Software Applications        | 2             |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 0112-285                          | Business 3: Commercialization           | 2             |
| 0511-211                          | Principles of Microeconomics            | 4             |
| 0511-402                          | Principles of Macroeconomics            | 4             |
| 0535-352                          | Professional Communication for Business | 4             |
| 1016-226                          | Calculus for Management Science         | 4             |
| 1016-319, 320                     | Data Analysis I, II                     | 10            |
|                                   | Liberal Arts*                           | 12            |
|                                   | Wellness Education†                     | 0             |
| <b>Second Year</b>                |   |               |
| 0101-301,302                      | Financial and Management Accounting     | 8             |
| 0102-305                          | Careers in Business                     | 1             |
| 0113-310                          | Global Business: An Introduction        | 4             |
| 0104-350                          | Corporate Finance                       | 4             |
| 0105-363                          | Principles of Marketing                 | 4             |
| 0112-331                          | Developing Business Applications        | 4             |
| 0112-340                          | Database Management Systems             | 4             |
| 0112-370                          | Systems Analysis and Design             | 4             |
|                                   | Liberal Arts*                           | 12            |
|                                   | Laboratory Sciences                     | 8             |
| <b>Third Year</b>                 |   |               |
| 0102-320                          | Organizational Behavior                 | 4             |
| 0102-438                          | Business Ethics                         | 4             |
| 0110-319                          | Legal Environment of Business           | 4             |
| 0112-390                          | Emerging Business Technologies          | 4             |
|                                   | Liberal Arts*                           | 12            |
|                                   | Free Electives                          | 8             |
|                                   | General Education                       | 4             |
|                                   | Cooperative Education‡                  | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0102-551                          | Strategy                                | 4             |
| 0106-401                          | Operations and Supply Chain Management  | 4             |
| 0112-525                          | MIS Capstone                            | 4             |
| 0102-530                          | Managing Innovation and Technology      | 4             |
|                                   | MIS Elective                            | 8             |
|                                   | Free Electives                          | 4             |
|                                   | General Education                       | 12            |
| <b>Total Quarter Credit Hours</b> |   | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

## Marketing, BS

<http://saunders.rit.edu/undergraduate/marketing/index.php>

### Program overview

Marketing has long been recognized as a critical element in the success of modern business operations. The overall process of entering markets, creating value for customers, and developing profits is the fundamental challenge for the contemporary marketing manager. These marketing basics apply to governmental agencies, not-for-profit organizations, service organizations, and for-profit firms.

In the marketing program, students learn theory and gain practical experience by creating tactically enabled strategic marketing plans. Through projects, they learn to work independently and in teams to achieve organizational objectives. Marketing majors develop leadership and communication skills through classroom experiences and their work on real and simulated business challenges. Upon completing the program, students have gained proficiency in analyzing and understanding buyers, developed and

delivered professional sales presentations, and designed and implemented marketing research projects. Students graduate with the ability to create and critically evaluate strategic marketing plans.

## Curriculum

### Marketing, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1720-051, 052                     | Discovery/Pathways                      | 2             |
| 0102-260                          | Business 1: Ideas and Creativity        | 4             |
| 0102-265                          | Business 2: Business Plan Development   | 2             |
| 0112-270                          | Business Software Applications          | 2             |
| 0112-285                          | Business 3: Commercialization           | 2             |
| 0511-211                          | Principles of Microeconomics            | 4             |
| 0511-402                          | Principles of Macroeconomics            | 4             |
| 0535-352                          | Professional Communication for Business | 4             |
| 1016-226                          | Calculus for Management Science         | 4             |
| 1016-319, 320                     | Data Analysis I, II                     | 10            |
|                                   | Liberal Arts*                           | 12            |
|                                   | Wellness Education†                     | 0             |
| <b>Second Year</b>                |   |               |
| 0101-301, 302                     | Financial and Management Accounting     | 8             |
| 0102-305                          | Careers in Business                     | 1             |
| 0113-310                          | Global Business: An Introduction        | 4             |
| 0104-350                          | Corporate Finance                       | 4             |
| 0105-363                          | Principles of Marketing                 | 4             |
|                                   | Liberal Arts*                           | 12            |
|                                   | Free Elective                           | 4             |
|                                   | General Education                       | 8             |
|                                   | Laboratory Sciences                     | 8             |
| <b>Third Year</b>                 |   |               |
| 0102-320                          | Organizational Behavior                 | 4             |
| 0105-505                          | Buyer Behavior                          | 4             |
| 0105-559                          | Professional Selling                    | 4             |
|                                   | Marketing Elective                      | 8             |
|                                   | Liberal Arts*                           | 12            |
|                                   | General Education                       | 8             |
|                                   | Cooperative Education‡                  | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0102-438                          | Business Ethics                         | 4             |
| 0102-507                          | Business, Government, and Society       | 4             |
| 0102-551                          | Strategy                                | 4             |
| 0105-551                          | Marketing Metrics and Research          | 4             |
| 0106-401                          | Operations and Supply Chain Management  | 4             |
| 0102-530                          | Managing Innovation and Technology      | 4             |
| 0105-550                          | Marketing Management                    | 4             |
|                                   | Free Electives                          | 12            |
| <b>Total Quarter Credit Hours</b> |   | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

## New Media Marketing, BS

[http://saunders.rit.edu/undergraduate/new\\_media\\_marketing/index.php](http://saunders.rit.edu/undergraduate/new_media_marketing/index.php)

### Program overview

The new media marketing program is an interdisciplinary major with a curriculum that covers marketing, imaging, graphic arts,

information systems, and management. The program provides an overall assessment of the current and future state of the graphic communication industry and was designed to meet the industry's need for broadly educated marketing, new media, and management professionals. This is a joint program between the Saunders College and the College of Imaging Arts and Sciences.

## Curriculum

### New media marketing, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1720-051, 052                     | Discovery/Pathways                      | 2             |
| 0102-260                          | Business 1: Ideas and Creativity        | 4             |
| 0102-265                          | Business 2: Business Plan Development   | 2             |
| 0112-270                          | Business Software Applications          | 2             |
| 0112-285                          | Business 3: Commercialization           | 2             |
| 0511-211                          | Principles of Microeconomics            | 4             |
| 0511-402                          | Principles of Macroeconomics            | 4             |
| 0535-352                          | Professional Communication for Business | 4             |
| 1016-226                          | Calculus for Management Science         | 4             |
| 1016-319, 320                     | Data Analysis I, II                     | 10            |
|                                   | New Media Elective                      | 4             |
|                                   | Liberal Arts*                           | 8             |
|                                   | Wellness Education†                     | 0             |
| <b>Second Year</b>                |   |               |
| 0101-301, 302                     | Financial and Management Accounting     | 8             |
| 0102-305                          | Careers in Business                     | 1             |
| 0113-310                          | Global Business: An Introduction        | 4             |
| 0104-350                          | Corporate Finance                       | 4             |
| 0105-363                          | Principles of Marketing                 | 4             |
|                                   | New Media Electives                     | 8             |
|                                   | Liberal Arts*                           | 16            |
|                                   | Laboratory Sciences                     | 8             |
| <b>Third Year</b>                 |   |               |
| 0102-320                          | Organizational Behavior                 | 4             |
| 0102-438                          | Business Ethics                         | 4             |
| 0105-440                          | Internet Marketing                      | 4             |
| 0105-442                          | Search Engine Marketing and Analytics   | 4             |
|                                   | Business/Media Electives                | 4             |
|                                   | Liberal Arts*                           | 12            |
|                                   | General Education                       | 4             |
|                                   | Cooperative Education‡                  | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0102-507                          | Business, Government, and Society       | 4             |
| 0102-551                          | Strategy                                | 4             |
| 0105-520                          | Advanced Internet Marketing             | 4             |
| 0106-401                          | Operations and Supply Chain Management  | 4             |
| 0102-530                          | Managing Innovation and Technology      | 4             |
|                                   | Free Electives                          | 12            |
|                                   | General Education                       | 12            |
| <b>Total Quarter Credit Hours</b> |   | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two quarters of cooperative education are required and must be completed within the third and fourth years.

# Business, Undeclared

## Program overview

If students' interests fall into the business realm, but they are unclear which program of study to choose from, the undeclared business option is a good place to begin. By building on the liberal arts and sciences and business core components, the undeclared business option provides students up to a year and a half to declare a major. During this time, students complete required courses (including liberal arts courses) that provide an understanding of all facets of business and serve as a foundation for the undeclared option as well as advanced study in a specific area of interest. Advisers are available to assist students in selecting a major that matches their area of interest.

## E. Philip Saunders College of Business

**Ashok Rao**, B.Tech., Indian Institute of Technology; MS, Ph.D., University of Iowa—Dean

**Donald O. Wilson**, BS, Oklahoma State University; MS, MPA, University of Southern California; Ph.D., University of California at Irvine—Associate Dean for Teaching and Curriculum; Director, EMBA Program

### Accounting

**Mithu Dey**, BBA, Howard University; MBA, Ph.D., George Washington University; CPA, Maryland—Assistant Professor

**William H. Dresnack**, BS, Long Island University; MS, State University of New York at Binghamton; JD, University of Buffalo—Professor

**William T. Evans**, BS, Rensselaer Polytechnic Institute; MBA, University of Rochester—Senior Lecturer

**Roberta L. Klein**, BS, State University College at Brockport; MBA, Rochester Institute of Technology; CPA, New York—Lecturer

**Bruce L. Oliver**, BBA, MBA, University of Cincinnati; Ph.D., University of Washington—Professor

**Qian Song**, B.Sc., M.Sc., Qingdao University; Ph.D., Washington State University—Assistant Professor

**Daniel D. Tessoni**, BBA, St. John Fisher College; MS, Clarkson College of Technology; Ph.D., Syracuse University; CPA, New York—Benjamin Forman Chair for Teaching Excellence; Assistant Professor

### Decision Sciences

**John Angelis**, BE, Youngstown State University; Ph.D., Case Western Reserve University—Assistant Professor

**John E. Ettlie**, BS, MS, Ph.D., Northwestern University—Benjamin Forman Chair for Research; Professor

**A. Erhan Mergen**, BS, Middle East Technical University (Turkey); MS, Ph.D., Union College—Professor

**Brian F. O'Neil**, BS, Syracuse University; MS, Ph.D., Purdue University—Distinguished Lecturer

**William J. Stevenson**, BSIE, MBA, Ph.D., Syracuse University—Associate Professor

### Finance

**Steven C. Gold**, BA, BS, Rutgers University; MA, Ph.D., State University of New York at Binghamton—Professor

**Chun-Kueng (Stan) Hoi**, BA, MS, North Texas State University; Ph.D., Arizona State University—Associate Professor

**Jeffrey P. Lessard**, BA, BS, University of New Hampshire; MBA, Plymouth State College; MA, Ph.D., University of Arkansas—Associate Professor

**Ashok J. Robin**, B.Com, University of Madras (India); MBA, Ph.D., State University of New York at Buffalo—Madelon and Richard Rosett Chair for Research; Professor

**Patricia L. Wollan**, BS, York University; MBA, Old Dominion University; Ph.D., Pennsylvania State University—Lecturer

**Hao Zhang**, BA, MA, Xiamen University (China), Ph.D., State University of New York at Buffalo—Assistant Professor

### Management and International Business

**Robert J. Barbato**, BA, LeMoyne College; Ph.D., Michigan State University—Professor

**Richard DeMartino**, BA, Roanoke College; MPA, Ph.D., University of Virginia—Associate Professor

**A. Clyde Hull**, BA, Yale University; MB, MBA, Ph.D., Indiana University—Associate Professor

**Shalini Khazanchi**, BS, South Gujarat University (India); MBA, University of Pune (India); Ph.D., University of Cincinnati—Associate Professor

**Martin Lawlor**, BA, State University of New York at Buffalo; MBA, Rochester Institute of Technology—Director, Online EMBA; Lecturer

**Steven Luxmore**, BA, MA, University of Guelph (Canada); Ph.D.; University of Toronto (Canada)—Assistant Professor

**Joy Oguntebi**, BS, Georgia Institute of Technology; MS, University of Michigan; Ph.D., University of Michigan—Assistant Professor

**Michael E. Palanski**, BS, Grove City College; MA, Covenant Theological Studies; Ph.D., State University of New York at Binghamton—Assistant Professor

**Ashok Rao**, B.Tech., Indian Institute of Technology; MS, Ph.D., University of Iowa—Dean

**Sandra L. Rothenberg**, BS, Syracuse University; MS, Ph.D., Massachusetts Institute of Technology—Director, Institute for Business Ethics and Corporate Social Responsibility; Associate Professor

**Delmonize Smith**, BBA, Faulkner University; MS, Troy University; Ph.D., University of Alabama—Assistant Professor

**Zhi Tang**, BA, Shandorun University; MA, Fudon University (China); Ph.D., University of Alabama—Assistant Professor

**Donald O. Wilson**, BS, Oklahoma State University; MS, MPA, University of Southern California; Ph.D., University of California at Irvine—Associate Dean for Teaching and Curriculum; Director, EMBA Program; Assistant Professor

### Management Information Systems

**A. James Baroody**, BS, University of Richmond; MS, College of William and Mary; MS, Ph.D., University of Wisconsin at Madison—Distinguished Lecturer

**Sean William Hansen**, BA, Harvard University; MBA, Ph.D., Case Western Reserve University—Lecturer

**Manlu Liu**, BS, Jiangsu University (China); MBA, The Hong Kong University of Science & Technology; Ph.D., University of Arizona—Associate Professor

**Victor J. Perotti**, BS, MA, MS, Ph.D., The Ohio State University—Associate Professor

**Qiang (John) Tu**, BS, MS, Xi'an Jiaotong University (China); Ph.D., University of Toledo—Professor



## Marketing

**Robert B. Boehner**, BA, MA, Siena College; JD, University of North Carolina at Chapel Hill—Senior Lecturer

**Adriana M. Boveda-Lambie**, BS, University of Maryland at College Park; MA, University of Texas at Austin; Ph.D., University of Rhode Island—Assistant Professor

**Deborah Colton**, BA, State University of New York at Buffalo; MBA, Rochester Institute of Technology; Ph.D., University of South Carolina—Associate Professor

**Neil Hair**, BS, University of Wales (U.K.); MS, Sheffield Hallam University (U.K.); Ph.D., Cranfield University—Associate Professor

**Joseph C. Miller**, BA, Grand Valley State University; MBA, Wayne State University; Ph.D., Michigan State University—Assistant Professor

**Rajendran Sriramachandra Murthy**, BE, University of Madras (India); MBA, Ph.D., Southern Illinois University—Assistant Professor

**John D. Ward**, BS, Georgia Institute of Technology; MS, Purdue University—Lecturer

## Distinguished Professorships

### **J. Warren McClure Research Professorship in Marketing**

Established: 1977

Donor: Mr. and Mrs. J. Warren McClure

Purpose: To perpetuate Mr. McClure's professional interest in the field of marketing  
Held by: open

### **Madelon and Richard Rosett Chair**

Established: 2000

Donor: Madelon and Richard Rosett

Purpose: To support a professorship of a nationally prominent scholar in any field of business  
Held by: Ashok Robin

# B. Thomas Golisano College of Computing and Information Sciences

Andrew L. Sears, Dean

[www.gccis.rit.edu](http://www.gccis.rit.edu)

## Programs of study

### Bachelor of Science degrees in:

|  |    |
|--|----|
| Applied Networking and System Administration | 47 |
| Computer Science                             | 43 |
| Game Design and Development                  | 50 |
| Information Security and Forensics           | 49 |
| Information Technology                       | 45 |
| Medical Informatics                          | 46 |
| New Media Interactive Development            | 51 |
| Software Engineering                         | 51 |

The B. Thomas Golisano College of Computing and Information Sciences is one of the largest colleges at RIT and has become one of the most comprehensive computing colleges in the United States. The college offers 17 bachelor's, master's, and doctorate degree programs in computing.

Since the college was established in 2001, more than 5,000 students have graduated with undergraduate and graduate degrees. The college's programs address the growing need for experts in the fields of computing. With more than 100 faculty, 3,000 students, 40 technical and support staff, and state-of-the-art facilities dedicated to learning, teaching, research, and development, the college has quickly risen in recognition around the country.

### Admission requirements

For more information on undergraduate admission, including freshman and transfer admission guidelines, please see the Undergraduate Admission section of this bulletin.

### Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

### Faculty

The college's faculty is a dedicated group of teacher-scholars and scholar-teachers, performing use-inspired research with an emphasis on student involvement and career preparation. Faculty members provide leadership by implementing innovative teaching techniques while anticipating and meeting the needs of students and our industrial partners. Many have significant industrial experience in addition to outstanding academic credentials.

### Facilities

The highly technical nature of our programs demands cutting-edge, state-of-the-art facilities and equipment. The college prides itself on offering the very best to support students' success. The Golisano building is equipped with more than 2,000 workstations housed in 56 labs, studio labs, and classrooms, all with the latest technology.

Each academic unit has extensive laboratories dedicated to undergraduate education. These labs contain powerful PCs and workstations as well as appropriate, up-to-date software. The labs are available to students 16–18 hours a day, except during designated class times. High-speed Internet access, along with a wireless network, is available to ensure our students have the tools necessary to complete their assignments and projects.

A 126,500-square-foot wireless building houses the college's specialized labs, such as those dedicated to wireless networking, security, entertainment technology, AI, streaming media, Honors, and computer vision, as well as academic units, faculty offices, classrooms, and study and lounge space. The proximity of the college's units and labs encourages joint projects as well as interaction among students in different programs outside the college.

### Accreditation

The bachelor of science degree programs in computer science, information technology, software engineering, and applied networking and system administration are fully accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

### Cooperative education

All programs in the Golisano College have a cooperative education requirement. Co-op generally starts after completing two years of the program and ends so that the last quarter attended is in residence. Co-ops may be one or two quarters in length and at any company that satisfies the program's requirements. Please refer to each program for specific information regarding cooperative education requirements. Academic advisers also can provide students with information concerning the co-op experience.

### Advising

As part of its commitment to student success, the Golisano College provides both academic advising and career counseling. Students have access to their program chairperson, a faculty adviser, a full-time academic adviser, the academic advising office in the College of Liberal Arts, and program coordinators from the Office of Cooperative Education and Career Services. In addition, office staff provide support for registration and help with records and scheduling. Part-time and evening students can arrange for these services at night by appointment.

### Academic enrichment

*Honors Program:* Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admissions process.

*Study Abroad:* RIT encourages all students to consider a study abroad program. Students may study full time at a variety of host schools and are able to select courses that fulfill requirements in their academic field of study and/or liberal arts general education requirements. The Study Abroad Office has information about foreign study options and opportunities.

*Minors:* RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

### Special opportunities

*Accelerated dual degree option:* Some programs offer accelerated, five-year dual BS/MS degree options. These degrees offer students the opportunity to earn a bachelor's degree and a master's degree in less time than pursuing each degree individually. Please refer to individual programs, the *Graduate Bulletin*, or the college's website for more information.

*Double majors:* The college offers a number of double majors to assist students in obtaining two areas of expertise. Please refer to individual programs or the college's website for more information.

*Graduate study:* The college offers a doctorate program in computing and information sciences; master of science degrees in computer science, computer security and information assurance, game design and development, human-computer interaction, information technology, medical informatics, networking and system administration, and software engineering; and advanced certificates in information assurance, interactive multimedia development, network planning and design, and networking and systems administration. Please refer to the *Graduate Bulletin* or the college's website for more information.

## Department of Computer Science

### Computer Science, BS

<http://www.cs.rit.edu/>

**Paul T. Tymann, Chair**  
(585) 475-7908, [ptt@cs.rit.edu](mailto:ptt@cs.rit.edu)

### Program overview

The computer science program attracts students who are interested in both the mathematical theory and technical applications of computer science. Most employers look for students who not only are good computer scientists but also understand the tools and techniques of mathematics, science, and industry and are able to communicate effectively. The BS program is for the mathematically adept student who wishes to become a computing professional with knowledge of relevant applications areas. The program also is attractive to students transferring to RIT with an associate degree in computer science and course work in mathematics and science.

The demands of industry and government require college graduates to master both the fundamentals and the applied aspects of their profession. To meet this requirement, two applied educational experiences are woven into the program. Students are required to complete a cooperative educational experience as well as an extensive set of laboratory and small-group experiences, many as members of a team. These activities are typically held in a setting involving 15 to 20 students each, providing a venue for significant student-faculty interaction.

Computer science covers a wide spectrum of areas within the field of computing, ranging from the theoretical to the practical. A computer scientist can specialize in areas such as artificial intelligence, computer graphics, computer theory, networking, security, robotics, parallel computation, database, data mining, computer architecture, or systems software. Programming is necessary, but computer scientists also must be adaptable as well as adept at problem solving and analytical reasoning, able to understand design principles, and fluent in using computers.

An undergraduate computer science student takes a core of computer science courses that provide a solid foundation for advanced work. Building on this base, students can explore a variety of specializations in their third, fourth, and fifth years. In addition, students have the opportunity to develop a broad appreciation of computer applications and the effects of computers on society via

computer science electives, liberal arts courses, and various electives, which can be used to complete minors, if so desired.

Accreditation

The BS degree in computer science is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

Curriculum

Computer science, BS degree, typical course sequence

| COURSE                         |  | QTR. CR. HRS. |
|--------------------------------|--|---------------|
| First Year                     |  |               |
| 4003-241                       | Problem-Based Introduction to Computer Science | 4             |
| 4003-242                       | Data Structures for Problem Solving            | 4             |
| 4003-243                       | Object-Oriented Programming                    | 4             |
| 1016-281, 282, 283             | Calculus I, II, III                            | 12            |
| 1016-265, 366                  | Discrete Mathematics I, II                     | 8             |
|                                | Liberal Arts*                                  | 16            |
| 1720-051, 052                  | First-Year Enrichment I, II                    | 2             |
|                                | Wellness Education†                            | 0             |
| Second Year                    |  |               |
| 4003-334                       | Computer Science 4                             | 4             |
| 4010-361                       | Software Engineering                           | 4             |
| 4003-341                       | Professional Communications                    | 4             |
| 4003-345                       | Computer Organization                          | 4             |
| 1016-351                       | Probability                                    | 4             |
|                                | Lab Science‡                                   | 12            |
|                                | Liberal Arts*                                  | 12            |
|                                | Free Elective**                                | 4             |
|                                | Wellness Education†                            | 0             |
| Third, Fourth, and Fifth Years |  |               |
| 4003-380                       | Introduction to Computer Science Theory        | 4             |
| 4003-440                       | Operating Systems I                            | 4             |
| 4003-420                       | Data Communications and Networks I             | 4             |
| 4003-450                       | Programming Language Concepts                  | 4             |
|                                | Computer Science-Related Electives††           | 8             |
|                                | Computer Science Electives                     | 16            |
|                                | Related Electives§                             | 12            |
|                                | Liberal Arts*                                  | 24            |
|                                | Science Electives‡                             | 8             |
|                                | Free Electives**                               | 8             |
|                                | Cooperative Education (four quarters required) | Co-op         |
| Total Quarter Credit Hours     |  | 190           |

\* Please see Liberal Arts General Education Requirements for more information.  
† Please see Wellness Education Requirement for more information.  
‡ Students complete a lab science sequence by selecting University Physics (1017-311, 312, 313), General and Analytical Chemistry (1011-215, 216, 217, 205, 206, 227), or General Biology (1001-201, 202, 203, 205, 206, 207). 4003-241, 4003-242, 4003-243 replaced the previous sequence of 4003-231, 232, 233. (If a lab science sequence calls for more than 12 quarter credit hours, then science electives are reduced by the corresponding amount.)  
§ Related electives may be chosen from any discipline other than computer science or software engineering.  
\*\* Any course open to computer science majors may be taken as a free elective subject to restrictions published in the Undergraduate Advising Handbook.  
†† The computer science-related electives requirement states that at least two courses are related according to department definitions. The general areas from which related electives may be selected are systems programming, data communications and networks, parallel computing, digital systems design, computer science theory, software engineering, computer graphics, and artificial intelligence. The computer science Undergraduate Advising Handbook has a complete list.

Evening program

The BS program may be taken on a part-time basis during evening hours. The typical evening student requires approximately 25 quarters for a BS degree (this assumes no previous course work). Students with a strong associate degree in computer science can complete the BS degree requirements in approximately 13 quarters.

Computer science, BS degree, evening program, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| Computer Science                  |  |               |
| 4003-241                          | Problem-Based Introduction to Computer Science | 4             |
| 4003-242                          | Data Structures for Problem Solving            | 4             |
| 4003-243                          | Object-Oriented Programming                    | 4             |
| 4003-334                          | Computer Science 4                             | 4             |
| 4003-341                          | Professional Communications                    | 4             |
| 4010-361                          | Software Engineering                           | 4             |
| 4003-345                          | Computer Organization                          | 4             |
| 4003-380                          | Introduction to CS Theory                      | 4             |
| 4003-450                          | Programming Language Concepts                  | 4             |
| 4003-420                          | Data Communications and Networks I             | 4             |
| 4003-440                          | Operating Systems I                            | 4             |
|                                   | Computer Science-Related Electives‡            | 8             |
|                                   | Computer Science Electives                     | 16            |
| Liberal Arts                      |  |               |
|                                   | Liberal Arts*                                  | 52            |
| Mathematics and Science           |  |               |
| 1016-281, 282, 283                | Calculus I, II, III                            | 12            |
| 1016-351                          | Probability                                    | 4             |
| 1016-265, 366                     | Discrete Mathematics I, II                     | 8             |
|                                   | Science Electives **                           | 8             |
|                                   | Choose one science sequence§                   | 12            |
| 1017-311, 312, 313                | University Physics                             |               |
| 1011-215, 216, 217, 205, 206, 227 | General and Analytical Chemistry I, II, III    |               |
| 1001-201, 202, 203, 205, 206, 207 | General Biology                                |               |
| Other                             |  |               |
| 1720-051, 052                     | First-Year Experience I, II                    | 2             |
|                                   | Wellness Education†                            | 0             |
|                                   | Free Electives                                 | 12            |
|                                   | Related Electives                              | 12            |
|                                   | Cooperative Education (four quarters required) | Co-op         |
| Total Quarter Credit Hours        |  | 190           |

\* Please see Liberal Arts General Education Requirements for more information.  
† Please see Wellness Education Requirement for more information.  
‡ The computer science-related electives requirement states that at least two courses must be related according to department definitions. The general areas from which related electives may be selected are systems programming, data communications and networks, parallel computing, digital systems design, computer science theory, software engineering, computer graphics, and artificial intelligence. The computer science Undergraduate Advising Handbook has a complete list.  
§ Related electives may be chosen from any discipline other than computer science or software engineering. If a lab science calls for more than 12 quarter credit hours, then science electives are reduced by the corresponding amount.

## School of Informatics

### Department of Information Sciences and Technology

## Information Technology, BS

<http://www.ist.rit.edu/>

**Jeffrey A. Lasky, Chair**

**(585) 475-2284, [Jeffrey.Lasky@rit.edu](mailto:Jeffrey.Lasky@rit.edu)**

### Program overview

The role of an IT professional, or information technologist, is diverse and multifaceted. To develop and maintain truly effective systems, information technologists need core competencies in four essential areas: Web design/development and interactive media; database, programming, and application development; networking and system administration, which includes the design, deployment, and security of computing infrastructure; and technology integration and deployment in user communities, including needs assessment, user-centered design, technology transfer, and ongoing support.

The fourth competency area is the defining expertise for information technology professionals. To design and develop the best possible systems, IT professionals must see the world through the users' eyes and learn about what user communities need to contribute to organizational goals and success. This requires skills in information gathering, user-centered design, and effective deployment practices in organizations with differing user environments and cultures, as well as strong communication and people skills.

### Curriculum

The core competencies provide a foundation for developing greater depth in specialized concentration areas. Students will choose two concentrations from the following: Web development, database technology, interactive multimedia development, network and system administration, learning and performance technology, medical informatics, and advanced application development. In addition, with department permission, students can create a special-topics sequence for one of their two concentrations. Most students select advanced technical courses for developing a deep competency in one or two of the specialization areas. Other students choose a broader path to prepare for general IT practitioner jobs, which are prevalent in virtually every enterprise.

### Accreditation

The BS in information technology is accredited by the Computing Accreditation Commission of ABET, Market 111 Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

### Cooperative education

The program requires students to complete three quarters of co-operative education. Students may begin their co-op requirement after completing all second-year academic requirements. A typical schedule might include cooperative education in the summer quarter following the second year and in the spring and summer quarters of the third year.

## Information technology, BS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 4002-201                          | Freshman Seminar   | 1             |
| 4002-320                          | Introduction to Multimedia: The Internet and the Web       | 4             |
| 4002-217, 218, 219                | Programming for Information Technology I, II, III          | 12            |
| 4050-220                          | Cyber Self-Defense   | 4             |
| 1016-205, 206                     | Discrete Math for Technologists I, II                      | 8             |
|                                   | Liberal Arts*  | 12            |
| 1105-051, 052                     | First-Year Enrichment                                      | 2             |
|                                   | Wellness Education†  | 0             |
| <b>Second Year</b>                |  |               |
| 4050-350                          | Computer System Fundamentals                               | 4             |
| 4050-351                          | Network Fundamentals                                       | 4             |
| 4002-331                          | Interactive Programming                                    | 4             |
| 4002-360                          | Introduction to Database and Data Modeling                 | 4             |
| 4002-425                          | HCI 1: Human Factors                                       | 4             |
| 1016-319                          | Data Analysis I  | 4             |
|                                   | Liberal Arts*  | 12            |
|                                   | Lab Science Elective                                       | 8             |
|                                   | Free Elective  | 4             |
| <b>Third and Fourth Year</b>      |  |               |
|                                   | Cooperative Education (3 quarters required after year two) | Co-op         |
| 4002-455                          | Needs Assessment   | 4             |
| 4002-426                          | HCI 2: Interface Design and Development                    | 4             |
| 4002-460                          | Technology Transfer  | 4             |
|                                   | IT Concentration Courses‡                                  | 24            |
| 1016-320                          | Data Analysis II   | 4             |
|                                   | Liberal Arts*  | 12            |
|                                   | Free Electives   | 20            |
|                                   | General Education Electives                                | 18            |
| <b>Total Quarter Credit Hours</b> |  | <b>181</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two three-course concentrations are required. Concentrations include Web development, interactive multimedia development, network and system administration, database, learning and performance technology, advanced application development, and special topics. A six-course Web-database integration concentration also is available.

## Additional information

### Part-time study

The BS degree in information technology may be completed on a part-time basis, with courses available during the day and in the evening to accommodate those who work. The typical evening student requires approximately 23 quarters for a BS degree (this assumes no previous course work). Students with a strong associate degree may be able to complete the degree requirements in 12 quarters.



## Information Technology, AAS

<http://www.ist.rit.edu/>

**Jeffrey A. Lasky, Chair**  
(585) 475-2284, [jalics@rit.edu](mailto:jalics@rit.edu)

ADMISSION TO THIS PROGRAM HAS BEEN SUSPENDED  
FOR THE 2011-2012 ACADEMIC YEAR.

### Program overview

The role of an IT professional, or information technologist, is diverse and multifaceted. To develop and maintain truly effective systems, information technologists need core competencies in four essential areas: Web design/development and interactive media; database, programming, and application development; networking and system administration, which includes the design, deployment, and security of computing infrastructure; and technology integration and deployment in user communities, including needs assessment, user-centered design, technology transfer, and ongoing support.

### Curriculum

#### Information technology, AAS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 4002-320                          | Introduction to Multimedia: The Internet and the Web | 4             |
| 4002-217, 218, 219                | Programming for Information Technology I, II, III    | 12            |
| 4050-220                          | Cyber Self-Defense                                   | 4             |
| 1016-204                          | Algebra and Trigonometry                             | 4             |
| 1016-205, 206                     | Discrete Math for Technologists I, II                | 8             |
|                                   | Liberal Arts*  | 12            |
| <b>Second Year</b>                |  |               |
| 4002-331                          | Interactive Programming                              | 4             |
| 4050-350                          | Computer System Fundamentals                         | 4             |
| 4050-351                          | Network Fundamentals                                 | 4             |
| 4002-360                          | Introduction to Database and Data Modeling           | 4             |
| 4002-425                          | HCI 1: Human Factors                                 | 4             |
|                                   | IT Electives   | 8             |
|                                   | Lab Science Electives                                | 8             |
|                                   | Liberal Arts*  | 8             |
|                                   | Free Elective  | 4             |
|                                   | Wellness Education†                                  | 0             |
| <b>Total Quarter Credit Hours</b> |  | <b>92</b>     |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Medical Informatics, BS

<http://www.ist.rit.edu/?q=node/49>

**Nicolas A. Thireos, Program Director**  
(585) 475-6511, [natvkm@rit.edu](mailto:natvkm@rit.edu)

### Program overview

The BS degree in medical informatics is one of only a few programs in the United States that responds to the increasing use of computers in every aspect of health care as well as biomedical research and education. Developed by the college's departments of computer sci-

ence and information technology in partnership with the College of Science, the program gives students training in the medical sciences, computer science, and information technology, with an emphasis on clinical applications. The program trains students to develop computer applications for the solution of clinical problems and to provide computing support to medical practice, medical research, and education. ABET does not accredit programs in this field.

### Curriculum

The medical informatics program offers students the choice of two tracks: computer science, for those interested primarily in developing computer software for medicine; or information technology, for those interested in providing computer support for clinical information systems, databases, networks, and Web applications.

Students consult with faculty advisers to tailor their academic programs to individual career goals. Upper-level electives prepare graduates for specialized employment opportunities within medical informatics, for graduate school in the sciences or computer science/information technology, or for postgraduate professional school.

#### Requirements for the BS in medical informatics

Students must meet the minimum requirements of the university as described in this bulletin and, in addition, complete the requirements contained in this program. Transfer students may be required to take additional course work, depending on the program they have studied at their previous school. Specific requirements will be determined by the department for each transfer student.

#### Cooperative education

A minimum of two academic quarters of co-op is required after the completion of the second year of study. Co-op allows students to gain relevant, hands-on work experience in the medical informatics field, provides the opportunity to apply classroom knowledge in real-life situations, and offers networking opportunities with professionals in the field. Students alternate quarters of academic study with quarters of paid employment, starting with the summer between the second and third years. These experiences enhance students' education and make them more valuable to prospective employers.

#### Optional premedical track

Medical informatics is also a premedical program. Students interested in applying to medical, dental, or veterinary school after graduation should replace some of the computing courses with physics and organic chemistry. For more information, contact the program director.

#### Accelerated dual degree option

The college offers an accelerated dual degree option enabling students to earn a BS degree in medical informatics and an MS degree in computer science with one additional year of study. Students must declare their intention to pursue the MS degree by their third year of undergraduate study.

#### Medical informatics, BS degree, typical course sequence, computer science track

| COURSE            |  | QTR. CR. HRS. |
|-------------------|--|---------------|
| <b>First Year</b> |  |               |
| 4006-230          | Computers in Medicine                          | 4             |
| 4006-240          | Introduction to Medical Informatics            | 4             |
| 4003-241          | Project-Based Introduction to Computer Science | 4             |
| 4003-242          | Data Structure Problem Solving                 | 4             |

| COURSE                            |                                      | QTR. CR. HRS. |
|-----------------------------------|--------------------------------------|---------------|
| 4003-243                          | Object-Oriented Programming          | 4             |
| 4002-320                          | Introduction to Multimedia: Web      | 4             |
| 1026-301                          | Medical Terminology                  | 3             |
| 1016-281, 282                     | Project-Based Calculus               | 8             |
| 1016-265                          | Discrete Mathematics                 | 4             |
|                                   | Liberal Arts*                        | 8             |
| 4002-201                          | Freshman Seminar                     | 1             |
| 1105-051, 052                     | First-Year Enrichment                | 2             |
|                                   | Wellness Education†                  | 0             |
| <b>Second Year</b>                |                                      |               |
| 4006-310                          | Developing Medical Applications      | 4             |
| 4006-410                          | The Electronic Health Record         | 4             |
| 4006-345                          | Medical Informatics Seminar          | 1             |
| 4003-334                          | Computer Science 4                   | 4             |
| 4003-485                          | Database Concepts                    | 4             |
| 4006-420                          | Medical Database Architectures       | 4             |
| 1001-201, 202, 203                | General Biology I, II, III           | 9             |
| 1001-205, 206, 207                | General Biology Lab                  | 3             |
| 1016-351                          | Probability and Statistics           | 4             |
|                                   | Liberal Arts*                        | 4             |
|                                   | Free Elective                        | 4             |
| <b>Third Year</b>                 |                                      |               |
| 4006-430                          | Medical Application Integration      | 4             |
| 4003-345                          | Computer Organization                | 4             |
| 4003-420                          | Data Communication and Networks      | 4             |
| 4010-361                          | Software Engineering                 | 4             |
|                                   | Computing Elective                   | 4             |
| 1026-350, 360                     | Anatomy and Physiology               | 10            |
| 1026-205                          | Diagnostic Medical Imaging           | 2             |
|                                   | Liberal Arts*                        | 8             |
|                                   | Free Elective                        | 4             |
|                                   | Wellness Education†                  | 0             |
| 4002-499                          | Cooperative Education                | Co-op         |
| <b>Fourth Year</b>                |                                      |               |
|                                   | Computing Electives                  | 12            |
| 1011-215, 216, 217                | General and Analytical Chemistry     | 10            |
| 1011-205, 206, 227                | General and Analytical Chemistry Lab | 3             |
|                                   | Liberal Arts*                        | 16            |
|                                   | Free Elective                        | 4             |
| 4002-499                          | Cooperative Education                | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                      | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

### Medical informatics, BS degree, typical course sequence, information technology track

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 4006-230           | Computers in Medicine                             | 4             |
| 4006-240           | Introduction to Medical Informatics               | 4             |
| 4002-217, 218, 219 | Programming for Information Technology I, II, III | 12            |
| 4002-320           | Introduction to Multimedia: Web                   | 4             |
| 1026-301           | Medical Terminology                               | 3             |
| 1016-225           | Algebra for Management                            | 4             |
| 1016-205, 206      | Discrete Math for Tech I, II                      | 8             |
|                    | Liberal Arts*                                     | 8             |
| 4002-201           | Freshman Seminar                                  | 1             |
| 1105-051, 052      | First-Year Enrichment                             | 2             |
|                    | Wellness Education†                               | 0             |
| <b>Second Year</b> |   |               |
| 4006-310           | Developing Medical Applications                   | 4             |

| COURSE                            |                                      | QTR. CR. HRS. |
|-----------------------------------|--------------------------------------|---------------|
| 4006-410                          | The Electronic Health Record         | 4             |
| 4006-345                          | Medical Informatics Seminar          | 1             |
| 4002-360                          | Database and Data Modeling           | 4             |
| 4002-461                          | Fundamental Data Modeling            | 4             |
| 4006-420                          | Medical Database Architectures       | 4             |
| 1001-201, 202, 203                | General Biology I, II, III           | 9             |
| 1001-205, 206, 207                | General Biology Lab                  | 3             |
| 1016-319                          | Data Analysis                        | 4             |
|                                   | Liberal Arts*                        | 4             |
|                                   | Free Elective                        | 4             |
| <b>Third Year</b>                 |                                      |               |
| 4006-430                          | Medical Application Integration      | 4             |
|                                   | Information Technology Electives     | 8             |
| 4050-350                          | Computer System Fundamentals         | 4             |
| 4050-351                          | Network Fundamentals                 | 4             |
| 1026-350, 360                     | Anatomy and Physiology               | 10            |
| 1026-205                          | Diagnostic Medical Imaging           | 2             |
|                                   | Liberal Arts*                        | 8             |
|                                   | Free Elective                        | 4             |
|                                   | Wellness Education†                  | 0             |
| <b>Fourth Year</b>                |                                      |               |
|                                   | Information Technology Electives     | 12            |
| 1011-215, 216, 217                | General and Analytical Chemistry     | 10            |
| 1011-205, 206, 227                | General and Analytical Chemistry Lab | 3             |
|                                   | Liberal Arts*                        | 16            |
|                                   | Free Elective                        | 4             |
| 4002-499                          | Cooperative Education                | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                      | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Department of Networking, Security, and Systems Administration

### Applied Networking and System Administration, BS

<http://www.nssa.rit.edu/>

**Sylvia Perez-Hardy, Chair**

**(585) 475-7941, [Sylvia.Perez-Hardy@rit.edu](mailto:Sylvia.Perez-Hardy@rit.edu)**

### Program overview

Networking is the technology of interconnecting multiple computers so information can flow between them. As the number of computers in the network scales up, the task becomes more difficult, involving design tradeoffs, performance considerations, and cost issues. Applied networking refers to the design, construction, operation, and maintenance of computer networks using off-the-shelf components. This includes activities as simple as cable construction to those as complex as the configuration of services and protocols to enable an entire intranet and the support of that environment.

Systems administration is the installation, configuration, operation, and support of computer systems. This includes the specification and implementation of server hardware and software.

Both areas are concerned with the security and privacy of the information that servers maintain. In today's information-rich environment, servers exist at the heart of a network and often work together to provide services and a central repository for information.

## Curriculum

The BS degree in applied networking and system administration is designed to teach students to be the designers, implementers, operators, and maintainers of computing networks and networked systems (both clients and servers). Graduates will evaluate existing networks and computing systems, suggest improvements, monitor such systems for faults, and plan for growth. They work in small- to large-scale companies.

An important goal of the program is to provide students with a level of specialization in this area beyond that provided by information systems or information technology programs. To accomplish this, the program focuses specifically on the network or computing system and overall favors depth over breadth. It is this approach that allows faculty to guide students in their exploration of the technologies.

Students must complete 182 quarter credit hours to graduate from the program. Entering freshmen will earn most (if not all) of those credits at RIT. For transfer students, up to two years' worth of credits may be transferred from course work completed at previous schools.

The program includes required core courses and advanced track curriculum. The core includes a programming sequence, competency courses in multimedia and database, and a sequence in user-centered deployment. These are in addition to fundamental courses in computer networking and system administration. In addition to 60 credits of core courses, students will select 20 credits of advanced work.

### Advanced track

The advanced track of study for the program requires students to choose five of the following courses:

|          |                                 |
|----------|---------------------------------|
| 4050-403 | Wireless Network Concepts       |
| 4050-422 | System Administration II        |
| 4050-423 | System Administration III       |
| 4050-519 | Network Troubleshooting         |
| 4050-521 | Perl for System Administration  |
| 4050-530 | Telephony Integration           |
| 4050-550 | VoIP Security and QoS           |
| 4050-540 | Network Design and Performance  |
| 4050-545 | Advanced Routing and Switching  |
| 4050-582 | Wireless Ad-Hoc/Sensor Networks |

Students may also select themed groupings, such as the following:

#### Network Administration

|          |                                 |
|----------|---------------------------------|
| 4050-519 | Network Troubleshooting         |
| 4050-530 | Telephony Integration           |
| 4050-540 | Network Design and Performance  |
| 4050-545 | Advanced Routing and Switching  |
| 4050-582 | Wireless Ad-Hoc/Sensor Networks |

#### Systems Administration

|          |                                |
|----------|--------------------------------|
| 4050-422 | System Administration II       |
| 4050-423 | System Administration III      |
| 4050-521 | Perl for System Administration |
| 4050-530 | Telephony Integration          |
| 4050-540 | Network Design and Performance |

## Applied networking and system administration, BS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 4050-202                          | Introduction to UNIX/Linux Seminar                             | 1             |
| 4002-208, 210, 4050-212           | C++ Programming Sequence                                       | 12            |
| 4050-350                          | Computer System Fundamentals                                   | 4             |
| 4050-220                          | Cyber Self-Defense   | 4             |
| 4002-320                          | Introduction to Multimedia: The Internet and the Web           | 4             |
| 1016-204                          | College Algebra  | 4             |
| 1016-205, 206                     | Discrete Math for Technologists I, II                          | 8             |
|                                   | Liberal Arts*  | 12            |
| 1105-051, 052                     | First-Year Enrichment  | 2             |
| 4050-351                          | Networking Fundamentals  | 4             |
| <b>Second Year</b>                |  |               |
| 4050-302                          | Scripting in Perl  | 4             |
| 4050-515                          | Introduction to Routing and Switching                          | 4             |
| 4050-421                          | System Administration I  | 4             |
| 4050-413                          | Application of Wireless Networks                               | 4             |
| 4002-360                          | Introduction to Database and Data Modeling                     | 4             |
| 1016-319                          | Data Analysis  | 4             |
|                                   | Lab Science Electives  | 8             |
|                                   | Liberal Arts*  | 12            |
| 4050-203                          | Co-op Preparation Seminar                                      | 1             |
| <b>Third and Fourth Years</b>     |  |               |
|                                   | Cooperative Education (three quarters required after year two) | Co-op         |
| 4050-516                          | Network Services   | 4             |
| 4002-455                          | Needs Assessment   | 4             |
| 4002-460                          | Technology Transfer  | 4             |
|                                   | Advanced Track Courses‡  | 20            |
|                                   | Liberal Arts*  | 12            |
|                                   | Free Electives   | 20            |
|                                   | General Education Electives                                    | 14            |
|                                   | Communication Elective   | 4             |
|                                   | Wellness Education†  | 0             |
| <b>Total Quarter Credit Hours</b> |  | <b>182</b>    |

\* Please see Liberal Arts General Education Requirement for more information.

† Please see Wellness Education Requirement for more information.

‡ A five-course advanced work track is required.

## Additional information

### Cooperative education

Students will complete three quarters of cooperative education. Students have found co-op positions in nearly every type of business that requires a computer network or server. These vary from small- or medium-sized businesses to large international companies, from computing-centric organizations (network hardware manufacturers, software services providers) to those that are users of information technology (manufacturing companies, school districts, and the entertainment industry). Co-op gives students real-world experience and an edge when applying for jobs after graduation. Typically, co-ops occur during the summers following the second and third years and during one of the academic quarters in the third year. Students must complete their co-op requirement prior to completing their course work and preferably prior to their senior year.

## Part-time study

The program is available on a part-time basis. Courses are available during the day and in the evening to accommodate those who work. The typical evening student requires 26 quarters to complete the BS degree. Please refer to the *Part-time Undergraduate Bulletin* for more information on this option.

## Information Security and Forensics, BS

<http://www.nssa.rit.edu/>

**Sylvia Perez-Hardy, Chair**

**(585) 475-7941, [Sylvia.Perez-Hardy@rit.edu](mailto:Sylvia.Perez-Hardy@rit.edu)**

## Program overview

The scope of computer networks and the span of these systems increases in organizations every day. At the same time, industry and society's dependence on these technologies is growing, as is the creation of damaging software that attacks computing systems and networks. Therefore, security has become a major concern. The result is an increased need for people and technologies that can secure information infrastructures and protect them from attack.

The BS degree in information security and forensics produces professionals who understand people and processes. In addition to possessing state-of-the-art knowledge in the preservation of information assets, students become experts in the identification of computer security vulnerabilities. Students also understand the forensic requirements needed to prove an attack occurred, identify its origin, assess the extent of the damage or loss of information, and design strategies that ensure data can be recovered.

An important goal of the program is to provide students with a level of specialization in information security and forensics beyond what is provided by more general programs offered in information systems or information technology. RIT accomplishes this by focusing on network and computing system security and forensics. The program favors depth over breadth, affording students sufficient time to explore the issues and technologies of computer and network security.

## Curriculum

The program requires students to complete 182 quarter credit hours. For transfer students, some of these credits may be transferred from course work completed at other accredited institutions.

The program features both required core courses and an advanced track. The core includes a programming sequence, an ethics course, a computer networking and system administration sequence, and foundation courses in computer and network security. In addition to 64 quarter credit hours of core courses, students will select one of two advanced tracks for 16 quarter credit hours.

### Advanced tracks

Students select one of the following two tracks. Before beginning either advanced track, they must successfully complete Ethics in Information Technology (4002-415).

#### Network and Wireless Security

|          |   |
|----------|---|
| 4050-517 | Network Forensics and Security              |
| 4050-523 | Security of Wireless Networks               |
| 4050-525 | Wireless Ad-hoc and Sensor Network Security |
| 4050-585 | Networks and System Security Audits         |

#### Computer System Security

|          |                                     |
|----------|-------------------------------------|
| 4050-422 | System Administration II            |
| 4050-580 | Computer System Security            |
| 4050-581 | Computer System Forensics           |
| 4050-585 | Networks and System Security Audits |

## Information security and forensics, BS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 4050-202                          | Introduction to UNIX/Linux Seminar                             | 1             |
| 1105-051, 052                     | First-Year Enrichment  | 2             |
| 4050-220                          | Cyber Self-Defense   | 4             |
| 4002-208, 210                     | C++ Programming I, II  | 8             |
| 4050-350                          | Computer System Fundamentals                                   | 4             |
| 4050-351                          | Network Fundamentals   | 4             |
| 1016-204                          | College Algebra  | 4             |
| 1016-205, 206                     | Discrete Math for Technologists I, II                          | 8             |
|                                   | Liberal Arts*  | 16            |
| <b>Second Year</b>                |  |               |
| 4050-413                          | Application of Wireless Networks                               | 4             |
| 4050-302                          | Scripting in Perl  | 4             |
| 4050-212                          | Client/Server Programming                                      | 4             |
| 4050-360                          | Information Security Policies                                  | 4             |
| 4050-515                          | Introduction to Routing and Switching                          | 4             |
| 4050-421                          | System Administration I  | 4             |
| 4050-365                          | Cryptography and Authentication                                | 4             |
| 1016-319                          | Data Analysis  | 4             |
|                                   | Lab Science Electives  | 8             |
|                                   | Liberal Arts*  | 8             |
|                                   | Wellness Education†  | 0             |
| 4050-203                          | Co-op Preparation Seminar                                      | 1             |
| <b>Third and Fourth Years</b>     |  |               |
|                                   | Cooperative Education (three quarters required after year two) | Co-op         |
| 4050-460                          | Introduction to Computer Malware                               | 4             |
| 4050-516                          | Network Services   | 4             |
| 4002-415                          | Ethics in Information Technology                               | 4             |
| 4002-455                          | Needs Assessment   | 4             |
|                                   | Advanced Track Courses‡  | 16            |
|                                   | Liberal Arts*  | 12            |
|                                   | Free Electives   | 20            |
|                                   | Communications Elective  | 4             |
|                                   | General Education Electives                                    | 14            |
|                                   | Wellness Education†  | 0             |
| <b>Total Quarter Credit Hours</b> |  | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education for more information.

‡ A four-course advanced track is required. Students must complete either the networking security track or the computer system security track.

## Additional information

### Cooperative education

Students complete three quarters of cooperative education, which enables them to work in a variety of organizations, from small- or medium-sized businesses to large international companies or law enforcement organizations, that require computer systems or computer networks. These may be security-centric businesses (law enforcement agencies, security auditors) to users of information technology (manufacturing companies, school districts, health care). Completing a co-op provides real-world experience and an

edge when applying for jobs after graduation. Typically, the first co-op occurs during the summer following the second year. The remaining co-ops may occur during the student's third year or the following summer. Students must complete the co-op requirement prior to completing their course work.

### Part-time study

The program is available on a part-time basis. Courses can be completed during the day and in the evening to accommodate those who work, regardless of their schedules. The typical evening student requires 26 quarters to complete the BS degree. Please refer to the part-time undergraduate guide for more information on this option.

## School of Interactive Games and Media

### Game Design and Development, BS

[igm.rit.edu/](http://igm.rit.edu/)

**Andrew Phelps, Director**  
(585) 475-6758, [andy@mail.rit.edu](mailto:andy@mail.rit.edu)

### Program overview

The BS in game design and development allows students to explore the entertainment technology landscape, as well as related areas, while pursuing a broad-based university education. The program has its technical roots in computing and information sciences. Simultaneously, students explore the breadth of development processes through involvement in topics such as game design, design process, and animation.

The program focuses on development while meeting the industry need for developers who will be involved in the design process from inception through completion. The degree is for students who aspire to careers within the professional games industry or a related field such as simulation, edutainment, or visualization. It focuses on producing graduates who understand the technical roots of their medium, the possibilities that creative application of software development affords, and the way in which their industry operates. This degree also provides students with a core computing education that prepares them for graduate study in a number of computing fields and for employment in more general computing professions.

### Curriculum

The program is a four-year undergraduate program in which students complete a core of required course work and then pursue advanced studies that can be customized to individual interests and career goals. In addition, all students complete general education requirements in the liberal arts, social sciences, mathematics, and laboratory sciences. Students can further customize their experience through both general education electives and free electives.

In particular, the program integrates strong programming skills, which are mandatory in the game development field, with game design and collaborative skills essential to success in the games industry, where multifaceted professionals are in high demand to work on game development teams.

### Game design and development, BS degree, typical course sequence

| COURSE  |   | QTR. CR. HRS. |
|---|---|---------------|
| <b>First Year</b>                                     |   |               |
| 4080-201  | Freshman Seminar in Game Design and Development                   | 1             |
| 4080-221, 222, 223                                    | Game Software Development I, II, III                              | 12            |
| 4080-295  | Introduction to Interactive Media                                 | 4             |
| 1016-230  | Pre-Calculus  | 4             |
| 1016-205, 206   | Discrete Math for Technologists I, II                             | 8             |
| <i>Choose one of the following physics sequences:</i> |   |               |
| 1017-211, 212   | College Physics I, II   | 4             |
| 1017-311, 312   | University Physics I, II  | 4             |
|   | Liberal Arts*   | 12            |
|   | Wellness Education†   | 0             |
| 1720-050, 052   | Discovery/Pathways  | 2             |
| <b>Second Year</b>                                    |   |               |
| 4080-330  | Interactive Digital Media   | 4             |
| 4002-360  | Introduction to Database and Data Modeling                        | 4             |
| 4080-346  | 2D Animation for Interactive Media                                | 4             |
| 4080-347  | 3D Modeling and Animation for Interactive Media                   | 4             |
| 4080-309  | Introduction to Website Design                                    | 4             |
| 4080-380, 381   | Fundamentals of Game Design and Development I, II                 | 8             |
| 4080-387  | Data Structures and Algorithms for Game Design and Development I  | 4             |
| 4050-210  | Networking Essentials   | 4             |
| 1016-228  | Analytic Geometry   | 4             |
|   | Liberal Arts*   | 8             |
| <b>Third and Fourth Years</b>                         |   |               |
|   | Cooperative Education‡  | Co-op         |
| 4080-417  | Visual C++ for Programmers  | 4             |
| 4080-434  | Programming for Digital Media                                     | 4             |
| 4002-425  | HCI1: Human Factors   | 4             |
| 4080-487  | Data Structures and Algorithms for Game Design and Development II | 4             |
|   | Advanced Studies§   | 20            |
|   | Liberal Arts*   | 16            |
|   | General Education Electives                                       | 18            |
|   | Free Electives  | 12            |
| <b>Total Quarter Credit Hours</b>                     |   | <b>181</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirements for more information.

‡ Three quarters of cooperative education are required after year two.

§ Five courses chosen from a pool of 16 advanced game design and development electives in areas such as computer graphics programming, multi-user interactivity, animation, artificial intelligence, writing for interactive media, and database/server programming.

### Cooperative education

Students are required to complete three quarters of cooperative education. Co-op students have found work in the games industry and related domains, both regionally and nationally, at companies both large and small. Co-op gives students real-world experience, a definite edge when applying for jobs after graduation.

The design of this program had considerable input from leaders in the games industry. Companies want employees who can work in interdisciplinary teams, and they actively recruit our graduates into the games industry.



## New Media Interactive Development, BS

[igm.rit.edu](http://igm.rit.edu)

**Andrew Phelps, Director**

**(585) 475-6758, [andy@mail.rit.edu](mailto:andy@mail.rit.edu)**

### Program overview

The last decade has seen unprecedented innovation in technologies for communication, computation, interactivity, and delivery of information. New media touch nearly all of us daily through online games, search engines, dynamic and personalized websites, high-definition home entertainment, handheld devices, and instant connectivity. Educators, advertising agencies, design studios, and a wide variety of industries use new media to reach target audiences for advertising, entertaining, training, transacting business, and expressing creative ideas.

Two huge underlying factors—Internet connectivity and computer processing—have transformed the media landscape dramatically. New media are dynamic, personalized, and connected. They change the way we learn, communicate, affiliate, and play. For the world to benefit from these changes there is a need for practitioners who can integrate evolving technologies with creative disciplines.

In a field that is changing rapidly, successful practitioners must have a solid foundation in cutting-edge technologies, a well-honed sense of design, and the skills to put creative ideas into practice. The new media interactive development program has been carefully formulated to provide students with a balanced background in design and technology, and an emphasis on independent problem solving in a constantly evolving field.

### Curriculum

The BS degree in new media interactive development features core courses; specialty courses in the areas of graphic design, photographic imaging, video, publishing, programming, and interactive games and media; and a senior project that brings together all of the curriculum into a singular project at the conclusion of the academic program.

The senior project tackles real-world new media issues and provides an opportunity for students to hone their skills in collaboration with students from different disciplines in a setting that mirrors current industry practice.

Leaders from the new media industry had considerable input to the design and structure of the program. The course work ensures that students gain experience working on interdisciplinary teams and brings the value of their senior project and cooperative education experiences together to enhance the overall educational experience.

### Cooperative education

In addition to the senior project, new media interactive development students are required to complete three quarters of cooperative education. This gives students real-world experience and an edge when applying for jobs after graduation.

### New media interactive development, BS degree, typical course sequence

| COURSE            |   | QTR. CR. HRS. |
|-------------------|---|---------------|
| <b>First Year</b> |   |               |
| 4080-229          | Introduction to New Media Interactive Development | 4             |

| COURSE                            |   | QTR. CR. HRS.  |
|-----------------------------------|---|----------------|
| 4080-295                          | Introduction to Interactive Media               | 4              |
| 2009-221                          | Principles: Imaging for New Media               | 4              |
| 4080-230                          | Introduction to Programming for New Media       | 4              |
| 4080-231                          | Programming II for New Media                    | 4              |
| 2009-213                          | Elements of Graphic Design                      | 3              |
| 4050-210                          | Networking Essentials                           | 4              |
| 4080-309                          | Introduction to Website Development             | 4              |
|                                   | Wellness Education†                             | 0              |
| 1016-230                          | Pre-Calculus                                    | 4              |
|                                   | Liberal Arts*                                   | 12             |
| 1720-050, 052                     | Discovery/Pathways                              | 2              |
| <b>Second Year</b>                |   |                |
| 4080-333, 334                     | Programming for New Media III, IV               | 8              |
|                                   | New Media Studio Electives‡                     | 6-8            |
| 4080-323                          | Design of the Graphical User Interface          | 4              |
| 4080-431, 432                     | New Media Web Technologies I, II                | 8              |
| 1016-205, 206                     | Discrete Math for Technologists I, II           | 8              |
|                                   | Liberal Arts*                                   | 12             |
|                                   | Cooperative Education (three quarters required) | Co-op          |
| <b>Third and Fourth Year</b>      |   |                |
|                                   | New Media Advanced Electives§                   | 24             |
| 1016-319                          | Data Analysis                                   | 4              |
|                                   | Lab Science Electives                           | 8              |
|                                   | Liberal Arts*                                   | 12             |
|                                   | General Education Electives                     | 18             |
|                                   | Free Electives                                  | 12             |
| 4080-560, 565                     | New Media Team Project I, II                    | 8              |
| <b>Total Quarter Credit Hours</b> |   | <b>180-182</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Two courses selected out of a pool of five will cover topics such as animation, video, typography, and game design.

§ Six advanced new media courses form a track selected by the student in consultation with an adviser.

## Department of Software Engineering

### Software Engineering, BS

<http://www.se.rit.edu/>

**James Vallino, Chair**

**(585) 475-2991, [J.Vallino@se.rit.edu](mailto:J.Vallino@se.rit.edu)**

### Program overview

As software becomes ever more common in everything from airplanes to appliances, there is an increasing demand for engineering professionals who can develop high-quality, cost-effective software systems. The BS in software engineering is a unique program that combines traditional computer science and engineering with specialized course work in software engineering.

Students learn principles, methods, and techniques for the construction of complex and evolving software systems. The program encompasses technical issues affecting software architecture, design, and implementation as well as process issues that address project management, planning, quality assurance, and product maintenance. Upon graduation, students are prepared for immediate employment and long-term professional growth in software development organizations.

## Curriculum

An important component of the curriculum is complementary course work in related disciplines. As with other engineering fields, mathematics and the natural sciences are fundamental. In addition, students must complete courses in related fields of engineering, business, or science. Three engineering electives, plus a three-course sequence in an application domain, provide the opportunity to connect software engineering principles to areas in which they may be applied. A required course in economics or finance bridges software engineering with the realities of the business environment.

The liberal arts component of the program consists of six core courses and a three-course concentration. A required ethics course helps students develop a sense of professionalism and social responsibility in the technical world.

### Senior projects in software engineering

One of the hallmarks of RIT's engineering programs is a senior project sequence that each student completes before graduation. Software engineering students take this two-course sequence during the winter and spring quarters prior to graduation. The goal of the course is to have seniors synthesize and apply the knowledge and experience they have gained at RIT and on co-op assignments.

**Winter quarter:** At the start of the winter quarter, students organize themselves into teams, based on the number and complexity of the projects available. The bulk of the winter quarter is primarily devoted to requirements elicitation and architectural design, but also may include detailed design, prototyping, and even production, depending on the nature of the project. In addition, teams are responsible for assigning specific roles to team members and developing a project plan that includes scheduled, concrete milestones.

**Spring quarter:** The spring quarter is devoted to tactical issues of development and deployment. It is during this quarter that the careful planning and disciplined design from the winter quarter bear fruit in the construction, integration, testing, and demonstration of a complete system.

Companies and other organizations with challenging technical problems frequently contact software engineering faculty, and in many cases these problems are appropriate for assignment to a senior project team.

Companies and organizations that have sponsored senior projects include Nortel Networks, Northrup Grumman Security Systems, Intel Corp., Webster Financial Group, Primavera Systems, Nokia, IBM Thomas Watson Research, PaeTec Communications, Alstom Signaling Inc., Eastman Kodak Co., RIT Information and Technology Services, Harris Corporation (RF Communications Division), the Air Force Research Laboratory, Excellus Blue Cross Blue Shield, Telecom Consulting Group NE Corp. (TCN), and Videk.

### Cooperative education

Students must complete four quarters of cooperative education prior to graduation. Students typically begin co-op in their third year of study, alternating academic quarters and co-op blocks. To ensure that co-op is integrated with the academic program, students must complete their final co-op block prior to taking Software Engineering Project I (4010-561).

## Software engineering, BS degree, typical course sequence

| COURSE   |  | QTR. CR. HRS. |
|--|--|---------------|
| <b>First Year</b>                              |  |               |
| 4010-101                                       | Freshman Seminar                               | 1             |
| 4003-241                                       | Problem-Based Introduction to Computer Science | 4             |
| 4003-242                                       | Data Structure Problem Solving                 | 4             |
| 4003-243                                       | Object-Oriented Programming                    | 4             |
| 1016-281, 282, 283                             | Calculus I, II, III                            | 12            |
| 1016-265, 366                                  | Discrete Mathematics I, II                     | 8             |
|  | Liberal Arts*                                  | 8             |
|  | Wellness Education†                            | 0             |
| 1720-050 052                                   | First-Year Enrichment I, II                    | 2             |
| <b>Second Year</b>                             |  |               |
| 4010-350                                       | Personal Software Engineering                  | 4             |
| 4010-361                                       | Software Engineering                           | 4             |
| 4010-362                                       | Engineering of Software Subsystems             | 4             |
| 0535-351                                       | Professional Communications                    | 4             |
| 1017-311                                       | University Physics 1                           | 4             |
| Choose one of the following science sequences: |  | 8             |
| 1017-312, 313                                  | University Physics II, III                     |               |
| 1011-215, 216<br>205, 206                      | Chemical Principles I, II, and Labs            |               |
| 1001-201, 202,<br>205, 206                     | General Biology I, II, and Labs                |               |
| 1016-314                                       | Engineering and Statistics                     | 4             |
| 0306-340                                       | Engineering Fundamentals of Computer Systems   | 4             |
| 4003-380                                       | Introduction to Computer Science Theory        | 4             |
|  | Liberal Arts*                                  | 8             |
|  | Wellness Education†                            | 0             |
| <b>Third, Fourth, and Fifth Year</b>           |  |               |
|  | Math/Science Elective‡                         | 4             |
| 4010-456                                       | Software Process and Project Management        | 4             |
| 4010-444                                       | Engineering Methods for Software Usability     | 4             |
| 4010-441                                       | Principles of Concurrent Systems               | 4             |
| 4010-540                                       | Principles of Software Architecture and Design | 4             |
| 4010-420                                       | Formal Methods of Specification and Design     | 4             |
| 4010-555                                       | Software Requirements Engineering              | 4             |
| 4010-561, 562                                  | Software Engineering Project 1, 2              | 8             |
|  | Software Engineering Electives**               | 12            |
|  | Application Domain Electives§                  | 12            |
|  | Engineering Electives††                        | 12            |
|  | Free Electives                                 | 12            |
|  | Liberal Arts*                                  | 20            |
|  | Cooperative Education (four quarters required) | Co-op         |
| <b>Total Quarter Credit Hours</b>              |  | <b>195</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Software engineering majors are required to take one four-credit math/science elective from the following list: College Chemistry (1011-208), General Biology (1011-201), Matrix Algebra (1016-331), Combinatorial Mathematics (1016-365), Differential Equations (1016-306) or Theory of Graphs and Networks (1016-467)

§ Each student must complete a three-course sequence in an application domain related to software engineering. Current domains include industrial and systems engineering, bioinformatics, business applications, computational mathematics, computer security, economics, interactive entertainment, public policy, remote sensing, usability, computer engineering, artificial intelligence, scientific and engineering computing, imaging and publishing technology.

\*\* Students must choose three of the following courses: Principles of Distributed Software Systems (4010-442), Principles of Information Systems Design (4010-443), Software Process and Product Quality (4010-450), Software Testing (4010-452), or Agile Software Development (4010-556).

†† Each student must complete three separate or related engineering electives. Choices can be made from software engineering, industrial and systems engineering, computer engineering, and other pre-approved computer science courses. Prerequisites apply.

## Additional information

### Laboratories

Equipped with the latest technology, the software engineering department's facilities include three student instructional studio labs, a specialized embedded systems lab, and a general users lab. In addition, our freshmen are encouraged to take advantage of the department's mentoring lab. Staffed by advanced software engineering students, the mentoring lab offers our newest students an environment where they can learn from those who have successfully fulfilled most of the program's academic requirements.

Students enrolled in software engineering courses also can use any of the department's 11 team rooms. Equipped with a computer and projector, Ethernet connections, a meeting table, comfortable seating for six, and generous whiteboard space, these rooms support the department's commitment to teamwork, both inside and outside the classroom.

Senior software engineering students have unrestricted access to the department's projects lab for the duration of their senior projects. All of these facilities are connected to the campus network and to the Internet.

## Exploration Programs

### Computing Exploration, Undeclared

**Jim Vallino, Computing Exploration Faculty Coordinator**  
(585) 475-2991, [jrvics@rit.edu](mailto:jrvics@rit.edu)

#### Program overview

The computing exploration option is designed for students who are interested in computing but are unsure whether computer science or software engineering is the correct choice for them. Students in the exploration option spend their first and part of their second year exploring computer science and software engineering before selecting a major.

The computing exploration option has been carefully designed so that students will stay on track for graduation regardless of whether they select the computer science or software engineering major. Each student is assigned an adviser who will meet regularly to discuss course selection, provide guidance, and discuss career options.

#### Curriculum

##### Computing exploration option, freshman course sequence

| COURSE         |  | QTR. CR. HRS. |
|----------------|--|---------------|
| Fall Quarter   |  |               |
|                | Introduction to Computing and Informatics      | 1             |
| 4003-241       | Problem-Based Introduction to Computer Science | 4             |
| 1016-281       | Project-Based Calculus                         | 4             |
|                | Liberal Arts*                                  | 8             |
| 1720-050       | First-Year Enrichment                          | 1             |
| Winter Quarter |  |               |
| 4003-242       | Data Structures for Problem Solving            | 4             |

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| 1016-282                   | Project-Based Calculus II               | 4             |
| 1016-265                   | Discrete Mathematics I                  | 4             |
|                            | Liberal Arts*                           | 4             |
| 1720-051                   | First-Year Enrichment                   | 1             |
| Spring Quarter             |   |               |
| 4003-243                   | OOP Using Java                          | 4             |
| 1016-283                   | Project-Based Calculus III              | 4             |
| 1016-366                   | Discrete Mathematics II                 | 4             |
|                            | Liberal Arts*                           | 4             |
|                            | Wellness Education†                     | 0             |
| Fall Quarter               |   |               |
| 4010-361                   | Introduction to Software Engineering    | 4             |
| 4003-380                   | Introduction to Computer Science Theory | 4             |
| 1017-311                   | University Physics                      | 4             |
|                            | Liberal Arts*                           | 4             |
| Total Quarter Credit Hours |   | 67            |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

### Informatics Exploration, Undeclared

**Jeffrey Laski, Informatics Exploration Faculty Coordinator**  
(585) 475-2284, [jalics@rit.edu](mailto:jalics@rit.edu)

#### Program overview

The informatics exploration option is designed for students who have an interest in computing but are unsure which program best meets their career goals. Students in the informatics exploration option will spend their first year exploring four programs of study—applied networking and system administration, information security and forensics, information technology, and medical informatics—before selecting one program as their major. This option has been carefully designed so that students may explore each program without wasting credits toward graduation. Each student will have an assigned academic adviser to provide guidance on course selection, minors, and career options.

#### Curriculum

##### Informatics exploration option, first-year course sequence

| COURSE                       |  | QTR. CR. HRS. |
|------------------------------|--|---------------|
| Fall Quarter                 |  |               |
|                              | Introduction to Computing and Informatics            | 1             |
| 4002-217                     | Programming for IT I                                 | 4             |
| 1016-205                     | Discrete Math for Technologists I                    | 4             |
|                              | Liberal Arts*  | 4             |
| 4002-320                     | Introduction to Multimedia: The Internet and the Web | 4             |
| 1720-050                     | First-Year Enrichment                                | 1             |
| Winter Quarter               |  |               |
| 4002-218                     | Programming for IT II                                | 4             |
| Choose one of the following: |  | 4             |
| 4050-220                     | Cyber Self-Defense                                   |               |
| 4006-240                     | Introduction to Medical Informatics                  |               |
|                              | Liberal Arts*  | 4             |
| Choose one of the following: |  | 4             |
| 1016-205                     | Discrete Math for Technologists I                    |               |
| 1016-206                     | Discrete Math for Technologists II                   |               |
| 1720-051                     | First-Year Enrichment                                | 1             |

| COURSE                              |  | QTR. CR. HRS. |
|-------------------------------------|--|---------------|
| <b>Spring Quarter</b>               |  |               |
| 4002-219                            | Programming for IT III                     | 4             |
| <i>Choose one of the following:</i> |  | 4             |
| 1016-206                            | Discrete Math for Technologists II         |               |
| 4002-360                            | Introduction to Database and Data Modeling |               |
|                                     | Lab Science Elective                       | 4             |
| 4050-350                            | Computer System Fundamentals               | 4             |
|                                     | Wellness Education†                        | 0             |
| <b>Total Quarter Credit Hours</b>   |  | <b>51</b>     |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## B. Thomas Golisano College of Computing and Information Sciences

**Andrew L. Sears**, BS, Rensselaer Polytechnic Institute; Ph.D., University of Maryland—Dean; Professor

**Wiley R. McKinzie**, BA, University of Wichita; MS, State University of New York at Buffalo—Vice Dean; Professor

### Computer Science

**Paul T. Tymann**, BS, MS, Syracuse University—Department Chair; Professor

**Reynold Bailey**, BS, Midwestern State University; MS, Ph.D., Washington University—Assistant Professor

**Ivona Bezakova**, BS, Comenius University (Slovakia); MS, Ph.D., University of Chicago—Assistant Professor

**Hans-Peter Bischof**, BS, MS, University of Ulm (Germany); Ph.D., University of Osnabrück (Germany)—Graduate Program Director; Professor

**Zack Butler**, BS, Alfred University; Ph.D., Carnegie Mellon University—Associate Professor

**Roxanne Canosa**, BS, State University College at Brockport; MS, Ph.D., Rochester Institute of Technology—Associate Professor

**Warren Carithers**, BS, MS, University of Kansas—Associate Professor

**Henry Etlinger**, BS, University of Rochester; MS, Syracuse University—Undergraduate Program Coordinator; Associate Professor

**Matthew Fluet**, BS, Harvey Mudd College; Ph.D., Cornell University—Assistant Professor

**Roger S. Gaborski**, BS, MS, State University of New York at Buffalo; Ph.D., University of Maryland—Professor

**Joe Geigel**, BS, Manhattan College; MS, Stevens Institute of Technology; Ph.D., George Washington University—Associate Professor

**James Heliotis**, BS, Cornell University; Ph.D., University of Rochester—Professor

**Edith Hemaspaandra**, BS, MS, Ph.D., University of Amsterdam (Netherlands)—Professor

**Christopher Homan**, AB, Cornell University; MS, Ph.D., University of Rochester—Associate Professor

**Trudy Howles**, BS, MS, Rochester Institute of Technology; Ph.D., Nova Southwestern University—Associate Professor

**Alan Kaminsky**, BS, Lehigh University; MS, University of Michigan—Associate Professor

**Fereydoun Kazemian**, BS, Queen Mary College (UK); MS, Pittsburgh State University; Ph.D., Kansas State University—Associate Professor

**Minseok Kwon**, BS, MS, Seoul National University (South Korea); Ph.D., Purdue University—Associate Professor

**Xumin Liu**, BE, Dalian University; ME, Jinan University (China); Ph.D., Virginia Polytechnic Institute—Assistant Professor

**Stanislaw Radziszowski**, MS, Ph.D., University of Warsaw (Poland)—Professor

**Rajendra K. Raj**, BS, Indian University of Technology; MS, University of Tennessee; Ph.D., University of Washington—Professor

**Manjeet Rege**, BS, University of Mumbai (India); MS, Eastern Michigan University; Ph.D., Wayne State University—Assistant Professor

**Leonid Reznik**, Degree of Electronics, Leningrad Institute of Aeronautical Construction (Russia); MS, St. Petersburg Aircraft Academy (Russia); Ph.D., St. Petersburg Polytechnic Institute—Professor

**Axel Schreiner**, MS, Northern Illinois University; Ph.D., University of Illinois—Professor

**Walter A. Wolf**, BA, Wesleyan University; MS, Rochester Institute of Technology; MA, Ph.D., Brandeis University—Professor

**Richard Zanibbi**, BA, MS, Ph.D., Queens University (Canada)—Assistant Professor

### School of Interactive Games and Media

**Andrew Phelps**, BFA, Bowling Green State University; MS, Rochester Institute of Technology—Director; Professor

**Jessica Bayliss**, BS, California State University, Fresno; MS, Ph.D., University of Rochester—Associate Professor

**Kevin Bierre**, BA, State University College at Geneseo; MS, Cornell University and Rochester Institute of Technology—Associate Professor

**John A. Biles**, BA, MS, University of Kansas—Professor

**Nancy Doubleday**, BS, MS, Rochester Institute of Technology—Associate Professor

**Christopher A. Egert**, BS, MS, Rochester Institute of Technology; Ph.D., University at Buffalo—Associate Director; Associate Professor

**Gordon Goodman**, BS, State University of New York at Binghamton; MS (IT), MS (CS), Rochester Institute of Technology—Professor

**W. Michelle Harris**, MPS, New York University—Associate Professor

**Tona Henderson**, BS, Southwest Missouri State University; MS, University of Missouri—Associate Professor

**Jay Alan Jackson**, BS, MS, Ph.D., Florida State University—Associate Professor

**Stephen Jacobs**, BA, MA, New School for Social Research—Associate Professor

**Anthony Jefferson**, BS, State University College at Oswego; MBA, Rochester Institute of Technology—Lecturer

**Stephen Kurtz**, BA, University of Miami; MS, MFA, Rochester Institute of Technology—Professor

**Elizabeth Lane Lawley**, AB, MLS, University of Michigan; Ph.D., University of Alabama—Professor

**Elouise Oyzon**, BFA, MFA, Rochester Institute of Technology—Associate Professor

**Jonathan Schull**, BS, Reed College; MA, Ph.D., University of Pennsylvania—Associate Professor

**David I. Schwartz**, BS, MS, Ph.D., University of Buffalo—Associate Professor

**Erik Vick**, BS, MS, Ph.D., University of Central Florida—Assistant Professor

**Keith Whittington**, BS, Rensselaer Polytechnic Institute; MS, Nova Southeastern University—Associate Professor

### School of Informatics

**Evelyn P. Rozanski**, BS, State University College at Brockport; MS, Syracuse University; Ph.D., State University of New York at Buffalo—Professor

### Information Sciences and Technologies

**Jeffrey A. Lasky**, BBA, City College of New York; MBA, City University of New York; MS, University of Minnesota—Department Chair; Professor

**Catherine I. Beaton**, BA, B.Ed., MITE, Dalhousie University (Canada)—Associate Professor

**Dianne P. Bills**, BA, University of Rochester; MS, Rochester Institute of Technology—Graduate Program Director; Associate Professor

**Daniel S. Bogaard**, BFA, Indiana University; MS, Rochester Institute of Technology—Associate Professor

**Sean Boyle**, BS, MS, Rochester Institute of Technology—Lecturer

**Deborah Coleman**, AAS, Rochester Institute of Technology; BS, Empire State College; MS, Rochester Institute of Technology—Associate Professor

**Michael Floeser**, AAS, BS, MS, , Rochester Institute of Technology—Lecturer

**Anne Haake**, BA, Colgate University; MS, University of South Carolina; MS, Rochester Institute of Technology; Ph.D., University of South Carolina—Associate Professor

**Edward Holden**, BA, State University College at Oswego; MBA, Rochester Institute of Technology—Associate Professor

**Jai Kang**, BS, Seoul National University (South Korea); MA, Kent State University; MS, Georgia Institute of Technology; Ph.D., State University of New York at Buffalo—Associate Professor

**James Leone**, BS, University of Cincinnati; MA, Ph.D., Johns Hopkins University—Professor

**Rayno Niemi**, BS, MS, Ph.D., Rensselaer Polytechnic Institute—Professor

**Ronald Perry**, B. Tech, MS, Rochester Institute of Technology—Professor

**Evelyn P. Rozanski**, BS, State University College at Brockport; MS, Syracuse University; Ph.D., State University of New York at Buffalo—Professor

**Jeffrey Sonstein**, BA, MA, New College of California—Assistant Professor

**Nicholas Thireos**, BS, Wabash College; MS, Utah State University—Medical Informatics Program Director; Associate Professor

**Brian Tomaszewski**, BS, State University of New York at Albany; MA, University at Buffalo; Ph.D., Pennsylvania State University—Assistant Professor

**Ronald P. Vullo**, BS, LeMoyne College; Ed.M., Ph.D., University at Buffalo—Associate Professor

**Elissa M. Weeden**, BS, MS, Rochester Institute of Technology—Associate Professor, Faculty Associate for Undergraduate Affairs

**Michael A. Yacci**, BS, Ithaca College; MS, Rochester Institute of Technology; Ph.D., Syracuse University—Professor

**Qi Yu**, BS, Zhejiang University (China); M.E., National University of Singapore; Ph.D., Virginia Polytechnic Institute—Assistant Professor

**Stephen Zilora**, BS, University of Rochester; MS, New Jersey Institute of Technology—Associate Professor

### Networking, Security, and Systems Administration

**Sylvia Perez-Hardy**, BS, MBA, Cornell University—Department Chair; Associate Professor

**George Barido**, BS, State University College at Brockport; MS, Rochester Institute of Technology—Lecturer

**Charles B. Border**, BA, State University College at Plattsburgh; MBA, Ph.D., State University of New York at Buffalo—Associate Professor

**Tina Chapman-DaCosta**, BA, State University College at Brockport; MS, Rochester Institute of Technology—Senior Lecturer

**Bruce H. Hartpence**, BS, MS, Rochester Institute of Technology—Associate Professor

**Lawrence Hill**, BS, MS, Rochester Institute of Technology—Associate Professor

**Daryl Johnson**, BS, St. John Fisher College; MS, Rochester Institute of Technology—Associate Professor

**Daniel Kennedy**, BS, MS, Rochester Institute of Technology—Lecturer

**James Leone**, BS, University of Cincinnati; MA, Ph.D., Johns Hopkins University—Professor

**Peter Lutz**, BS, St. John Fisher College; MS, Ph.D., State University of New York at Buffalo—Professor

**Sharon P. Mason**, BS, Ithaca College; MS, Rochester Institute of Technology—Associate Professor

**Sumita Mishra**, BS, Patna University (India); BS, Ph.D, State University of New York at Buffalo—Assistant Professor

**Tae (Tom) Oh**, BS, Texas Tech University; MS, Ph.D., Southern Methodist University—Associate Professor

**Yin Pan**, BS, MS, Shanghai Normal University; MS, Ph.D., State University of New York at Binghamton—Associate Professor

**Nirmala Shenoy**, BE, ME, University of Madras (India); Ph.D., University of Bremen (Germany)—Professor

**William Stackpole**, BS, Roberts Wesleyan College; MS, Rochester Institute of Technology—Associate Professor

**Luther Troell**, BS, MA, Texas A&M University; Ph.D., University of Texas at Austin—Professor

**Harris Weisman**, BS, Cornell University; MBA, Rensselaer Polytechnic Institute—Lecturer

**Kaiqi Xiong**, MS, Ph.D., Claremont Graduate University; MS, Ph.D. North Carolina State University—Assistant Professor

**Bo Yuan**, BS, Shanghai Teachers' University (China); Ph.D., State University of New York at Binghamton—Associate Professor

### Software Engineering

**James Vallino**, BE, The Cooper Union; MS, University of Wisconsin; Ph.D., University of Rochester—Department Chair; Professor

**J. Scott Hawker**, BS, MS, Texas Technical University; Ph.D., Lehigh University—Associate Professor

**Daniel Krutz**, BS, St. John Fisher College; MS, Rochester Institute of Technology—Lecturer

**Stephanie A. Ludi**, BS, MS, California Polytechnic State University at San Luis Obispo; Ph.D., Arizona State University—Graduate Program Coordinator; Associate Professor

**Michael J. Lutz**, BS, St. John Fisher College; MS, State University of New York at Buffalo—Professor

**Kenn Martinez**, BS, Syracuse University; MS, Rensselaer Polytechnic Institute—Lecturer

**Andrew Meneely**, BA, Calvin College; Ph.D., North Carolina State University—Assistant Professor

**Thomas Reichlmayr**, BS, MS, Rochester Institute of Technology—Associate Professor

**Lihua Xu**, BS, Nanchang University (China); MS, Ph.D., University of California—Assistant Professor



# Kate Gleason College of Engineering

Harvey Palmer, Dean

[www.rit.edu/kgcoe](http://www.rit.edu/kgcoe)

## Programs of study

### Bachelor of Science degrees in:

|                             |    |
|-----------------------------|----|
| Biomedical Engineering      | 58 |
| Chemical Engineering        | 60 |
| Computer Engineering        | 61 |
| Electrical Engineering      | 63 |
| Industrial Engineering      | 66 |
| Mechanical Engineering      | 68 |
| Microelectronic Engineering | 71 |

The programs offered by the Kate Gleason College of Engineering prepare students for careers in industry or for graduate study in engineering and related fields. Students develop a strong intellectual foundation for lifelong learning through a balance of course work in the liberal arts, physical sciences, and professional studies. The college offers programs leading to bachelor of science degrees in biomedical, chemical, computer, electrical, industrial, mechanical, and microelectronic engineering. All students participate in a five-year program that integrates the college's comprehensive four-year academic program with five quarters of cooperative education experience.

Our engineering programs are strongly oriented toward mathematics and the physical sciences. The first two years emphasize these subjects to establish a foundation for the applied sciences and engineering subjects that follow in the third, fourth, and fifth years. Students acquire hands-on design experience in their first year, and engineering fundamentals are introduced as early as possible into the curriculum. This helps students develop a strong appreciation for the engineering discipline and to prepare them for meaningful work experience in their first co-op job, which usually occurs after the second year of study. Advanced courses in the discipline, as well as applications, are taught in the fourth and fifth years.

Each program of study has a full complement of technical and free electives so that students may tailor their educational experiences to address special interests and career goals. In particular, all programs offer the flexibility of pursuing minors in the full range of academic disciplines, from business to foreign languages to the arts. In their fifth year, all students participate in Senior Design. This course challenges students to work together to find solutions to industry-inspired engineering problems. A distinctive element of the Kate Gleason College is its broad-based, multidisciplinary design initiative that provides the opportunity for teams of students from a variety of disciplines to generate creative and innovative solutions to real-world problems.

In addition to the foundation and engineering courses in each program, students take a variety of other courses that enhance their education. In modern society, engineering decisions are rarely made without considering the ethical and socio-economic impacts. Because the ability to communicate clearly and effectively with others is indispensable to an engineer, a significant portion of each program's curriculum is devoted to the liberal arts. These courses sensitize students to the factors that surround most decision-making situations, improving their ability to communicate with others, making their professional lives more meaningful, and encouraging their positive impact on society.

## Goals

The overarching goals of the engineering program are:

- to educate students to be engineering professionals who are highly marketable and will make an immediate impact in the workplace, and
- to provide graduates with the educational foundation needed to succeed in selective graduate programs across the nation.

The Kate Gleason College accomplishes these goals by:

- integrating cooperative education into the program for all students,
- providing a strong foundation in mathematics and science as well as an appropriate balance between the liberal arts and technical courses,
- establishing an appropriate balance between the engineering design and engineering science components of the program,
- incorporating a strong laboratory component that is supported by outstanding laboratory facilities, and
- having a diverse faculty committed to engineering education.

Advances in engineering and technology are occurring at a rapid rate. Our career-oriented programs allow us to respond quickly to these changes, keeping our curriculum current and responsive to industry needs.

## Admission requirements

For more information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

## Faculty

The college's faculty is dedicated to teaching, research, and professional development with an emphasis on student involvement and success. Many faculty members have significant industrial experience that enhances their ability to convey the relevance of the subject matter in multiple contexts. Over 90 percent of the faculty members hold doctoral degrees.

## Facilities and resources

The engineering programs of the Kate Gleason College reside in a building complex that includes almost 300,000 square feet of classrooms, machine shops, computer-based design capabilities, and specialized laboratories for teaching and research. Highlights include an integrated circuit design center, computer labs with industry-standard CAD software packages, more than 10,000 square feet of clean-room laboratory space for the fabrication of integrated circuits, a machining and manufacturing center equipped with state-of-the-art computer numerically controlled (CNC) machinery, and a first-rate engineering design center to teach product development and innovation. The engineering complex offers wireless access throughout.

We take pride in the effectiveness with which engineering practice is integrated into our academic programs. All programs incorporate classroom and laboratory instruction, engineering research projects, and special projects to prepare students for their industrial work assignments or for advanced study in graduate school.

## Cooperative education

RIT's cooperative education requirement enhances the knowledge students acquire in the academic setting with on-the-job experience. The exposure is invaluable in bringing the engineering discipline to life for students, providing a meaningful framework for the complex concepts that are studied in the classroom. Co-op experiences also acquaint students with the constraints imposed by the industrial environment on the solution of real-world engineering problems and help them decide which career path would be most rewarding. Each student makes co-op employment arrangements with assistance from a co-op coordinator in the Office of Cooperative Education and Career Services.

Students typically begin co-op after two years of study, at a time when their educational background qualifies them for jobs that require meaningful engineering work. Two examples (A and B) of how cooperative education may be integrated into the academic program are shown.

| YEAR           |   | FALL  | WINTER | SPRING | SUMMER |
|----------------|---|-------|--------|--------|--------|
| One and two    |   | RIT   | RIT    | RIT    |        |
| Three and four | A | RIT   | Co-op  | RIT    | Co-op  |
|                | B | Co-op | RIT    | Co-op  | RIT    |
| Five           | A | RIT   | Co-op  | RIT    |        |
|                | B | Co-op | RIT    | RIT    |        |

## Accreditation

All of the college's bachelor of science programs are fully committed to achieving and maintaining national accreditation by ABET (Accreditation Board of Engineering and Technology), which is a prerequisite for licensure as a Professional Engineer in many states. In their final quarter of study, all graduating seniors are eligible and encouraged to sit for the Fundamentals of Engineering section of the New York State Professional Engineering examination.

## Advising

Upon entry into the Kate Gleason College, each student is assigned a faculty adviser who is available for academic advising and career counseling. In addition, the college's Student Services Office provides specialized co-curricular programs and individual counseling to meet students' needs.

## Academic enrichment

*The Honors Program:* The Honors Program is designed to enrich the academic and professional experiences of some of the best students who apply to RIT. Honors participants have access to distinctive courses, receive special advising within the college, and enjoy privileges such as early registration and access to special housing. Engineering students enrolled in the Honors program will participate in a curriculum that focuses on product innovation for a global economy and strives to educate students about how engineers become leaders who shape the future of our society. Highlights include all-expenses-paid trips to key industry centers, which expose students to best practices in the conceptualization, development, design, and manufacture of innovative products from both a domestic and global perspective. Travel destinations have included a variety of major city centers known for their diverse portfolio of engineering companies (e.g., Seattle, San Francisco, Austin, Texas; and Guadalajara, Mexico). Seminars and social events with engineering faculty and advisers round out the program.

**Minors:** RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

**Study Abroad:** RIT encourages all students to consider a study abroad program. Students may study full time at a variety of host schools and are able to select both courses in their majors and/or liberal arts classes. The Study Abroad Office has information about foreign study options and opportunities. Students may choose to take advantage of a growing number of opportunities for study abroad, co-op placement outside the United States, or collaboration with students at an international university.

**Writing competency:** All students are required to be proficient in writing the English language. This is accomplished through required courses in the liberal arts and through writing requirements established and monitored by individual departments. A passing grade on the college's writing test, administered in the third, fourth, or fifth year, is required for graduation.

**Professional student organizations:** The college maintains memberships in the following professional organizations: Biomedical Engineering Society, American Institute of Chemical Engineers, American Society of Mechanical Engineers, Institute of Electrical and Electronic Engineers, Institute of Industrial Engineers, Micro-electronic Engineering Student Association, National Society of Black Engineers, Society of Automotive Engineers, Society of Hispanic Professional Engineers, Society of Manufacturing Engineers, and Society of Women Engineers.

### Special Opportunities

**Accelerated dual degree options:** Some programs offer accelerated, five-year dual BS/MS, BS/ME, or BS/MBA degree options. These degrees offer students the opportunity to earn a bachelor's degree and a master's degree in less time than pursuing each degree individually. Please refer to individual programs, the *Graduate Bulletin*, or the college's website for more information.

**Graduate study:** The college offers a doctorate degree in micro-systems engineering; master of science degrees in applied statistics, computer engineering, electrical engineering, industrial engineering, manufacturing engineering, materials science and engineering (offered jointly with the College of Science), mechanical engineering, microelectronic engineering, product development, and sustainable engineering; master of engineering degrees in engineering management, industrial engineering, mechanical engineering, microelectronics manufacturing engineering, sustainable engineering, and systems engineering; and advanced certificates in statistical methods for product and process improvement, statistical quality, and vibrations engineering. For more information regarding these graduate programs, please refer to the *Graduate Bulletin* or visit the college's website.

**Women and minorities in engineering:** The Kate Gleason College is proud of its many co-curricular programs that have helped build a strong sense of community among its students and faculty. Focused on student success, the college's Office of Student Services manages a variety of special programs to enhance the quality of the educational experience for female and minority engineering students.

WE@RIT is dedicated to increasing the representation of women within the engineering disciplines through outreach and community building. Current students can participate in these programs and learn valuable leadership skills, network with women engineers

in the area, and have access to resources that help prepare them for success. For more information visit [www.rit.edu/kgcoe/women/](http://www.rit.edu/kgcoe/women/).

## Biomedical Engineering, BS

<http://www.rit.edu/kgcoe/biomedical>

**Steven Weinstein, Head, Chemical/Biomedical Engineering**  
(585) 475-4299, [steven.weinstein@rit.edu](mailto:steven.weinstein@rit.edu)

**Dan Phillips, Director, Biomedical Engineering Program**  
(585) 475-2309, [dbpeee@rit.edu](mailto:dbpeee@rit.edu)

### Program overview

#### Educational objectives

The bachelor of science degree in biomedical engineering prepares graduates to:

- apply fundamental knowledge, skills, and tools of engineering in a wide variety of biomedical application domains.
- possess a broad education and knowledge of contemporary issues relevant to the practice of the biomedical engineering profession.
- engage in lifelong learning as a means of adapting to change, refining skill level, and remaining aware of professional and societal issues.
- communicate effectively as individuals, and within and across teams.
- accept the professional and ethical responsibilities to function as a biomedical engineer in society.
- work as engineering professionals in the private or public sector.
- enter graduate education programs and obtain advanced degrees if desired.

Biomedical engineers are intimately involved in the development of devices and techniques to address health-state issues. Such development is inherently a multidisciplinary endeavor requiring expertise from a wide range of professionals, and in particular engineers from the classical disciplines such as chemical, electrical, and mechanical engineering. This is true whether in industrial, research, or clinical settings. A fully successful multidisciplinary team must have at least one member who possesses a comprehensive understanding of the highly variable and intricate nature of the biomedical system of interest. This team member must possess the quantitative and analytical engineering skills needed to precisely define the challenge that is being addressed and assess the relative effectiveness of plausible solution strategies. This crucial role can be performed effectively by a biomedical engineer expressly educated to meet those requirements and qualifications.

The BS degree in biomedical engineering delivers a focused curriculum that targets the biomedical enterprise from a highly quantitative and analytically rigorous perspective. The goal is to enable participants to compete successfully for engineering-related positions immediately upon graduation or to pursue post-graduate education in engineering, science, or medicine. Undergraduates will have the ability to contribute significantly to the development of new knowledge, understanding, and innovative solutions in the health care industry and across a wide variety of health care related research applications.

## Curriculum

Biomedical engineering is a five-year program consisting of 50 weeks of cooperative employment experience and the following course requirements: biomedical engineering core (74 quarter credit hours), professional technical electives (12 quarter credit hours), science and mathematics (62 quarter credit hours), liberal arts (36 quarter credit hours), free electives (12 quarter credit hours), wellness education (0 quarter credit hours), and First-Year Enrichment (2 quarter credit hours). The program culminates in the fifth year with a two-course multidisciplinary design sequence, a capstone design experience that integrates engineering theory, principles, and processes within a collaborative environment that bridges engineering disciplines.

### Biomedical engineering, BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 0310-051           | Discovery Biomedical Engineering                       | 1             |
| 1720-052           | Pathways†  | 1             |
| 0310-181           | Biomedical Engineering Seminar                         | 1             |
| 0310-182, 183      | Introduction to Biomedical Engineering I, II           | 2             |
| 1011-215, 216, 217 | General Chemistry I, II, III                           | 10            |
| 1011-205, 206, 227 | General Chemistry Lab I, II, III                       | 3             |
| 1017-311, 312      | University Physics I, II and Labs                      | 10            |
| 1016-281, 282, 283 | Calculus I, II, III                                    | 12            |
|                    | Liberal Arts*  | 12            |
|                    | Wellness Education†                                    | 0             |
| <b>Second Year</b> |  |               |
| 0310-200           | Functional Anatomy and Lab                             | 4             |
| 0310-250           | Engineering Analysis I                                 | 4             |
| 0310-320           | Mechanics of Biosystems and Lab                        | 4             |
| 0310-310           | Thermo I: Single Component                             | 4             |
| 0310-370           | Biomaterials Science and Lab                           | 4             |
| 0310-330           | Bio E&M and Lab  | 5             |
| 0309-320           | Fluid Mechanics I                                      | 4             |
| 1016-305           | Multiple Variable Calculus                             | 4             |
| 1016-306           | Differential Equations                                 | 4             |
| 1004-240, 241      | Cell and Molecular Biology for Engineers I, II and Lab | 8             |
| 1004-242           | Biocompatibility and the Immune System                 | 3             |
|                    | Wellness Education†                                    | 0             |
| <b>Third Year</b>  |  |               |
| 0310-410, 411      | System Physiology I, II and Labs                       | 8             |
| 0310-440           | BME Signals and Analysis and Lab                       | 5             |
| 0310-450           | Engineering Analysis II                                | 4             |
| 0307-361, 362      | Probability and Statistics for Eng. I, II              | 8             |
|                    | Liberal Arts*  | 8             |
|                    | Cooperative Education (2 quarters)                     | Co-op         |
| <b>Fourth Year</b> |  |               |
| 0310-412           | System Physiology III and Lab                          | 4             |
| 0304-646           | Biomedical Device Engineering                          | 4             |
| 0307-420           | DOE for BME  | 4             |
| 0310-550           | Dynamics and Control of Biomedical Systems             | 5             |
|                    | Professional Technical Elective                        | 4             |
|                    | Liberal Arts*  | 8             |
|                    | Free Elective  | 4             |
|                    | Cooperative Education (2 quarters)                     | Co-op         |
| <b>Fifth Year</b>  |  |               |
| 0309-591, 592      | Multidisciplinary Design I, II                         | 8             |
|                    | Professional Technical Electives                       | 8             |

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Liberal Arts*                     | 8             |
| Free Electives                    | 8             |
| Cooperative Education (1 quarter) | Co-op         |
| <b>Total Quarter Credit Hours</b> | <b>198</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

## Concentrations

### Biomedical device and system design

Students will develop the ability to propose and assess innovative ideas and understand the type of analysis and assessment tools that are key elements in the process of developing robust designs. Constraints on such designs are safe and efficient devices, systems, and processes for biomedical applications. This represents a need in industrial, research, and clinical environments, and includes therapeutic, rehabilitative, and research-oriented developments.

### Biomedical signal processing

Biological systems are inherently complex and are composed of processes, mechanisms, and phenomena that interact, often in parallel and across a wide range of scales and environments. The ability to determine key aspects of those systems for biomedical applications requires a rigorous and in-depth capability to detect, process, and interpret signals that can be extracted and measured, often in the midst of noise and confounding information. Producing reliable information that can be used to assess or understand those systems requires careful processing and interpretation of available signals.

### Physiological modeling, dynamics, and control

Homeostasis is fundamentally a feedback process. Generally, biological systems contain a myriad of interrelated and interacting feedback systems that are inherently non-deterministic in nature and usually have a variety of optimal or satisfactory operating points. If the goal of a therapeutic or rehabilitative system or intervention is to predict the outcome of some intended action, then it becomes essential to accurately model the behavior of the relevant characteristics of the targeted system. This type of analysis can be used to support fundamental research as well as help provide guidance to develop a new device or system. A concentration in this area builds on the core elements of the curriculum as well as an understanding, from a systems perspective, of human physiology.

### Biomaterials

An important feature of materials intended for biomedical applications is their compatibility with the environment in which they are employed. This presumes a solid knowledge and understanding of a wide variety of biologically compatible materials. Similarly, the dynamic behavior of the materials in response to stress, strain, and wear must often be assessed in terms of efficacy, safety, and durability. Useful and rigorous modeling, as well as the design and evaluation of material performance, requires a strong foundation in physics, chemistry, and mathematics (including statistics) along with an understanding of appropriate and accurate analysis methods. Courses for this type of work are provided in the core curriculum of the program. However, electives that provide additional expertise in this area (e.g.: material science, probability and



statistics, chemistry and chemical engineering) may be obtained by selecting the biomaterials concentration.

## Chemical Engineering, BS

<http://www.rit.edu/kgcoe/chemical>

**Steven Weinstein, Head**  
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### Program overview

#### Educational objectives

The bachelor of science degree in chemical engineering prepares students to:

- apply fundamental knowledge, skills, and tools of chemical engineering in a wide variety of application domains.
- possess a broad education and knowledge of contemporary issues relevant to the practice of the chemical engineering profession.
- engage in lifelong learning as a means of adapting to change, refining skill level, and remaining aware of professional and societal issues.
- communicate effectively as individuals within and across teams;
- accept the professional and ethical responsibilities to function as a chemical engineer in society.
- work as engineering professionals in the private or public sector.
- enter graduate education programs and obtain advanced degrees if desired.

Chemical engineering is the branch of engineering that applies the core scientific disciplines of chemistry, physics, biology, and mathematics to transform raw materials or chemicals into more useful or valuable forms, invariably in processes that involve chemical change. All engineers employ mathematics, physics, and engineering art to overcome technical problems in a safe and economical fashion. Yet, it is the chemical engineer alone who provides the critical level of expertise needed to solve problems in which chemical specificity and change have particular relevance. In research and development, chemical engineers not only create new, more effective ways to manufacture chemicals, they also work collaboratively with chemists to pioneer the development of high-tech materials for specialized applications. Chemical engineers have made well-known contributions—among them: the development and commercialization of synthetic rubber, synthetic fiber, pharmaceuticals, and plastics. Chemical engineers contribute significantly to advances in the food industry, alternative energy systems, semiconductor manufacturing, and environmental modeling and remediation. The breadth of scientific and technical knowledge inherent in the chemical engineering curriculum encourages some to describe the chemical engineer as the “universal engineer.” Indeed, this breadth explains why chemical engineers excel in leading multidisciplinary teams. Moreover, the special focus within the discipline on process engineering cultivates a “systems perspective” that makes chemical engineers extremely versatile and capable of handling a wide spectrum of technical problems.

Students graduating from the chemical engineering program will have a firm and practical grasp of engineering principles and the underlying science associated with traditional chemical engineering applications, and will also learn to tie together phenomena at the nano-scale with the behavior of systems at the macro-scale.

While chemical engineers have always excelled at analyzing and designing processes with multiple length scales, modern chemical engineering applications require this knowledge to be extended to the nano-scale, and our program addresses this emerging need.

### Curriculum

Chemical engineering is a five-year program consisting of 50 weeks of cooperative education and the following course requirements: chemical engineering core (76 quarter credit hours), professional technical electives (12 quarter credit hours), science and mathematics (60 quarter credit hours), liberal arts (36 quarter credit hours), free electives (12 quarter credit hours), wellness education (0 quarter credit hours), and First-Year Enrichment (2 quarter credit hours).

The core of the program consists of 23 courses that provide students with a solid foundation in engineering principles and their underlying science. The program culminates in the fifth year with 20 weeks of multidisciplinary design, a capstone design experience that integrates engineering theory, principles, and processes within a collaborative environment that bridges engineering disciplines. Students also choose three professional technical electives to form a concentration in one of five key application domains: biomedical, alternate energy systems, advanced materials, semiconductor processing, and environmental issues. Other concentration areas are also possible with the guidance of a faculty adviser, and can be chosen to reflect current societal needs and student interest. Students choose professional technical electives from a department-approved list of courses offered throughout the university in addition to those offered by the chemical engineering department.

Rounding out the program are courses in mathematics and science that help to develop students’ knowledge of science and its significance in the field of chemical engineering. Free electives provide students the opportunity to choose additional course work to enhance a personal or professional interest, and liberal arts courses help to develop students’ broader understanding of society, the humanities, and the arts.

#### Cooperative education

Cooperative education is a key component of the chemical engineering program. The 50-week requirement is met with five co-op blocks of 10-week duration. These full-time, paid experiences enable students to apply what they’ve learned in the classroom to real work scenarios. Students will also have the chance to network with professionals in the field and learn in a hands-on environment.

#### Chemical engineering, BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 0309-051           | Discovery Chemical Engineering           | 1             |
| 1720-052           | Pathways†                                | 1             |
| 0309-181, 182, 183 | Chemical Engineering Insights I, II, III | 3             |
| 1011-215, 216, 217 | General Chemistry I, II, III             | 10            |
| 1011-205, 206, 227 | General Chemistry Lab I, II, III         | 3             |
| 1017-311, 312      | University Physics I, II and Labs        | 10            |
| 1016-281, 282, 283 | Calculus I, II, III                      | 12            |
|                    | Wellness Education†                      | 0             |
|                    | Liberal Arts*                            | 8             |
| <b>Second Year</b> |  |               |
| 0309-230           | Chemical Process Analysis                | 4             |
| 0309-310           | Thermo I: Single Component               | 4             |



| COURSE                            |                                     | QTR. CR. HRS. |
|-----------------------------------|-------------------------------------|---------------|
| 0309-410                          | Thermo II: Multiple Component       | 4             |
| 0309-320, 420                     | Fluid Mechanics I, II               | 8             |
| 0309-301                          | Math Tech for Chemical Engineers    | 3             |
| 1013-431, 432                     | Organic Chemistry I, II             | 6             |
| 1013-435, 436                     | Organic Chemistry Lab I, II         | 2             |
| 1016-305                          | Multiple Variable Calculus          | 4             |
| 1016-306                          | Differential Equations              | 4             |
|                                   | Wellness Education†                 | 0             |
|                                   | Liberal Arts*                       | 12            |
| <b>Third Year</b>                 |                                     |               |
| 0309-340, 440                     | Reaction Engineering I, II          | 8             |
| 0309-421                          | Heat Transfer                       | 4             |
| 0309-330                          | Mass Transfer Operations            | 4             |
| 0309-391                          | Chemical Engineering Principles Lab | 2             |
| 0309-302                          | Math Tech for Chemical Engineers II | 2             |
| 1017-313                          | University Physics III and Lab      | 4             |
|                                   | Liberal Arts*                       | 8             |
|                                   | Cooperative Education (2 quarters)  | Co-op         |
| <b>Fourth Year</b>                |                                     |               |
| 0304-344                          | Materials Science                   | 4             |
| 0309-401                          | System Dynamics and Controls        | 4             |
| 0309-450                          | Micro-scale Phenomena               | 4             |
| 0309-550                          | Analysis of Micro-scale Processes   | 4             |
| 0309-392                          | Chemical Engineering Processes Lab  | 2             |
|                                   | Professional Technical Elective     | 4             |
| 1014-442                          | Quantum Chemistry                   | 4             |
| 1014-446                          | Quantum Chemistry Lab               | 1             |
|                                   | Liberal Arts*                       | 8             |
|                                   | Cooperative Education (2 quarters)  | Co-op         |
| <b>Fifth Year</b>                 |                                     |               |
| 0309-591, 592                     | Multidisciplinary Design I, II      | 8             |
| 0309-590                          | Design with Constraint              | 4             |
|                                   | Professional Technical Electives    | 8             |
|                                   | Free Electives                      | 12            |
|                                   | Cooperative Education (1 quarter)   | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                     | <b>198</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

## Technical Electives

### Biomedical

|          |                                       |
|----------|---------------------------------------|
| 0304-461 | Contemporary Issues in Bioengineering |
| 0304-645 | Introduction to Biomaterials          |
| 0304-646 | Biomedical Device Engineering         |
| 0304-756 | Aerosols in the Respiratory Tract     |
| 0303-732 | Biomechanics                          |

### Alternate Energy Systems

|          |   |
|----------|---|
| 0304-629 | Renewable Energy Systems                                |
| 0304-633 | Sustainable Energy Management and the Built Environment |
| 0304-639 | Alternative Fuels and Energy                            |
| 0304-710 | Fuel Cell Technology                                    |

### Environmental

|          |   |
|----------|---|
| 1006-202 | Concepts in Environmental Science                 |
| 1006-203 | Environmental Science Field Studies               |
| 1001-340 | General Ecology                                   |
| 0304-460 | Contemporary Issues in Energy and the Environment |

|          |   |
|----------|---|
| 1001-471 | Freshwater Ecology                                      |
| 1001-567 | Environmental Microbiology                              |
| 1015-520 | Environmental Chemistry                                 |
| 1015-521 | Atmospheric Chemistry                                   |
| 1015-522 | Aquatic Toxicology and Chemistry                        |
| 0304-633 | Sustainable Energy Management and the Built Environment |
| 0303-792 | Design for the Environment                              |

### Advanced Materials

|          |                                     |
|----------|-------------------------------------|
| 1029-301 | Introduction to Polymer Technology  |
| 0304-343 | Materials Processing                |
| 0304-644 | Introduction to Composite Materials |
| 0304-645 | Introduction to Biomaterials        |

### Semiconductor Processing

|          |   |
|----------|---|
| 0305-350 | IC Technology                             |
| 0305-643 | Thin Film Processes                       |
| 0305-666 | Microolithography Materials and Processes |

## Computer Engineering, BS

<http://www.ce.rit.edu/>

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## Program overview

### Educational objectives

The computer engineering department has established the following educational objectives for the computer engineering program, which describe the accomplishments of its graduates during the first few years following graduation:

**Career focus:** Graduates successfully contribute to the professional workforce typically by applying their knowledge in various areas of computer engineering related to hardware, software, and/or systems.

**Graduate study:** Many graduates have pursued, are pursuing, or plan to pursue graduate study in computer engineering, related disciplines, or business.

**Independent learning:** Graduates are engaged in lifelong learning and stay current with advancements in their chosen field through independent learning and/or continuing education.

**Professionalism:** Graduates conduct themselves in a professional and ethical manner and function as responsible members of society.

The computer engineering program focuses on the design and development of computer and computer-integrated systems, with due consideration to such engineering factors as function, performance, and cost. Computer engineers design and build these systems to meet application requirements with attention to the hardware-software interaction. The program spans topics from formal specifications to heuristic algorithm development; from systems architecture to computer design; from interface electronics to software development, especially real-time applications; and from computer networking to VLSI circuit design and implementation.

As an engineering discipline, computer engineering emphasizes the careful adoption of design methodology and the application of sophisticated engineering tools. The intensive programming and

laboratory work requirements ensure significant experience with modern facilities and up-to-date design tools.

The cooperative education program enables students to apply the principles and techniques of computer engineering to real industrial problems and provides them with a stronger framework on which to build their academic courses. These co-op work periods alternate with academic quarters throughout the last three years of the program.

The faculty members of the computer engineering department are committed to quality engineering education and student success.

### Accreditation

The BS program in computer engineering is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

### Principal field of study

For students matriculated in the interdisciplinary computer engineering program, the principal field of study is defined as all courses taken in the Kate Gleason College of Engineering and the departments of computer science and software engineering.

## Curriculum

### Computer engineering, BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 0306-200           | Introduction to Computer Engineering     | 1             |
| 0306-201           | Freshman Seminar                         | 1             |
| 0306-341           | Introduction to Digital Systems          | 4             |
| 4003-241           | Problem Solving in Computer Science      | 4             |
| 4003-242           | Data Structures for Problem Solving      | 4             |
| 4003-243           | Object Oriented Programming              | 4             |
| 1016-281, 282, 283 | Calculus I, II, III                      | 12            |
| 1017-311           | University Physics I                     | 5             |
|                    | Liberal Arts*                            | 12            |
| 1720-051           | Discovery 1720-050 or                    | 1             |
| 1720-052           | Pathways‡                                | 1             |
|                    | Wellness Education†                      | 0             |
| 1016-265           | Discrete Math I                          | 4             |
| <b>Second Year</b> |  |               |
| 0306-250           | Assembly Language Programming            | 4             |
| 0306-351           | Hardware Description Languages           | 4             |
| 0301-381           | Circuits I with Lab                      | 4             |
| 4003-334           | Computer Science IV                      | 4             |
| 4010-361           | Software Engineering                     | 4             |
| 1016-305           | Multivariable Calculus                   | 4             |
| 1016-306           | Differential Equations                   | 4             |
| 1016-331           | Linear Algebra I                         | 4             |
| 1017-312, 313      | University Physics II, III               | 9             |
|                    | Liberal Arts*                            | 8             |
|                    | Wellness Education†                      | 0             |
| <b>Third Year</b>  |  |               |
| 0306-550           | Computer Organization                    | 4             |
| 0306-561           | Digital Systems Design                   | 4             |
| 0301-382           | Circuits II                              | 4             |
| 0301-481           | Electronics I                            | 4             |
| 0306-381           | Applied Programming                      | 4             |
| 4003-440           | Operating Systems                        | 4             |
| 1016-345           | Probability and Statistics for Engineers | 4             |
|                    | Free Elective                            | 4             |
|                    | Cooperative Education (2 quarters)       | Co-op         |

| COURSE                            |                                    | QTR. CR. HRS. |
|-----------------------------------|------------------------------------|---------------|
| <b>Fourth Year</b>                |                                    |               |
| 0306-451                          | Digital Signal Processing          | 4             |
| 0306-694                          | Data and Computer Communications   | 4             |
| 0306-560                          | Interface and Digital Electronics  | 4             |
| 0306-630                          | Introduction to VLSI Design        | 4             |
| 0306-654 or 656                   | Senior Design Projects I           | 4             |
|                                   | Liberal Arts*                      | 8             |
|                                   | Math/Science Elective              | 4             |
|                                   | Cooperative Education (2 quarters) | Co-op         |
| <b>Fifth Year</b>                 |                                    |               |
| 0306-551                          | Computer Architecture              | 4             |
| 0306-657 or 659                   | Senior Design Projects II          | 4             |
|                                   | Professional Electives             | 8             |
|                                   | Free Electives                     | 8             |
|                                   | Liberal Arts*                      | 8             |
|                                   | Cooperative Education (1 quarter)  | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                    | <b>198</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

### Professional electives (partial list)

|          |   |
|----------|---|
| 0306-553 | Digital Control Systems                 |
| 0306-615 | Wireless Networks                       |
| 0306-620 | Design Automation of Digital Systems    |
| 0306-624 | High-Performance Architectures          |
| 0306-631 | Advanced VLSI Design                    |
| 0306-632 | Low-Power Design                        |
| 0306-663 | Real-Time and Embedded Systems          |
| 0306-672 | Special Topics in Computer Engineering* |
| 0306-674 | Modeling of Real-Time Systems           |
| 0306-675 | Robotics                                |
| 0306-676 | Robust Control                          |
| 0306-710 | Network Modeling Design and Simulation  |
| 0306-722 | Advanced Computer Architecture          |
| 0306-756 | Multiple Processor Systems              |
| 0306-758 | Fault Tolerant Digital Systems          |
| 0306-684 | Digital Image Processing Algorithms     |
| 0306-685 | Computer Vision                         |
| 0306-699 | Independent Study                       |

\* Special Topics in Computer Engineering (0306-672) includes topics such as: Computational Intelligence, Wireless Communications, Performance Engineering of Real-Time and Embedded Systems.

Approved upper-level courses from other disciplines may be used as professional electives; e.g., courses from electrical engineering, software engineering, and computer science.

### Optional concentrations

Students in the computer engineering program may pursue one of the following optional concentrations by selecting the specified courses as electives:

#### VLSI Design Concentration

Electronics II and two of the following courses as professional electives:

|          |                                      |
|----------|--------------------------------------|
| 0306-620 | Design Automation of Digital Systems |
| 0306-631 | Advanced VLSI Design                 |
| 0306-632 | Low-Power Design                     |
| 0301-726 | Mixed Signal IC Design               |

### Embedded Systems Concentration

|          |  |
|----------|--|
| 0306-663 | Real-Time and Embedded Systems and two of the following courses as professional electives: |
| 0306-674 | Modeling of Real-Time Systems  |
| 0306-672 | Special Topics: Performance Engineering of Real-Time and Embedded Systems                  |

### Networking Concentration

|          |   |
|----------|---|
| 0306-615 | Wireless Networks and one of the following: |
| 0306-710 | Network Modeling, Design, and Simulation    |
| 0306-672 | Special Topics: Wireless Communications     |

### Robotics Concentration

|          |  |
|----------|--|
| 0306-675 | Robotics plus the following courses as professional electives: |
| 0306-553 | Digital Control Systems  |
| 0306-685 | Computer Vision  |
| 0306-663 | Real-Time and Embedded Systems                                 |

### Image Processing Concentration

The following courses as professional electives:

|          |                                     |
|----------|-------------------------------------|
| 0306-684 | Digital Image Processing Algorithms |
| 0306-685 | Computer Vision                     |

and one of the following courses as a free elective:

|          |  |
|----------|--|
| 0306-672 | Special Topics: Computational Intelligence |
| 0301-770 | Pattern Recognition                        |
| 0301-803 | Digital Video Processing                   |

## Electrical Engineering, BS

<http://www.rit.edu/kgcoe/eme/>

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### Program overview

#### Educational objectives

The electrical engineering faculty, in conjunction with its constituents, has established the following educational objectives for each of its students:

- graduates will practice the profession of engineering using a systems perspective and be able to analyze, design, develop, optimize, and implement complex electrical systems.
- graduates will be able to immediately contribute to industrial, service, and/or government organizations by applying their cooperative educational experiences.
- graduates will be well-prepared for graduate education.
- graduates will possess a broad base of knowledge to draw upon in providing engineering solutions within the appropriate technological, global, societal, ethical, and organizational context.

Electrical engineering addresses the high-technology needs of business and industry by offering a rich academic program that includes analog and digital integrated circuits, digital signal processing, microwave electronics, optical electronics, bioelectronics, radiation and propagation, power electronics, control systems, communications and information theory, circuit theory, computer-aided design, solid-state devices, microelectromechanical systems (MEMs), robotics, and pattern recognition. Our nationally

recognized program combines the rigor of theory with the reality of engineering practice.

The program prepares students for exciting careers within the varied electrical engineering and allied disciplines and for positions in business management. Our graduates also have the foundation to pursue advanced study at the most prestigious graduate schools. A degree in electrical engineering is a steppingstone to entering and changing the future.

The curriculum, co-op program, and facilities are designed to accomplish the program's educational objectives. Since the ability to design is an essential part of electrical engineering, the student is presented with challenging design problems in a number of courses, beginning with the first hands-on course, Electrical Engineering Practicum (0301-205), in the freshman year.

To strengthen students' applied knowledge in electrical engineering, laboratories are an integral part of many courses. The department offers a number of classes in studio-style lecture labs, where the instructor presents the lecture in a fully instrumented room that allows immediate observation and implementation of important engineering ideas. Many of our alumni report that the college's facilities are comparable to the best in the industry.

The highlight of the applied engineering experience is the senior project. Students work on a challenging project under the tutelage of an experienced faculty adviser. While experiencing the satisfaction of completing an interesting project and exploring the latest in technology, students develop engineering management and project organization skills. They learn to communicate their ideas effectively within a multidisciplinary team and present their project and ideas to a diverse audience of students, faculty, and industrial partners.

The first two years of the curriculum are devoted to establishing a foundation in mathematics and physical science that is essential to the study of electrical engineering. In other courses, students learn about electrical engineering principles such as circuits and digital systems. The practicum courses introduce students to electrical engineering practice and computer-aided design (CAD) tools that are used throughout the five-year program.

In the third and fourth years, students build on this foundation and focus on the subjects that form the core of electrical engineering. Courses in circuits, electronics, linear systems, electromagnetic fields, semiconductor devices, communication systems, control systems, and microelectromechanical systems are taught.

During the fifth year, students specialize in an area of their professional interest. They complete their capstone engineering project, the senior design project, as part of the graduation requirements.

#### Accreditation

The BS in electrical engineering program is accredited by the EAC Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

## Curriculum

### Electrical engineering, BS degree, typical course sequence

| COURSE                               | QTR.                                      | CR.   | HRS.       |
|--------------------------------------|---|-------|------------|
| <b>First Year</b>                    |   |       |            |
| 0301-205                             | Electrical Engineering Freshman Practicum | 1     |            |
| 0301-240                             | Digital Systems                           | 4     |            |
| 1011-208                             | College Chemistry I                       | 4     |            |
| 1016-281, 282, 283                   | Calculus I, II, III                       | 12    |            |
| 1017-311, 312                        | University Physics I, II                  | 10    |            |
|                                      | Liberal Arts*                             | 20    |            |
|                                      | Wellness Education†                       | 0     |            |
| 1720-050, 051                        | Discovery                                 | 1     |            |
| 1720-052                             | Pathways‡                                 | 1     |            |
| <b>Second Year</b>                   |   |       |            |
| 0301-360                             | Semiconductor Devices                     | 4     |            |
| 0301-365                             | Microcomputer Systems                     | 4     |            |
| 0301-381, 382                        | Circuits I, II with Lab                   | 8     |            |
| 1016-305                             | Multivariable Calculus                    | 4     |            |
| 1016-306                             | Differential Equations                    | 4     |            |
| 1016-328                             | Engineering Mathematics                   | 4     |            |
| 1017-313                             | University Physics III                    | 4     |            |
| Choose one of the following courses: |   |       | 4          |
| 0301-370                             | Restricted Science Elective               |       |            |
| 1017-314                             | Modern Physics I                          |       |            |
|                                      | Liberal Arts*                             | 4     |            |
|                                      | Free Elective                             | 4     |            |
| 0301-344                             | Matlab and C for Electrical Engineers     | 3     |            |
| <b>Third Year</b>                    |   |       |            |
| 0301-453, 554                        | Linear Systems I, II                      | 8     |            |
| 0301-473, 474                        | Electromagnetic Fields I, II              | 9     |            |
| 0301-481, 482                        | Electronics I, II with Lab                | 8     |            |
| 1016-420                             | Complex Variables                         | 4     |            |
|                                      | Free Elective                             | 4     |            |
|                                      | Cooperative Education (2 quarters)        | Co-op |            |
| <b>Fourth Year</b>                   |   |       |            |
| 1016-345                             | Probability and Statistics for Engineers  | 4     |            |
| 0301-347                             | Computer Architecture                     | 4     |            |
| 0301-514                             | Control Systems Design                    | 5     |            |
| 0301-534                             | Communication Systems                     | 4     |            |
| 0301-545                             | Digital Electronics                       | 4     |            |
|                                      | Free Elective                             | 4     |            |
|                                      | Liberal Arts*                             | 8     |            |
|                                      | Cooperative Education (2 quarters)        | Co-op |            |
| 0301-497                             | Individual Design                         | 3     |            |
| <b>Fifth Year</b>                    |   |       |            |
| 0301-531                             | Mechatronics                              | 4     |            |
|                                      | Professional Electives                    | 12    |            |
| 0301-697, 698                        | Senior Design Project I, II               | 8     |            |
|                                      | Liberal Arts*                             | 4     |            |
|                                      | Cooperative Education (1 quarter)         | Co-op |            |
| <b>Total Quarter Credit Hours</b>    |   |       | <b>197</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

### Professional electives

Each of the listed professional electives includes significant design experience. For convenience, the courses have been grouped by interest areas. Some courses apply to more than one area.

### Electromagnetic Fields and Optics

|          |                             |
|----------|-----------------------------|
| 0301-601 | Modern Optics for Engineers |
|----------|-----------------------------|

### Control Systems

|          |                         |
|----------|-------------------------|
| 0301-615 | State Space Control     |
| 0301-636 | Biorobotics/Cybernetics |
| 0301-647 | Artificial Intelligence |
| 0301-685 | Principles of Robotics  |

### Communications

|          |                                       |
|----------|---------------------------------------|
| 0301-677 | Digital Filters and Signal Processing |
| 0301-692 | Communication Networks                |
| 0301-693 | Digital Data Communications           |

### Signal Processing

|          |                                       |
|----------|---------------------------------------|
| 0301-677 | Digital Filters and Signal Processing |
| 0301-679 | Analog Filter Design                  |

### Digital and Computer Systems

|          |                                  |
|----------|----------------------------------|
| 0301-650 | Design of Digital Systems        |
| 0301-651 | Physical Implementation          |
| 0301-655 | Microcomputer Software I         |
| 0301-664 | Embedded Microcontroller Systems |

### Devices and Integrated Circuits

|          |                           |
|----------|---------------------------|
| 0301-610 | Analog Electronic Design  |
| 0301-612 | Semiconductor Devices III |
| 0301-646 | Power Electronics         |
| 0301-650 | Design of Digital Systems |
| 0301-679 | Analog Filter Design      |

### Biomedical

|          |                                      |
|----------|--------------------------------------|
| 0301-630 | Biomedical Instrumentation           |
| 0301-631 | Biomedical Sensors and Transducers I |
| 0301-632 | Fundamental Electrophysiology        |
| 0301-633 | Biomedical Signal Processing         |

### MEMS

|          |                                |
|----------|--------------------------------|
| 0301-686 | Microelectromechanical Devices |
| 0301-688 | MEMS System Evaluation         |

### Robotics

|          |                          |
|----------|--------------------------|
| 0301-636 | Biorobotics/Cybernetics  |
| 0301-647 | Artificial Intel Explore |
| 0301-685 | Principles of Robotics   |

### BS in electrical engineering with computer engineering option

The computer engineering concentration is ideal for those who would like to incorporate the skills required in designing modern computing systems. Students in this program meet all the requirements for the BS degree in electrical engineering and receive instruction in areas ranging from C programming, object-oriented programming, assembly language, microprocessor interfacing, and logic design to data structures and computer operating systems.

**Students pursuing a BS degree in electrical engineering with the computer engineering option must meet all the requirements of the BSEE degree with certain specifications.**

The program includes the following computer-specific courses:

- 0301-240 Digital Systems
- 0301-365 Microcomputer Systems



- 0301-346 Advanced Programming for Engineers
- 0301-347 Computer Architecture
- 4003-440 Operating Systems (or equivalent)

One of the two required professional electives must be chosen from the following:

- 0301-650 Design of Digital Systems
- 0301-651 Physical Implementation of ICs
- 0301-655 Microcomputer Software I
- 0301-664 Embedded Microcontroller

### BS in electrical engineering with biomedical engineering option

Biomedical engineering plays a crucial role in understanding the fundamental principles of human life sciences, especially those related to health care and clinical medicine. Incorporating these findings and principles into practical medical systems and devices requires the expertise of professionals trained in core engineering disciplines such as electrical engineering. The biomedical engineering option is designed to provide students with the necessary expertise in the analysis and design of devices and systems used in sensing, control, and analysis of electrical signals within human biological processes. Biomedical engineering is expanding into the nano level of tissue, cell, molecule, and gene studies as well as nanotechnology research. The focus of the option is the application of the principles of electrical engineering and related disciplines to the fields of both biology and medicine in clinical and research settings.

The biomedical engineering option augments the foundation of the electrical engineering curriculum with two courses from the College of Science and two option-specific electrical engineering courses as outlined below.

All courses in the option have a strong design emphasis and incorporate project-oriented assignments to allow students an opportunity to investigate and demonstrate concepts discussed in class. This option culminates in a biomedical, multidisciplinary, capstone senior design project. Examples of such projects include integrated biosensor design and fabrication, clinical and laboratory instrumentation design, telemedicine, and telemetry applications and equipment, including Internet-enabled monitoring and health care delivery systems. These projects typically involve university-wide interaction with departments in the Kate Gleason College, the College of Science, the College of Imaging Arts and Sciences, and the B. Thomas Golisano College of Computing and Information Sciences, as well as a close affiliation with Rochester-area hospitals.

**Students pursuing a BS in electrical engineering with the biomedical engineering option must meet all the requirements of the BSEE degree with certain specifications.**

The program includes the following biomedical-specific courses:

- 0301-630 Biomedical Instrumentation
- 0301-632 Fundamental Electrophysiology
- 1026-355 Physiology and Anatomy I
- 1026-365 Physiology and Anatomy II

One of these required professional electives must be chosen:

- 0301-631 Biomedical Sensors and Transducers I
- 0301-633 Biomedical Signal Processing

### BS in electrical engineering with robotics option

The robotics option is ideal for those who want to incorporate the theoretical and practical skills required in designing robots and robotics devices. Robots and robotic devices have become a part of our daily lives. Students in this option complete curriculum in areas from advanced programming, robotics systems, principles of robotics, and advanced robotics. Students are introduced to robotics systems in their third year and design components of a mobile robot. In the fourth year, they study principles of robotics covering kinematics and dynamics of robotics manipulators, mobile robots, locomotion types, and complete experiments using various arm and mobile robots. In the final year, they take an advanced robotics course to study dynamics of manipulators, dynamics of mobile robots with advance locomotion techniques, and path planning.

**Students pursuing a BS degree in electrical engineering with the robotics engineering option must meet all the requirements of the BS degree with certain specifications.**

The program includes the following robotics-specific courses:

|   |                                    |
|---|------------------------------------|
| 0301-346  | Advanced Programming for Engineers |
| 0301-585  | Robotics Systems                   |
| 0301-685  | Principles of Robotics             |
| One of the two required professional electives must be: |                                    |
| 0301-895  | Advanced Robotics                  |

### Accelerated dual degree option

An accelerated dual degree (BS/MS) option is available for electrical engineering students. Enrollment in this program requires the successful completion of at least 232 quarter credit hours. After completing this requirement, the student is awarded the BS and MS degrees simultaneously. Students may apply to this program in the second quarter of their second year, providing that a minimum cumulative grade point average of 3.4 has been obtained at the end of the previous quarter. Although admission requirements are stricter for this program, graduation requirements are consistent with university policies.

The first three years of the program are identical for the BSEE and the combined BS/MS program, with the exception of the work period between the second and third years being used to earn early cooperative education credit. Additional information can be obtained from the department of electrical engineering. A typical fourth- and fifth-year program sequence follows.

### Electrical engineering, BS/MS option, typical course sequence

| COURSE                        |  | QTR. CR. HRS. |
|-------------------------------|--|---------------|
| <b>First Year-Third Year†</b> |  |               |
|                               |  | 133           |
| <b>Fourth Year</b>            |  |               |
| 1016-314                      | Engineering Statistics                   | 4             |
| 0301-347                      | Computer Architecture                    | 4             |
|                               | Liberal Arts*                            | 4             |
| 0301-534                      | Communication Systems                    | 5             |
| 0301-703                      | Matrix Methods in Electrical Engineering | 4             |
| 0301-514                      | Control Systems Design                   | 5             |
| 0301-545                      | Digital Electronics                      | 4             |
| 0301-702                      | Random Signals and Noise                 | 4             |
|                               | Professional Electives                   | 12            |
| 0301-890                      | Thesis                                   | 2             |
|                               | Cooperative Education (1 quarter)        | Co-op         |
| <b>Fifth Year</b>             |  |               |



| COURSE                            |                                   | QTR. CR. HRS. |
|-----------------------------------|-----------------------------------|---------------|
|                                   | Graduate Courses                  | 20            |
| 0301-531                          | Mechatronics                      | 4             |
|                                   | Professional Elective             | 4             |
| 0301-697, 698                     | Senior Design I, II               | 8             |
|                                   | Liberal Arts*                     | 8             |
| 0301-890                          | Thesis                            | 7             |
|                                   | Cooperative Education (1 quarter) | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                   | <b>232</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† The first three years of the program are identical to the first three years of the BS program in electrical engineering.

Note: Two of the professional electives will be counted twice, once toward the BS degree and once toward the MS degree. The free elective will be replaced by a graduate course for the BSEE.

## Accelerated dual degree options

### **BS/MS premedical/biomedical**

This option prepares the student for a career in electrical engineering/medical science. Upon successful completion, students will receive a BS and MS degree in electrical engineering and be prepared to apply to medical school. This is a rigorous academic curriculum, and the student must maintain very high academic standing to be eligible for admission to medical school. Students must meet with a premed adviser to understand the program requirements.

### **BS/MS analog and mixed signal**

The analog and mixed-signal BS/MS accelerated dual degree option in electrical engineering introduces the student to a broad range of subject material considered essential for a career in analog circuit design. It emphasizes the actual design and fabrication of complex analog and mixed-signal integrated circuits. Digital and analog signal processing principles are presented in a coordinated design environment.

## Industrial Engineering, BS

<http://www.rit.edu/kgcoe/ise/>

**Scott E. Grasman, Head and Professor**  
(585) 475-2598, [segeie@rit.edu](mailto:segeie@rit.edu)

## Program overview

### **Educational objectives**

The industrial and systems engineering faculty, in conjunction with its constituents, has established the following educational objectives for the industrial and systems engineering program:

**Systems integrators**—Graduates will draw upon broad knowledge to develop integrated systems-based engineering solutions that include the consideration of realistic constraints within contemporary global, societal, and organizational contexts.

**Lifelong learners**—Graduates will develop engineering solutions using the skills and knowledge acquired through formal education and training, independent inquiry, and professional development.

**Graduate education**—Graduates will successfully pursue graduate degrees.

**Engineering professionals**—Graduates will work independently as well as collaboratively with others and demonstrate leadership, accountability, initiative, and ethical and social responsibility.

With rapidly changing work environments, students need a well-rounded education that will allow them to apply engineering principles to new situations.

Industrial engineers design, optimize, and manage the process by which products are made and distributed across the world (i.e., global supply chain) or the way services are delivered in industries such as banking, health care, or entertainment. Industrial engineers ensure that high-quality products and services are delivered in a cost-effective manner.

Industrial engineering is ideal for those who enjoy both technology and working with people. Industrial engineers frequently spend as much time interacting with other engineers and product users as they do at their desks and computers. Typical computer work involves developing applied simulations of processes to evaluate overall system efficiency.

A degree in industrial engineering offers students a significant opportunity for a flexible long-term career. Employers have consistently praised the quality of RIT's industrial engineering graduates, noting that the range of their abilities includes both strong technical knowledge and communication skills. Graduates have used their technical base as a springboard to careers in management, consulting, manufacturing, sales, medicine, law, and teaching.

Because of the flexible nature of the program, the industrial engineering student can gain breadth of knowledge in many different areas of industrial engineering, including, but not limited to, information systems, lean production, quality, distribution/logistics, and sustainable design and development. Students may choose free and professional electives for this purpose. The industrial and systems engineering faculty is committed to high-quality engineering education as well as the program's educational objectives.

The industrial engineering curriculum covers the principal concepts of engineering economics and project management, facilities planning, human performance, mathematical and simulation modeling, production control, applied statistics and quality, and contemporary production processes that are applied to solve the challenges presented by the global environment and economy of today. The curriculum stresses the application of contemporary tools and techniques in solving engineering problems.

As described by the Institute of Industrial Engineers on the organization's website:

"Industrial engineering (IE) is about choices. IE gives you the opportunity to work in a variety of businesses. The most distinctive aspect of industrial engineering is the flexibility that it offers: shortening a rollercoaster line, streamlining an operating room in a hospital, distributing products worldwide, or manufacturing superior products.

"As companies adopt management philosophies of continuous productivity and quality improvement to survive in the increasingly competitive world market, the need for industrial engineers is growing. Why? Industrial engineers function as productivity and quality improvement specialists.

"Industrial engineers figure out how to do things better. They engineer processes and systems that improve quality and productivity. They work to eliminate waste of time, money, materials, energy and other commodities. Most important of all, industrial engineers save companies money. This is why more and more companies are hiring industrial engineers and then promoting them into management positions."

Industrial engineers are "big-picture" thinkers, much like systems integrators. IEs spend most of their time out in the work environment, using scientific approaches to solve today's problems while they develop solutions for the future.

## Accreditation

The BS in industrial engineering program is accredited by the EAC Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

## Curriculum

### Industrial engineering, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 0303-201                          | Fundamentals of Industrial Engineering    | 4             |
| 0303-204                          | Computer Tools for Increased Productivity | 2             |
| 1011-208                          | College Chemistry                         | 4             |
| 1016-281, 282, 283                | Calculus I, II, III                       | 12            |
| 1017-311, 312                     | University Physics I, II                  | 10            |
| 0303-343                          | Materials Processing                      | 3             |
|                                   | Liberal Arts*                             | 16            |
| 0303-051                          | Discovery Industrial Engineering          | 1             |
| 1720-052                          | Pathways†                                 | 1             |
|                                   | Wellness Education‡                       | 0             |
| <b>Second Year</b>                |   |               |
| 0304-331                          | Mechanics I                               | 3             |
| 0304-332                          | Mechanics II                              | 3             |
| 1016-305                          | Multivariable Calculus                    | 4             |
| 0303-302                          | Computing for Engineers                   | 4             |
| 1016-306                          | Differential Equations                    | 4             |
| 1016-331                          | Matrix Algebra                            | 4             |
| 1017-313                          | University Physics III                    | 4             |
| 1004-212                          | Human Biology II                          | 3             |
| 0304-344                          | Materials Science                         | 4             |
|                                   | Free Elective                             | 4             |
|                                   | Liberal Arts*                             | 12            |
|                                   | Wellness Education‡                       | 0             |
| <b>Third Year</b>                 |   |               |
|                                   | Liberal Arts*                             | 4             |
| 0303-520                          | Engineering Economy                       | 4             |
| 0303-401                          | Introduction to Operations Research       | 4             |
| 0307-361, 362                     | Probability and Statistics I, II          | 8             |
| 0303-415                          | Ergonomics                                | 4             |
| 0303-481                          | Engineering Management                    | 4             |
| 0303-422                          | Systems and Facilities Planning           | 4             |
|                                   | Cooperative Education (2 quarters)        | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0303-510                          | Applied Statistical Quality Control       | 4             |
| 0303-511                          | Applied Linear Regression Analysis        | 4             |
| 0303-402                          | Production Control                        | 4             |
| 0303-503                          | Systems Simulation                        | 4             |
| 0303-516                          | Human Factors                             | 4             |
| 0303-526                          | Design and Analysis of Production Systems | 4             |
|                                   | Professional Elective                     | 4             |
|                                   | Liberal Arts*                             | 4             |
|                                   | Cooperative Education (2 quarters)        | Co-op         |
| <b>Fifth Year</b>                 |   |               |
| 0303-630                          | Advanced Systems Integration              | 4             |
| 0303-560, 561                     | Multidisciplinary Senior Design I, II     | 8             |
|                                   | Professional Electives                    | 12            |
|                                   | Free Electives                            | 8             |
|                                   | Cooperative Education (1 quarter)         | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>198</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

### Professional electives (partial list)

|          |  |
|----------|--|
| 0303-704 | Logistics Management                       |
| 0303-728 | Production Systems Management              |
| 0303-732 | Biomechanics                               |
| 0303-734 | Safety Engineering                         |
| 0303-758 | Design of Experiments                      |
| 0303-760 | Product and Process Development and Design |
| 0303-761 | Rapid Prototyping                          |
| 0303-790 | Fundamentals of Sustainable Design         |
| 0303-791 | Lifecycle Assessment and Costing           |
| 0303-792 | Design for the Environment                 |

A full listing of electives can be found at [www.rit.edu/kgcoe/ise](http://www.rit.edu/kgcoe/ise). Graduate-level courses, as well as courses from the other engineering disciplines, may be used as professional electives with the permission of the adviser and course instructor. (See the *Graduate Bulletin* for descriptions.)

### Accelerated dual degree options

The department offers accelerated dual degree (BS/MS and BS/ME) options, where select students may complete a BS and an MS or ME in industrial engineering in five years. An arrangement with the E. Philip Saunders College of Business allows for an accelerated BS/MBA option. For more information, contact the department or visit its website.

## Additional information

### Facilities

The industrial and systems engineering department is located in the James E. Gleason Building and houses several state-of-the-art laboratories, including the Brinkman Machine Tools and Manufacturing Lab, the Metrology and Rapid Prototyping Lab, the Toyota Production Systems Lab, the Human Performance Lab, the Advanced Systems Integration Lab, the Sustainable Engineering Research Group (SERG) Lab, and the Print Research and Image Systems Modeling (PRISM) Lab. Ample computing facilities reside within each of these specialized labs, as well as a dedicated PC computer lab. These labs offer an extensive library of software to support industrial engineering course work, project work, and research, including conventional word processing, spreadsheet, and presentation applications (e.g., Microsoft Office), database management (e.g., Microsoft ACCESS), data acquisition (e.g., Lab View), statistical analysis (e.g., Minitab, SAS), facilities layout (e.g., AutoCad, Factory Flow, Factory Plan, LayoutIQ), manufacturing (e.g., MasterCam Cambridge Engineering Selector Software), optimization (e.g., ILOG OPL-CPLEX, LINDO, KNITRO, AMPL, GuROBI, Mathematica), systems simulation software (e.g., Solver, Arena, Promodel), and lifecycle assessment and costing tools (e.g., SimaPro, CES Eco-Audit).

### Careers

In order to optimize processes and systems, industrial engineers apply their knowledge in a wide range of areas, including systems simulation modeling, quality, logistics and supply chain management, ergonomics and human factors, facilities layout, production planning and control, manufacturing, management information systems, and project management. Upon graduation, our students work for a wide array of companies, including Boeing, IBM, Toyota, Xerox, Intel, General Electric, Hershey, Walt Disney World, Ortho-McNeil Pharmaceutical, Lockheed Martin, and Wegmans, to name a few.

Balance, as well as specialization, has allowed our graduates to pursue varied paths. Examples of the diversity, along with the roles in which an industrial engineer might function, are reflected in the following list of sample industrial engineering co-op assignments.

In manufacturing industries:

- Perform product life studies
- Lay out and improve work areas
- Design production processes to improve productivity
- Investigate and analyze the cost of purchasing new vs. repairing existing equipment
- Investigate delivery service, including scheduling, route modification, and material handling
- Create computer programs to track pricing policies and truck scheduling
- Perform downtime studies of various operations using time study and work sampling
- Develop and computerize a forecasting model
- Perform ergonomic studies and evaluations of workstations and product designs
- Participate in the design process of products and processes to ensure ease of manufacture, maintenance, and remanufacture or recycling

In service industries:

- Design information systems
- Monitor safety and health programs
- Manage hazardous and toxic materials storage and disposal programs
- Manage a facility's projects to ensure they are completed on time and on budget
- Conduct cost analysis of procedures to support decision making
- Schedule operations and manage information flow
- Design supply-ordering systems
- Improve processes in a hospital
- Evaluate waiting time and space utilization in an amusement park

## Mechanical Engineering, BS

<http://www.rit.edu/kgcoe/mechanical/>

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### Program overview

#### Educational objectives

The objectives of the mechanical engineering program are to prepare graduates to:

- practice mechanical engineering in support of the design of engineered systems through the application of the fundamental knowledge, skills, and tools of mechanical engineering.
- enhance their skills through formal education and training, independent inquiry, and professional development.
- work independently as well as collaboratively with others, while demonstrating the professional and ethical responsibilities of the engineering profession.
- successfully pursue graduate degrees at the master's and/or doctoral levels, should they choose.

Mechanical engineering is perhaps the most comprehensive of the engineering disciplines. The mechanical engineer's interests encompass the design of automotive and aerospace systems, bioengineering devices, and energy-related technologies. The spectrum of professional activity for the mechanical engineering graduate runs from research through design and development to manufacturing and sales. Because of their comprehensive training and education, mechanical engineers often are called upon to assume management positions.

The mechanical engineering department offers professional courses in the areas of bioengineering, energy systems, applied mechanics, manufacturing, materials science, systems analysis, computer-aided graphics and design, robotics, and automotive and aerospace engineering. The department's laboratories are equipped to provide extensive experimentation in these areas. Laboratory facilities include a well-instrumented wind tunnel, a particle imaging velocimetry laser system for flow visualization, advanced heat transfer systems, robotics, a proton exchange membrane fuel cell, engine dynamometers, fluid flow loops, refrigeration systems, tensile testers, compression testers, torsion testers, hardness testers, X-ray diffractometer, atomic force microscope, dynamic system simulators, a spectrum analyzer, and a well-equipped machine shop.

Students have an opportunity to participate in regional and national design competitions such as the Formula SAE Autosports Competition team, the SAE Aerodesign Club, and the Human-Powered Vehicle Competition team. They also are encouraged to participate in the student chapters of professional societies such as the American Society of Mechanical Engineers, the Society of Women Engineers, the National Society of Black Engineers, the Society of Hispanic Professional Engineers, the American Institute of Aeronautics and Astronautics, and the Society of Automotive Engineers.

### Curriculum

The program provides students with a broad academic base complemented by hands-on laboratory activities and cooperative education experience. Students devote their first two years to the study of mathematics, physics, chemistry, liberal arts, and engineering sciences, while the third and fourth years emphasize engineering science, design, and systems.

A student may then specialize by choosing appropriate technical and free elective courses in an area of interest. Each of the listed technical electives includes a significant design project. In the fifth year, each student is required to complete the capstone design courses, Senior Design I and II (0305-630, 631).

The liberal arts component of the mechanical engineering program consists of 36 credit hours of study in accordance with the university's liberal arts general education requirements. In the third year, all students must demonstrate writing competency in the English language by successfully completing a college writing exercise evaluated by faculty from the Institute Writing Committee. For some students, this may require work with the Academic Support Center, the English Language Center, or additional course work in the College of Liberal Arts.

### Accreditation

The BS in mechanical engineering program is accredited by the EAC Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

## Mechanical engineering, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1720-050, 051                     | Discovery   | 1             |
| 1720-052                          | Pathways‡   | 1             |
|                                   | Students will be enrolled in one of the two calculus sequences below: |               |
| 1016-281, 282, 283                | Calculus I, II, III   | 12            |
| 1016-271, 272, 273                | Calculus A, B, C  |               |
| 1011-208                          | Chemistry I   | 4             |
| 0304-343                          | Materials Processing  | 3             |
|                                   | Liberal Arts*   | 12            |
| 1017-311, 312                     | University Physics I, II  | 10            |
| 0304-214                          | Engineering Design Graphics   | 2             |
| 0304-280                          | Measurements, Instrumentation, Controls Lab                           | 2             |
| 0304-342                          | Problem Solving with Computers  | 3             |
|                                   | Wellness Education†   | 0             |
| <b>Second Year</b>                |   |               |
|                                   | Science Electives   | 8             |
| 1016-305                          | Multivariable Calculus  | 4             |
| 1016-306                          | Differential Equations  | 4             |
| 1016-318                          | Matrices and Boundary Value Problems                                  | 4             |
| 1017-313                          | University Physics III  | 4             |
| 0304-413                          | Thermodynamics  | 4             |
| 0304-415                          | Fluid Mechanics   | 4             |
| 0304-336                          | Statics   | 4             |
| 0304-347                          | Mechanics of Materials  | 4             |
| 0304-348                          | Mechanics of Materials Lab  | 1             |
| 0304-359                          | Dynamics  | 5             |
|                                   | Liberal Arts*   | 4             |
|                                   | Wellness Education†   | 0             |
| <b>Third Year</b>                 |   |               |
| 1016-314                          | Engineering Statistics  | 4             |
| 0304-344                          | Materials Science   | 4             |
| 0304-437                          | Design of Machine Elements  | 4             |
| 0304-440                          | Numerical Methods   | 4             |
| 0304-514                          | Heat Transfer   | 4             |
| 0304-416                          | Thermal Fluids Lab I  | 1             |
| 0301-381                          | Circuits I  | 4             |
|                                   | Liberal Arts*   | 8             |
|                                   | Cooperative Education (2 quarters)                                    | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0304-518                          | Advanced Computational Techniques                                     | 4             |
|                                   | Liberal Arts*   | 4             |
| 0304-543                          | Systems Dynamics  | 5             |
| 0304-550                          | Transport Phenomena   | 4             |
| 0304-551                          | Thermal Fluids Lab II   | 1             |
|                                   | Cooperative Education (3 quarters)                                    | Co-op         |
| <b>Fifth Year</b>                 |   |               |
|                                   | Technical Electives   | 16            |
|                                   | Free Electives  | 12            |
|                                   | Liberal Arts*   | 8             |
| 0304-630, 631                     | Senior Design I, II   | 8             |
| <b>Total Quarter Credit Hours</b> |   | <b>195</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

## Elective courses

### Technical/Graduate Electives

|          |  |
|----------|--|
| 0304-701 | Research Methods (Primarily for BS/MS Students)          |
| 0304-730 | Design Project Management (Primarily for BS/ME Students) |

### General Technical Electives

|          |  |
|----------|--|
| 0303-620 | Engineering Economy                      |
| 0304-610 | Topics in Mechanical Engineering Design  |
| 0304-615 | Robotics                                 |
| 0304-618 | Computer-Aided Engineering               |
| 0304-635 | Heat Transfer II                         |
| 0304-638 | Design of Machine Systems                |
| 0304-652 | Turbomachinery                           |
| 0304-672 | Dynamics of Machinery                    |
| 0304-658 | Engineering Vibrations                   |
| 0304-745 | Micro/Nano Characterization of Materials |

### Aerospace Technical Electives

|          |  |
|----------|--|
| 0304-644 | Introduction to Composite Materials            |
| 0304-643 | Control Systems                                |
| 0304-671 | Aerostructures                                 |
| 0304-678 | Propulsion                                     |
| 0304-682 | Flight Dynamics                                |
| 0304-683 | Orbital Mechanics                              |
| 0304-743 | Intermediate Control Systems                   |
| 0304-754 | Fundamentals of Fatigue and Fracture Mechanics |

### Automotive Technical Electives

|          |   |
|----------|---|
| 0304-622 | High Performance Vehicle Engineering      |
| 0304-623 | Powertrain Systems and Design             |
| 0304-624 | Vehicle Dynamics                          |
| 0304-640 | Internal Combustion Engines               |
| 0304-643 | Control Systems                           |
| 0304-710 | Fuel Cell Technology                      |
| 0304-752 | Fundamentals of Tribology and Lubrication |
| 0303-801 | Design for Manufacture                    |

### Bioengineering Technical Electives

|          |                                   |
|----------|-----------------------------------|
| 0304-645 | Biomaterials                      |
| 0304-646 | Biomedical Device Engineering     |
| 0304-756 | Aerosols in the Respiratory Tract |
| 0303-732 | Biomechanics                      |

### Energy and Environment Technical Electives

|          |  |
|----------|--|
| 0304-629 | Renewable Energy Systems                                   |
| 0304-633 | Sustainable Energy Management and the Built Environment    |
| 0304-639 | Alternative Fuels and Energy Efficiency for Transportation |
| 0304-640 | Internal Combustion Engines                                |
| 0304-643 | Controls Systems   |
| 0304-660 | Refrigeration and Air Conditioning                         |
| 0304-680 | Advanced Thermodynamics                                    |
| 0304-710 | Fuel Cell Technology                                       |

Additional technical electives are available outside of the department. Students wishing to complete external technical courses may request departmental approval.



A number of free electives are also available. These courses may NOT be used as technical electives:

|          |   |
|----------|---|
| 0303-520 | Engineering Economy                                 |
| 0304-540 | Introduction to Automotive Design and Manufacturing |
| 0304-560 | Introduction to Aerospace Engineering               |
| 0304-461 | Contemporary Issues in Bioengineering               |
| 0304-460 | Contemporary Issues in Energy and the Environment   |

### Options

Students may select a number of course options to gain specialized study in a particular discipline of mechanical engineering. Options include aerospace engineering, automotive engineering, bioengineering, and energy and environment. Participation in one of these options is not required. However, they are offered for those students who seek to pursue a career in one of these specialized fields of mechanical engineering. Students must maintain a GPA of at least 2.0 within the option sequence of courses to remain in the option. The degree requires students to complete four technical electives and three free electives.

Students may elect to complete the program without an option and instead customize their academic study in support of their career plans. The mechanical engineering program is relatively flexible and allows students to pursue options, minors, and even multiple degrees.

### Aerospace engineering

The aerospace engineering option allows for specialized study in the engineering aspects of air- and space-borne vehicles and starts with a course introducing students to the aerospace field. The sequence starts in the third year with Introduction to Aerospace Engineering (0304-560), which counts as a free elective. Students who elect the aerospace option must take Aerodynamics (0304-575) in place of Transport Phenomena (0304-550). Students then select three technical electives from courses such as Aerospace Structures (0304-671), Propulsion (0304-678), Introduction to Composite Materials (0304-644), Fundamentals of Fatigue and Fracture Mechanics (0304-754), Control Systems (0304-643), Flight Dynamics (0304-682), and Orbital Mechanics (0304-683). In addition, students choosing this option are expected to work on an aerospace engineering design project in Senior Design I and II (0304-630, 631) and to pursue co-op employment in a related field.

### Automotive engineering

The automotive engineering option offers a series of specialized technical and free elective courses during the fourth and fifth years that provides an introduction to vehicle power plants, dynamics, and control systems. The sequence starts in the third year with Introduction to Auto Design and Manufacturing (0304-540), which counts as a free elective. Students then select three technical electives from courses such as High Performance Vehicle Engineering (0304-622), Powertrain Systems and Design (0304-623), Vehicle Dynamics (0304-624), Design of Machine Systems (0304-638), Internal Combustion Engines (0304-640), Control Systems (0304-643), Fundamentals of Tribology and Lubrication (0304-752), Fuel Cell Technology (0304-710), and Design for Manufacture (0303-801). In addition, students choosing this concentration are expected to work on an automotive senior design project in Senior Design I and II (0304-630, 631) and to pursue co-op employment in a related field.

### Bioengineering

The bioengineering option provides an introduction to engineering sciences and design based upon a foundation of biological sciences. The course sequence starts with a biological science elective, which counts as a free elective. Students then select three technical electives from courses such as Contemporary Issues in Bioengineering (0304-461), and three technical electives chosen from a wide variety of offerings, such as Aerosols in the Respiratory Tract (0304-756), Biomechanics (0304-732), Control Systems (0304-643), Introduction to Biomaterials (0304-645), and Biomedical Device Engineering (0304-646). Students choosing this option are expected to work on a bioengineering design project in Senior Design I and II (0304-630, 631) and to pursue co-op employment in a related field.

### Energy and environment

This option consists of electives that provide students with exposure to a wide range of opportunities and careers associated with energy-intensive systems and how they relate to the environment. This option increases the number of opportunities students have for careers in the fields of building energy systems, alternative and renewable energy, and direct energy conversion. The sequence starts in the third year with Contemporary Issues in Energy and the Environment (0304-460), which counts as a free elective. Students then select three technical electives from courses such as Renewable Energy Systems (0304-629), Sustainable Energy Management (0304-633), Alternative Fuels and Energy Efficiency (0304-639), Advanced Thermodynamics (0304-680), Fuel Cell Technology (0304-710), and Heating, Refrigeration and Air Conditioning (0304-660). Students choosing this option are expected to work on an energy systems design project in Senior Design I and II (0304-630, 631) and to pursue co-op employment in a related field.

### Accelerated dual degree options

Three accelerated dual degree options offer outstanding mechanical engineering students an opportunity to earn bachelor of science and master of science degrees within approximately five years. Two dual degree options are available—a bachelor of science/master of engineering degree (BS/ME), which has a strong career focus for students who plan to seek employment immediately after graduation; and a bachelor of science/master of science degree (BS/MS), which has a strong research focus and is primarily directed toward students who plan to continue their education in the pursuit of a doctoral degree. All students enrolled in the BS/MS options are required to complete a graduate thesis and conduct scholarly research.

The ME department also offers a dual degree option enabling students to earn a BS in mechanical engineering and an MS in science, technology, and public policy. This dual degree option has a public policy research focus and is designed for students interested in using their technical preparation as an engineer to help shape future policy decisions. It is a cliché that technology has become a major driver, perhaps the most important driver, of social, political, and economic change. It follows then that engineers will increasingly shape the direction of those changes, and it is important that engineers understand how their future actions directly and indirectly affect all of our lives.

A student enrolled in the dual degree option is required to successfully complete 230-235 quarter credit hours, after which the BS and MS or ME degrees are awarded simultaneously. A student



may apply for admission to this program in the winter quarter of the second year. A transfer student may apply after completing one quarter of study at RIT. Admission is based on a cumulative grade-point average of at least 3.4, letters of recommendation from the faculty, and a letter of application from the student. Students are admitted first to the BS/ME option but may change to the BS/MS option upon approval of a thesis proposal. While in the program, students are required to maintain a cumulative grade-point average of at least 3.2.

## Microelectronic Engineering, BS

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<http://www.rit.edu/kgcoe/electrical>

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### Program overview

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Semiconductor microelectronics technology remains important for the world economy. The semiconductor industry is a star performer in U.S. manufacturing. Fostering a vigorous semiconductor industry in our country is important for the nation's economic growth, long-term security, and the preparation and maintenance of a capable high-tech workforce. The Kate Gleason College of Engineering developed the first bachelor of science degree program in microelectronic engineering in the U.S., and the college continues to provide highly educated and skilled engineers for the semiconductor industry.

### Educational objectives

Our constituents include students, graduate schools, faculty, and the semiconductor industry. The educational objectives of the microelectronic engineering program are to produce graduates who have the following skills or characteristics:

- A sound knowledge of the fundamental scientific principles involved in the operation, design, and fabrication of integrated circuits.
- A comprehensive understanding of relevant technologies such as integrated circuit process integration and manufacturing. This includes microlithography and the application of engineering principles to the design and development of current and future semiconductor technologies.
- A professional approach to problem solving, using analytical, academic, and communication skills effectively, with special emphasis on working in teams.
- An enthusiasm for learning and the continuous improvement of skills throughout one's career, exemplified by learning about emerging technologies and adapting to and accepting change within the field.
- A desire to achieve leadership positions in industry or academia.
- A breadth of knowledge, including the multidisciplinary nature of microelectronic engineering as well as the broad social, ethical, safety, and environmental issues within which engineering is practiced.

One of the great challenges in integrated circuit manufacturing is the need to draw on scientific principles and engineering developments from such an extraordinarily wide range of disciplines. The design of microelectronic circuits requires a sound knowledge of

electronics and circuit analysis. Optical lithography tools, which print microscopic patterns on wafers, represent one of the most advanced applications of the principles of Fourier optics. Plasma etching involves some of the most complex chemistries used in manufacturing today. Ion implantation draws upon understanding from research in high-energy physics. Thin films on semiconductor surfaces exhibit complex mechanical and electrical behavior that stretches our understanding of basic materials properties.

Scientists and engineers who work in the semiconductor field need a broad understanding of and the ability to seek out, integrate, and use ideas from many disciplines. The program provides the broad interdisciplinary background in electrical and computer engineering, solid-state electronics, physics, chemistry, materials science, optics, and applied math and statistics necessary for success in the semiconductor industry.

### Accreditation

The BS in microelectronic engineering program is accredited by the EAC Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700.

### Curriculum

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The curriculum begins with introductory courses in microelectronic engineering and microlithography (micropatterning) for integrated circuits. The first two years of the program build a solid foundation in mathematics, physics, and chemistry. The fundamentals of statistics and their applications in the design of experiments, semiconductor device physics and operation, and integrated circuit technology are covered in the second year. This prepares students for their first cooperative education experience. The third year comprises the electrical engineering course work necessary for understanding semiconductor devices and integrated circuits. The fourth and fifth years are dedicated to VLSI design, optics, microlithography systems and materials, semiconductor processing, professional electives, and a two-quarter capstone senior project. In the capstone course, students propose and conduct individual research/design projects and present their work at the Annual Microelectronic Engineering Conference, which is organized by the department and well-attended by industrial representatives.

A choice of professional electives and the senior project offer students an opportunity to build a concentration such as advanced CMOS, VLSI chip design, analog circuit design, electronic materials science, microelectromechanical systems (MEMS), or nanotechnology within this unique interdisciplinary program. Three free elective courses are built into the program to allow students to take a minor program in any other discipline.

Computing skills are necessary to design, model, simulate, and predict processes and device behavior that are vital to manufacturing. A comprehensive knowledge of statistics is required to manipulate data and process control. As the devices shrink in size, approaching the nanoscale regime where molecular and atomic scale phenomena come into play, elements of quantum mechanics become important.

Important issues such as the technology road map, ethics, societal impact, and global perspectives are built into the program beginning with first-year courses. The program is laid out in a way that keeps students connected with their home department throughout the course of study.

Students gain hands-on experience in the design, fabrication, and testing of integrated circuits (microchips), the vital component in almost every advanced electronic product manufactured today. RIT's undergraduate microelectronics engineering laboratories, which include modern integrated circuit fabrication (clean room) and test facilities, are the best in the nation. At present, the program is supported by a complete complementary metal oxide semiconductor line equipped with diffusion; ion implantation; plasma; and chemical vapor deposition (CVD) processes; chemical mechanical planarization; and device design, modeling, and test laboratories. The microlithography facilities include Canon i-line and GCA g-line wafer steppers, and a Perkin Elmer MEBES III electron beam mask writer.

Students participate in the required co-op portion of the program after completing their second year of study. Microelectronic engineering co-op students work for many of the major integrated circuits manufacturers across the United States. Upon graduation, they are well-prepared to enter the industry or graduate school. This program also prepares students to work in emerging technologies such as nanotechnology, microelectromechanical systems, and microsystems.

With the worldwide semiconductor industry growing at an astounding pace, RIT graduates are a valuable resource to the industry. This program offers students an unparalleled opportunity to prepare for professional challenges and success in one of the leading modern areas of engineering. Faculty committed to quality engineering education, state-of-the-art laboratories, strong industrial support, co-op opportunities with national companies, and smaller class sizes make this one of the most value-added programs in the nation.

### Microelectronic engineering, BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 0305-201           | Introduction to Microelectronics       | 4             |
| 0305-221           | Introduction to Micro/Nano Lithography | 4             |
| 1011-208           | College Chemistry I                    | 4             |
| 1016-281, 282, 283 | Calculus I, II, III                    | 12            |
| 1017-311, 312      | University Physics I, II               | 10            |
| 0306-341           | Introduction to Digital Systems        | 4             |
|                    | Liberal Arts*                          | 12            |
|                    | Wellness Education†                    | 0             |
| 1720-050, 051      | Discovery                              | 1             |
| 1720-052           | Pathways‡                              | 1             |
| <b>Second Year</b> |  |               |
| 1016-305           | Multivariable Calculus                 | 4             |
| 1016-306           | Differential Equations                 | 4             |
| 1016-328           | Engineering Mathematics                | 4             |
| 1017-313           | University Physics III                 | 4             |
| 1017-314           | Modern Physics                         | 4             |
| 0301-344           | Matlab and C                           | 3             |
| 0305-460           | Semiconductor Devices I                | 4             |
| 0307-315           | Statistics for Engineers               | 4             |
| 0305-320           | Design of Experiments                  | 4             |
| 0305-350           | Integrated Circuit Technology          | 4             |
| 0301-381           | Circuits                               | 4             |
|                    | Free Elective                          | 4             |
|                    | Wellness Education†                    | 0             |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>Third Year</b>                 |   |               |
| 0301-382                          | Circuit Analysis II                               | 4             |
| 0305-515                          | Principles of Electromagnetic Fields              | 4             |
|                                   | Free Elective                                     | 4             |
| 0301-481, 482                     | Electronics I, II with Labs                       | 8             |
| 0305-560                          | Semiconductor Devices II                          | 4             |
|                                   | Liberal Arts*                                     | 8             |
|                                   | Cooperative Education (2 quarters)                | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 0305-525                          | Optics for Microelectronics                       | 4             |
| 0305-632                          | Silicon Processes                                 | 4             |
| 0305-563, 573                     | Microlithography Systems with Lab                 | 4             |
| 0305-520                          | VLSI Design                                       | 4             |
| 0305-643                          | Thin Film Processes                               | 4             |
| 0301-453                          | Linear Systems                                    | 4             |
|                                   | Liberal Arts*                                     | 8             |
|                                   | Cooperative Education (2 quarters)                | Co-op         |
| <b>Fifth Year</b>                 |   |               |
| 0305-650                          | CMOS Processing Lab                               | 4             |
| 0305-666, 676                     | Microlithography Materials and Processes with Lab | 4             |
| 0305-681, 691                     | Senior Design Project I, II                       | 6             |
|                                   | Two Professional Electives                        | 8             |
|                                   | Free Elective                                     | 4             |
|                                   | Liberal Arts*                                     | 8             |
|                                   | Cooperative Education (1 quarter)                 | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>197</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

‡Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

### Professional electives (partial list)

|          |  |
|----------|--|
| 0305-704 | Semiconductor Process and Device Modeling          |
| 0305-705 | Quantum and Solid State Physics for Nanostructures |
| 0305-706 | SiGe and SOI Devices and Technology                |
| 0305-707 | Nanoscale CMOS and Beyond                          |
| 0305-714 | Micro/Nano Characterization                        |
| 0305-732 | Microelectronics Manufacturing II                  |
| 0305-830 | Metrology for Yield and Failure Analysis           |
| 0306-561 | Digital System Design                              |
| 0306-631 | Advanced VLSI Design                               |
| 0301-726 | Analog IC Design                                   |
| 0301-730 | Advanced Analog IC Design                          |
| 0305-870 | Microelectromechanical Systems                     |

Graduate-level courses from other related engineering, mathematics, or science disciplines may be used as professional electives with the permission of the academic adviser and course instructor. (See the *Graduate Bulletin* for descriptions.)

### BS/MS microelectronic engineering and materials science

A cross-disciplinary dual degree BS/MS degree option between two colleges is available in the microelectronic engineering program. Students may work to earn a BS in microelectronic engineering from the Kate Gleason College of Engineering and an MS in materials science and engineering from the College of Science.

This unique program was inspired by trends involving convergence of advanced materials with nanofabrication and microelectronics in modern microdevices and systems. The five-year option requires the successful completion of 225 credits, with a minimum of 45 graduate course credits and a graduate thesis. One co-op quarter is substituted for the graduate course work to make it an accelerated five-year option requiring a minimum of 13 quarters of academic course work. A student may apply for admission to this option in the fall quarter of the third year with a grade-point average of at least 3.0 at the end of the previous quarter.

### Microelectronic engineering materials science and engineering, BS/MS option, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
|                                   | Same as BS (Microelectronic Engineering)           | 52            |
| <b>Second Year</b>                |  |               |
|                                   | Same as BS (Microelectronic Engineering)           | 49            |
| <b>Third Year</b>                 |  |               |
|                                   | Same as BS (Microelectronic Engineering)           | 32            |
| <b>Fourth Year</b>                |  |               |
| 0305-525                          | Optics for Microelectronics                        | 4             |
| 0305-563, 573                     | Microolithography Systems and Lab                  | 4             |
| 0305-632                          | Silicon Processes                                  | 4             |
| 0305-703                          | Thin Film Processes                                | 4             |
| 0305-520                          | VLSI Design  | 4             |
|                                   | Free Elective                                      | 4             |
|                                   | Liberal Arts*                                      | 8             |
|                                   | Cooperative Education (1 quarter)                  | Co-op         |
| 1028-701                          | Introduction to Materials Science                  | 4             |
| 1028-704                          | Introduction to Theoretical Methods                | 4             |
| 1028-705                          | Introduction to Experimental Techniques            | 4             |
|                                   | MSE Graduate Elective                              | 4             |
| <b>Fifth Year</b>                 |  |               |
| 0305-650                          | CMOS Processing Lab                                | 4             |
| 0305-666, 721                     | Microolithography Materials and Processes with Lab | 3             |
| 0305-381, 691                     | Senior Design Project I, II                        | 6             |
|                                   | Free Elective                                      | 4             |
|                                   | Liberal Arts*                                      | 8             |
| 1028-703                          | Solid State Science                                | 4             |
| 1028-702                          | Introduction to Polymer Science                    | 4             |
|                                   | MSE Graduate Elective                              | 4             |
| 1028-879                          | MSE Research                                       | 8             |
| 1028-890                          | MSE Seminar/Defense                                | 1             |
| <b>Total Quarter Credit Hours</b> |  | <b>227</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

## Engineering Exploration, Undeclared

<http://www.rit.edu/kgcoe/undergrad/undeclared>

### Program overview

The engineering exploration option is for students who prefer additional time in which to decide their engineering major. Students may choose a major at the end of the fall, winter, or spring quarter of their first year.

## Curriculum

During their first year students take the foundation courses required by all the engineering disciplines. Course work taken as an engineering exploration student will transfer into all engineering programs without any loss of credits toward graduation.

During the fall quarter, engineering exploration students take a one-credit course, Introduction to Engineering (0302-210). This course provides an overview of all seven programs plus the opportunity to learn about the course of study in each program, career opportunities in each of the engineering disciplines and an introduction to the faculty and students of each program. Other career-oriented activities available during the freshman year include participating in small group discussions with faculty and other students, observing classroom presentations of senior engineering design projects, exploring engineering laboratory facilities, and consulting one-on-one with an academic adviser regarding engineering courses.

### Engineering exploration option, typical first-year schedule

| COURSE                            |                               | QTR. CR. HRS. |
|-----------------------------------|-------------------------------|---------------|
| <b>Fall</b>                       |                               |               |
| 1016-281                          | Calculus I                    | 4             |
| 1011-208                          | College Chemistry             | 4             |
| 0302-210                          | Introduction to Engineering   | 1             |
|                                   | Liberal Arts*                 | 8             |
| 1720-050, 051                     | Discovery                     | 1             |
| <b>Winter</b>                     |                               |               |
| 1016-282                          | Calculus II                   | 4             |
|                                   | Engineering class of interest | 4             |
| 1017-311                          | University Physics I          | 4             |
|                                   | Liberal Arts*                 | 4             |
|                                   | Pathways course†              | 1             |
| <b>Spring</b>                     |                               |               |
| 1016-283                          | Calculus III                  | 4             |
|                                   | Engineering class of interest | 4             |
| 1017-312                          | University Physics II         | 4             |
|                                   | Liberal Arts*                 | 4             |
|                                   | Wellness Education‡           | 0             |
| <b>Total Quarter Credit Hours</b> |                               | <b>51</b>     |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students are required to complete one Pathways course. Students may choose from Innovation/Creativity (1720-052), Leadership (1720-053), or Service (1720-054). These courses may be completed in the winter or spring quarter.

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**Jason R. Kolodziej**, BS, MS, Ph.D., State University of New York at Buffalo—Assistant Professor

**Margaretha J. Lam**, BS, MS, State University of New York at Buffalo; Ph.D., Virginia Polytechnic Institute and State University—Lecturer

**Kathleen Lamkin-Kennard**, BS, Worcester Polytechnic Institute; MS, Ph.D., Drexel University—Assistant Professor

**Timothy P. Landschoot**, BS, MS, Rochester Institute of Technology; MBA, University of Rochester—Lecturer

**Kate Leipold**, BS, MS, Rochester Institute of Technology—Lecturer

**Alexander Liberson**, BS, MS, Ph.D., State University of Aerospace Technology (Russia)—Visiting Associate Professor

**Alan H. Nye**, BS, MS, Clarkson College; Ph.D., University of Rochester—Associate Department Head; Professor

**Ali Ogut**, B.Ch.E., Hacettepe University (Turkey); MS, Ph.D., University of Maryland—Professor

**Risa J. Robinson**, BS, MS, Rochester Institute of Technology; Ph.D., State University of New York at Buffalo—Associate Professor

**Frank Sciremammano Jr.**, BS, MS, Ph.D., University of Rochester, PE—Professor

**Robert J. Stevens**, BS, Swarthmore College; MS, North Carolina State University; Ph.D., University of Virginia—Associate Professor

**Benjamin Varela**, BS, Institute of Technology of Juarez (Mexico); MS, Ph.D., New Mexico State University—Associate Professor

**Panchapakesan Venkataraman**, B.Tech., Indian Institute of Technology; MS, Ph.D., Rice University—Associate Professor

**Wayne W. Walter**, BE, State University of New York Maritime College; MS, Clarkson College; Ph.D., Rensselaer Polytechnic Institute; PE—Professor

**John D. Wellin**, BS, Rochester Institute of Technology; MS, University of Rochester—Lecturer

## The John D. Hromi Center for Quality and Applied Statistics

**Donald D. Baker**, BA, Trinity College; M.Ed., MBA, Ed.D., University of Rochester—Director; Professor

**Peter Bajorski**, MS, University of Wroclaw (Poland); Ph.D., Technical University of Wroclaw (Poland)—Associate Professor

**Ernest Fokoué**, Maitrise B.Sc., University of Yaoundé (Cameroon); M.Sc., Aston University (England); Ph.D., University of Glasgow (Scotland)—Assistant Professor

**Steven M. LaLonde**, BA, State University College at Potsdam; MBA, University of Rochester; MA, Ph.D., Syracuse University—Chair; Associate Professor

**Daniel R. Lawrence**, BA, BS, University of Akron; MA, Ball State University; MS, Rochester Institute of Technology; Ph.D., University of Toronto (Canada)—Associate Professor

**Robert J. Parody**, BS, Clarkson University; MS, Rochester Institute of Technology; Ph.D., University of South Carolina—Assistant Professor

**Joseph G. Voelkel**, BS, Rensselaer Polytechnic Institute; MS, Northwestern University; Ph.D., University of Wisconsin at Madison—Professor



## Microsystems Engineering

**Bruce W. Smith**, BS, MS,  
Ph.D., Rochester Institute of  
Technology—Director; Intel  
Professor of Research and  
Technology; Professor

**Zhaolin Lu**, BS, Changqing  
University (China); MS, Michigan  
Technological University; Ph.D.,  
University of Delaware—Assistant  
Professor

**Stefan F. Preble**, BS, Rochester  
Institute of Technology; Ph.D.,  
Cornell University—Assistant  
Professor

## Distinguished Professorships

### James E. Gleason Professorship in Mechanical Engineering

Established: 1967  
Donor: Estate of James E. Gleason  
Purpose: To provide a permanent  
memorial for Mr. Gleason, who  
served as a trustee of RIT from  
1930 until 1964, and to strengthen  
RIT in the field in which he  
received his education  
Held by: Satish G. Kandlikar

### Micron Technology Professor

Established: 2005  
Donor: Micron Technology, Inc.  
Purpose: To enhance  
microelectronics education at the  
undergraduate and graduate level  
and to foster development and  
collaboration in areas of mutual  
interest  
Held by: Karl D. Hirschman

## Earl W. Brinkman Professor of Screw Machine Technology

Established: 1995  
Donor: Brinkman Family  
Charitable Trust and an  
anonymous foundation  
Purpose: To create a lasting  
memorial to Earl W. Brinkman,  
an innovative leader in the  
screw machine industry, who  
retired from Davenport Machine  
Company in Rochester, N.Y., in  
1979 after devoting 53 years to the  
company  
Held by: Denis R. Cormier

### Intel Professor of Research and Technology

Established: 2000  
Donor: Intel Corporation  
Purpose: To support RIT's  
Microelectronic Engineering  
Department and to develop  
new methods of manufacturing  
computer chips  
Held by: Bruce W. Smith

# College of Health Sciences and Technology

*Richard Doolittle, Acting Dean/Chair*

## **Programs of study**

### **Bachelor of Science degrees in:**

|  |    |
|--|----|
| Biomedical Sciences                        | 78 |
| Diagnostic Medical Sonography (Ultrasound) | 79 |
| Nutrition Management                       | 81 |
| Physician Assistant                        | 81 |

### **Certificates in:**

|  |    |
|--|----|
| Diagnostic Medical Sonography (Ultrasound) | 80 |
| Exercise Science                           | 83 |

RIT has recently established the College of Health Sciences and Technology to respond to the growing need for well-educated professionals in the health care field. The United States faces a looming shortage of many types of health care professionals, including nurses, physicians, dentists, pharmacists, and allied health workers. The college, housed in the Institute of Health Sciences and Technology, serves as an independent academic and research entity designed to provide a focused, interdisciplinary, and systems approach to innovative health care education, applied/translational research, and community outreach. The institute incorporates three major thrusts: the College of Health Sciences and Technology, the Health Science Research Center, and the Health Science Community Collaboration and Outreach Center.

The college offers clinically related and biomedical research-based programs to meet both the present and future needs of the health care system. The college's faculty and staff are committed to delivering high quality educational programs. Building on a foundation of liberal arts and basic sciences, students will gain advanced knowledge in theoretical science and practical applications in experiential learning environments. These experiences prepare students to serve as practitioners, scientists, and leaders through their contributions to, and the provision of, high-quality patient care, health care service, and/or applied, translational biomedical research.

## **Admission requirements**

For more information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## **Financial aid and scholarships**

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

## **Faculty**

Faculty members in the college have considerable experience in their respective fields of discipline. Basic science and clinical faculty work side-by-side to provide students with a comprehensive learning experience to prepare them for their chosen health-care-related career.

## **Facilities and resources**

In addition to facilities shared with the College the Science, the Center for Bioscience Education and Technology building provides a comprehensive environment to support academic, community, and career-training programs in the emerging life and medical sciences. The facility consists of multi-purpose, high-tech laboratories and classrooms for academic programs, continuing education

programs, research, K-12 student workshops, secondary school training programs, and work-force development.

### **Cooperative education**

All students will gain advanced knowledge in theoretical science and practical applications in experiential learning environments. For some students in the college this comes primarily in the form of unpaid clinical internship rotations through medical settings designed to help students master technical standards for their degree and eventual licensure. Additional opportunities are available for students to participate in cooperative education experiences to complement disciplines offered through the curriculum.

### **Accreditation**

The college offers several professional programs, which are all fully accredited through national accrediting organizations. The diagnostic medical sonography program (ultrasound) is accredited by the Joint Review Committee on Education in Diagnostic Medical Sonography of the Commission on Accreditation of Allied Health Education Programs (CAAHEA). The physician assistant program is accredited through the Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA). The nutrition management program is accredited by the Commission of Accreditation on Dietetic Education of the American Dietetic Association.

### **Advising**

The college's Student Services Office offers administrative support to assist with course selection and registration, career guidance, student records, and course scheduling. In addition, the administrative staff provides students with information on additional support services within RIT. Students are assigned an individual faculty adviser, who becomes an integral part of their advising network.

### **Academic enrichment**

*Honors Program:* Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admissions process.

*Study Abroad:* RIT encourages all students to consider a study abroad program to enhance their understanding of other cultures. Students may study full time at a variety of host schools and are able to select both business and liberal arts classes. RIT's Study Abroad Office has information about foreign study options and opportunities.

*Minors:* RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

### **Special opportunities**

*Graduate study:* The college offers master of science degrees in health systems administration and clinical chemistry, and a master of fine arts degree in medical illustration. Additional graduate programs in health-related fields and in the sciences are offered through the College of Science. Please refer to the *Graduate Bulletin* or the colleges' websites for more information.

## **Premedical Studies Advisory Program**

The premedical studies advisory program is designed to provide guidance and assistance to all RIT students who are interested in

continuing their education in one of the health professions; e.g., medicine, osteopathy, dentistry, optometry, podiatry, or veterinary science. Faculty members who participate in this program provide advice on the prerequisites (course selection, health-related experiences, extracurricular activities) needed for application to various health-related professional schools. In addition, they provide assistance with the application process.

### **Enrollment in premedical studies**

The premedical studies advisory program is available to students who are enrolled in one of the degree granting programs offered at RIT or to nonmatriculated students taking the premedical core courses or preprofessional prerequisite courses. To enroll in the program, students must contact the premedical studies office in room 1109 in the Center for Bioscience Education and Technology (CBET), or call Kristen Waterstram-Rich, Director, at (585) 475-7105.

## **Biomedical Sciences, BS**

[http://www.rit.edu/cos/medical/biomedical\\_sciences.html](http://www.rit.edu/cos/medical/biomedical_sciences.html)

**Kristen M. Waterstram-Rich, Program Director**  
**(585) 475-5117, [kmw4088@rit.edu](mailto:kmw4088@rit.edu)**

### **Program overview**

Biomedical sciences is an academic program designed to prepare students for advanced study in medical, dental, or graduate schools as they pursue careers in health care or biomedical research.

Faculty, from across the basic science disciplines and within and outside of the college, offer a diverse curriculum as well as research opportunities for students. In tracking through a highly flexible curricular structure, students will have access to myriad scientific professionals and educational experiences.

For the past 20 years, researchers in the biomedical fields have enjoyed rapid gains in employment due, in part, to the advances in biotechnology and an increase in staff in new medical research industries. Continued employment growth will occur with the increased need for more research in many areas of health care, including AIDS, diabetes, cancer, and neurological disorders. Courses and concentration options within biomedical sciences are designed to attract students interested in the broad spectrum of medically related jobs and to provide a knowledge base and the technical skills required to pursue their chosen careers.

### **Curriculum**

#### **Requirements for the BS degree in biomedical sciences**

The curricular requirements for the BS degree in biomedical sciences are very flexible, consisting of a life sciences core and a broad range of flexible options. The life sciences core is designed to provide the student with a strong grounding in mathematics and science, a complement of liberal arts courses in preparation for a particular career path—e.g., entry into medical/dental school graduate studies—or a research position in an applied area of biomedical science. Upon completion of the life sciences core, a choice of concentration areas is available in which the student, in consultation with an academic adviser, may select and complete a series of required and elective courses. Concentration areas include focused study in forensic science, pre-health professions (premedical, pre-dental), exercise science, pathology, neuroscience, and genetics. Students

also may choose to use elective credits to engage in undergraduate research with a faculty mentor and/or pursue a secondary field of study through a minor; e.g., in the liberal arts (communications, psychology, public policy, foreign language, etc.) or sciences (statistics, biochemistry, or imaging science), or possibly a second major.

### Biomedical sciences, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS.  |
|-----------------------------------|---|----------------|
| <b>First Year</b>                 |   |                |
| 1001-200, 259                     | Freshman Symposium                          | 2              |
| 1001-201, 202, 203                | General Biology I, II, III                  | 9              |
| 1001-205, 206, 207                | General Biology Lab I, II, III              | 3              |
| 1011-215, 216, 217                | General and Analytical Chemistry I, II, III | 10             |
| 1011-205, 206                     | Chemistry Principles I, II Lab              | 2              |
| 1011-227                          | General and Analytical Chemistry III Lab    | 1              |
| 1016-214, 215                     | Elementary Calculus I, II                   | 6              |
|                                   | Wellness Education†                         | 0              |
|                                   | Liberal Arts*                               | 12             |
|                                   | First-Year Enrichment                       | 2              |
| <b>Second Year</b>                |   |                |
| 1001-311                          | Cell Biology                                | 4              |
| 1001-350                          | Molecular Biology                           | 4              |
| 1026-350, 360                     | Anatomy and Physiology I, II                | 10             |
| 1013-231, 232, 233                | Organic Chemistry I, II, III                | 9              |
| 1013-235, 236, 237                | Organic Chemistry I, II, III Lab            | 3              |
| 1016-319                          | Data Analysis I                             | 4              |
|                                   | Science/Track Elective                      | 4              |
|                                   | Liberal Arts*                               | 12             |
| <b>Third Year</b>                 |   |                |
| 1017-211, 212, 213                | College Physics I, II, III                  | 12             |
|                                   | Science/Track Electives                     | 16             |
|                                   | University-wide Electives                   | 2-4            |
|                                   | Liberal Arts*                               | 12             |
| <b>Fourth Year</b>                |   |                |
|                                   | Science/Track Electives                     | 24             |
|                                   | University-wide Electives                   | 17             |
| <b>Total Quarter Credit Hours</b> |   | <b>180-182</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

### Program concentrations

The program includes the following concentrations:

|                        |
|------------------------|
| Forensic science       |
| Pre-health professions |
| Exercise science       |
| Pathology              |
| Genetics               |
| Neuroscience           |

### Elective courses

Below is a sample of available elective courses.

|                                      |                              |
|--------------------------------------|------------------------------|
| Bioinformatics                       | Immunology                   |
| Science of Forensics                 | Premedical Studies           |
| Genetics                             | Medical Terminology          |
| Introduction to Infectious Diseases  | Patient Care                 |
| Biochemistry                         | Introduction to Microbiology |
| Sports Physiology and Life Fitness   | Exercise Prescription        |
| Fitness Programming and Prescription | Undergraduate Research*      |
| Sports Nutrition                     | Medical Genetics             |
| Histology                            | Introduction to Neuroscience |
| Medical Pathophysiology              | Genetic Engineering          |
| Human Gross Anatomy                  | Endocrinology                |

|                              |                      |
|------------------------------|----------------------|
| Developmental Biology        | Virology             |
| Introduction to Pharmacology | Evolutionary Biology |

\*Variable credit; requires at least two sequential quarters of participation

## Diagnostic Medical Sonography, BS

[http://www.rit.edu/cos/medical/diagnostic\\_medical.html](http://www.rit.edu/cos/medical/diagnostic_medical.html)

**Hamad Ghazle, Program Director**  
(585) 475-2241, [hghsci@rit.edu](mailto:hghsci@rit.edu)

### Program overview

One of the fastest-growing areas in diagnostic medicine, diagnostic medical sonography is a noninvasive, nontoxic diagnostic medical imaging modality in which high-frequency sound waves are used to produce images of many different areas of the human body. Ultrasound is readily used to image the heart, blood flow, and abdominal organs as well as the developing fetus and male/female reproductive organs. The profession has grown rapidly in the last 20 years and is expected to continue to grow over the next several decades. Evaluation of the job market and a survey of employers indicate a strong demand for well-trained sonographers.

The medical sonography program is one of only a few such degree programs in the nation. It offers a BS degree in general ultrasound and a certificate option in general ultrasound (abdomen/small parts and obstetrics and gynecology, with an introduction to vascular). The program prepares students for application to schools of medicine, dentistry, veterinary medicine, podiatry, and chiropractic medicine. Students also can earn a certificate in health systems administration while completing their requirements. Additionally, graduates may choose to pursue a master's or doctoral degree in a variety of fields.

The intent of the program is to prepare students to be leaders in the field of ultrasound. Skills in administration and research are emphasized in addition to the development of scanning and diagnostic abilities. Students apply their theoretical knowledge and practice their skills in our dedicated ultrasound laboratory before their clinical internship. Upon successful completion of the program requirements, students are eligible to take a national certifying examination for abdominal, small parts, obstetrical, and gynecological ultrasound. Each candidate is also introduced to vascular ultrasound.

Graduates are prepared to pursue a variety of career options, nationally and internationally, in medical, industrial, and educational settings. Our graduates can be found in a wide range of positions, including supervisory and administrative, in hospitals, clinics, private physicians' offices, teaching, research, sales, and industry. Graduates also can choose to work as freelance sonographers or for mobile services.

### Curriculum

Students must meet the minimum requirements of the university as described in this bulletin and, in addition, must complete the curriculum requirements listed here or the equivalent, as determined and approved by the department of medical sciences. The BS degree is typically a four-year program, including clinical internship, unless the student has transfer credit from another institution. Those holding associate degrees may be able to complete the BS degree in two years; additional course work may be required. Contact the program director for further information on BS degree requirements.

## Clinical internship

The clinical internship year (completed with a 20 percent tuition discount) provides hands-on experience at two or more medical facilities in upstate New York or at approved regional and national medical ultrasound facilities. All students begin the internship by attending an intensive five-week experience on campus. During this time, they learn how to perform complete sonographic examinations and to recognize anatomy and disease states using equipment in the ultrasound laboratory. Students also learn about hospital departmental and administrative operations. After completing the requirements, candidates are assigned to a medical training site for clinical experience. At the medical facility, students work side by side with sonographers, physicians, and other health care professionals to learn, develop, apply, and sharpen the necessary skills to perform general ultrasound examinations. The students' clinical progress and performance are monitored by the program's clinical coordinator and program director, who make periodic visits to the clinical internship sites. Additionally, students return to campus each month for three days of lectures, presentations, projects, and testing.

## Accreditation

The program is accredited by the Joint Review Committee on Education in Diagnostic Medical Sonography of the Commission on Accreditation of Allied Health Education Programs.

## Diagnostic medical sonography (general ultrasound), BS degree, typical course sequence

| COURSE                          |  | QTR. CR. HRS. |
|---------------------------------|--|---------------|
| <b>First Year</b>               |  |               |
| 1001-201, 202, 203              | General Biology                            | 9             |
| 1001-205, 206, 207              | General Biology Lab                        | 3             |
| 1011-215, 216, 217              | General and Analytical Chemistry           | 10            |
| 1011-205, 206, 207              | Chemistry I, II, III Labs                  | 3             |
| 4006-230                        | Computers in Medicine                      | 4             |
| 1016-226                        | Calculus for Management Science            | 4             |
|                                 | Liberal Arts*                              | 12            |
| 1105-051, 052                   | First-Year Enrichment                      | 2             |
|                                 | Wellness Education†                        | 0             |
| <b>Second Year</b>              |  |               |
| 1017-211, 212, 213              | College Physics                            | 12            |
| 1026-205                        | Introduction to Diagnostic Medical Imaging | 2             |
| 1026-301                        | Medical Terminology                        | 3             |
| 1026-350, 360                   | Anatomy and Physiology                     | 10            |
| 1016-319                        | Data Analysis I                            | 4             |
|                                 | Liberal Arts*                              | 12            |
| <b>Third Year</b>               |  |               |
| 1030-412                        | Cross-Sectional Anatomy                    | 4             |
| 1030-409, 410                   | Ultrasound Instrumentation I, II           | 8             |
| 1026-415                        | Pathophysiology                            | 4             |
| 1004-315                        | Medical Genetics                           | 2             |
| 1026-333                        | Patient Care                               | 2             |
| 1030-559                        | Ultrasound Scanning                        | 4-6           |
|                                 | University-wide Electives                  | 12            |
|                                 | Liberal Arts*                              | 12            |
| <b>Fourth Year (Internship)</b> |  |               |
| 1030-552                        | Introduction to Obstetrical Ultrasound     | 3             |
| 1030-553                        | Gynecologic Ultrasound                     | 3             |
| 1030-556                        | Abdominal Ultrasound I                     | 3             |
| 1030-570                        | Clinical Ultrasound I                      | 7             |
| 1030-554                        | Advanced Obstetrical Ultrasound            | 4             |
| 1030-557                        | Abdominal Ultrasound II                    | 3             |

| COURSE                            |                             | QTR. CR. HRS.  |
|-----------------------------------|-----------------------------|----------------|
| 1030-560                          | Ultrasound Seminar          | 2              |
| 1030-571                          | Clinical Ultrasound II      | 7              |
| 1030-558                          | Small Parts Ultrasound      | 3              |
| 1030-414                          | General Vascular Evaluation | 4              |
| 1030-561                          | Research Seminar            | 2              |
| 1030-572                          | Clinical Ultrasound III     | 7              |
| <b>Total Quarter Credit Hours</b> |                             | <b>184-186</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Diagnostic Medical Sonography, Cert.

**Hamad Ghazle, Program Director**  
(585) 475-2241, [hghscl@rit.edu](mailto:hghscl@rit.edu)

## Program overview

The certificate option in diagnostic medical ultrasound is a one-year course of study that includes lectures integrated with a clinical internship. Certain prerequisite courses must be completed before starting the clinical internship. Contact the program director for further information on prerequisite course work. The certificate option is available to all registered allied health practitioners as well as to those holding an associate or bachelor's degree in a relevant discipline.

## Curriculum

The course work for the certificate program must be completed before students are allowed to begin the program's required clinical internship.

## Diagnostic medical sonography certificate program, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 1026-205                          | Introduction to Diagnostic Medical Imaging* | 2             |
| 1030-412                          | Cross-Sectional Anatomy*                    | 4             |
| 1030-409, 410                     | Ultrasound Instrumentation I, II*           | 8             |
| 1026-415                          | Pathophysiology*                            | 4             |
| 1030-559                          | Ultrasound Scanning*                        | 4-6           |
| <i>Clinical internships:</i>      |   |               |
| 1030-552                          | Introduction to Obstetrical Ultrasound      | 3             |
| 1030-553                          | Gynecologic Ultrasound                      | 3             |
| 1030-556                          | Abdominal Ultrasound I                      | 3             |
| 1030-570                          | Clinical Ultrasound I                       | 7             |
| 1030-554                          | Advanced Obstetrical Ultrasound             | 4             |
| 1030-557                          | Abdominal Ultrasound II                     | 3             |
| 1030-560                          | Ultrasound Seminar                          | 2             |
| 1030-571                          | Clinical Ultrasound II                      | 7             |
| 1030-558                          | Small Parts Ultrasound                      | 3             |
| 1030-414                          | General Vascular Evaluation                 | 4             |
| 1030-561                          | Research Seminar                            | 2             |
| 1030-572                          | Clinical Ultrasound III                     | 7             |
| <b>Total Quarter Credit Hours</b> |   | <b>70-72</b>  |

\* Course work must be completed before entering clinical internships. Other prerequisite courses may apply.

## Nutrition Management, BS

<http://www.rit.edu/cast/hsm/programs/nutrition/>

**Barbra Cerio-Iocco, Chair**  
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**Elizabeth Kmiecinski, Co-Chair**  
(585) 475-2357, [eakism@rit.edu](mailto:eakism@rit.edu)



## Program overview

People are increasingly interested in the nutritional requirements for obtaining good health and a long life. Registered dietitians work with people of all ages, cultures, and economic means. They learn to understand people as individuals, thereby helping their clients solve their nutritional needs. Registered dietitians are health professionals who apply the science and art of food and nutrition.

The BS program in nutrition management offers a challenging curriculum that prepares students to become registered dietitians and practice in diverse settings such as private practice; community nutrition and public health; wellness; sports fitness programs; corporations; clinical dietetics, hospital or long-term-care food management facilities; research; food companies; nutrition education; restaurant consulting; writing and communication.

## Curriculum

The program leads to a BS degree that meets the education requirements of the American Dietetic Association (ADA). The pre-professional phase (years 1 and 2) involves core courses in basic sciences, food science, basic nutrition, mathematics, liberal arts, and business. The professional phase (years 3 and 4) includes practicum experiences in various upper-division courses. Students must complete three quarters of approved cooperative education experience and have the opportunity to acquire a certificate or minor in a variety of content areas, including exercise science. To become credentialed as a registered dietitian, students also need to complete an ADA-accredited supervised practice after graduation and pass the National Registration Exam for Dietitians.

### Two-year transfer in nutrition management

Due to specific areas of study required by the American Dietetic Association and RIT, the amount of transferable credit and estimated time to complete work for the BS degree must be determined by each individual's transcript. A minimum grade-point average of 3.2 and grades of A or B in all required science courses are required for admission and continuation in this program. For specific information regarding transfer admission, please refer to the Admission section of this bulletin.

### Accreditation

The nutrition management program has been granted initial accreditation by the American Dietetic Association Commission on Dietetic Education/CADE, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995.

### Nutrition management, BS degree, typical course sequence

| COURSE            |  | QTR. CR. HRS. |
|-------------------|--|---------------|
| <b>First Year</b> |  |               |
| 0619-220          | Service Management Careers in Hospitality Industry | 2             |
| 0620-213          | Contemporary Nutrition                             | 4             |
| 0621-225          | Principles of Food Production                      | 4             |
| 0621-314          | Sanitation and Safety                              | 2             |
| 0619-221          | Orientation to Computers in Hospitality            | 2             |
| 1011-201, 205     | Survey of General Chemistry, Lab                   | 5             |
| 1011-202, 207     | Survey of Organic Chemistry, Lab                   | 5             |
| 1011-203          | Biochemistry                                       | 3             |
| 1016-225          | Algebra for Management Science                     | 4             |
|                   | Liberal Arts*                                      | 12            |
| 0511-211          | Principles of Microeconomics                       | 4             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
|                                   | Wellness Education†                      | 0             |
|                                   | Pathways and Discovery                   | 2             |
| 0621-499                          | Cooperative Education                    | Co-op         |
| <b>Second Year</b>                |  |               |
| 0101-301                          | Financial Accounting                     | 4             |
| 0105-363                          | Principles of Marketing                  | 4             |
| 1004-210                          | Microbiology                             | 4             |
| 1026-350, 360                     | Anatomy and Physiology I, II             | 10            |
| 1016-319                          | Data Analysis I                          | 4             |
|                                   | Liberal Arts*                            | 12            |
| 0621-318                          | Food and Beverage Management             | 4             |
|                                   | Free Electives                           | 8             |
| 0621-499                          | Cooperative Education                    | Co-op         |
| <b>Third Year</b>                 |  |               |
| 0619-410                          | Assessment of Service Quality            | 4             |
| 0619-426                          | Technology in Service Systems            | 4             |
| 0619-480                          | Human Resources Management               | 4             |
| 0621-416                          | Product Development                      | 4             |
| 0620-402                          | Dietetic Environment                     | 4             |
| 0621-331                          | Restaurant Operations                    | 6             |
| 0620-554                          | Nutrition in Life Cycle                  | 5             |
| 0627-519                          | Techniques of Dietetic Education         | 4             |
|                                   | Liberal Arts*                            | 8             |
| 0621-499                          | Cooperative Education                    | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 0619-470                          | Leadership Management in Service Culture | 4             |
| 0619-490                          | Senior Project                           | 4             |
| 0620-525, 526                     | Medical Nutrition Therapy I, II          | 9             |
| 0620-550                          | Community Nutrition                      | 4             |
| 0620-510                          | Nutrition and Alternative Medicine       | 2             |
|                                   | Free Electives                           | 4             |
|                                   | Liberal Arts*                            | 12            |
|                                   | General Education                        | 8             |
| <b>Total Quarter Credit Hours</b> |  | <b>189</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Physician Assistant, BS/MS

[http://www.rit.edu/cos/medical/physician\\_assistant.html](http://www.rit.edu/cos/medical/physician_assistant.html)

**Heidi Miller, Program Director**

**(585) 475-5945, hbmscl@rit.edu**

### Program overview

The physician assistant program focuses on primary care for patients. Physician assistants provide diagnostic and therapeutic patient care in conjunction with a supervising physician. They perform tasks that include: eliciting medical histories, conducting physical examinations, ordering laboratory and radiological testing, diagnosing common illnesses, determining treatment, giving medical advice, counseling and educating patients, promoting wellness and disease prevention, assisting in surgery, and casting and suturing.

Physician assistant duties vary depending on the state and specialty in which they practice. In most states, including New York, physician assistants may prescribe medication. Examples of specialties include (but are not limited to): internal medicine, family medicine, emergency medicine, geriatrics, pediatrics, obstetrics/gynecology, psychiatry, general surgery, orthopedics, neurosurgery, and neonatology. Clinical rotations (internships) during students' senior year provide the opportunity to explore these varied disciplines.

## Curriculum

The physician assistant program is divided into the pre-professional phase (years 1 and 2), which includes course work in the sciences, mathematics, and liberal arts; and the professional phase, (years 3, 4, 5), which features didactic medical education and culminates in clinical rotations in which students apply their knowledge in the medical field in a series of rotations through various disciplines of medicine.

### Accelerated dual degree

The physician assistant program is now offered as a five-year BS/MS degree, enabling students to earn both a bachelor's degree and a master's degree. Students entering the program in fall 2011 will begin their studies under the new format.

### Clinical internship

Clinical rotations include a five-week experience in various disciplines of medicine, providing students with the opportunity to apply the basic principles of medicine to hospital-based and ambulatory patient care settings. Students are assigned to a primary preceptor (physician/physician assistant) and are exposed to a wide variety of acute and chronic medical problems. The emphasis is on data gathering, physical examination, differential diagnosis, patient management, maintenance of medical records, performance of diagnostic and therapeutic procedures, and the provision of patient education and counseling. Mandatory rotations are in fields of inpatient medicine, family medicine, geriatrics, orthopedics, emergency medicine, OB/GYN, pediatrics, general surgery, and psychiatry. Students also are able to select one elective rotation, which enables them to customize their experience according to their medical area of interest.

### Accreditation

The professional phase (years 3, 4, and 5) of the physician assistant program is fully accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA).

### Physician assistant, BS/MS degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year (Pre-professional)</b>                           |               |
| 1001-201, 202, 203 General Biology                             | 9             |
| 1001-205, 206, 207 General Biology Lab                         | 3             |
| 1016-226 Calculus for Management Science                       | 4             |
| 1011-215, 216, 217 General and Analytical Chemistry I, II, III | 10            |
| 1011-205, 206 Chemical Principles I, II Lab                    | 2             |
| 1011-227 General and Analytical Chemistry III Lab              | 1             |
| Liberal Arts*  | 16            |
| 1105-051, 052 First-Year Enrichment                            | 2             |
| Wellness Education†  | 0             |
| <b>Second Year (Pre-professional)</b>                          |               |
| 1026-350, 360 Anatomy and Physiology I, II                     | 10            |
| 1016-319 Data Analysis I                                       | 4             |
| 1009-334 Biochemistry  | 4             |
| 1032-406 Medical Microbiology                                  | 4             |
| University-wide Electives                                      | 12            |
| Liberal Arts*  | 20            |
| <b>Third and Fourth Years (Professional)</b>                   |               |
| 1032-501, 502, 503 Pathophysiology of Diseases I, II, III      | 6             |
| 1032-450 Healthcare Policy and Law                             | 2             |
| 1032-404 Physician Assistant Seminar                           | 2             |
| 1032-509 Diagnostic Lab Medicine                               | 2             |
| 1032-424 Advanced Gross Anatomy                                | 2             |
| 1026-330 Medical Genetics                                      | 2             |

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| 1032-430 Society and Patient Care                            | 3             |
| 1032-408 Behavioral Medicine                                 | 4             |
| 1032-400 Medical Interviewing in Patient Care                | 2             |
| 1032-401, 402 Patient History and Physical Exam I, II        | 10            |
| 1032-522 Procedural Clinical Skills                          | 4             |
| 1032-515, 516, 517, 518 Clinical Pharmacology I, II, III, IV | 10            |
| 1032-521 Diagnostic Radiology                                | 2             |
| 1032-510, 511 Hospital Practice I, II                        | 10            |
| 1032-411, 412, 413 Essentials of Medicine I, II, III         | 15            |
| 1032-522, 523 Clinical Medicine I, II                        | 8             |
| 1032-729 Clinical Epidemiology                               | 4             |
| Graduate Electives   | 8             |
| 1032-723 Advanced Clinical Medicine                          | 4             |
| 1032-730 Research Methods                                    | 3             |
| 1032-720 Clinical Seminar                                    | 3             |
| 1032-810 Graduate Project I                                  | 2             |
| 1032-761 Professional Practice I                             | 2             |
| 1032-750 Pediatrics  | 4             |
| 1032-751 General Medicine                                    | 4             |
| <b>Fifth Year (Professional)‡</b>                            |               |
| 1032-752 OB-GYN  | 4             |
| 1032-753 Emergency Medicine                                  | 4             |
| 1032-754 Surgery   | 4             |
| 1032-762, 763 Professional Practice II, III                  | 4             |
| 1032-820 Graduate Project II                                 | 2             |
| 1032-755 Orthopedics   | 4             |
| 1032-756 Geriatrics  | 4             |
| 1032-757 Psychiatry  | 4             |
| 1032-758 Family Medicine                                     | 4             |
| 1032-759 Elective Rotation                                   | 4             |
| 1032-764 Professional Practice                               | 2             |
| <b>Total Quarter Credit Hours</b>                            | <b>259</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Clinical rotations are completed at various hospitals and ambulatory health care settings approved for training physician assistants.

## Admission requirements

In addition to the university's general admission procedures, the physician assistant program requires the completion of a supplemental data packet, application, and successful completion of an admission interview (by invitation). For more information regarding these supplemental requirements, please contact the Office of Undergraduate Admissions or refer to the Undergraduate Admission section of this bulletin. It also is important to note that the minimum grade-point average for acceptance into the physician assistant program is 3.0 (on the basis of a 4.0 maximum) for both high school and transfer students. In order to graduate from the program, a GPA of 2.8 or better must be maintained.

### Transfer admission

Qualified transfer students are accepted, on a space available basis, into the program. Prior health care experience and/or shadowing are strongly recommended. During the transition of the program from a BS to a BS/MS, RIT will continue to accept a limited number of transfer students into the second and third years of the four-year BS program. Transcript evaluations and rendering of transfer credit are addressed at the time of admission only. Anatomy and physiology courses must be taken within the last five years prior to matriculation to be eligible for transfer into the program. All

pre-professional course work must be completed to continue on, or to be considered for entry, into the professional phase of the program. Please contact the Office of Undergraduate Admissions for information on transfer requirements.

## Additional information

### Advanced placement

In the pre-professional phase, advanced placement (AP) credit for liberal arts courses is evaluated and approved by the College of Liberal Arts. AP credit for calculus, statistics, and university electives are awarded, as applicable, within the program. AP credit is not accepted for biology and chemistry as course substitutions, but university elective credit is awarded for these courses, as applicable. Advanced placement or credit for experiential learning is not awarded for courses in the professional phase of the program.

## Exercise Science, Cert.

[http://www.rit.edu/cos/medical/exercise\\_science.html](http://www.rit.edu/cos/medical/exercise_science.html)

**William Brewer, Program Director**  
(585) 475-2476, [wsbsci@rit.edu](mailto:wsbsci@rit.edu)

### Program overview

College-level knowledge and professional certification are increasingly required for those who wish to work in the fitness industry, whether full- or part-time, and whether in an athletic club, ski resort, or sports medicine facility. Knowledge of and professional certification in fitness instruction and programming also are of increasing value to allied health professionals who wish to augment their care or practice with the ability to prescribe exercise programs that address special medical needs. The certificate program in exercise science covers the basic principles of exercise physiology, fitness assessment, the preparation of fitness programs and prescriptions, and the development of exercise prescriptions for individuals with medical or other significant limitations. Students who successfully complete all three courses in the program will be prepared to sit for professional certification examinations from the American College of Sports Medicine, American Council on Exercise, and the American Academy of Health and Fitness Professionals as well as for certifications from the Cooper Institute for Aerobic Research, the National Academy of Sports Medicine, and a number of other recognized organizations.

## Curriculum

### Exercise science, certificate program, typical course sequence

| COURSE                               |   | QTR. CR. HRS. |
|--------------------------------------|---|---------------|
| 1026-305                             | Sports Physiology and Life Fitness            | 4             |
| 1026-306                             | Fitness Prescription and Programming          | 4             |
| Choose one of the following courses: |   | 4             |
| 1026-307                             | Exercise Prescription for Special Populations |               |
| 0620-300                             | Sports Nutrition                              |               |
| <b>Total Quarter Credit Hours</b>    |   | <b>12</b>     |

## College of Health Sciences and Technology

### Biomedical Sciences

**William Brewer**, BS, State University College at Cortland; MS, Empire State College—Lecturer

**Richard L. Doolittle**, BA, University of Bridgeport; MS., Ph.D., University of Rochester—Assistant Provost for Undergraduate Education; Professor

**G. Thomas Frederick**, BS, MS, Ph.D., The Ohio State University—Professor

**Michele Lennox**, AAS, Rochester Institute of Technology—Lecturer

**Douglas P. Merrill**, BS, Ph.D., State University of New York College of Environmental Science and Forestry—Professor

**Robert Osgood**, BS, Jackson State University; MS, Ph.D., University of Southern Mississippi—Assistant Professor

**Elizabeth Perry**, BS, State University College at Brockport; MS, Ph.D., University of Rochester—Lecturer

**Bolaji Thomas**, BS, MS, Ph.D., University of Lagos (Nigeria)—Assistant Professor

**Kristen Waterstam-Rich**, BS, MS, Rochester Institute of Technology—Director, Premedical Studies; Professor

### Clinical Chemistry

**James C. Aumer**, BS, MS, Michigan Technology University—Interim Program Director; Professor

### Diagnostic Medical Sonography

**Jodie Crowley**, BS, MS, Rochester Institute of Technology—Clinical Coordinator

**Vikram Dogra**, MD—Medical Director

**Hamad Ghazle**, BS, RDMS, Rochester Institute of Technology; MS, Ed.D. University of Rochester—Program Director; Professor

**Susan Voci**, MD—Co-Medical Director

### Nutrition Management

**Barbra A. Cerio-Iocco**, RD, BS, MS, State University of New York at Buffalo—Associate Professor

**Elizabeth A. Kmiecinski**, RD, BS, The Ohio State University; MS, University of Kentucky—Associate Professor

### Physician Assistant

**Cara F. Calvelli**, AB, Mount Holyoke College; MD, Cornell University Medical College—Assistant Professor

**Peter P. Ciancaglini**, PharmD, Campbell University—Adjunct Faculty

**Nancy Herbert**, BS, Rochester Institute of Technology—Academic Support Coordinator

**Paul Levy**, BS, MD, The Ohio State University—Medical Director

**Heidi Miller**, BS, PA-C, Alderson Broaddus College; MPH, University of Rochester—Program Director; Professor

**Patricia Newcomb**, AB, Mount Holyoke College; MD, Tufts University Medical School—Academic Coordinator; Assistant Professor

**Joseph Nicholas**, BA, Cornell University; MD, University of Pittsburgh—Medical Education Consultant

**John B. Oliphant**, BA, Messiah College; MS, Elmira College; MHP, PA-C, Northeastern University—Clinical Coordinator; Adjunct Faculty

**Nancy Valentage**, BS, PA-C, Gannon University; MS, Rochester Institute of Technology—Associate Director/Clinical Coordinator; Professor

## Programs of study

### Bachelor of Fine Arts degrees in:

|  |     |
|--|-----|
| 3D Digital Graphics  | 93  |
| Ceramics and Ceramic Sculpture                                 | 86  |
| Film and Animation   | 98  |
| Fine Arts Studio (Painting, Printmaking, Sculpture, New Forms) | 92  |
| Glass  | 87  |
| Graphic Design   | 94  |
| Illustration   | 91  |
| Industrial Design  | 95  |
| Interior Design  | 95  |
| Medical Illustration   | 92  |
| Metalcrafts and Jewelry  | 88  |
| New Media Design and Imaging                                   | 96  |
| Professional Photographic Illustration*                        | 101 |
| Visual Media*  | 103 |
| Woodworking and Furniture Design                               | 89  |

### Bachelor of science degrees in:

|  |     |
|--|-----|
| Biomedical Photographic Communications           | 99  |
| Imaging and Photographic Technology              | 100 |
| Media Arts and Technology                        | 104 |
| Motion Picture Science (formerly Digital Cinema) | 97  |

### Associate in Occupational Studies degree in:

|                                  |    |
|----------------------------------|----|
| Woodworking and Furniture Design | 90 |
|----------------------------------|----|

\*The bachelor of fine arts degree in professional photographic illustration offers options in advertising photography, fine art photography, photojournalism, and visual media.

# College of Imaging Arts and Sciences

**Lorraine Justice, Dean**

<http://cias.rit.edu>

The College of Imaging Arts and Sciences includes the schools of American Crafts, Art, Design, Film and Animation, Photographic Arts and Sciences, and Print Media. Students in most of the baccalaureate and master's degree programs complete foundation courses for fundamental studio course work and historical grounding in the visual arts.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

**Portfolio review:** Admission to the schools of American Crafts, Art, and Design requires a combination of academic performance and creative visual skills that are evaluated via a portfolio review. Faculty will review each student's portfolio to evaluate creative visual skills as well as the potential for success in the student's selected program.

The schools of Photographic Arts and Sciences and Print Media do not require a portfolio for acceptance into their undergraduate programs. However, a portfolio is required if students are requesting a transfer of credits to satisfy program requirements. A portfolio is optional for applicants to the School of Film and Animation.

**Guidelines for portfolio submission:** 1. Portfolios for the schools of American Crafts, Art, and Design will be evaluated on the basis of drawing and design ability, original ideas, and craftsmanship. Portfolios should consist of 10 to 20 digital files of a student's best artwork, saved in a JPEG file format on a CD. There should be a minimum of five samples of drawings made from direct observation. These should include figure, perspective, still life, and object drawing (not copied from photographs, comics or "fantasy"). Other work may include painting, photography, page layout design, two-dimensional design, sculpture, models, mechanical drawings, and marker renderings. The clarity of the digital file is of the utmost importance. Portfolios that do not meet the correct specifications will not be reviewed.

2. All digital files and documents submitted should be clearly labeled. Each digital file should be submitted with the student's last name and a number beginning with two zeros (e.g., smith001.jpg, smith002.jpg) with no spaces. The CD must be labeled with the student's full name, address, phone number, and e-mail address (if available). Please write legibly and directly on the face of the CD with a black or blue permanent marker. Package the finished CD in a plastic case for protection.

3. The CD must be accompanied by a separate sheet of paper listing each work by corresponding number with title, size, media, and assignment. Exhibition/award notations may be included. Make certain to include the student's full name, address, phone number, and e-mail address (if available) on the list.

4. Medical illustration applicants should include at least six samples of natural forms such as shells, figures, or animals rendered in a single medium.

5. School for American Crafts applicants are encouraged to include works produced in the medium of their intended major, if possible. Although portfolios are required, in extenuating circumstances a portfolio waiver can be considered. Contact the School for American Crafts (585) 475-6114, sac@rit.edu, for details/consideration.

6. Portfolios are not required by applicants to the School of Film and Animation but may be submitted. Portfolios are likely to be reviewed in cases where final determination of acceptance must be made between similar academically competitive applicants. Most portfolios will not be reviewed. Applicants must present their best work, and films or videos should total 15 minutes or less in length. A complete work is preferable to a "demo reel." If there are no short works, then a 15-minute excerpt of a longer piece is acceptable.

7. Transfer students in art, design, and crafts should clearly represent their basic foundation experience as well as any advanced or applied work. Students considering transfer should notify RIT at the earliest possible moment. Catalog course descriptions assist in transfer credit evaluation.

8. Digital portfolios will not be returned. It is recommended that students make additional copies of their portfolio CD for their own records.

9. While every precaution is taken to ensure proper handling, the university assumes no responsibility for lost or damaged portfolios.

10. The schools participate in open house programs hosted by RIT's Office of Undergraduate Admissions and selected National Portfolio Days. These events allow for the presentation and review of original work and, for the exceptional portfolio, a means for on-site acceptance of portfolio. For information on National Portfolio Days, call the foundation department at (585) 475-2647. For dates of open houses and general admission information, call the Office of Undergraduate Admissions at (585) 475-6631.

11. For further information on submitting a digital portfolio, please visit our website at <http://www.rit.edu/emcs/admissions/application-forms>.

### Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

### Facilities

- Thirty fully equipped photographic studios.
- More than 20 fully ventilated darkrooms.
- Extensive professional 16mm film and digital video field production equipment, including newly renovated film and animation facilities, 60 digital film editing stations, three animation labs, three stop-motion studios, two sound stages, and prop shop.
- More than \$40 million worth of printing and publishing equipment in 17 laboratories.

- Wallace Library, rich in photography, graphic arts publications, and contemporary periodicals in design, arts, crafts for study, and research; ARTstor, an online image collection; and electronic reserve course materials.
- Cooperative efforts with George Eastman House International Museum of Photography and Film, with access to the museum's collections of photography, rare books, motion pictures, and technology.
- Library of the Kodak Research Laboratories.
- The Melbert B. Cary Jr. Graphic Arts Collection, containing more than 20,000 volumes of rare books and additional resources that illustrate fine printing, the history of printing, book design and illustration, papermaking, binding, and other aspects of the graphic arts.
- The Graphic Design Archives in the Wallace Library are complete and partial collections of some of the world's most influential pioneers in graphic design. The collections contain original source materials documenting the designers' working lives and include such unique items as original artwork, sketchbooks, sculptures, architectural models, reliefs, and printed samples.
- The Vignelli Center for Design Studies houses the extensive professional archive of Massimo and Lella Vignelli, and offers exhibition space and archival study classrooms for the examination of Modernist design history, theory, and criticism.
- Bevier Gallery and the School of Photographic Arts and Sciences (SPAS) Gallery, the college's on-campus exhibition spaces.
- Gallery r, the university's off-campus, student-managed contemporary art gallery, is overseen by the School of Art. The gallery actively educates and encourages viewers to examine the relevance of art and cultural exposure in their own lives. Gallery r is an educational laboratory presenting art to the widest possible audience and maintaining a select collection of student and alumni artwork for on-site consignment and sales.
- The college houses archives, as well as exhibition and display spaces. Exhibitions regularly feature the work of contemporary painters, designers, photographers, illustrators, graphic artists, filmmakers, and faculty and student work.
- A comprehensive art library and a variety of educational resources are available in RIT's library.

### Cooperative education

Students may participate in cooperative education experiences or internships. Co-op allows students the opportunity to evaluate career goals before making employment decisions, develop insight into their chosen fields, gain professional experience that enhances their resumes, and increase their potential for placement and rapid career advancement after graduation. As part of the student's career exploration, co-op experiences provide an opportunity to observe and perform work directly related to the student's major.

Co-op is required in the School of Print Media and in the bachelor of science programs in the School of Photographic Arts and Sciences. Although co-op is not required in the BFA programs in the schools of American Crafts, Art, Design, Film and Animation, or Photographic Arts and Sciences, many students choose to co-op during the summer quarter to enhance their learning while gaining valuable experience.

For more information about cooperative education, please refer to the Office of Cooperative Education and Career Services or visit the college's website.



Accreditation

All programs offered in the College of Imaging Arts and Sciences are fully accredited and approved by the New York State Department of Education and the Middle States Association of Colleges and Secondary Schools. In addition, the National Association of Schools of Art and Design accredits the BFA and MFA programs in the schools of American Crafts, Art, Design, Photographic Arts and Sciences, and Film and Animation. The School of Design's interior design program is accredited by the Council for Interior Design Education Accreditation.

Advising

All programs provide expert advisement to students in multiple ways. Each CIAS student is assigned a primary adviser with whom they consult on a quarterly basis concerning course selection, assignments, co-ops, educational challenges, and career opportunities. In addition, each school has program chairs per discipline whose primary task is to advise students, as well as the chair of the school and academic advisers in the college's Student Services Offices. While at RIT and after graduation, students can seek and receive personal and professional advisement to support their studies.

Academic Enrichment

*Honors Program:* Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admission process.

*Study Abroad:* RIT encourages all students to consider a study abroad program. Students may study full time at a variety of host schools and are able to select both courses in their majors and/or liberal arts classes. The Study Abroad Office has information about foreign study options and opportunities.

*Minors:* RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

*Professional student organizations:* The college maintains memberships in the following professional organizations: Industrial Designers Society of America, ACM Siggraph, American Institute of Architects, American Institute of Graphic Arts, American Society of Interior Designers, American Society of Media Photography, Bio Communications Association, College Art Association, ICO-GRADA, International Interior Design Association, International Panoramic Photographers Association, International Society for Optical Engineering, National Press Photographer Association Student Chapter, Ophthalmic Photographers Society, Photo Imaging Educators Association, Photo Marketing Association International, Society of Environmental Graphic Designers, Society for Imaging Science and Technology, and Society for Photographic Education.

Special Opportunities

*Graduate study:* The college offers master of fine art degrees in ceramics and ceramic sculpture, computer graphics design, fine arts studio, glass, graphic design, imaging arts, industrial design, metalcrafts and jewelry, and woodworking and furniture design; a master of science for teachers in visual arts (all grades); a master of science in print media; and an advanced certificate in non-toxic intaglio printmaking. Please refer to the *Graduate Bulletin* or the college's website for more information.

*Summer course offerings:* The college offers a number of summer courses. Please contact the Office of Part-time Enrollment Services or visit the college's website for more information.

School for American Crafts

The programs in the School for American Crafts provide an in-depth artistic approach to crafts with a comprehensive technical education. Our international community of students creates a full spectrum of work, including one-of-a-kind pieces, commissions, limited edition work, sculptural work, and work and designs produced for industry. Students are engaged in an intensive studio environment where personal expression and professionalism flourish.

Ceramics and Ceramic Sculpture, BFA

<http://cias.rit.edu/crafts>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

Program overview

As an internationally recognized school that merges art with craft, the School for American Crafts is a leader in crafts education. Our programs provide an educational experience that balances technical expertise with aesthetic expression in the creative and practical understanding of wood, metal, clay, and glass.

Our educational objectives seek to stimulate creative imagination and technical invention, develop knowledge of process and command of skills, and foster appreciation not only of the crafts but also the related arts. The programs strive to inspire the student to seek continual improvement through analysis and self-evaluation.

Curriculum

After successful completion of the four-year program, the bachelor of fine arts degree is awarded in ceramics and ceramic sculpture. The credit requirements for the BFA degree are as follows:

| COURSE                            | QTR. CR. HRS.  |
|-----------------------------------|----------------|
| Required Craft Major Studio       | 90             |
| Required Electives                | 9              |
| Business Practices                | 9              |
| Open Elective                     | 3              |
| Liberal Arts*                     | 36             |
| General Education                 | 9              |
| Art History                       | 18             |
| Freshman Electives                | 6              |
| Wellness Education†               | 0              |
| <b>Total Quarter Credit Hours</b> | <b>182-185</b> |

\* Please see Liberal Arts General Education Requirements for more information.  
† Please see Wellness Education Requirement for more information.

Ceramics and ceramic sculpture, BFA degree, typical course sequence

| COURSE             |                      | QTR. CR. HRS. |
|--------------------|----------------------|---------------|
| First Year         |                      |               |
|                    | Freshman Elective    | 6             |
| 2013-211, 212, 213 | Drawing I, II, III   | 9             |
| 2013-231, 232, 233 | 2D Design I, II, III | 9             |
| 2013-241, 242, 243 | 3D Design I, II, III | 9             |

| COURSE                            |   | QTR. CR. HRS.  |
|-----------------------------------|---|----------------|
|                                   | Open Elective                                     | 3              |
|                                   | Liberal Arts*                                     | 12             |
| 1720-050, 052                     | First-Year Enrichment                             | 2              |
|                                   | Wellness Education†                               | 0              |
| <b>Second Year‡</b>               |   |                |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III | 9              |
| 2040-301, 302, 303                | Materials and Processes Ceramics, Sophomore       | 18             |
| 2045-311                          | Concept Drawing                                   | 3              |
| 2045-312                          | Craft Technical Drawing                           | 3              |
| 2045-xxx                          | Design Processes                                  | 3              |
|                                   | Wellness Education†                               | 0              |
| <b>Third Year</b>                 |   |                |
| 2040-401, 402, 403                | Materials and Processes Ceramics, Junior          | 18             |
|                                   | Art History Electives§                            | 9              |
|                                   | Open Electives                                    | 9              |
|                                   | Liberal Arts*                                     | 12             |
| <b>Fourth Year</b>                |   |                |
| 2040-501, 502, 503                | Materials and Processes Ceramics, Senior          | 18             |
| 2045-511                          | Planning a Career in the Crafts                   | 3              |
| 2045-512                          | Crafts Promotional Package                        | 3              |
| 2045-513                          | Operating a Business in the Crafts                | 3              |
|                                   | Open Electives                                    | 9-12           |
| <b>Total Quarter Credit Hours</b> |   | <b>182-188</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Upon completion of second year, the associate in applied science degree is awarded.

§ Please refer to the list of art history electives.

### Art history electives (select three)

Students are required to select three art history electives to broaden their understanding of the historical development of the arts. Art history electives include:

|          |  |
|----------|--|
| 2039-300 | History of Design                                |
| 2039-306 | Architecture Interior and Furniture Design I †   |
| 2039-307 | Architecture Interior and Furniture Design II †  |
| 2039-308 | Architecture Interior and Furniture Design III † |
| 2039-310 | History of Crafts                                |
| 2039-315 | Pre-Columbian Art                                |
| 2039-316 | Florence and Rome 1400-1470                      |
| 2039-317 | Florence and Rome 1470-1520                      |
| 2039-318 | Florence and Rome 1520-1590                      |
| 2039-320 | History of Art Criticism                         |
| 2039-330 | Philosophy in Art                                |
| 2039-340 | Symbols and Symbol Making                        |
| 2039-355 | Latin American Art                               |
| 2039-360 | 18th and 19th Century Art                        |
| 2039-368 | Scandinavian Modernism                           |
| 2039-375 | 20th Century Art Since 1950                      |
| 2039-376 | Renaissance Painting in Flanders                 |
| 2039-385 | Installation Art                                 |
| 2039-390 | Native American Art and Culture                  |
| 2039-395 | Theory and Criticism of 20th Century Art         |
| 2039-410 | The Art of Art History                           |
| 2039-415 | Thinking About Making                            |
| 2039-425 | Public Art/Public Spaces                         |
| 2039-430 | Dada and Surrealism                              |
| 2039-433 | What Is Post Modernism?                          |
| 2039-435 | Art of the Last Decade                           |

|          |  |
|----------|--|
| 2039-438 | Body in Art  |
| 2039-440 | Conceptual Art   |
| 2039-443 | Art and Technology: From the Machine Aesthetic to the Cyborg Age |
| 2039-452 | Art and Activism   |
| 2039-459 | Art Central Italy 1250-1400                                      |
| 2039-469 | Baroque Rome   |

† Required for interior design majors and School for American Crafts wood majors.

## Additional information

### Crafts residency program

The School for American Crafts offers a crafts residence program for participants accepted in the ceramics and ceramic sculpture, glass, metalcrafts and jewelry, and woodworking and furniture design disciplines. Residence positions are limited and will be awarded based on the review of an application, which consists of a portfolio, transcripts, and references. An interview also is required. Accepted studio residents are required to register for at least two credits of independent study during every quarter of residence. These two credits can be taken as an audit, thus reducing the tuition cost to the resident.

Accepted residents are expected to attend their major studio courses during class hours and to contribute up to 10 hours of work per week in the major studio. These work hours will be coordinated and overseen by the faculty in the program area. In exchange, the school will provide workspace, access to facilities, and supportive instruction. The residents are invited to participate in the full range of studio activities.

Residence program participants may be individuals seeking additional studio experience prior to undergraduate or graduate study, early career professionals, or teachers on leave who wish to work in an academic studio environment. The faculty in each program area will make decisions concerning appropriate candidates.

## Glass, BFA

<http://cias.rit.edu/crafts>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

### Program overview

As an internationally recognized school that merges art with craft, the School for American Crafts is a leader in crafts education. Our programs provide an educational experience that balances technical expertise with aesthetic expression in the creative and practical understanding of wood, metal, clay, and glass.

Our educational objectives seek to stimulate creative imagination and technical invention, develop knowledge of process and command of skills, and foster appreciation not only of the crafts but also the related arts. The programs strive to inspire the student to seek continual improvement through analysis and self-evaluation.

## Curriculum

### Programs of study

After successful completion of the four-year program, the bachelor of fine arts degree is awarded in glass. The credit requirements for the BFA degree are as follows:

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Required Craft Major Studio       | 90            |
| Required Electives                | 9             |
| Business Practices                | 9             |
| Open Elective                     | 3             |
| Liberal Arts*                     | 36            |
| General Education                 | 9             |
| Art History                       | 18            |
| Freshman Electives                | 6             |
| Wellness Education†               | 0             |
| <b>Total Quarter Credit Hours</b> | <b>180</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

### Glass, BFA degree, typical course sequence

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| <b>First Year</b>                 |               |
| Freshman Elective                 | 6             |
| 2013-211, 212, 213                | 9             |
| 2013-231, 232, 233                | 9             |
| 2013-241, 242, 243                | 9             |
| Open Elective                     | 3             |
| Liberal Arts*                     | 12            |
| 1720-050, 052                     | 2             |
| Wellness Education†               | 0             |
| <b>Second Year‡</b>               |               |
| 2039-225, 226, 227                | 9             |
| 2041-301, 302, 303                | 18            |
| 2045-311                          | 3             |
| 2045-312                          | 3             |
| 2045-xxx                          | 3             |
| Wellness Education†               | 0             |
| Liberal Arts*                     | 12            |
| <b>Third Year</b>                 |               |
| 2040-401, 402, 403                | 18            |
| Art History Electives§            | 9             |
| Open Electives                    | 9-12          |
| Liberal Arts*                     | 12            |
| <b>Fourth Year</b>                |               |
| 2041-501, 502, 503                | 18            |
| 2045-511                          | 3             |
| 2045-512                          | 3             |
| 2045-513                          | 3             |
| Open Electives                    | 9-12          |
| <b>Total Quarter Credit Hours</b> | <b>188</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Upon completion of second year, the associate in applied science degree is awarded.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Additional information

### Crafts residency program

The School for American Crafts offers a crafts residence program for participants accepted in the ceramics and ceramic sculpture, glass,

metalcrafts and jewelry, and woodworking and furniture design disciplines. Residence positions are limited and will be awarded based on the review of an application, which consists of a portfolio, transcripts, and references. An interview also is required. Accepted studio residents are required to register for at least two credits of independent study during every quarter of residence. These two credits can be taken as an audit, thus reducing the tuition cost to the resident.

Accepted residents are expected to attend their major studio courses during class hours and to contribute up to 10 hours of work per week in the major studio. These work hours will be coordinated and overseen by the faculty in the program area. In exchange, the school will provide workspace, access to facilities, and supportive instruction. The residents are invited to participate in the full range of studio activities.

Residence program participants may be individuals seeking additional studio experience prior to undergraduate or graduate study, early career professionals, or teachers on leave who wish to work in an academic studio environment. The faculty in each program area will make decisions concerning appropriate candidates.

## Metalcrafts and Jewelry, BFA

<http://cias.rit.edu/crafts>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

### Program overview

As an internationally recognized school that merges art with craft, the School for American Crafts is a leader in crafts education. Our programs provide an educational experience that balances technical expertise with aesthetic expression in the creative and practical understanding of wood, metal, clay, and glass.

Our educational objectives seek to stimulate creative imagination and technical invention, develop knowledge of process and command of skills, and foster appreciation not only of the crafts but also the related arts. The programs strive to inspire the student to seek continual improvement through analysis and self-evaluation.

## Curriculum

After successful completion of the four-year program, the bachelor of fine arts degree is awarded in metalcrafts and jewelry. The credit requirements for the bachelor of fine arts are as follows:

| COURSE                            | QTR. CR. HRS.  |
|-----------------------------------|----------------|
| Required Craft Major Studio       | 90             |
| Required Electives                | 9              |
| Business Practices                | 9              |
| Open Elective                     | 3              |
| Liberal Arts*                     | 36             |
| General Education                 | 9              |
| Art History                       | 18             |
| Freshman Electives                | 6              |
| Wellness Education†               | 0              |
| <b>Total Quarter Credit Hours</b> | <b>182-185</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Metalcrafts and jewelry, BFA degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS.  |
|-----------------------------------|---|----------------|
| <b>First Year</b>                 |   |                |
|                                   | Freshman Elective                                 | 6              |
| 2013-211, 212, 213                | Drawing   | 9              |
| 2013-231, 232, 233                | 2D Design   | 9              |
| 2013-241, 242, 243                | 3D Design   | 9              |
|                                   | Open Elective                                     | 3              |
|                                   | Liberal Arts*                                     | 12             |
| 1720-050, 052                     | First-Year Enrichment                             | 2              |
|                                   | Wellness Education†                               | 0              |
| <b>Second Year‡</b>               |   |                |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III | 9              |
| 2042-301, 302, 303                | Materials and Processes Metals, Sophomore         | 18             |
| 2045-311                          | Concept Drawing                                   | 3              |
| 2045-312                          | Craft Technical Drawing                           | 3              |
| 2045-xxx                          | Design Processes                                  | 3              |
|                                   | Wellness Education†                               | 0              |
|                                   | Liberal Arts*                                     | 12             |
| <b>Third Year</b>                 |   |                |
| 2042-401, 402, 403                | Materials and Processes Metals, Junior            | 18             |
|                                   | Art History Electives§                            | 9              |
|                                   | Open Electives                                    | 9              |
|                                   | Liberal Arts*                                     | 12             |
| <b>Fourth Year</b>                |   |                |
| 2042-501, 502, 503                | Materials and Processes Metals, Senior            | 18             |
| 2045-511                          | Planning a Career in the Crafts                   | 3              |
| 2045-512                          | Crafts Promotional Package                        | 3              |
| 2045-513                          | Operating a Business in the Crafts                | 3              |
|                                   | Open Electives                                    | 9-12           |
| <b>Total Quarter Credit Hours</b> |   | <b>182-185</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Upon completion of second year, the associate in applied science degree is awarded.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Additional information

### Crafts residency program

The School for American Crafts offers a crafts residence program for participants accepted in the ceramics and ceramic sculpture, glass, metalcrafts and jewelry, and woodworking and furniture design disciplines. Residence positions are limited and will be awarded based on the review of an application, which consists of a portfolio, transcripts, and references. An interview also is required. Accepted studio residents are required to register for at least two credits of independent study during every quarter of residence. These two credits can be taken as an audit, thus reducing the tuition cost to the resident.

Accepted residents are expected to attend their major studio courses during class hours and to contribute up to 10 hours of work per week in the major studio. These work hours will be coordinated and overseen by the faculty in the program area. In exchange, the school will provide workspace, access to facilities, and supportive instruction. The residents are invited to participate in the full range of studio activities.

Residence program participants may be individuals seeking additional studio experience prior to undergraduate or graduate

study, early career professionals, or teachers on leave who wish to work in an academic studio environment. The faculty in each program area will make decisions concerning appropriate candidates.

## Woodworking and Furniture Design, BFA

<http://cias.rit.edu/crafts>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

### Program overview

As an internationally recognized school that merges art with craft, the School for American Crafts is a leader in crafts education. Our programs provide an educational experience that balances technical expertise with aesthetic expression in the creative and practical understanding of wood, metal, clay, and glass.

Our educational objectives seek to stimulate creative imagination and technical invention, develop knowledge of process and command of skills, and foster appreciation not only of the crafts but also the related arts. The programs strive to inspire the student to seek continual improvement through analysis and self-evaluation.

### Curriculum

After the satisfactory completion of two years of study, the associate in occupational studies degree is awarded in woodworking and furniture design. After successful completion of the four-year program, the bachelor of fine arts degree is awarded. The credit requirements for the BFA are as follows:

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Required Craft Major Studio       | 90            |
| Required Electives                | 9             |
| Business Practices                | 9             |
| Open Elective                     | 3             |
| Liberal Arts*                     | 36            |
| General Education                 | 9             |
| Art History                       | 18            |
| Freshman Electives                | 6             |
| Wellness Education†               | 0             |
| <b>Total Quarter Credit Hours</b> | <b>180</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirements for more information.

AOS program: A two-year associate degree in occupational studies also is offered in woodworking and furniture design. The credit requirements for the AOS degree are as follows:

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Required Wood Major               | 36            |
| Drawing                           | 9             |
| 2D Design                         | 9             |
| 3D Design                         | 9             |
| Advanced Drawing                  | 9             |
| Art History Electives*            | 9             |
| Professional Business Practices   | 9             |
| Open Elective                     | 3             |
| Wellness Education†               | 0             |
| <b>Total Quarter Credit Hours</b> | <b>93</b>     |

\* Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

† Please see Wellness Education Requirements for more information.

Wood, BFA degree, typical course sequence

| COURSE                             | QTR. CR. HRS.                                       |
|------------------------------------|---|
| First Year                         |   |
|                                    | Freshman Elective 6                                 |
| 2013-211, 212, 213                 | Drawing I, II, III 9                                |
| 2013-231, 232, 233                 | 2D Design I, II, III 9                              |
| 2013-241, 242, 243                 | 3D Design I, II, III 9                              |
|                                    | Open Elective 3                                     |
|                                    | Liberal Arts* 12                                    |
| 1720-050, 052                      | First-Year Enrichment 2                             |
|                                    | Wellness Education† 0                               |
| Second Year‡                       |   |
| 2039-225, 226, 227                 | Survey of Western Art and Architecture I, II, III 9 |
| 2044-301, 302, 303                 | Materials and Processes Wood, Sophomore 18          |
| 2045-311                           | Concept Drawing 3                                   |
| 2045-312                           | Craft Technical Drawing 3                           |
| 2045-xxx                           | Design Processes 3                                  |
|                                    | Wellness Education† 0                               |
|                                    | Liberal Arts* 12                                    |
| Third Year                         |   |
| 2044-401, 402, 403                 | Materials and Processes Wood, Junior 18             |
| 2039-306, 307, 308                 | Architecture, Interior Furniture Design History 9   |
|                                    | Open Electives 9                                    |
|                                    | Liberal Arts* 12                                    |
| Fourth Year                        |   |
| 2044-501, 502, 503                 | Materials and Processes Wood, Senior 18             |
| 2045-511                           | Planning a Career in the Crafts 3                   |
| 2045-512                           | Crafts Promotional Package 3                        |
| 2045-513                           | Operating a Business in the Crafts 3                |
|                                    | Open Electives 9-12                                 |
| Total Quarter Credit Hours 182-185 |   |

\* Please see Liberal Arts General Education Requirements for more information.  
† Please see Wellness Education Requirement for more information.  
‡ Upon completion of second year, the associate in applied science degree is awarded.

Additional information

Crafts residency program

The School for American Crafts offers a crafts residence program for participants accepted in the ceramics and ceramic sculpture, glass, metalcrafts and jewelry, and woodworking and furniture design disciplines. Residence positions are limited and will be awarded based on the review of an application, which consists of a portfolio, transcripts, and references. An interview also is required. Accepted studio residents are required to register for at least two credits of independent study during every quarter of residence. These two credits can be taken as an audit, thus reducing the tuition cost to the resident.

Accepted residents are expected to attend their major studio courses during class hours and to contribute up to 10 hours of work per week in the major studio. These work hours will be coordinated and overseen by the faculty in the program area. In exchange, the school will provide workspace, access to facilities, and supportive instruction. The residents are invited to participate in the full range of studio activities.

Residence program participants may be individuals seeking additional studio experience prior to undergraduate or graduate study, early career professionals, or teachers on leave who wish to work in an academic studio environment. The faculty in each program area will make decisions concerning appropriate candidates.

Woodworking and Furniture Design, AOS

Don Arday, Chair  
(585) 475-4985, dkafaa@rit.edu

Program overview

As an internationally recognized school that merges art with craft, the School for American Crafts is a leader in crafts education. The school’s programs provide an educational experience that balances technical expertise with aesthetic expression in the creative and practical understanding of wood, metal, clay, and glass. Educational objectives seek to stimulate creative imagination and technical invention, develop knowledge of process and command of skills, and foster appreciation not only of the crafts but also the related arts. The programs strive to inspire the student to seek continual improvement through analysis and self evaluation.

Curriculum

Wood, AOS degree, typical course sequence

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| First Year                 |   |               |
| 2013-211, 212, 213         | Drawing I, II, III  | 9             |
| 2013-241, 242, 243         | 3D Design I, II, III  | 9             |
| 2044-301, 302, 303         | Materials and Processes Wood, Sophomore                     | 18            |
| 2045-311                   | Concept Drawing   | 3             |
| 2045-312                   | Craft Technical Drawing                                     | 3             |
| 2045-xxx                   | Crafts Design Process                                       | 3             |
|                            | Open Elective   | 3             |
| 1720-050, 052              | First-Year Enrichment                                       | 2             |
|                            | Wellness Education†   | 0             |
| Second Year                |   |               |
| 2013-231, 232, 233         | 2D Design I, II, III  | 9             |
| 2039-306, 307, 308         | Architecture, Interior Design, and Furniture Design History | 9             |
| 2044-401, 402, 403         | Materials and Processes Wood, Junior                        | 18            |
| 2045-511                   | Planning a Career in the Crafts                             | 3             |
| 2045-512                   | Crafts Promotional Package                                  | 3             |
| 2045-513                   | Operating a Business in the Crafts                          | 3             |
|                            | Wellness Education†   | 0             |
| Total Quarter Credit Hours |   | 95            |

† Please see Wellness Education Requirement for more information.

School of Art

The School of Art educates students to be fine artists and illustrators who contribute to their professions, communicate effectively within their disciplines, have a lifelong attitude of inquiry, and make a positive impact on society. The School of Art fulfills this mission through its nationally recognized programs. We promote



an innovative educational community that balances expression, imaginative problem solving, aesthetic understanding, critical thinking, and creativity within a studio environment. Gallery r, an art gallery in downtown Rochester operated by School of Art students, solidifies the learning experience by bringing the work of our students to the greater Rochester community.

The educational objectives of the School of Art are to encourage imagination, creative ability, and artistic discrimination; develop the skills essential for professional competence; relate the various arts and help students find the means to enjoy them; and incorporate studies in the College of Liberal Arts for social and cultural growth, inspiring students to make maximum contributions as creative artists and citizens.

Programs of study offered in the School of Art include illustration, medical illustration, and fine arts studio. Beginning in the second year, students pursue their major course of study. The first year forms the foundation for the major concentration with courses required in drawing and two- and three-dimensional design.

## Illustration, BFA

<http://cias.rit.edu/art>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

### Program overview

Illustration majors solve communication problems by translating concepts and ideas into images. They study traditional and electronic media and design to prepare themselves for their professional goals.

### Curriculum

#### General credit requirements

The credit requirements for students admitted in the illustration program are as follows:

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| Required Major (medical illustration, illustration, fine arts studio) | 93-94         |
| Professional Electives  | 15            |
| Open Electives  | 21            |
| Liberal Arts  | 36            |
| General Education   | 12            |
| Art History   | 9             |
| Art History/General Education   | 9             |
| <b>Total Quarter Credit Hours</b>                                     | <b>196</b>    |

A freshman kit is suggested for art, design, and craft students; it costs approximately \$400. Students are generally responsible for the cost of additional supplies.

#### Electives\*

Students have the opportunity to select electives that enhance their studies or allow them to pursue an area of personal or professional interest. Electives are available in the following areas:

|                       |
|-----------------------|
| Graphic Design        |
| Illustration          |
| Graphic Visualization |
| Industrial Design     |

|                            |
|----------------------------|
| Interior Design            |
| Fine Arts Studio           |
| Environmental Design       |
| Ceramics                   |
| Glass                      |
| Metals                     |
| Textiles                   |
| Woodworking                |
| Introduction to Filmmaking |
| Still Photography          |
| Imaging Technology         |

\* Electives prerequisite: Completion of foundation program or permission of instructor. Additional selections offered as special topics.

### Illustration, BFA degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>  |               |
| Foundation Studies:  |               |
| 2013-215 Foundation Vector Imaging                                   | 1             |
| 2013-216 Foundation Raster Imaging                                   | 1             |
| Freshman Electives   | 6             |
| 2013-211, 212, 213 Drawing I, II, III                                | 9             |
| 2013-231, 232, 233 2D Design I, II, III                              | 9             |
| 2013-241, 242, 243 3D Design I, II, III                              | 9             |
| Liberal Arts*  | 12            |
| 1720-050, 052 First-Year Enrichment                                  | 2             |
| Wellness Education†  | 0             |
| <b>Second Year</b>   |               |
| 2039-225, 226, 227 Survey of Western Art and Architecture I, II, III | 9             |
| Liberal Arts*  | 12            |
| Wellness Education†  | 0             |
| Illustration:  |               |
| 2019-301 Illustration I  | 3             |
| 2019-306 Head, Hands, Facial Expressions                             | 3             |
| 2019-311 Digital Illustration I                                      | 3             |
| 2019-345 Illustration Techniques I                                   | 3             |
| 2019-361 Dimensional Illustration I                                  | 3             |
| Studio Electives   | 9             |
| <b>Third Year</b>  |               |
| Art History Electives§   | 9             |
| Studio Electives   | 6             |
| Open Elective  | 3-4           |
| Liberal Arts*  | 12            |
| Illustration:  |               |
| Junior-level courses from major concentration                        | 12            |
| Program electives  | 6             |
| <b>Fourth Year</b>   |               |
| Studio Elective  | 3             |
| Open Electives   | 18-24         |
| Illustration:  |               |
| 2019-513 Illustration Marketing and Business                         | 3             |
| 2019-563 Portfolio Preparation                                       | 3             |
| Senior-level courses from major concentration                        | 15            |
| <b>Total Quarter Credit Hours</b>                                    | <b>191</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Fine Arts Studio, BFA

<http://cias.rit.edu/art>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

### Program overview

Fine arts studio serves the student who is interested in a career in the fine arts across a variety of two- and three-dimensional disciplines and media, both traditional and technological. While painting, printmaking, and sculpture are the areas of greatest emphasis, new forms of expression are encouraged through course discipline work.

### Curriculum

#### General credit requirements

The credit requirements for students admitted in the fine arts studio program are as follows:

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| Required Major (medical illustration, illustration, fine arts studio) | 93-94         |
| Professional Electives  | 15            |
| Open Electives  | 21            |
| Liberal Arts  | 36            |
| General Education   | 12            |
| Art History   | 9             |
| Art History/General Education   | 9             |
| <b>Total Quarter Credit Hours</b>                                     | <b>196</b>    |

A freshman kit is suggested for art, design, and craft students; it costs approximately \$400. Students are generally responsible for the cost of additional supplies.

#### Electives\*

Students have the opportunity to select electives that enhance their studies or allow them to pursue an area of personal or professional interest. Electives are available in the following areas:

|                            |
|----------------------------|
| Graphic Design             |
| Illustration               |
| Graphic Visualization      |
| Industrial Design          |
| Interior Design            |
| Fine Arts Studio           |
| Environmental Design       |
| Ceramics                   |
| Glass                      |
| Metals                     |
| Textiles                   |
| Woodworking                |
| Introduction to Filmmaking |
| Still Photography          |
| Imaging Technology         |

\* Electives prerequisite: Completion of foundation program or permission of instructor. Additional selections offered as special topics.

## Fine arts studio, BFA degree, typical course sequence

| COURSE                            | QTR. CR. HRS.                                       |
|-----------------------------------|---|
| <b>First Year</b>                 |   |
| Foundation Studies:               |   |
| 2013-215                          | Foundation Vector Imaging 1                         |
| 2013-216                          | Foundation Raster Imaging 1                         |
|                                   | Freshman Electives 6                                |
| 2013-211, 212, 213                | Drawing I, II, III 9                                |
| 2013-231, 232, 233                | 2D Design I, II, III 9                              |
| 2013-241, 242, 243                | 3D Design I, II, III 9                              |
|                                   | Liberal Arts* 12                                    |
| 1720-050, 052                     | First-Year Enrichment 2                             |
|                                   | Wellness Education† 0                               |
| <b>Second Year</b>                |   |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III 9 |
|                                   | Liberal Arts* 12                                    |
|                                   | Wellness Education† 0                               |
| Fine Arts Studio:                 |   |
| 2021-xxx                          | Introduction to Fine Arts Drawing 3                 |
| 2021-305                          | Introduction to Painting 3                          |
| 2021-xxx                          | Intermediate Painting 3                             |
| 2021-xxx                          | Figure in Motion 3                                  |
| 2021-315                          | Introduction to Non-Toxic Printmaking 3             |
| 2021-xxx                          | Intermediate Non-Toxic Printmaking 3                |
| 2021-xxx                          | Introduction to Sculpture 3                         |
| 2021-383                          | Intermediate Sculpture 3                            |
|                                   | Studio Elective 3                                   |
| <b>Third Year</b>                 |   |
|                                   | Art History Electives§ 9                            |
|                                   | Studio Electives 6                                  |
|                                   | Open Elective 3-4                                   |
|                                   | Liberal Arts* 12                                    |
| Fine Arts Studio:                 |   |
|                                   | Junior-level courses from Fine Arts Studio I 9      |
| 2021-471                          | Sculpture Ideation and Series 3                     |
|                                   | Figure Studies course 3                             |
| <b>Fourth Year</b>                |   |
|                                   | Studio Elective 3                                   |
|                                   | Open Electives 18-24                                |
| Fine Arts Studio:                 |   |
| 2021-572                          | Business Practices for the Fine Arts 3              |
|                                   | Senior-level courses from Fine Arts Studio II 15    |
| <b>Total Quarter Credit Hours</b> | <b>182-186</b>                                      |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Medical Illustration, BFA

<http://cias.rit.edu/art>

**Don Arday, Administrative Chair**  
(585) 475-4985, [dkafaa@rit.edu](mailto:dkafaa@rit.edu)

### Program overview

Medical illustration students learn to provide visual support for communications and instruction in medicine and allied health sciences. Graduating students rely on their course work in biology, anatomy, and art in their professional roles.

## Curriculum

### General credit requirements

The credit requirements for students admitted in the medical illustration program are as follows:

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| Required Major (medical illustration, illustration, fine arts studio) | 93-94         |
| Professional Electives  | 15            |
| Open Electives  | 21            |
| Liberal Arts  | 36            |
| General Education   | 12            |
| Art History   | 9             |
| Art History/General Education   | 9             |
| <b>Total Quarter Credit Hours</b>                                     | <b>196</b>    |

A freshman kit is suggested for art, design, and craft students; it costs approximately \$400. Students are generally responsible for the cost of additional supplies.

### Electives\*

Students have the opportunity to select electives that enhance their studies or allow them to pursue an area of personal or professional interest. Electives are available in the following areas:

|                            |
|----------------------------|
| Graphic Design             |
| Illustration               |
| Graphic Visualization      |
| Industrial Design          |
| Interior Design            |
| Fine Arts Studio           |
| Environmental Design       |
| Ceramics                   |
| Glass                      |
| Metals                     |
| Textiles                   |
| Woodworking                |
| Introduction to Filmmaking |
| Still Photography          |
| Imaging Technology         |

\*Electives prerequisite: Completion of foundation program or permission of instructor. Additional selections offered as special topics.

### Medical illustration, BFA degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>  |               |
| Foundation Studies:  |               |
| 2013-215 Foundation Vector Imaging                                   | 1             |
| 2013-216 Foundation Raster Imaging                                   | 1             |
| Freshman Electives   | 6             |
| 2013-211, 212, 213 Drawing I, II, III                                | 9             |
| 2013-231, 232, 233 2D Design I, II, III                              | 9             |
| 2013-241, 242, 243 3D Design I, II, III                              | 9             |
| Liberal Arts*  | 12            |
| 1720-050, 052 First-Year Enrichment                                  | 2             |
| Wellness Education†  | 0             |
| <b>Second Year</b>   |               |
| 2039-225, 226, 227 Survey of Western Art and Architecture I, II, III | 9             |
| Liberal Arts*  | 12            |
| Wellness Education†  | 0             |
| Medical Illustration:  |               |
| 2019-311 Digital Illustration I                                      | 3             |
| 1001-201 General Biology   | 4             |

| COURSE  | QTR. CR. HRS.  |
|---|----------------|
| 1004-212, 259 Human Biology II, III                   | 8              |
| Choose three of the following courses:                | 9              |
| 2019-301 Illustration I                               |                |
| 2019-306 Head, Hands, Facial Expressions              |                |
| 2019-323 Zoological and Botanical Illustration        |                |
| 2019-345 Illustration Techniques I                    |                |
| 2021-xxx Figure in Motion                             |                |
| <b>Third Year</b>                                     |                |
| Art History Electives§                                | 9              |
| Studio Electives                                      | 6              |
| Open Elective   | 3-4            |
| Liberal Arts*   | 12             |
| Medical Illustration:                                 |                |
| 2020-431, 432 Human Gross Anatomy                     | 8              |
| 2019-304 Anatomical Figure Drawing                    | 3              |
| 2020-407 Anatomical Wet Media Illustration            | 3              |
| 2020-406 Anatomical Drawing and Illustration          | 3              |
| 2020-408 Computer Application Anatomical Illustration | 3              |
| Anatomical Drawing II                                 | 3              |
| 2020-410 Anatomical Illustration Mixed Media          | 3              |
| <b>Fourth Year</b>                                    |                |
| Studio Elective                                       | 3              |
| Open Electives  | 18-24          |
| Medical Illustration:                                 |                |
| 2020-501 Advanced Medical Illustration                | 3              |
| 2020-504 Surgical Drawing and Illustration I          | 3              |
| 2020-505 Surgical Drawing and Illustration II         | 3              |
| 2020-506 Computer Animation in Medical Illustration   | 3              |
| 2020-507 Marketing and Business Practices             | 3              |
| 2020-508 Medical Illustration Portfolio               | 3              |
| <b>Total Quarter Credit Hours</b>                     | <b>189-196</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## School of Design

The School of Design provides quality design education and preparation for professional practice. Our internationally recognized programs educate students to be designers who make valuable contributions to their professions, communicate effectively, maintain a lifelong attitude of inquiry, and make a positive impact on society. Within the School of Design, programs, faculty, and students form an inquisitive and dynamic educational community in which creativity, critical thinking, innovative problem solving, aesthetic understanding, cross-disciplinary study, professionalism, and social responsibility are explored, cultivated, and promoted.

## 3D Digital Graphics, BFA

[cias.rit.edu/design/](https://cias.rit.edu/design/)

**Marla Schweppe, Program Chair**  
(585) 475-2754, [mkspph@rit.edu](mailto:mkspph@rit.edu)

### Program overview

Students in the 3D digital graphics program will learn to use 3D computer graphics in computer and video games, medical and scientific simulations, data visualization, models for architects

and engineers, motion or broadcast graphics, instructional media accident reconstruction, and more. Traditional design skills using commercial 3D software are integrated with principles relating to time, motion, and lighting.

## Curriculum

### 3D digital graphics, BFA degree, typical course sequence

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| First Year                 |   |               |
| 2014-221                   | Introduction to 3D DG Modeling                    | 4             |
| 2014-222                   | Introduction to 3D DG Materials                   | 4             |
| 2014-223                   | Introduction to 3D DG Motion                      | 4             |
| 2014-231                   | Technical Drawing                                 | 2             |
| 2014-233                   | Drawing Motion                                    | 3             |
| 2039-225, 226, 227         | Survey of Western Art and Architecture I, II, III | 9             |
| 2083-206                   | Imaging for New Media                             | 4             |
|                            | Liberal Arts*                                     | 12            |
|                            | Open Electives                                    | 6-8           |
| 1720-050, 052              | First-Year Enrichment                             | 2             |
|                            | Wellness Education†                               | 0             |
| Second Year                |   |               |
| 2014-363                   | Digital Video for MM                              | 4             |
| 2012-201                   | Basic Design I                                    | 2             |
| 2014-343                   | Flowcharts and Storyboards                        | 2             |
| 2019-304                   | Anatomical Drawing I                              | 3             |
| 4003-241                   | Problem-Based Introduction to CS                  | 4             |
| 4003-242                   | Data Structure Problem Solving                    | 4             |
|                            | Major Electives‡                                  | 12            |
|                            | Liberal Arts*                                     | 12            |
| Third Year                 |   |               |
| 2014-411                   | Project Planning                                  | 2             |
| 2014-432                   | Senior Thesis Assist                              | 4             |
| 2014-463                   | Introduction to the Production Pipeline           | 4             |
|                            | Major Electives‡                                  | 22            |
|                            | Liberal Arts*                                     | 12            |
|                            | Open Elective                                     | 3-4           |
| Fourth Year                |   |               |
| 2014-511, 512              | Senior Thesis I, II                               | 12            |
| 2014-513                   | Portfolio Development                             | 2             |
|                            | Major Electives‡                                  | 12            |
| 2014-xxx                   | History of Computer Graphics                      | 3             |
|                            | Art History Electives§                            | 6             |
|                            | Open Electives                                    | 9-12          |
| Total Quarter Credit Hours |   | 180           |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please refer to the list of major electives offered each quarter.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Graphic Design, BFA

<http://cias.rit.edu/design>

**Nancy Ciolek, Program Chair**  
(585) 475-7472, [nacfad@rit.edu](mailto:nacfad@rit.edu)

### Program overview

Graphic design is the study and practice of communicating ideas and information through printed, environmental, and digital presentations. Typography and images are integrated to express

messages that interest, inform, and persuade intended audiences. With the addition of visual movement, navigation, and sound, digital presentations also are developed. Using research, critical thinking, creativity, and a range of problem-solving principles, graphic designers solve complex visual communication problems within the constraints of time, space, budget, and technology. Areas of study include publication design, signage and environmental design, corporate identity, interactive media, packaging design, and information design.

The school maintains memberships in a variety of professional organizations, including Industrial Designers Society of America, ACM Siggraph, Society of Environmental Graphic Designers, American Society of Interior Designers, American Institute of Architects, ICOGRADA, American Institute of Graphic Arts, and International Interior Design Association.

## Curriculum

The School of Design offers a BFA program in graphic design. The curriculum integrates major courses, studio and open electives, the liberal arts, and art/design history. Computer skills, design perspectives, career preparation, and exposure to the related areas of publishing, photography, engineering, and information technology are integrated into the curriculum.

### Graphic design, BFA degree, typical course sequence

| COURSE             | QTR. CR. HRS.                                     |      |
|--------------------|---|------|
| First Year         |   |      |
|                    | Foundation Studies:                               |      |
|                    | Freshman Elective                                 | 2    |
| 2010-216           | Vector Imaging                                    | 2    |
| 2010-211           | Raster Imaging                                    | 2    |
| 2013-211, 212, 213 | Drawing I, II, III                                | 9    |
| 2013-231, 232      | 2D Design I, II                                   | 6    |
| 2013-241, 242, 243 | 3D Design I, II, III                              | 9    |
| 2010-301           | Elements of Graphic Design                        | 3    |
| 2015-222           | Design Survey                                     | 2    |
|                    | Liberal Arts*                                     | 12   |
| 1720-050, 052      | First-Year Enrichment                             | 2    |
|                    | Wellness Education†                               | 0    |
| Second Year        |   |      |
| 2039-225, 226, 227 | Survey of Western Art and Architecture I, II, III | 9    |
| 2010-302           | Typography I                                      | 3    |
| 2010-313           | Introduction to Time-Based Design                 | 3    |
| 2010-401           | Typography II                                     | 3    |
| 2010-402           | Imagery in Design                                 | 3    |
|                    | Studio Electives                                  | 9-12 |
|                    | Liberal Arts*                                     | 12   |
|                    | Wellness Education†                               | 0    |
| Third Year         |   |      |
| 2010-471           | History of Graphic Design                         | 3    |
|                    | Art History Electives§                            | 6    |
| 2010-403           | Symbol and Icon Design                            | 3    |
| 2010-404           | Design for Publications                           | 3    |
| 2010-405           | Information Design                                | 3    |
| 2010-406           | Environmental Design                              | 3    |
| 2010-512           | Introduction to Interactive Media Design          | 3    |
| 2010-501           | Career Skills and Professional Practice           | 2    |
| 2010-561           | Introduction to Web Design                        | 3    |
|                    | Studio Electives                                  | 9    |
|                    | Liberal Arts*                                     | 12   |

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>Fourth Year</b>   |               |
| Open Electives   | 18-24         |
| <i>Students complete an additional eight senior-level courses, chosen from the list below:</i> |               |
| 2010-502 Corporate Design  | 3             |
| 2010-504 Design Systems  | 3             |
| 2010-505 Advertising Design  | 3             |
| 2010-506 Concept and Symbolism   | 3             |
| 2010-507 Design for Marketing  | 3             |
| 2010-511 Advanced Information Design   | 3             |
| 2010-512 Introduction to Interactive Media Design  | 3             |
| 2010-513 Senior Project  | 3             |
| 2010-514 Editorial Design  | 3             |
| 2010-523 Senior Internship   | 3             |
| 2010-524 Portfolio Development and Presentation  | 3             |
| 2010-562 Advanced Web Design   | 3             |
| <b>Total Quarter Credit Hours</b>  | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Industrial Design, BFA

<http://cias.rit.edu/design>

**Stan Rickel, Program Chair**  
(585) 475-4745, [srrfaa@rit.edu](mailto:srrfaa@rit.edu)

### Program overview

Industrial design involves the integration of form and function as products are designed and created by combining materials, process, computer-aided design, and human factors. Blending technical instruction with studio assignments, studies also include package, exhibit, and furniture design. Aesthetic sensitivity, technical competence, and analytical thought are developed and applied to meet the challenge of designing products for human needs.

The school maintains memberships in a variety of professional organizations, including Industrial Designers Society of America, ACM Siggraph, Society of Environmental Graphic Designers, American Society of Interior Designers, American Institute of Architects, ICOGRADA, American Institute of Graphic Arts, and International Interior Design Association.

### Curriculum

The School of Design offers a BFA program in industrial design. The curriculum integrates major courses, studio and open electives, the liberal arts, and art/design history. Computer skills, design perspectives, career preparation, and exposure to the related areas of publishing, photography, engineering, and information technology are integrated into the curriculum.

#### Industrial design, BFA degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>                                  |               |
| Foundation Studies:                                |               |
| Freshman Electives                                 | 2             |
| ID Freshman Elective                               | 2             |
| 2010-211 Vector Imaging or 2010-216 Raster Imaging | 2             |
| 2013-211, 212, 213 Drawing I, II, III              | 9             |

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| 2013-231, 232, 233 2D Design I, II, III                              | 9             |
| 2013-241, 242, 243 3D Design I, II, III                              | 9             |
| 2015-222 Design Survey   | 2             |
| Liberal Arts*  | 12            |
| 1720-050, 052 First-Year Enrichment                                  | 2             |
| Wellness Education†  | 0             |
| <b>Second Year‡</b>  |               |
| 2039-225, 226, 227 Survey of Western Art and Architecture I, II, III | 9             |
| 2035-306 Technical Drawing   | 2             |
| 2035-311 Model Making  | 2             |
| 2035-321, 322, 323 Graphic Visualization I, II, III                  | 6             |
| 2035-331, 332 Form I, II   | 4             |
| 2035-348 Sophomore Design Studio                                     | 4             |
| Studio Electives   | 9-12          |
| Liberal Arts*  | 12            |
| Wellness Education†  | 0             |
| <b>Third Year</b>  |               |
| 2035-442 History of Industrial Design                                | 3             |
| Art History Electives§   | 6             |
| 2035-405 Materials and Process Applications                          | 3             |
| 2035-406 Consumer Product Design I                                   | 3             |
| 2035-407 Human Factors Applications                                  | 3             |
| 2035-408 Equipment Design  | 3             |
| 2035-410 Consumer Product Design II                                  | 3             |
| 2035-418 CAD Applications  | 3             |
| Studio Electives   | 9             |
| Liberal Arts*  | 12            |
| <b>Fourth Year</b>   |               |
| 2035-510 Professional Practice                                       | 3             |
| 2035-513 Career Planning   | 3             |
| Choose one of the following:   |               |
| 2035-506 Design Collaborative  | 3             |
| 2035-498 Internship  | 3             |
| Choose two of the following:   |               |
| 2035-508 Furniture Design  | 3             |
| 2035-512 Advanced Product Design                                     | 3             |
| 2035-522 Toy Design  | 3             |
| 2035-527 Packaging Design  | 3             |
| Open Electives   | 18-24         |
| <b>Total Quarter Credit Hours</b>                                    | <b>196</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Upon completion of the second year, the associate in applied science degree is awarded.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## Interior Design, BFA

<http://cias.rit.edu/design>

**Charles Lewis, Program Chair**  
(585) 475-6357, [clffaa@rit.edu](mailto:clffaa@rit.edu)

### Program overview

Interior design is the creative integration of form, materials, function, and aesthetics within interior space. Students develop an understanding of, and sensitivity to, history, future technology, environment, economics, architecture, and societal needs by exploring projects that develop aesthetic understanding, technical proficiencies, and preparation for professional certification and licensing. The program is accredited by the Council for Interior Design Accreditation.



The school maintains memberships in a variety of professional organizations, including Industrial Designers Society of America, ACM Siggraph, Society of Environmental Graphic Designers, American Society of Interior Designers, American Institute of Architects, ICOGRADA, American Institute of Graphic Arts, and International Interior Design Association.

## Curriculum

The School of Design offers a BFA program in interior design. The curriculum integrates major courses, studio and open electives, the liberal arts, and art/design history. Computer skills, design perspectives, career preparation, and exposure to the related areas of publishing, photography, engineering, and information technology are integrated into the curriculum.

### Interior design, BFA degree, typical course sequence

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| <b>First Year</b>   |               |
| Foundation Studies:   |               |
| Freshman Electives  | 4             |
| 2010-211 Vector Imaging or 2010-216 Raster Imaging  | 2             |
| 2013-211, 212, 213 Drawing I, II, III   | 9             |
| 2013-231, 232, 233 2D Design I, II, III   | 9             |
| 2013-241, 242, 243 3D Design I, II, III   | 9             |
| 2015-222 Design Survey  | 2             |
| Liberal Arts*   | 12            |
| 1720-050, 052 First-Year Enrichment   | 2             |
| Wellness Education†   | 0             |
| <b>Second Year</b>  |               |
| 2039-225, 226, 227 Survey of Western Art and Architecture I, II, III  | 9             |
| <i>Majors must take each of the following courses to complete the sophomore year (prerequisite: completion of foundation studies):</i>              |               |
| 2015-305 Architectural Drawing  | 3             |
| 2015-306 Perspective Drawing  | 3             |
| 2015-307 Introduction to Interior Design  | 3             |
| 2015-308 Computer-Aided Design Applications   | 3             |
| 2015-311 Model Building and Human Dimension   | 3             |
| Studio Electives  | 9-12          |
| Liberal Arts*   | 12            |
| Wellness Education†   | 0             |
| <b>Third Year</b>   |               |
| 2039-306, 307, 308 History of Architecture and Furniture  | 9             |
| <i>Majors must take each of these courses in sequence to complete junior year in interior design (prerequisite: completion of sophomore year):‡</i> |               |
| 2015-404 Hospitality Design   | 3             |
| 2015-405 Application of Color and Light   | 3             |
| 2015-406 Retail Design  | 3             |
| 2015-407 Building Construction Systems  | 3             |
| 2015-408 Office Design and Planning   | 3             |
| 2015-409 Interior Specifications  | 3             |
| Studio Electives  | 9             |
| Liberal Arts*   | 12            |
| <b>Fourth Year</b>  |               |
| <i>Majors must take these courses to complete senior year in interior design (prerequisite: completion of junior year):‡</i>                        |               |
| 2015-504 Multipurpose/Multistory Design   | 4             |
| 2015-505 Building Codes and Regulations   | 2             |
| 2015-506 Environmental Control Applications   | 3             |
| 2015-507 Healthcare Design  | 4             |
| 2015-508 Interior Design Business Practices   | 2             |
| 2015-509 Career Planning  | 2             |

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| 2015-510 Working Drawings         | 4             |
| 2015-511 Special Projects         | 3             |
| Open Electives                    | 18-24         |
| <b>Total Quarter Credit Hours</b> | <b>193</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Additional special topics courses may be required.

## New Media Design and Imaging, BFA

<http://cias.rit.edu/design>

**Adam Smith, Program Chair**  
(585) 475-4552, [aesfaa@rit.edu](mailto:aesfaa@rit.edu)

### Program overview

The new media design and imaging program was created in response to the growing demand for college graduates with strong digital imaging skills, highly refined design sensitivities, and the ability to visualize concepts in two- and three-dimensional motion graphics and interactive projects. These students explore all forms of digital media as well as traditional imaging techniques to become creative and skilled multimedia designers. Students gain experience in concept development, design development, digital sound, two- and three-dimensional animation, interactivity, programming, digital photography and video, multimedia project development, and digital imaging. They also explore gaming, entertainment multimedia, virtual reality, and other facets of new media. Students prepare and deliver projects executed in all of the major media formats, including mobile broadcast and the Web. This program shares courses with the new media option of the interactive development program in the B. Thomas Golisano College of Computing and Information Sciences. This is an exciting and dynamic interdisciplinary curriculum in step with cutting-edge technology.

## Curriculum

### New media design and imaging, BFA degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>  |               |
| 2013-211, 212 Drawing I, II  | 6             |
| 2013-231, 232 2D Design I, II  | 6             |
| 2009-213 Elements of Graphic Design for New Media                    | 3             |
| 2009-311 Typography for New Media                                    | 3             |
| 2009-313 Introduction to Computer Imaging                            | 3             |
| 2009-411 Time-Based Imaging  | 4             |
| 2065-217 Digital Video for Multimedia                                | 4             |
| 2009-221 Principles of Imaging for New Media                         | 4             |
| 2009-xxx Introduction to Web   | 4             |
| Studio Elective  | 3             |
| Liberal Arts*  | 12            |
| 1720-050, 052 First-Year Enrichment                                  | 2             |
| Wellness Education†  | 0             |
| <b>Second Year</b>   |               |
| 2039-225, 226, 227 Survey of Western Art and Architecture I, II, III | 9             |
| 2009-212 3D Form and Space   | 3             |
| 2009-312 Information Design for New Media                            | 3             |
| 2009-328 Introduction to Digital Animation                           | 4             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 2009-401                          | Advanced Design Networking                   | 3             |
| 4080-230                          | Introduction to Programming for New Media    | 4             |
| 4080-231                          | Programming II for New Media                 | 4             |
| 4080-309                          | Introduction to Web Development              | 4             |
|                                   | Studio Elective                              | 3             |
|                                   | Liberal Arts*                                | 12            |
|                                   | Wellness Education†                          | 0             |
| <b>Third Year</b>                 |  |               |
|                                   | Art History Electives§                       | 9             |
| 2009-323                          | Design of Graphical User Interface           | 4             |
| 2009-402                          | Emerging Multimedia Design and Imaging Tools | 3             |
| 2009-403                          | Dynamic Information Design                   | 3             |
| 2009-412                          | Dynamic Typography                           | 3             |
| 2009-413                          | Advanced 3D Techniques                       | 3             |
|                                   | New Media Elective                           | 3             |
|                                   | Open Elective                                | 3             |
|                                   | Liberal Arts*                                | 12            |
| <b>Fourth Year</b>                |  |               |
| 2009-501                          | Dynamic Persuasion                           | 3             |
| 2009-511                          | QTVR and Multimedia Design                   | 3             |
|                                   | Choose two of the following:                 |               |
| 2009-511                          | QTVR and Multimedia Design                   | 3             |
| 2009-xxx                          | Experimental New Media                       | 3             |
|                                   | Studio Electives                             | 6             |
| 2009-516                          | Career Skills in New Media                   | 3             |
| 2009-542, 543                     | New Media Team Project I, II                 | 8             |
|                                   | Open Electives                               | 12-16         |
| <b>Total Quarter Credit Hours</b> |  | <b>191</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

§ Please refer to the list of art history electives under Ceramics and Ceramic Sculpture.

## School of Film and Animation

### Motion Picture Science (formerly Digital Cinema), BS

[http://cias.rit.edu/film/digitalcinema/digital\\_cinema.html](http://cias.rit.edu/film/digitalcinema/digital_cinema.html)

**David Long, Program Chair**  
(585) 475-5724; [dllpr@rit.edu](mailto:dllpr@rit.edu)

#### Program overview

The BS degree program in motion picture science provides a science- and engineering-based education in the fundamental imaging technologies used for the motion picture industry. By joining a core curriculum in practical filmmaking from the College of Imaging Arts and Sciences and image science from the College of Science, this program trains students in the art and science of feature film, television, and animation production. Topics include film and digital image capture, film scanning, digital image manipulation, color science, visual effects, and digital and traditional projection. New facilities provide students with hands-on experience on the same equipment being used in major motion picture production today.

Utilizing research, critical thinking, creativity, and a range of problem-solving principles, students are taught to address complex

motion imaging workflow issues within the constraints of time, space, budget, and technology. Graduates of the BS program will enjoy a variety of career opportunities, from feature film and television post-production to imaging equipment design and essential motion imaging technology research and development.

## Curriculum

### Motion picture science, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1016-281, 282, 283                | Project-Based Calculus I, II, III             | 12            |
| 1017-311, 312                     | University Physics I, II                      | 10            |
| 2065-201                          | Introduction to Film Production               | 4             |
| 2065-202                          | Digital Film Production                       | 4             |
| 2065-222                          | Film Language                                 | 4             |
| 2065-231                          | Film/Video Materials and Technology,          | 4             |
|                                   | Liberal Arts*                                 | 12            |
|                                   | Wellness Education†                           | 0             |
| 1720-050, 051                     | First-Year Enrichment                         | 2             |
| <b>Second Year</b>                |   |               |
| 1017-313                          | University Physics III                        | 4             |
| 1051-211                          | Programming for Imaging Science               | 4             |
| 1051-320                          | Linear Math for Imaging                       | 4             |
| 1051-350                          | Vision and Psychophysics                      | 4             |
| 1051-370                          | Radiometry                                    | 4             |
| 2065-316                          | Production Process                            | 6             |
| 2065-331                          | Introduction to Animation I                   | 4             |
| 2065-344                          | Post-production Processes                     | 4             |
| 2065-452                          | Sound Recording                               | 3             |
|                                   | Liberal Arts*                                 | 8             |
|                                   | Wellness Education†                           | 0             |
| 1051-361                          | Digital Image Process I                       | 4             |
| <b>Third Year</b>                 |   |               |
| 1051-303                          | Geometric Optics                              | 4             |
| 1051-402                          | Color Science                                 | 4             |
| 1051-462                          | Digital Imaging Processing II                 | 4             |
| 2065-361                          | Introduction to 3D Computer Animation         | 4             |
| 2065-411, xxx                     | Image Capture and Production Technology I, II | 8             |
| 2065-xxx                          | Special Effects and Digital Post              | 4             |
|                                   | Film/Animation History and Aesthetics         | 3             |
|                                   | Free Elective                                 | 4             |
|                                   | Liberal Arts*                                 | 8             |
| <b>Fourth Year</b>                |   |               |
| 2065-507, 508, 509                | Senior Project 1, 2, 3                        | 9             |
| 2065-xxx                          | Film Projection and Digital Cinema            | 4             |
|                                   | Film/Animation Electives                      | 9-12          |
|                                   | Film/Animation History and Aesthetics         | 3             |
|                                   | Free Electives                                | 12            |
|                                   | Liberal Arts*                                 | 8             |
| <b>Total Quarter Credit Hours</b> |   | <b>192</b>    |

\*Please see Liberal Arts General Requirements for more information.

†Please see Wellness Education Requirement for more information.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Professional student organizations

The school maintains memberships in a number of professional organizations: Animation World Network, College Art Association, Rochester Audio Visual Association, Society of Motion Picture and Television Engineers, University Film and Video Association, Siggraph, and BEA. The school also is a certified Apple Training Center for Professional Applications.

## Film and Animation, BFA

<http://cias.rit.edu/film/>

**Malcolm Spaul, Administrative Chair**  
(585) 475-2779, [mgschdm@rit.edu](mailto:mgschdm@rit.edu)

### Program overview

The BFA degree program in film and animation is for students who recognize the moving image as an expressive force uniquely important to modern life. The school will develop students' production skills and acquaint each with film, video, and animation as creative media.

### Curriculum

The curriculum emphasizes production, with students beginning their first quarter working in 16mm film and animation and continuing with production work every quarter until they graduate. Students may choose to specialize in motion pictures, video, or traditional or computer animation. The school's goal is to prepare students who are able to produce, creatively and practically, their own independent work and/or fulfill professional production responsibilities in any medium suitable to their interests and abilities.

Through lectures and laboratories, students develop individual skills in moving-image communications and learn the aesthetic principles governing the art. Technology and technique are never taught as an end in themselves but in terms of learning to use the tools necessary to achieve a creative goal in relation to the audience.

Students in the film and animation program produce several short films or animations by working through all phases of production: scripting, production planning, budgeting, shooting, editing, and sound design. Students further their learning of visual and sound artistry through hands-on experience with camera and sound equipment. Film, video, and animation projects are designed by individual students. A wide variety of styles and intentions is expressed in the department's work.

Utilizing research, critical thinking, creativity, and a range of problem-solving principles, students are taught to address complex motion imaging workflow issues within the constraints of time, space, budget, and technology. Graduates of the BS program will enjoy a variety of career opportunities, from feature film and television post-production to imaging equipment design and essential motion imaging technology research and development.

### Film and animation, BFA degree, typical course sequence

| COURSE            | QTR.                            | CR. | HRS. |
|-------------------|---------------------------------|-----|------|
| <b>First Year</b> |                                 |     |      |
| 2065-201          | Introduction to Film Production | 4   |      |
| 2065-202, 203     | Digital Production I, II        | 8   |      |

| COURSE                              | QTR.  | CR.  | HRS. |
|-------------------------------------|---|------|------|
| 2065-206                            | Story and Structure                                   | 2    |      |
| 2065-216                            | Fundamentals of Computer Imaging                      | 3    |      |
| 2065-221                            | Materials and Processes of Moving Image               | 2    |      |
| 2065-222                            | Film Language   | 4    |      |
| 2065-263                            | Single-Frame Motion                                   | 2    |      |
| 2065-331                            | Introduction to Animation                             | 4    |      |
| 2065-342                            | Scriptwriting I                                       | 3    |      |
|                                     | Liberal Arts*   | 12   |      |
| 1720-050, 051                       | First-Year Enrichment                                 | 2    |      |
|                                     | Wellness Education†                                   | 0    |      |
| <b>Second Year</b>                  |   |      |      |
| 2065-344                            | Post-production Processes                             | 4    |      |
|                                     | Liberal Arts*   | 12   |      |
|                                     | Wellness Education†                                   | 0    |      |
| <b>Production Emphasis:</b>         |   |      |      |
| 2065-316                            | Production Processes                                  | 5    |      |
| 2065-324                            | Live-Action Pre-production                            | 3    |      |
| 2065-343                            | Scriptwriting II                                      | 3    |      |
|                                     | Film/Video Production Workshop                        | 4    |      |
|                                     | Film Animation History and Aesthetics                 | 12   |      |
|                                     | Film/Animation Electives                              | 9-12 |      |
| <b>Animation Emphasis:</b>          |   |      |      |
| 2065-352                            | Animation Pre-production                              | 4    |      |
| 2065-427                            | 2D Computer Animation                                 | 4    |      |
| 2065-457                            | Introduction to 3D Modeling Animation                 | 4    |      |
| 2013-211, 212                       | Foundation Drawing                                    | 6    |      |
| <i>Choose one of the following:</i> |   |      |      |
| 2065-333                            | Animation Production Workshop                         |      |      |
| 2065-447                            | Experimental Animation Workshop                       |      |      |
| <i>Choose one of the following:</i> |   |      |      |
| 2013-213                            | Foundation Drawing                                    | 3    |      |
| 2013-231                            | 2D Design   |      |      |
| 2013-241                            | 3D Design   |      |      |
|                                     | Film/Animation History and Aesthetics                 | 6-8  |      |
|                                     | Film/Animation Elective                               | 3-4  |      |
| <b>Third Year</b>                   |   |      |      |
| 2065-413                            | Senior Project Seminar                                | 1    |      |
|                                     | Open Electives  | 8    |      |
|                                     | Liberal Arts*   | 12   |      |
| <b>Production Emphasis:</b>         |   |      |      |
| <i>Choose one of the following:</i> |   |      |      |
| 2065-387                            | Writing the Short Film                                |      |      |
| 2065-376                            | Dramatic Structure for Film/TV                        |      |      |
| <i>Choose one of the following:</i> |   |      |      |
|                                     | Production Workshop: Documentary/Experimental/Fiction |      |      |
| 2065-387                            | Writing the Short Film                                |      |      |
|                                     | Film/Animation History and Aesthetics                 |      |      |
|                                     | Film/Animation Electives                              |      |      |
| <b>Animation Emphasis:</b>          |   |      |      |
| <i>Choose one of the following:</i> |   |      |      |
| 2065-361                            | Introduction to 3D Computer Animation I               |      |      |
| 2065-478                            | 3D Computer Animation II                              |      |      |
| 2065-332                            | Advanced Animation Tools                              |      |      |
| 2065-363                            | Scriptwriting for Animation                           | 3    |      |
| 2065-437                            | Advanced Animation Workshop I                         | 4    |      |
| 2065-438                            | Advanced Animation Workshop II                        | 4    |      |
|                                     | Film/Animation History and Aesthetics                 | 3-4  |      |
|                                     | Film/Animation Electives                              | 6-8  |      |
| <b>Fourth Year</b>                  |   |      |      |
|                                     | Open Elective   | 4    |      |
|                                     | Liberal Arts*   | 9-12 |      |

| COURSE   |                                       | QTR. CR. HRS.  |
|--|---------------------------------------|----------------|
| <b>Production Emphasis and Animation Emphasis:</b> |                                       |                |
| 2065-507, 508, 509                                 | Senior Project 1, 2, 3                | 12             |
| 2065-512   | Senior Forum                          | 2              |
| 2065-513   | Career Preparation                    | 2              |
|  | Film/Animation History and Aesthetics | 3-4            |
|  | Film/Animation Electives              | 9-12           |
| <b>Total Quarter Credit Hours</b>                  |                                       | <b>184-195</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

**Portfolio guidelines:** Please see portfolio guidelines listed in the introductory section for this college for specific instructions on portfolio submission for applicants to the film and animation program. The review committee is looking for work that is original in concept and content. It does not necessarily need to be motion media, but should be visual or aural. Examples include films/videos, photos, drawings, paintings, sculpture, stop-motion puppets, scripts, storyboards, and original music.

An inventory sheet or table of contents should accompany portfolios. Videos should be on mini-DV, DVCAM, VHS, DVD, or DVD-ROM. The movie files on a DVD-ROM must be in QuickTime or MPEG2 format. No AVI or other digital video architectures files. NTSC or ATSC (HD) only. Still images should be on DVD-ROM or CD-ROM in jpeg or tiff format. Slides in 35mm format are acceptable, but they must be presented in sleeves. No boxes or carousel trays will be accepted. Sound design should be no longer than 10 minutes in length and must be presented in CD format.

## Writing policy

The School of Film and Animation has a minimum writing requirement within each of its degree programs. A copy of the school's official writing competency policy may be obtained from the department or from the Office of Academic Student Services.

## Additional information

### Graduate programs

The School of Film and Animation offers an MFA degree in animation with options in 2D animation, 3D animation, scriptwriting, and live action production. The program is described in the *Graduate Bulletin*, available from the Office of Graduate Enrollment Services at [www.rit.edu/programs/grad/](http://www.rit.edu/programs/grad/).

### Summer session

The School of Film and Animation offers a limited selection of courses during the summer quarter. These range from beginning courses to those requiring a substantial background. For information on summer courses, please e-mail the school: [sofa@rit.edu](mailto:sofa@rit.edu).

### Memberships

The school maintains memberships in a number of professional organizations: Animation World Network, College Art Association, Rochester Audio Visual Association, Society of Motion Picture

and Television Engineers, University Film and Video Association, Siggraph, and BEA. The school also is a certified Apple Training Center for Professional Applications.

## School of Photographic Arts and Sciences

The programs of the School of Photographic Arts and Sciences are designed to prepare students for a wide range of careers in photographic and related imaging fields. Studies in photographic practices provide both technical and creative experiences for visual problem solving. The principles of imaging are taught through courses investigating the tools and processes used to make pictorial-, data-, and information-based images. All first-year BFA and BS students are required to have their own handheld small- or medium-format digital SLR camera and a professional light meter. Students are encouraged to take advantage of Rochester's historic connection with photography. A comprehensive schedule of programs, including exhibitions, lectures, and seminars, is offered by the city's array of cultural institutions.

## Biomedical Photographic Communications, BS

<http://biomed.rit.edu/>

**Christye Sisson, Program Chair**  
(585) 475-4228, [cpspph@rit.edu](mailto:cpspph@rit.edu)

## Program overview

RIT has the only program in the nation that grants a bachelor of science degree in biomedical photographic communications, which combines photography, visual communications, and science. The program prepares students for photographic and imaging careers in various institutions such as forensic labs, pharmaceutical companies, and military bases, or in ophthalmic photography, the only form of diagnostic photography. Because of the unique blend of courses, recent graduates have been very successful finding positions not only in biomedical imaging but also in the electronic imaging field as technical service representatives, multimedia producers, and Web publishers.

During the first two years of the program, students receive a solid foundation in digital photography and desktop and Web publishing. Included in these classes are topics such as close-up and high-magnification photography, studio lighting, ethics, ophthalmic photography, and imaging technologies. Students also take biology, liberal arts, and general education courses. In the third and fourth years the curriculum becomes more flexible, allowing students to choose elective courses and build a photographic concentration from a wide variety of courses taught in the College of Imaging Arts and Sciences, the College of Science, and the B. Thomas Golisano College of Computing and Information Sciences. This flexibility, coupled with the personal attention of faculty advisers, allows students to focus on their career and educational goals. It is not uncommon for graduates to continue their studies in graduate school programs in imaging, medicine, or information technology.

## Careers

Since 1968, various visual communication companies have actively recruited most of the program's nearly 600 graduates. Many of our graduates have become directors and leaders in their respective



institutions and companies. Today, the biomedical photographic communications program boasts a placement rate of well over 85 percent.

### Curriculum

#### Biomedical photographic communications, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 2061-xxx, xxx, xxx                | Biomedical Photo I, II, III                       | 15            |
| 2076-211, 212, 213                | Materials and Processes of Photography            | 9             |
| 2061-213                          | Survey of Biomedical Photography                  | 1             |
|                                   | General Education                                 | 4             |
|                                   | Math or Science‡                                  | 8             |
|                                   | Liberal Arts*                                     | 12            |
| 1720-050, 052                     | First-Year Enrichment                             | 2             |
|                                   | Wellness Education†                               | 0             |
|                                   | Cooperative Education (summer)                    | Co-op         |
| <b>Second Year</b>                |   |               |
| 2061-301, 302, 303                | Applications of Scientific Photography I, II, III | 12            |
| 2061-311, 313                     | Preparation of Biomedical Visuals I, III          | 6             |
|                                   | General Education                                 | 8             |
|                                   | Open Elective                                     | 4             |
|                                   | Math or Science‡                                  | 4             |
|                                   | Liberal Arts*                                     | 12            |
|                                   | Wellness Education†                               | 0             |
|                                   | Cooperative Education (optional)                  | Co-op         |
| <b>Third Year</b>                 |   |               |
| 2061-316                          | Digital Media in Biomedical Photography I         | 4             |
| 2061-361                          | Web Design Using Photography                      | 4             |
| 2061-403                          | Advanced Photography in Biomedical Communication  | 4             |
|                                   | Open Electives                                    | 12            |
|                                   | Math or Science‡                                  | 8             |
|                                   | General Education                                 | 4             |
|                                   | Liberal Arts*                                     | 12            |
| <b>Fourth Year</b>                |   |               |
| 2061-501, 502, 503                | Photographic Concentration                        | 12            |
| 2061-401                          | AV Production I                                   | 4             |
| 2061-402                          | Advanced Photography in Biomedical Communication  | 4             |
|                                   | General Education                                 | 18            |
|                                   | Open Electives                                    | 4-6           |
| <b>Total Quarter Credit Hours</b> |   | <b>191</b>    |

\* Please see Liberal Arts General Education Requirements for more information.  
† Please see Wellness Education Requirement for more information.  
‡ The math or science requirement includes: Human Biology I, II, or III (1004-211, 212, or 213) (8 credits); Medical Terminology (1026-301) (3 credits); or Human Biology I, II, III (1004-211, 212, or 213) (8 credits).

#### Cooperative education

At least one cooperative education experience or internship is required for graduation. Co-ops are an opportunity for students to gain experience in their field and are generally completed between their second and third academic years. Co-ops are full- or part-time paid positions usually eight to 10 weeks in length. The Office of Cooperative Education and Career Services can assist students in identifying co-op placements and opportunities.

### Imaging and Photographic Technology, BS

<http://phototech.rit.edu/>  
**Christye Sisson, Program Chair**  
**(585) 475-4228, cpspph@rit.edu**

#### Program overview

The imaging and photographic technology curriculum blends experiences in contemporary digital photography with a diverse and specialized education exploring technical, professional, or scientific imaging applications that lead to careers as professional photographers or positions that use related imaging technologies. Imaging and technical skills are complemented by courses in mathematics, computing, physics, technical writing, and the liberal arts.

Various aspects of photography are investigated across all four years of the program, with explorations in black-and-white photography; color photography; and specialized areas such as high-speed, architectural, and nature photography. Some required courses include Photographic Sensitometry (2076-301); Photographic Chemistry (2076-302); Photographic Optics (2076-303); Digital Image Processing I (2076-481); and courses in color theory, color measurement, and imaging systems. Beginning in the first year, electronic imaging and computing are emphasized in all courses.

Third- and fourth-year students can develop expertise in professional or technical fields by selecting electives or minors from across the university. Within the department electives are available in holography, photonics, scanning electron microscopy, photo instrumentation, technical photography, imaging chemistry, still photography, graphic arts, optics, imaging systems, business, science, and engineering. Opportunities for independent study also are available. While each student's core program is similar, graduates' academic backgrounds often vary with their choice of concentration electives.

### Curriculum

#### Imaging and photographic technology, BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 2076-xxx, xxx, xxx | Photography I, II, III                 | 15            |
| 2076-211, 212, 213 | Materials and Processes of Photography | 9             |
| 1016-230           | Precalculus                            | 4             |
| 1016-231           | Calculus for Engineering Technology I‡ | 4             |
| 1016-319           | Data Analysis                          | 4             |
|                    | Liberal Arts*                          | 12            |
| 1720-050, 052      | First-Year Enrichment                  | 2             |
|                    | Wellness Education†                    | 0             |
| <b>Second Year</b> |  |               |
| 2076-301           | Photographic Sensitometry              | 4             |
| 2076-302           | Technical Photographic Chemistry       | 4             |
| 2076-303           | Photographic Optics                    | 4             |
| 2076-5xx           | IDL Programming for Photography        | 4             |
| 1051-350           | Vision and Psychophysics               | 4             |
| 2076-313           | Color Measurement                      | 4             |
| 1017-211, 212, 213 | College Physics I, II, III§            | 9             |
| 1017-271, 272, 273 | College Physics I, II, III Lab§        | 3             |
|                    | Liberal Arts*                          | 12            |
|                    | Cooperative Education (summer quarter) | Co-op         |



| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>Third Year</b>                 |  |               |
| 2076-412                          | Color Management for Photographers     | 4             |
| 2076-491                          | Digital Imaging Processing             | 4             |
| 2076-411                          | Imaging Systems                        | 4             |
| 0502-444                          | Technical Writing                      | 4             |
|                                   | General Education Elective             | 4             |
|                                   | Liberal Arts*                          | 12            |
|                                   | Open Electives                         | 12            |
|                                   | Cooperative Education (summer quarter) | Co-op         |
| Choose one of the following:      |  | 4             |
| 2061-354                          | Photomacrography                       |               |
| 2061-463                          | Photo and the Microscope               |               |
| 2076-471                          | Nature Photography                     |               |
| 2076-478                          | Architectural Photography              |               |
| 2076-572                          | Scanning Electron Microscopy           |               |
| <b>Fourth Year</b>                |  |               |
| 2076-501                          | Introduction to Research               | 3             |
| 2076-503                          | Survey of Nonconventional Imaging      | 3             |
| 2076-511                          | High-Speed/Time Lapse                  | 3             |
|                                   | General Education Electives            | 24            |
|                                   | Open Electives                         | 12            |
| <b>Total Quarter Credit Hours</b> |  | <b>190</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

‡Calculus I and II may be substituted for College Algebra and Trigonometry, Calculus for Engineering Technology I, and/or Data Analysis.

§University Physics I, II, and III and the related labs can be substituted for College Physics.

Notes: Minors or concentrations in general education can be selected only from such offerings by the College of Science or the College of Liberal Arts. Minors offered by other colleges can be applied to open electives.

## Cooperative education

At least two cooperative education placements, each normally 10 weeks in length, are required before graduation. Co-ops are full- or part-time positions. They offer an opportunity for students to gain experience in their field and are generally completed between their second and third academic years. The Office of Cooperative Education and Career Services can assist students in identifying co-op placements and opportunities.

## Additional information

### Career opportunities

An employment survey conducted by the School of Photographic Arts and Sciences indicates the need for graduates with imaging and photographic technology backgrounds will exist well into the future. Recent graduates are employed as applications engineers; imaging/photographic technologists; technical sales representatives; technical illustrators; high-speed photographers; corporate, industrial, advertising, and commercial photographers; and research associates in the private, government, and entrepreneurial sectors.

The Technical Photography Student Association promotes professional and social interaction among students and professionals from the imaging and photographic technology industry. The association regularly invites alumni in professional imaging fields to present lectures and demonstrations.

## Professional Photographic Illustration–Advertising Photography, BFA

<http://cias.rit.edu/photography>

**Douglas Manchee, Program Chair**  
(585) 475-7401, [djmpmh@rit.edu](mailto:djmpmh@rit.edu)

### Program overview

The advertising photography option prepares students to utilize their skill and creativity in the challenging world of commercial photography. Whether creating images for advertising agencies, magazines, or designer projects, students learn the technical and artistic skills necessary to create successful photographs. Graduates receive a bachelor of fine arts degree in professional photographic illustration.

The program is flexible enough to develop each student's particular talents, with the ultimate goal of providing art for commerce. During their junior and senior years, students can choose from courses that include editorial, food, portraiture, architectural, and still-life photography. Additional courses include advanced studio and location photography, publication design and production, and collaborative courses with graphic design students. All advertising photography courses emphasize visual communications and professional business practices.

### Curriculum

#### Professional photographic illustration, advertising photography option, BFA degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 2067-201, 202, 203                | Photo Arts 1, 2, 3                                | 15            |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III | 9             |
| 2076-211, 212, 213                | Materials and Processes of Photography            | 9             |
|                                   | Liberal Arts*                                     | 12            |
| 1720-050, 052                     | First-Year Enrichment                             | 2             |
|                                   | Wellness Education†                               | 0             |
| <b>Second Year</b>                |   |               |
| 2067-xxx                          | Photo Arts Elements                               | 15            |
| 2067-306, 307, 308                | History and Aesthetics of Photography             | 9             |
| 2013-211                          | Drawing I   | 3             |
| 2013-231                          | 2D Design I                                       | 3             |
| 2013-xxx                          | 4D Design   | 3             |
| 2067-xxx                          | Career Seminar                                    | 1             |
|                                   | Liberal Arts*                                     | 12            |
|                                   | Wellness Education†                               | 0             |
| <b>Third Year</b>                 |   |               |
| 2067-411, 412                     | Advertising Photography                           | 10            |
|                                   | Advertising Core‡                                 | 5             |
|                                   | Minor or CIAS Electives§                          | 18-20         |
|                                   | Business Elective                                 | 4             |
|                                   | Liberal Arts*                                     | 12            |
| <b>Fourth Year</b>                |   |               |
|                                   | Advertising Core‡                                 | 10            |
| 2067-473                          | Portfolio Development                             | 5             |
|                                   | Minor or CIAS Electives**§                        | 12-20         |
|                                   | Open Electives#                                   | 12-15         |
| <b>Total Quarter Credit Hours</b> |   | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Advertising core, minimum of 15 credits required

§ RIT-approved minor and/or CIAS elective, minimum 20 credits required

## Professional Photographic Illustration– Fine Art Photography, BFA

**Therese Mulligan, Chair**  
(585) 475-2884, [mtmpph@rit.edu](mailto:mtmpph@rit.edu)

### Program overview

The fine art photography option is designed to encourage and facilitate a student's artistic development, sensitivity, and uniqueness as a visual artist. The department's objective is to provide each student with a rich potential for personal growth as well as a lifetime of interesting and challenging work in creative imaging and related fields. Students majoring in fine art photography receive the BFA degree in professional photographic illustration.

### Curriculum

#### Professional photographic illustration, fine art photography option, BFA degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 2067-201, 202, 203                | Photo Arts 1, 2, 3                                | 15            |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III | 9             |
| 2076-211, 212, 213                | Materials and Processes of Photography            | 9             |
|                                   | Liberal Arts*                                     | 12            |
| 1720-050, 0512                    | First-Year Enrichment                             | 2             |
|                                   | Wellness Education†                               | 0             |
| <b>Second Year</b>                |   |               |
| 2067-xxx                          | Photo Arts Elements                               | 15            |
| 2067-306, 307, 308                | History and Aesthetics of Photography             | 9             |
| 2013-211                          | Drawing I   | 3             |
| 2013-231                          | 2D Design I                                       | 3             |
| 2013-xxx                          | 4D Design   | 3             |
| 2067-xxx                          | Career Seminar                                    | 1             |
|                                   | Liberal Arts*                                     | 12            |
|                                   | Wellness Education†                               | 0             |
| <b>Third Year</b>                 |   |               |
| 2067-406, 407, 408                | Photography as a Fine Art I, II, III              | 12            |
| 2067-416, 417                     | Contemporary Issues                               | 8             |
|                                   | Modern Art History Elective                       | 3             |
|                                   | Art History/Critical Study/Open Elective          | 3-4           |
|                                   | Minor or CIAS Electives‡                          | 6-9           |
|                                   | Liberal Arts*                                     | 12            |
| <b>Fourth Year</b>                |   |               |
| 2067-506, 507, 508                | Photography as a Fine Art II                      | 12            |
|                                   | Minor or CIAS Electives‡                          | 18-22         |
|                                   | Open Electives                                    | 9-12          |
| <b>Total Quarter Credit Hours</b> |   | <b>181</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ RIT-approved minor and/or CIAS elective, minimum 28 credits required.

### Additional information

#### Career opportunities

Graduates of the program find careers as exhibiting artists, teachers, picture editors, art directors, photographers' representatives,

photographic archivists, museum and gallery staff, multimedia specialists, self-employed photographers, custom-image printers, and film/video artists or animators. Many students choose to pursue graduate work and earn an MFA degree in the arts.

## Professional Photographic Illustration– Photojournalism, BFA

**William Snyder, Program Chair**  
(585) 475-2780, [wdspph@rit.edu](mailto:wdspph@rit.edu)

### Program overview

World events often are etched in the public's mind not by words but by photographs. The photojournalism option, which leads to a bachelor of fine arts degree in professional photographic illustration, provides an education in both photographic craft and visual storytelling. Since 1979, many graduates of this program have earned professional acclaim. Ten alumni have been awarded the Pulitzer Prize for photojournalism.

Within the program, students will have the opportunity to explore photography-related disciplines such as electronic publishing, video documentary, multimedia for photojournalists, and sound gathering and editing, to name a few.

### Curriculum

#### Professional photographic illustration, photojournalism option, BFA degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 2067-201, 202, 203                | Photo Arts 1, 2, 3                                | 15            |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III | 9             |
| 2076-211, 212, 213                | Materials and Processes of Photography            | 9             |
|                                   | Liberal Arts*                                     | 12            |
| 1720-050, 052                     | First-Year Enrichment                             | 2             |
|                                   | Wellness Education†                               | 0             |
| <b>Second Year</b>                |   |               |
| 2067-xxx                          | Photo Arts Elements                               | 15            |
| 2067-306, 307, 308                | History and Aesthetics of Photography             | 9             |
| 2013-211                          | Drawing I   | 3             |
| 2013-231                          | 2D Design I                                       | 3             |
| 2013-xxx                          | 4D Design   | 3             |
| 2067-xxx                          | Career Seminar                                    | 1             |
|                                   | Liberal Arts*                                     | 12            |
|                                   | Wellness Education†                               | 0             |
| <b>Third Year</b>                 |   |               |
| 2067-401, 402, 403                | Photojournalism I, II, III                        | 15            |
|                                   | Photojournalism Core‡                             | 4-5           |
| 2067-xxx                          | Photojournalism Ethics                            | 4             |
| 2067-xxx                          | Portfolio Development                             | 5             |
|                                   | Minor or CIAS Electives§                          | 8             |
|                                   | Liberal Arts*                                     | 12            |
| <b>Fourth Year</b>                |   |               |
| 2067-xxx                          | Photojournalism II                                | 15            |
|                                   | Photojournalism Core‡                             | 8-10          |
|                                   | Minor or CIAS Electives§                          | 12            |
|                                   | Open Electives**                                  | 12-15         |
| <b>Total Quarter Credit Hours</b> |   | <b>189</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Photojournalism core, minimum of 12 quarter credits required

## Internships

Our students apply for internships with some of the nation's most respected newspapers and magazines. They work behind the camera on a variety of stories and have the opportunity to learn from photographers, editors, and other professionals in the newsroom. Students receive assistance from their professors, as well as from the Office of Cooperative Education and Career Services, in identifying and applying for internships. Internships provide real-world work experience, which is an invaluable part of our students' educational experience.

## Additional information

### National Press Photographers Association

Photojournalism students are the driving force in our National Press Photographers Associate (NPPA) student chapter, which was named the 2004 Chapter of the Year by the national association. Students regularly attend activities sponsored by the NPPA. The chapter hosts guest speakers and alumni who share their experiences in photojournalism and review student portfolios. Chapter members participate each year in NPPA short courses and publish their own website.

### Career opportunities

Our photojournalism graduates go to work for some of today's best newspapers and magazines, working initially as either interns or full-time employees. A significant number of our students also become self-employed freelance photographers. They seek freelance assignments with news organizations, picture agencies, stock photo agencies, and editorial photographers.

## Professional Photographic Illustration– Visual Media, BFA

**Michael Peres, Associate Chair**  
 (585) 475-2775, [mrppph@rit.edu](mailto:mrppph@rit.edu)

### Program overview

The computer has helped unite the industries of photography, graphic design, and print media. All three of these career fields are using the same tools for visual communication and production. As a result, employers search for graduates with a strong base in photography and the ability to work efficiently with graphic designers, print media specialists, and multimedia professionals.

The visual media option broadens a student's skill base to include graphic design and/or print media. Graduates work within these disciplines to coordinate, drive, and direct the production of visual projects.

Students choose a focus in either graphic design or print media. The flexibility of the electives and management courses allows for an even broader skill set in the field. Students will prepare for ca-

reers in photographic studio management, graphic design production management, and printing management industries.

## Curriculum

### Professional photographic illustration, visual media option, BFA degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 2067-201, 202, 203                | Photo Arts 1, 2, 3                                  | 15            |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III   | 9             |
| 2076-211, 212, 213                | Materials and Processes of Photography              | 9             |
|                                   | Liberal Arts*                                       | 12            |
| 1720-050, 052                     | First-Year Enrichment                               | 2             |
|                                   | Wellness Education†                                 | 0             |
| <b>Second Year</b>                |   |               |
| 2067-xxx                          | Photo Arts Elements                                 | 15            |
| 2060-301, 302, 303                | History and Aesthetics of Photography               | 9             |
| 2013-211                          | Drawing I   | 3             |
| 2013-231                          | 2D Design I   | 3             |
| 2013-xxx                          | 4D Design   | 3             |
| 2060-xxx                          | Career Seminar                                      | 1             |
|                                   | Liberal Arts*                                       | 12            |
|                                   | Wellness Education†                                 | 0             |
| <b>Third Year</b>                 |   |               |
|                                   | Visual Media Focus§ (graphic design or print media) | 8-9           |
| 0681-200, 201, 203                | Management Process I, II, III                       | 12            |
|                                   | Minor or CIAS Electives**                           | 12            |
|                                   | Liberal Arts*                                       | 12            |
| <b>Fourth Year</b>                |   |               |
| 2067-512                          | Visual Media Capstone Project                       | 4             |
|                                   | Visual Media Focus or Elective§                     | 4             |
|                                   | Minor or CIAS Electives**                           | 10            |
|                                   | Photo Electives‡                                    | 16            |
|                                   | Open Electives††                                    | 12            |
| <b>Total Quarter Credit Hours</b> |   | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Photo electives, minimum of 16 quarter credits required in fine art photography, biomedical photographic communications, photographic arts and sciences and imaging and photographic technology

§ Visual media focus, minimum of 12 quarter credits required.

\*\* Minor and/or CIAS elective, minimum 20 quarter credits required.

†† Open electives, minimum of 12 quarter credits required.

## School of Print Media

The rapid innovation of digital technology has blurred the roles that traditionally differentiated printers, publishers, advertising agencies, graphic designers, website developers, and mail and fulfillment houses. Because of these evolving roles, the School of Print Media's program encourages customized study in other course areas to develop and enhance the individual talents and skills of our students.

The ability to tailor our programs differentiates RIT from other universities. Another primary differentiating factor is the school's facilities. Students have access to more than \$40 million in state-of-the-art equipment in 17 laboratories.

# Media Arts and Technology, BS

<http://cias.rit.edu/printmedia/>

**Barbara Birkett, Program Chair**  
(585) 475-2889, [babppr@rit.edu](mailto:babppr@rit.edu)

## Program overview

In the media arts and technology program students learn how to create, transform, and publish text and images. This might mean publishing to the Web, to a cell phone, to an iPod, or any other medium. This program reflects the convergence of technologies that enable content to be created, stored, and repurposed across multiple output media, as well as shared among millions of people, while simultaneously personalizing each message. Students build skills in traditional publishing, database management, and new media production in preparation for working closely with designers, photographers, marketers, IT professionals, and all of the players in the publishing process.

In their sophomore year, students begin a concentration comprised of four courses from one of the following seven areas: advertising and media strategy, contemporary publishing, content management, digital imaging and pre-media, print production, print quality, and three-dimensional computer graphics. The concentrations give students an opportunity to gain in-depth knowledge in an area of particular interest to them.

Graduates find challenging positions with advertising and marketing agencies, publishers, news organizations, print media firms, website developers, corporate communication departments, direct marketers, and a host of other firms across many industries.

## Curriculum

### Media arts and technology, BS degree, typical course sequence

| COURSE             |                                     | QTR. CR. HRS. |
|--------------------|-------------------------------------|---------------|
| <b>First Year</b>  |                                     |               |
| 2083-201           | New Media Perspectives              | 3             |
| 2083-206           | Imaging for New Media               | 4             |
| 2083-216           | Digital Foundations                 | 4             |
| 2083-217           | Typography and Page Design          | 4             |
|                    | Liberal Arts*                       | 16            |
| 1016-225           | Algebra for Management Science      | 4             |
|                    | Laboratory Science§                 | 4             |
|                    | General Education                   | 4             |
| 1720-050, 052      | First-Year Enrichment               | 2             |
| <b>Second Year</b> |                                     |               |
| 2082-303           | Professional and Technical Writing‡ | 4             |
| 2083-346           | Print Production Workflow           | 4             |
|                    | SPM Concentration                   | 3-4           |
| 2082-417           | Database Publishing                 | 4             |
|                    | Liberal Arts                        | 4             |
| 1016-319, 320      | Data Analysis I, II                 | 10            |
|                    | Laboratory Science§                 | 4             |
|                    | General Education                   | 4             |
| 4002-206           | Web Foundations                     | 4             |
| 4002-406           | Rapid Online Presence               | 4             |
|                    | Liberal Arts*                       | 4             |
|                    | Wellness Education†                 | 0             |
|                    | Cooperative Education               | Co-op         |
| <b>Third Year</b>  |                                     |               |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 2082-337                          | Digital Asset Management                        | 3             |
| 2083-328                          | Information Architecture for Publishing Systems | 4             |
| 2083-416                          | Media Business Basics                           | 4             |
|                                   | Professional Elective                           | 4             |
|                                   | SPM Concentration                               | 9-12          |
|                                   | Liberal Arts*                                   | 12            |
|                                   | Open Elective                                   | 4             |
|                                   | General Education                               | 8             |
|                                   | Cooperative Education                           | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 2083-542                          | New Media Team Project                          | 4             |
|                                   | General Education                               | 16            |
|                                   | Professional Elective                           | 4             |
|                                   | Open Elective                                   | 16            |
| <b>Total Quarter Credit Hours</b> |   | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Students must take the Writing Competency Test if they earn less than a grade of "B" in this class.

§ School of Print Media students are required to complete two approved laboratory science courses. The following courses meet this requirement: Biology (1004-211 and 1004-231; 1004-212 and 1004-232); Chemistry (1011-201 and 1011-205; 1011-202 and 1011-207; 1011-271 and 1011-205; 1011-273 and 1011-277; 1011-215 and 1011-205; 1011-216 and 1101-206); Physics (1017-211; 1017-212; 1017-202; 1017-311; 1017-312); Medical Science (1026-222); Astronomy (1017-230 and 1017-231; 1017-235 and 1017-236); Imaging Science (1051-215; 1051-217); Environmental Science (1006-202; 1006-203); or Environmental Geology (0630-370 and 0630-372). Students are responsible for checking course prerequisites.

## Accelerated dual degree option

A joint program between the School of Print Media and the E. Philip Saunders College of Business, the accelerated BS/MBA dual degree option enables students to earn a BS degree and an MBA in five years. Students who qualify for this option receive a waiver of up to six MBA courses for specific undergraduate management courses completed with a grade of B or better.

Students interested in this dual degree should discuss the option's requirements with their advisers as early as possible during their undergraduate program. Students must meet the admission requirements for the MBA program, which include minimum Graduate Management Admission Test scores and undergraduate grade standards. Students must satisfy all of the requirements of their undergraduate degree and the MBA degree before each degree can be awarded.

## Art and Design, Undeclared

### Program overview

If students have a passion for the visual arts, but are undecided about which program of study to pursue, they may consider either the undeclared art and design or the undeclared crafts option in the College of Imaging Arts and Science. Students in the School of Art, School of Design, and the School for American Crafts begin their studies in a foundation studies program. This program provides students with a broad set of introductory experiences in several areas of the visual arts. Students interested in one of the programs in the School of Art or the School of Design should apply for the undeclared art and design option, while students interested in programs in the School for American Crafts should apply for the undeclared crafts option. Admission to these programs is based, in part, on a portfolio evaluation. Portfolio guidelines can be found at [admissions.rit.edu](http://admissions.rit.edu).



## Crafts, Undeclared

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### Program overview

If students have a passion for the visual arts, but are undecided about which program of study to pursue, they may consider either the undeclared art and design or the undeclared crafts option in the College of Imaging Arts and Sciences. Students in the School of Art, School of Design, and the School for American Crafts begin their studies in a foundation studies program. This program provides students with a broad set of introductory experiences in several areas of the visual arts. Students interested in one of the programs in the School of Art or the School of Design should apply for the undeclared art and design option, while students interested in programs in the School for American Crafts should apply for the undeclared crafts option. Admission to these programs is based, in part, on a portfolio evaluation. Portfolio guidelines can be found at [admissions.rit.edu](https://admissions.rit.edu).

## College of Imaging Arts and Sciences

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**Lorraine Justice**, BFA, Edinboro University; MA, Ph.D., The Ohio State University—Dean

**Twyla Cummings**, BS, MS, Wright State University; Ph.D., Union Institute—Paul and Louise Miller Distinguished Professor; Interim Associate Dean; Professor

**Debbie Kingsbury**, BS, MS, Rochester Institute of Technology—Assistant Dean

### School of Art

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**Donald Arday**, BFA, Cleveland Institute of Art; MFA, Syracuse University—Administrative Chair, School of Art; Professor

**Bob Cole**, BA, MS, University of Maryland—Professor

**Robert Dorsey**, BFA, Rochester Institute of Technology; MFA, Syracuse University—Professor

**William Finewood**, BA, State University College at Geneseo; MFA, Syracuse University—Associate Professor

**Robert Heischman**, BFA, Miami University; UCFA, Ruskin School of Art—Professor

**Glen Hintz**, BA, Lafayette College; MS, The Medical College of Georgia—Associate Professor

**Keith Howard**, Diploma, National Art School (Australia); MA, New York University—Associate Professor

**Elizabeth Kronfield**, BFA, Bowling Green State University; MFA, University of Georgia—Associate Professor

**Thomas Lightfoot**, BA, BFA, University of Connecticut; MFA, Instituto Allende (Mexico); MA, Ed.D., Columbia University Teachers College—Associate Professor

**James Perkins**, BA, Cornell University; MFA, Rochester Institute of Technology; ABD, University of Rochester—Associate Professor

**Luvon Sheppard**, BFA, MS, Rochester Institute of Technology—Professor

**Alan Singer**, BFA, The Cooper Union; MFA, Cornell University—Professor

**Zerbe Sodervick**, BFA, University of Nebraska; MFA, Pratt Institute—Director of Extended Studies; Associate Professor

**Carole Woodlock**, BFA, Alberta College of Art (Canada); MFA, Concordia University—Coordinator, Visual Arts (All Grades); Associate Professor

### Foundations

**Michael Amy**, BA, Vrije Universiteit Brussel (Belgium); MA, Ph.D., New York University—Professor

**Roberley Ann Bell**, BFA, University of Massachusetts at Amherst; MFA, State University of New York at Alfred—Professor

**Eileen Bushnell**, BFA, University of Massachusetts at Amherst; MFA, Indiana State University—Administrative Chair, Foundations; Associate Professor

**Bob Cole**, BA, MS, University of Maryland—Professor

**Regina Ferrari**, BFA, Wayne State University; MFA, Virginia Commonwealth University—Assistant Professor

**Robert Heischman**, BFA, Miami University; UCFA, Ruskin School of Art—Professor

**Heidi Nickisher**, BA, University of California at Santa Barbara; MA, California State University, Fullerton—Senior Lecturer

**Amos Scully**, BFA, Rochester Institute of Technology; MFA, California College of Arts and Crafts—Associate Professor

**Clarence Burton Sheffield Jr.**, BS, University of Utah; MA, University of Colorado at Boulder; Ph.D., Bryn Mawr College—Associate Professor

**Sarah Sutton**, BA, John Carroll University; MFA, Kent State University—Visiting Assistant Professor

**Sarah Thompson**, BA, University of California at San Diego; MA, Ph.D., University of California at Santa Barbara—Assistant Professor

**Clifford Wun**, BFA, Rhode Island School of Design; MFA, Maryland Institute College of Art—Associate Professor

### School of Design

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**Patti J. Lachance**, BFA, Herron School of Art and Design, Indiana and Purdue Universities; MFA, Rochester Institute of Technology—Administrative Chair, School of Design; Associate Professor

**Jason Arena**, BS, University of Buffalo; MFA, Pratt Institute—Associate Professor

**Deborah Beardslee**, BFA, Syracuse University; MFA, Virginia Commonwealth University—Associate Professor

**Peter Byrne**, BFA, Alberta College of Art & Design (Canada); MFA, York University (Canada)—Associate Professor

**Nancy A. Chwiecko**, BA, St. Lawrence University; MFA, Rochester Institute of Technology—Associate Professor

**Nancy A. Ciolek**, BFA, MFA, Indiana State University—Associate Professor; Graphic Design Program Chair

**Daniel DeLuna**, BFA, Ball State University; MFA, Pratt Institute—Associate Professor

**Carol Fillip**, BS, State University of New York at Buffalo; MFA, Rochester Institute of Technology—Assistant Professor

**Lorrie Frear**, BFA, MFA, Rochester Institute of Technology—Associate Professor

**David Halbstein**, BA, William Patterson College; MA, William Patterson University—Assistant Professor

**Therese M. Hannigan**, BFA, MS, Rochester Institute of Technology—Associate Professor

**Joyce Hertzson**, BFA, Rhode Island School of Design; MFA, Indiana University—Professor

**Chris B. Jackson**, BFA, Alfred University; MFA, Rochester Institute of Technology—Coordinator, Graduate Graphic Design and Computer Graphics Design; Associate Professor



**Charles F. Lewis**, B.Arch., Pratt Institute; M.Arch., State University of New York at Buffalo—Interior Design Program Chair; Professor

**Alex Lobos**, BID, Universidad Rafael Landivar (Guatemala); MFA, University of Notre Dame—Assistant Professor

**Bruce I. Meader**, BFA, MFA, Carnegie Mellon University—Associate Professor

**Marianne O'Loughlin**, BA, St. Bonaventure University; BFA, MFA, Rochester Institute of Technology—Associate Professor

**Josh Owen**, BA, BFA, Cornell University; MFA, Rhode Island School of Design—Associate Professor

**Alan Reddig**, BID, Syracuse University—Senior Lecturer

**R. Roger Remington**, BFA, Rochester Institute of Technology; MS, University of Wisconsin—Professor

**Stan Rickel**, BID, Pratt Institute; MID, Syracuse University—Industrial Design Program Chair; Associate Professor

**Marla Schweppe**, BA, University of Kansas; MA, The Ohio State University—3D Digital Graphics Program Chair; Professor

**Kim Sherman**, BS, State University College at Cortland; MFA, Rochester Institute of Technology—Senior Lecturer

**Adam Smith**, BFA, MFA, Rochester Institute of Technology—New Media Design Program Chair; Associate Professor

## School for American Crafts

**Andy Buck**, BA, Virginia Commonwealth University; MFA, Rhode Island School of Design—Professor

**Juan Carlos Caballero-Perez**, BFA, MFA, Rochester Institute of Technology—Professor

**Robin Cass**, BFA, Rhode Island School of Design; MFA, Alfred University—Professor

**Wendell Castle**, BFA, MFA, University of Kansas—Artist-in-Residence; Chair in Contemporary Crafts; Professor

**Richard A. Hirsch**, BS, State University College at New Paltz; MFA, Rochester Institute of Technology—Professor

**Albert Paley**, BFA, MFA, Temple University—Artist-in-Residence; Charlotte Fredericks Mowris Professor in Contemporary Craft; Professor

**Michael Rogers**, BA, MA, Western Illinois University; MFA, University of Illinois—Professor

**Richard Tannen**, BS, Cornell University; Certificate, Boston University—Professor

**Leonard A. Urso**, BFA, MFA, State University College at New Paltz—Professor

## School of Film and Animation

**Cat Ashworth**, BFA, Arizona State University; MFA, State University of New York at Buffalo—Associate Professor

**Charles Bandler**, BA, State University College at Fredonia; MFA, Rochester Institute of Technology—Visiting Assistant Professor

**Carl Battaglia**, BA, Boston College; MFA, Syracuse University—Professor

**Jack Beck**, BA, Denison University; MFA, University of Iowa—Live Action Production Program Chair; Associate Professor

**Adrienne Carageorge**, BA, Florida State University; MFA, Ohio University—Associate Professor

**Bob Deaver**, BS, University of California; MFA, Academy of Art University—Visiting Assistant Professor

**Ricardo Figueroa**, BS, MS, University of Puerto Rico, Mayaguez—Assistant Professor

**Tom Gasek**, BFA, Rochester Institute of Technology; MFA, Art Institute of Boston at Lesley University—Assistant Professor

**Brian Larson**, BFA, Colorado State University; MFA, Miami International University—Assistant Professor

**Howard Lester**, BA, Cornell University; MFA, University of California at Los Angeles—MFA Coordinator; Professor

**David Long**, BS, University of Texas; MS, University of Rochester—Digital Cinema Program Chair; Assistant Professor

**Stephanie Maxwell**, BA, University of California at Los Angeles; MFA, San Francisco Art Institute—Animation Program Chair; Professor

**Mark Reisch**, BFA, Savannah College of Art and Design; Certificate in Advanced Studies of Animation, Emeryville—Visiting Assistant Professor

**David Sluberski**, BA, State University College at Fredonia—Lecturer

**Malcolm Spauli**, BS, St. Lawrence University; MFA, Rochester Institute of Technology—Administrative Chair; Professor

## School of Photographic Arts and Sciences

**Patricia Ambroggi**, BA, State University of New York at Albany; MFA, Visual Studies Workshop—Associate Professor

**Owen Butler**, BFA, Rochester Institute of Technology—Associate Professor

**Frank Cost**, BS, Eisenhower College; MS, Rochester Institute of Technology—Program Chair, Visual Media; Professor

**Andrew Davidhazy**, BFA, MFA, Rochester Institute of Technology—Professor

**Meredith Davenport**, BFA, Rochester Institute of Technology; MFA, Hunter College—Assistant Professor

**Denis Defibaugh**, BS, MS, Rochester Institute of Technology—Professor

**Stephen Diehl**, BS, University of Miami; BS, MS, Rochester Institute of Technology—Associate Professor

**Rachel Ferraro**, BFA, Rochester Institute of Technology—Lecturer

**Angela Kelly**, Diploma, Trent Polytechnic (U.K.); Diploma Ed., Mary Ward College (U.K.); MA, Columbia College—MFA Coordinator, Imaging Arts; Associate Professor

**Susan Lakin**, BFA, Art Center College of Design; MFA, University of California—Associate Professor

**Dan Larkin**, BFA, Rochester Institute of Technology; MFA, Bard College—Fine Art Photography Chair; Associate Professor

**Doug Manchee**, BA, MA, San Francisco State University—Program Chair, Advertising Photography; Associate Professor

**Glenn Miller**, BS, Rochester Institute of Technology—Associate Professor

**Therese Mulligan**, BA, University of Missouri; MA, Michigan State University; Ph.D., University of New Mexico—Administrative Chair, Photographic Arts; Professor

**Willie Osterman**, BFA, Ohio University; MFA, University of Oregon—Professor

**Michael R. Peres**, BA, Bradley University; BS, MS, Rochester Institute of Technology—Associate Chair, Photographic Arts; Professor

**Douglas Ford Rea**, BS, Union College; MFA, Rochester Institute of Technology—Professor

**Patricia Russotti**, BS, Empire College; MS, Ed.S., Indiana University—Associate Professor

**Nanette Salvaggio**, BS, Rochester Institute of Technology—Lecturer

**Nitin Sampat**, BS, University of Bombay (India); MS, Rochester Institute of Technology—Minor Coordinator, Imaging Systems; Associate Professor

**Christye Sisson**, BS, MS, Rochester Institute of Technology—Biomedical Photographic Communications Chair; Associate Professor

**William Snyder**, BS, Rochester Institute of Technology—Photojournalism Chair; Professor

**Loret Steinberg**, BA, MFA, Indiana University at Bloomington—Associate Professor

**Allen Vogel**, Diploma, Philadelphia College of Art; MFA, Rochester Institute of Technology—Associate Professor

**Ken White**, BA, Princeton University; MA, MFA, University of New Mexico—Associate Professor

**Thomas Zigon**, BS, MS, Rochester Institute of Technology—Assistant Professor

## School of Print Media

**Patricia Sorce**, BA, Kent University; MS, Ph.D., University of Massachusetts—Fawcett Distinguished Professor

**Charles Bigelow**, BA, Reed College; MFA, University of California at Los Angeles; Certificate of Advanced Studies, Harvard University—Melbert B. Cary Distinguished Professor

**Barbara Birkett**, BA, Aquinas College; MBA, University of Michigan; MBA, Rochester Institute of Technology; CPA, Maryland—Program Chair; Associate Professor

**Robert Y. Chung**, BA, Eastern Washington State University; MS, Rochester Institute of Technology—Gravure Research Professor

**Robert Eller**, AB, MA, University of Missouri—Visiting Professor

**Franziska Frey**, MS, University of Zurich (Switzerland); Ph.D., Swiss Federal Institute of Technology—Administrative Chair; McGhee Distinguished Professor

**Christine Heusner**, BA, Elmira College; MFA, Rochester Institute of Technology—Visiting Professor

**Myrtle Jones**, BA, University of Illinois; MA, New York University—Assistant Professor

**David Pankow**, BA, MA, Brooklyn College; MLS, Columbia University—Professor

**Michael P. Riordan**, BS, State University College at New Paltz; MS, Rochester Institute of Technology—Lecturer

**Frank J. Romano**, BA, City University of New York—Professor Emeritus

**Scott Williams**, BA, Purdue University; Ph.D., Montana State University—Graduate Program Coordinator; Associate Professor

## Distinguished Professorships

**Ann Mowris Mulligan Distinguished Professorship in Contemporary Crafts**  
Established: 1999  
Donor: Ann Mowris Mulligan  
Purpose: The holder must have a distinguished record of excellent teaching, wide recognition as a renowned artist, and a demonstrated commitment to students' career development in the craft industry.  
Held by: Leonard Urso

**Gannett Center for Integrated Publishing Sciences**  
Established: 1987  
Donor: Gannett Foundation  
Purpose: The distinguished professor is engaged in research and academic study to address problems in the news and information business.  
Held by: Patricia Albanese

**Artist-in-Residence Professorship**  
Established: 1984

Purpose: To work with apprentice woodworkers and participate in conferences and lectures at RIT.  
Held by: Wendell Castle

**Charlotte Fredericks Mowris Professorship in Contemporary Crafts**

Established: 1973  
Donor: Mrs. Charles F. Mowris  
Purpose: To perpetuate interest in the School for American Crafts through the work of faculty and students as talented craftspeople.  
Held by: Albert Paley

**Melbert B. Cary Jr. Professorship in Graphic Arts**

Established: 1969  
Donor: Mary Flagler Cary Charitable Trust  
Purpose: To provide a permanent memorial for Mr. Cary, a former president of the American Institute of Graphic Arts, and to perpetuate his interest in the field.  
Held by: Charles Bigelow

**Gravure Research Professor**

Established: 2004  
Purpose: To promote gravure education in the curriculum.  
Held by: Robert Chung

**James E. McGhee Professorship in Photographic Management**

Established: 1967  
Donor: Master Photodealers and Finishers Association and friends of Mr. McGhee  
Purpose: To provide a permanent memorial for Mr. McGhee, a former vice president of Eastman Kodak Company and lifelong friend of the photofinishing industry.  
Held by: Franziska Frey

**Paul and Louise Miller Distinguished Professorship in Newspaper Operations Management**

Established: 1979  
Donor: Frank E. Gannett Newspaper Foundation  
Purpose: To honor the former chairman of the board of the Gannett Company and perpetuate his interest in good management practices in the newspaper industry.  
Held by: Twyla Cummings

**Roger K. Fawcett Distinguished Professorship in Publications Color Management**

Established: 1991  
Donor: World Color Press, Fawcett family, and industry colleagues  
Purpose: The endowed chair, the only one of its kind in the nation, was established to address color quality and productivity in both the magazine and the newspaper publishing industries as well as promotion of RIT color research activities.  
Held by: Patricia Sorce

# College of Liberal Arts

James J. Winebrake, Dean  
[www.rit.edu/cla/](http://www.rit.edu/cla/)

## Programs of study

### Bachelor of science degrees in:

|  |     |
|--|-----|
| Advertising and Public Relations         | 110 |
| Criminal Justice                         | 111 |
| Economics                                | 112 |
| International Studies                    | 113 |
| Journalism                               | 114 |
| Museum Studies                           | 116 |
| Philosophy                               | 118 |
| Political Science                        | 119 |
| Professional and Technical Communication | 121 |
| Psychology                               | 123 |
| Public Policy                            | 124 |
| Urban and Community Studies              | 125 |

The College of Liberal Arts plays three important roles at RIT: It offers a variety of undergraduate and graduate degree programs in the social sciences and humanities; it provides general education courses required of all students pursuing baccalaureate and associate degrees; and it creates opportunities for students and the RIT community to participate in cultural and academic experiences such as theater, music, creative writing, public speaking, and lectures.

The college offers undergraduate degree programs in advertising and public relations, criminal justice, economics, international studies, journalism, museum studies, philosophy, political science, professional and technical communication, psychology, public policy, and urban and community studies. The Liberal Arts Exploration option is a two-year undeclared program for students who are undecided about their choice of liberal arts major.

Recognizing that future leaders will work in an increasingly interconnected and complex world, the College of Liberal Arts provides students with a rigorous curriculum in the liberal arts. This curriculum is designed to help them forge comprehensive links between a major field of study and the ethical, social, cultural, and communicative demands of the modern world. As a result, the Liberal Arts general education requirements for undergraduate students include introductory and upper-level courses in the humanities and the social and behavioral sciences.

The Liberal Arts general education curriculum seeks to help students develop specific kinds of knowledge, such as:

- understanding the connections among humanistic, professional, and technological studies;
- building critical awareness of the interactions among society, culture, science, and technology;
- understanding and appreciating diverse social and cultural perspectives;
- understanding local, national, and global forms of citizenship and community;
- establishing knowledge and critical understanding of the responsibilities and rights of living in a participatory democracy;
- understanding human development and behavior;
- broadening critical awareness of the interactions between society and the environment;
- creating, interpreting, and evaluating artistic expression and understanding the aesthetic dimension of other forms of expression and experience;

- understanding the nature and implications of work and career;
- reasoning critically and creatively;
- reasoning through ethical and values issues and relating that reasoning to one's judgments and practice;
- understanding and demonstrating proficiency in written, oral, visual, and nonverbal forms of communication; and
- demonstrating proficiency in the analysis and interpretation of quantitative and qualitative data.

### **Admission requirements**

For more information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

### **Financial aid and scholarships**

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

### **Faculty**

College of Liberal Arts faculty members are recruited from the top graduate schools, and nearly all have doctorate or other terminal degrees. They are dedicated to providing students with outstanding educational experiences and access to cutting-edge research.

### **Cooperative education/Internships**

Students in the College of Liberal Arts have the option of participating in cooperative education or internship opportunities that provide hands-on experience as well as the opportunity to further develop their skills in a chosen profession.

### **Advising**

*Liberal arts academic advising:* Upon entry into the College of Liberal Arts, each student is assigned an academic adviser. These faculty members help students formulate career goals and offer support with registration, scheduling, and cooperative education.

*Liberal arts general education advising:* The advising staff in the college's Office of Student Services offers support to all RIT students as they select liberal arts courses to fulfill the required general education curriculum for their degree programs. The advising staff provides guidance that is consistent with the general education policies of the university. The office also evaluates liberal arts courses as transfer credits for all RIT students.

### **Academic enrichment**

*Honors Program:* Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admissions process.

*Study Abroad:* RIT encourages all students to consider a study abroad program. Students may study full time at a variety of host schools and are able to select courses that fulfill requirements in their academic field of study and/or RIT liberal arts general education requirements. RIT's Study Abroad Office has information about foreign study options and opportunities.

*Minors:* RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

*Research:* Students have the opportunity to collaborate with faculty members on exciting applied research projects. Students are encouraged to work with faculty on projects and to present their findings at the college's annual Student Research Conference, which highlights students' research findings. The college also hosts the annual Conference for Undergraduate Research in Communication. This conference invites students from all over the Northeast to showcase their research pursuits with peers from other institutions.

*Professional student organizations:* The college maintains memberships in the following professional organizations: American Advertising Federation, Lambda Pi Eta (National Honor Society for Communication), Omicron Delta Epsilon (International Honor Society for Economics) and the Public Relations Student Society of America.

### **Special opportunities**

*Accelerated dual degree option:* Some programs offer accelerated, five-year dual BS/MS or BS/MBA degree options. These degrees offer students the opportunity to earn a bachelor's degree and a master's degree in less time than pursuing each degree individually. Please refer to individual programs, the *Graduate Bulletin*, or the college's website for more information.

*Double majors:* The college offers a number of double majors to assist students in obtaining two areas of expertise. Please refer to individual programs or the college's website for more information.

*Graduate study:* The college offers the following graduate degree programs: applied experimental and engineering psychology; communication and media technologies; criminal justice; science, technology, and society; and school psychology. Please refer to the *Graduate Bulletin* or the college's website for more information.

*Part-time, evening and online options:* Many of the college's programs may be completed on a part-time basis. Please refer to the Office of Part-time and Graduate Enrollment's or the college's website for more information.

*Summer course offerings:* The college offers a number of summer courses in English, foreign languages, science and humanities, and social sciences as well as degree program courses in the college's academic areas of study. Please contact the Liberal Arts Office of Student Services, the Office of Part-time Enrollment Services, or visit the college's website for more information.

# Advertising and Public Relations, BS

<http://www.rit.edu/apr>

**Patrick Scanlon, Department Chairperson**  
(585) 475-2879, [pmsgsl@rit.edu](mailto:pmsgsl@rit.edu)

## Program overview

The bachelor of science degree in advertising and public relations prepares students to create persuasive messages for a variety of media. Students learn to analyze audiences, write copy, select media, and manage campaigns. Upon graduation, many students find work in the commercial, education, entertainment, government, or nonprofit sectors.

The fields of advertising and public relations are rapidly changing now that the Internet has added global reach, interactivity, and convergence to traditional media. Professionals will face unique opportunities as well as exciting challenges. No one is better prepared to succeed than graduates from our program, which is one of the few in the country to combine advertising, public relations, and marketing to address the overlapping roles of communication professionals. The program was formed through a partnership between the college's department of communication and the department of marketing in the E. Philip Saunders College of Business. Our program is distinguished by a senior thesis requirement and 20 weeks of work experience gained through internships and/or cooperative education.

## Curriculum

### Required communication courses (64 quarter credit hours)

|          |                                  |
|----------|----------------------------------|
| 0535-200 | Foundations of Communication     |
| 0535-315 | Quantitative Research Methods    |
| 0535-316 | Qualitative Research Methods     |
| 0535-421 | Public Relations                 |
| 0535-445 | Theories of Communication        |
| 0535-450 | Visual Communication             |
| 0535-460 | Copywriting and Visualization    |
| 0535-461 | Principles of Advertising        |
| 0535-462 | Digital Design in Communication  |
| 0535-463 | Campaign Management and Planning |
| 0535-464 | Public Relations Writing         |
| 0535-467 | Media Planning                   |
| 0535-481 | Persuasion                       |
| 0535-482 | Mass Communications              |
| 0535-501 | Public Speaking                  |
| 0535-595 | Senior Thesis in Communication   |

### University-wide electives (24 quarter credit hours)

Six courses (chosen as electives)

### Professional core (16 quarter credit hours)

As part of the program's degree requirements, students take a professional core of four courses from the department of marketing in the E. Philip Saunders College of Business.

#### Required course:

|          |                         |
|----------|-------------------------|
| 0105-363 | Principles of Marketing |
|----------|-------------------------|

#### Electives—Choose any three of the following:

|          |                                 |
|----------|---------------------------------|
| 0105-440 | Internet Marketing              |
| 0105-445 | Business to Business e-Commerce |

|          |                                      |
|----------|--------------------------------------|
| 0105-505 | Buyer Behavior                       |
| 0105-554 | Seminar in Marketing                 |
| 0105-559 | Professional Selling                 |
| 0105-560 | Advertising and Promotion Management |
| 0113-450 | Marketing in the Global Environment  |

## Advertising and public relations, BS degree, typical course sequence

| COURSE                            |                                       | QTR. CR. HRS. |
|-----------------------------------|---------------------------------------|---------------|
| <b>First Year</b>                 |                                       |               |
| 0535-200                          | Foundations of Communication          | 4             |
| 0535-421                          | Public Relations                      | 4             |
| 0535-501                          | Public Speaking                       | 4             |
| 0535-462                          | Digital Design in Communications      | 4             |
| 4002-206                          | Web Foundations                       | 4             |
|                                   | Liberal Arts*                         | 8             |
|                                   | Mathematics and Science Requirements† | 16            |
| 1105-051, 052                     | First-Year Enrichment                 | 2             |
|                                   | Wellness Education‡                   | 0             |
| <b>Second Year</b>                |                                       |               |
| 0535-481                          | Persuasion                            | 4             |
| 0535-461                          | Principles of Advertising             | 4             |
| 0535-450                          | Visual Communication                  | 4             |
| 0535-482                          | Mass Communications                   | 4             |
| 0535-467                          | Media Planning                        | 4             |
|                                   | Professional Core                     | 12            |
|                                   | Liberal Arts*                         | 16            |
|                                   | Wellness Education‡                   | 0             |
| <b>Third Year</b>                 |                                       |               |
| 0535-445                          | Theories of Communication             | 4             |
| 0535-463                          | Campaign Management and Planning      | 4             |
|                                   | Professional Core                     | 4             |
|                                   | General Education Electives           | 8             |
|                                   | Liberal Arts*                         | 8             |
|                                   | Mathematics Requirement†              | 4             |
|                                   | University-wide Electives             | 8             |
|                                   | Cooperative Education (two quarters)  | Co-op         |
| <b>Fourth Year</b>                |                                       |               |
| 0535-315                          | Quantitative Research Methods         | 4             |
| 0535-316                          | Qualitative Research Methods          | 4             |
| 0535-464                          | Public Relations Writing              | 4             |
| 0535-460                          | Copywriting and Visualization         | 4             |
| 0535-595                          | Senior Thesis in Communication        | 4             |
|                                   | Liberal Arts*                         | 12            |
|                                   | University-wide Electives             | 16            |
| <b>Total Quarter Credit Hours</b> |                                       | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Mathematics and Science General Education Curriculum for more information.

‡ Please see Wellness Education Requirement for more information.

## Senior thesis

As part of the program, students conduct original research on a subject of their choosing. Two faculty members advise students on how to investigate their topic, select a research method, implement the project, and present their results. Department of communication students often present their research at conferences.

## Cooperative education

Students are required to complete two quarters of cooperative education or an internship experience in a professional position. This experience gives students the opportunity to apply their classroom learning to a professional work environment. There are many opportunities to choose from, including positions with advertis-



ing agencies and public relations firms as well as businesses and nonprofit organizations. The Office of Cooperative Education and Career Services can assist students in identifying co-op and internship positions as well as permanent placement upon graduation.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Advisers

Every student is assigned a faculty adviser, who is available for both academic advising and career counseling. Students find that frequent consultation with their adviser is helpful in planning course scheduling, co-ops, and post-graduation work. In addition to their faculty adviser, students are assigned a co-op and placement adviser, who is located in the Office of Cooperative Education and Career Services. Finally, peer mentors—other advertising and public relations students—are available to answer questions about classes, clubs on campus, student-run activities, and other matters from the student's perspective.

### Faculty

Nearly all of the department's 18 faculty members hold the highest degrees in their fields. Many have won awards for teaching, and all have been published within their areas of expertise.

### Careers

Upon graduation, students will be well-qualified for positions in business, government, and the not-for-profit sectors. Graduate work also is an option. The department of communication offers an MS degree in communication and media technologies. Visit the program website ([www.rit.edu/cmt](http://www.rit.edu/cmt)) or refer to RIT's *Graduate Bulletin* for more information.

### Accelerated dual degree option

An accelerated dual degree option is available through an agreement with the E. Philip Saunders College of Business. The option allows students to earn a BS in advertising and public relations and an MBA in five years. For further information about this accelerated dual degree option, contact an adviser.

## Criminal Justice, BS

<http://www.rit.edu/cja/criminaljustice>

**LaVerne McQuiller Williams, Department Chairperson**  
(585) 475-2935, [llmgcj@rit.edu](mailto:llmgcj@rit.edu)

## Program overview

The bachelor of science degree in criminal justice offers students a broad education, preparing them for a wide range of careers in criminal justice. The program also provides continuing education for professionals already employed in criminal justice positions, and offers a strong academic foundation for graduate or law school. The criminal justice program is unique in its broad core curriculum, the scope of professional course offerings, and an intensive field experience, where students blend knowledge gained in the classroom with a career-oriented internship.

RIT's approach to the study of criminal justice combines theoretical perspectives with practical experience. The emphasis within the areas of crime, criminal behavior, social control mechanisms, administration, planning, and management is on problem-solving techniques based on the growing body of research in the field as well as students' own guided research.

The Center for Public Safety Initiatives is housed in the criminal justice department. The organization works with the Rochester Police Department and other community groups. Several students work at the CPSI and gain valuable experience working with crime mapping, data gathering, and data analysis. Students work closely with faculty on various projects, including Operation IMPACT, Ceasefire and Project Safe Neighborhoods, and the Rochester Police Department. The CPSI supports the development, implementation, and evaluation of criminal justice and community-based anti-crime and anti-violence interventions. For additional information please see [www.rit.edu/cpsi](http://www.rit.edu/cpsi).

The criminal justice department also offers a master of science degree that focuses on program analysis and evaluation. Please see the *Graduate Bulletin* for more information.

## Curriculum

### Criminal justice, BS degree, typical course sequence

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 0501-400           | Criminology                                     | 4             |
| 0501-201           | Seminar in Criminal Justice                     | 4             |
|                    | Liberal Arts*                                   | 12            |
| 0501-406           | Technology in Criminal Justice                  | 4             |
| 0501-456           | Courts  | 4             |
| 0501-441           | Corrections                                     | 4             |
| 0501-443           | Law Enforcement in Society                      | 4             |
|                    | Mathematics and Science Requirement‡            | 8             |
| 0501-460           | Current Issues in Criminal Justice              | 2             |
| 1105-051, 052      | First-Year Enrichment                           | 2             |
|                    | Wellness Education†                             | 0             |
| <b>Second Year</b> |   |               |
| 0501-440           | Juvenile Justice                                | 4             |
|                    | Criminal Justice Electives                      | 8             |
| 0501-444           | Concepts in Criminal Law                        | 4             |
|                    | University-wide Electives                       | 8             |
|                    | Liberal Arts*                                   | 12            |
|                    | Mathematics and Science Requirement‡            | 12            |
| 0501-460           | Current Issues in Criminal Justice              | 2             |
|                    | Wellness Education†                             | 0             |
|                    | Cooperative Education (optional)                | Co-op         |
| <b>Third Year</b>  |   |               |
| 0501-528           | Theories of Crime and Criminality               | 4             |
| 0501-410           | Management in Criminal Justice                  | 4             |
| 0501-401, 541      | Research Methods I, II                          | 8             |
|                    | Criminal Justice Elective                       | 4             |
|                    | University-wide Electives                       | 12            |
|                    | Liberal Arts*                                   | 12            |
|                    | Cooperative Education (optional)                | Co-op         |
| <b>Fourth Year</b> |   |               |
| 0501-403           | Field Experience                                | 8             |
| 0501-510           | Interviewing and Counseling in Criminal Justice | 4             |
|                    | Criminal Justice Electives                      | 8             |
|                    | University-wide Electives                       | 12            |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 0501-526                          | Seminar in Criminal Justice and Public Policy | 4             |
|                                   | Liberal Arts*                                 | 8             |
| <b>Total Quarter Credit Hours</b> |   | <b>186</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science Requirements for more information.

## Field experience

During their senior year, students have the opportunity to choose an internship from a number of agencies and organizations in the areas of law, law enforcement, institutional and non-institutional corrections, courts, juvenile advocacy and counseling programs, and security. For one quarter (10 weeks), students work 25 hours a week under an agency field supervisor and meet regularly with an adviser and with peers who are doing field placements in other agencies. Placements are individualized to fit a student's career objectives.

## Cooperative education

Students may have the opportunity to participate in cooperative education as part of their undergraduate program. In general, they may apply for co-op employment after three quarters of full-time study in the criminal justice program. Cooperative education provides a working experience in a criminal justice-related field but does not carry academic credit hours.

## Additional information

### Career planning

Upon acceptance into the criminal justice program, each student is assigned a faculty adviser who assists in formulating career goals and planning a field of study in accordance with those goals.

Through core courses, students are exposed to the widest possible range of perspectives from which to view crime and the nature of criminal justice administration, thus broadening their career options.

### Career opportunities

Alumni have entered a variety of careers in the criminal justice system directly following graduation or after completing graduate studies. Many graduates are engaged in law enforcement careers in agencies at all levels of government. At the state and federal levels, graduates are pursuing careers in agencies such as the Federal Bureau of Investigation, the Secret Service, the U.S. Marshals Service, Naval Intelligence Service, U.S. Customs and Border Patrol, the Immigration and Naturalization Service, the Centers for Disease Control, the Department of the Interior, and the National Park Service, among others. The Rochester Police Department, the Monroe County Sheriff's Department, and suburban departments throughout the Rochester area employ a substantial number of our graduates. A number have advanced in rank to positions of command, including several chiefs and deputy chiefs.

Other alumni work as correctional officers, counselors, probation officers, and parole officers; many advance to administrative positions. A significant number of alumni have used the program as a foundation for law school and have entered the legal profession as prosecutors, public defenders, and private practice lawyers. We have many graduates serving in U.S. Attorneys General offices. Others serve the legal profession as investigators or paralegals.

Consistent with the liberal arts/social science nature of the program, some graduates have attained advanced degrees in related areas and entered teaching careers at the secondary and college levels. Others have become psychologists, social workers, drug and alcoholism counselors, youth service specialists, and victim assistance/rape crisis counselors. Many have completed advanced degrees in business, public policy, public administration, criminology, and criminal justice.

## Prelaw study

The criminal justice curriculum prepares students for law school by combining a broad liberal arts background with intensive study in criminal justice. Students work closely with a faculty adviser to select appropriate professional and liberal arts electives. During their senior year, prelaw students spend 10 weeks (25 hours a week) as interns working with attorneys in the office of the district attorney, public defender, or state attorney general; with private law firms; or in any number of public or private organizations dealing with litigation. RIT's Prelaw Association publishes student research papers each year in *Legal Research at RIT*.

## Honors program

Students with a 3.0 grade point average at the end of their junior year may apply for admission to the departmental Honors program. The program requires students to complete Honors Research, which involves original research or problem solving under the direction of a faculty member. The program provides excellent experience and evidence of independent work for potential employers or graduate and law schools.

## Faculty

The eight full-time faculty members in the criminal justice program hold advanced degrees, have had professional experience in criminal justice, have proven teaching ability, and are committed to continuing professional growth in their areas of expertise. They spend many nonteaching hours in their offices with an open-door policy, in order to assist students with academic or personal concerns and questions. The full-time faculty members are supplemented by a strong cadre of adjunct instructors, many of whom are leading criminal justice practitioners in the region.

## Economics, BS

<http://www.rit.edu/cla/economics>

**Michael J. Vernarelli, Department Chairperson**  
(585) 475-2455, [mjvgss@rit.edu](mailto:mjvgss@rit.edu)

## Program overview

The BS in economics emphasizes the quantitative analytical approach to dealing with economic problems in both the public and private sectors, providing students with marketable skills and the intellectual foundation for career growth. Graduates with a BS degree in economics are prepared for entry-level positions in management and quantitative analysis or to pursue graduate study in economics, business, or law.

## Curriculum

The economics curriculum prepares students by developing communication, computer, and management skills in addition to

economic reasoning and quantitative abilities. Students in the program are involved in a wide variety of management and analytical positions, both during co-op and after graduation.

The program's required courses are specifically designed to develop the ability to apply economic analysis to real-world problems. Liberal arts courses enhance the student's oral and written communication skills. Business courses include accounting and finance. Quantitative analytical skills are developed by a course sequence that includes computer science, mathematics, and statistics. Free electives allow students to pursue advanced study in their individual areas of interest and/or develop a double major. Along with finance, marketing, mathematics, statistics, or computer science, there are many other possibilities. Faculty advisers help students develop professional options that will assist them in attaining their career goals.

### Cooperative education

Students in the program who participate in co-op may be placed with financial and brokerage institutions, government offices, and large corporations. Co-op can be completed during any quarter, including summer, after the sophomore year.

### Economics, BS degree, typical course sequence

| COURSE                       |   | QTR. CR. HRS. |
|------------------------------|---|---------------|
| <b>First Year</b>            |   |               |
| 0511-200                     | Foundational Seminar in Economics   | 1             |
| 0511-211                     | Principles of Microeconomics  | 4             |
| 0511-402                     | Principles of Macroeconomics  | 4             |
| 0511-459                     | Managerial Economics  | 4             |
|                              | Calculus Requirement‡   | 12            |
|                              | Computer Science/Information Technology/ Management Information Systems Elective  | 4             |
|                              | Liberal Arts*   | 16            |
| 1720-050, 052                | Discovery and Pathways  | 2             |
|                              | Wellness Education†   | 0             |
| <b>Second Year</b>           |   |               |
| 0511-452                     | Monetary Analysis and Policy  | 4             |
| 0511-457                     | Applied Econometrics  | 4             |
| 0511-458                     | Economic Forecasting  | 4             |
| 1016-319                     | Data Analysis   | 4             |
| 0101-301                     | Financial Accounting  | 4             |
| Choose one of the following: |   | 4             |
| 0101-302                     | Management Accounting   |               |
| 0511-464                     | Game Theory: Economic Applications  |               |
|                              | Liberal Arts*   | 8             |
|                              | General Education Electives   | 12            |
|                              | Laboratory Science  | 8             |
|                              | Wellness Education†   | 0             |
| <b>Third Year</b>            |   |               |
| 0511-453                     | Intermediate Microeconomic Theory   | 4             |
| 0511-455                     | Intermediate Macroeconomic Theory   | 4             |
| 0511-460                     | Mathematical Methods for Economics  | 4             |
| 0104-441                     | Corporate Finance   | 4             |
|                              | Free Electives  | 8             |
|                              | Computer Science/Information Technology/ Management Information Systems Electives | 8             |
|                              | Liberal Arts*   | 12            |
| <b>Fourth Year</b>           |   |               |
| 0511-454                     | International Trade and Finance   | 4             |
| 0511-456                     | Industrial Organization   | 4             |
| 0511-450                     | Benefit Cost Analysis   | 4             |

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Free Electives                    | 19            |
| General Education Electives       | 8             |
| <b>Total Quarter Credit Hours</b> | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Economics majors are required to take three pre-calculus and calculus courses and complete the equivalent of Calculus B.

### Capstone experience

All economics majors are required to complete a creative, capstone experience which may be fulfilled in one of the following ways. Students may publish a paper in a refereed journal, present a paper at a professional conference, present a paper at an RIT-sponsored conference, present research at an approved exhibit at ImagineRIT, or fulfill a comparable creative capstone requirement in the student's primary major if economics is the secondary major.

### Additional information

#### Double major in economics

Because of the flexibility of the economics curriculum, many students choose to pursue a double major in economics and a secondary field of study. Students are able to graduate in four years.

#### Accelerated dual degree options

In cooperation with the E. Philip Saunders College of Business, students may choose to pursue an accelerated BS/MBA option that permits qualified students to obtain a BS degree in four years and an MBA degree after one additional year of study. In cooperation with the public policy program, qualified students obtain a BS degree in economics and the MS degree in science, technology, and public policy in approximately five years of study. Students are encouraged to speak with an adviser to discuss courses and planning for this option.

#### Academic enrichment

Economics faculty members serve as mentors and are available to enhance students' personal and professional growth. There are many special opportunities for students in the economics program. They may work as teaching assistants for professors in Principles of Economics courses or learn about research techniques as research assistants for the faculty. For both of these activities, students receive a stipend. Finally, students can engage in independent research, receiving academic credit and obtaining funding for their research needs.

### International Studies, BS

<http://www.rit.edu/cla/sociology/internationalstudies>

**Christine Kray, Department Chairperson**  
(585) 475-4686, [cakgss@rit.edu](mailto:cakgss@rit.edu)

### Program overview

The bachelor of science in international studies highlights interdisciplinary approaches for understanding global processes, such as the impact of globalization on local communities, regions, and environments and how people in different parts of the world can promote equitable and sustainable development in the future. The program seeks to educate a new generation of global citizens who will acquire the expertise to assess and analyze salient issues such

as flexible capitalism, consumer culture, economic opportunities, international migration, social change, political violence, and terrorism. The program prepares graduates for careers that demand an understanding of the social, economic, political, and environmental issues that are central to globalization.

### Curriculum

The program allows students to choose a specialization that is focused on either a world region or a function. The world regions are East Asia, Latin America, Europe, the Middle East, Africa, and Indigenous Studies. The two functional tracks are international business; and science, technology, and society.

It is expected that students with a regional specialization will study a language that corresponds to that region: for example, Chinese or Japanese in the East Asia track; Portuguese or Spanish in the Latin America track; or French, German, Portuguese, Russian, Italian, or Spanish in the Europe track.

### International experience

The program requires students to participate in an international experience, which includes approved study abroad programs, cooperative education or internships in foreign countries, or employment in an international organization or in the international division of U.S. firms with foreign operations.

### Career opportunities

Graduates are prepared for a range of careers in the private, government, and nonprofit sectors. There is increased demand by companies with foreign operations for graduates who are competent to interact with people from different cultures and societies, are cognizant of the international dimensions of business, are knowledgeable of different histories and current dimensions of globalization, and are able to communicate in the languages commonly spoken in different parts of the world. In addition, the international studies program prepares students for graduate study in public and international affairs, business, law, and the social sciences.

### International studies, BS degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>                                |               |
| Liberal Arts*                                    | 12            |
| Mathematics and Science Requirement†             | 8             |
| Foreign Language Requirement                     | 12            |
| 0524-210 Global Studies                          | 4             |
| 0513-214 Introduction to International Relations | 4             |
| 0507-441 Modern U.S. Foreign Relations           | 4             |
| 0510-440 Cultures in Globalization               | 4             |
| 1720-050, 052 Discovery and Pathways,            | 2             |
| Wellness Education†                              | 0             |
| <b>Second Year</b>                               |               |
| Choose one of the following courses:             |               |
| 0511-449 Comparative Economic Systems            | 4             |
| 0511-454 International Trade and Finance         | 4             |
| Liberal Arts*                                    | 12            |
| Globalization Core Elective                      | 4             |
| 1016-319, 320 Data Analysis I and II             | 10            |
| Foreign Language Requirement                     | 12            |
| 4002-206 Web Foundations                         | 4             |
| Wellness Education†                              | 0             |

| COURSE                               | QTR. CR. HRS.  |
|--------------------------------------|----------------|
| <b>Third Year</b>                    |                |
| International Studies Track          | 8              |
| Foreign Language Requirement         | 12             |
| 0515-406 Qualitative Methods         | 4              |
| Liberal Arts*                        | 12             |
| Mathematics and Science Requirement‡ | 4              |
| Open Electives                       | 8              |
| International Experience             | 0              |
| <b>Fourth Year</b>                   |                |
| International Studies Track          | 8              |
| 0524-501 Capstone Seminar            | 4              |
| Liberal Arts*                        | 16             |
| Open Electives                       | 12             |
| <b>Total Quarter Credit Hours</b>    | <b>182-184</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum.

### Accelerated dual degree options

In cooperation with the E. Philip Saunders College of Business, students may choose to pursue an accelerated BS/MBA option that permits qualified students to obtain a BS degree in four years and an MBA degree after one additional year of study. In cooperation with the public policy program, qualified students obtain a BS degree in international studies and an MS degree in science, technology, and public policy in approximately five years of study. Students are encouraged to speak with an adviser to discuss courses and planning for these options.

### Journalism, BS

<http://www.rit.edu/journalism>

**Patrick Scanlon, Department Chairperson**  
**(585) 475-2879, [pmsgsl@rit.edu](mailto:pmsgsl@rit.edu)**

### Program overview

The bachelor of science degree in journalism offers a unique and multifaceted educational experience that prepares students to gather, critically analyze, and synthesize verbal and visual information in order to communicate accurate and clear news stories across multiple media platforms. In addition to writing and reporting, students learn to prepare audio and visual content for dissemination in a variety of media, making them a valuable asset to any future employer specializing in news reporting and factual storytelling.

The program is enhanced by RIT's reputation for using cutting-edge technology, yet is grounded in the traditional reporting and writing skills needed by professional journalists. The program prepares students for a converged digital media world. They will learn the conceptual and practical skills demanded by the digital newsroom through a combination of journalism, communication, and applied professional courses, along with a professional core offered through the College of Imaging Arts and Sciences.



## Curriculum

### Professional core courses

The professional core consists of six courses from the School of Print Media, the School of Film and Animation, and the department of photographic arts. The professional core provides an in-depth understanding of design principles, still photography, audio and video production, news and information management, and methods of new media publishing.

### Senior project

This capstone course provides students an opportunity to integrate, synthesize, and apply prior learning to a project similar to one they would encounter in their profession. Students produce a long-form piece of journalism, a website, and a digital portfolio of select works.

#### Required communication courses (60 credit hours)

|          |                                 |
|----------|---------------------------------|
| 0535-201 | Introduction to Journalism      |
| 0535-405 | Information Gathering           |
| 0535-416 | Newswriting                     |
| 0535-417 | Newswriting II                  |
| 0535-445 | Theories of Communication       |
| 0535-462 | Digital Design                  |
| 0535-464 | Public Relations Writing        |
| 0535-470 | Law and Ethics of the Press     |
| 0535-471 | History of Journalism           |
| 0535-472 | News Editing                    |
| 0535-473 | eJournalism                     |
| 0535-474 | Reporting in Specialized Fields |
| 0535-476 | eJournalism II                  |
| 0535-482 | Mass Communications             |
| 0535-590 | Senior Project                  |

### University-wide electives (20 credit hours)

Five courses (chosen as electives)

### Journalism elective (4 credit hours)

### Professional core courses (21-23 credit hours)

The program's professional core consists of six courses, three required courses plus the student's choice of three additional courses.

#### Required courses:

|          |   |
|----------|---|
| 2067-264 | Intro Photo/Non-Photo                                   |
| 2065-222 | Film Language   |
| 2065-357 | History and Aesthetics of the Moving Image: Documentary |

#### Choose one of the following:

|          |                                  |
|----------|----------------------------------|
| 2065-217 | Digital Video for Multimedia     |
| 2065-243 | Introduction to Portable Video I |

#### Choose two of the following:

|          |                                |
|----------|--------------------------------|
| 2083-317 | News Production Management     |
| 2083-412 | Digital News System Management |
| 2082-371 | Principles of Printing         |
| 2082-337 | Digital Asset Management       |

## Journalism, BS degree, typical course sequence

| COURSE                            |                                       | QTR. CR. HRS.  |
|-----------------------------------|---------------------------------------|----------------|
| <b>First Year</b>                 |                                       |                |
| 0535-201                          | Introduction to Journalism            | 4              |
| 0535-482                          | Mass Communications                   | 4              |
| 0535-471                          | History of Journalism                 | 4              |
| 0535-416                          | Newswriting                           | 4              |
| 4002-206                          | Web Foundations                       | 4              |
|                                   | Liberal Arts*                         | 12             |
|                                   | Mathematics and Science Requirement†‡ | 16             |
| 1105-051, 052                     | First-Year Enrichment                 | 2              |
|                                   | Wellness Education†                   | 0              |
| <b>Second Year</b>                |                                       |                |
| 0535-405                          | Information Gathering                 | 4              |
| 0535-417                          | Newswriting II                        | 4              |
| 0535-462                          | Digital Design in Communication       | 4              |
| 0535-474                          | Reporting in Specialized Fields       | 4              |
| 0535-472                          | News Editing                          | 4              |
| 0535-445                          | Theories of Communication             | 4              |
| 0535-473                          | eJournalism                           | 4              |
|                                   | General Education Elective            | 4              |
|                                   | Liberal Arts*                         | 8              |
|                                   | Professional Core                     | 6-8            |
|                                   | Wellness Education†                   | 0              |
| <b>Third Year</b>                 |                                       |                |
| 0535-476                          | eJournalism II                        | 4              |
| 0535-470                          | Law and Ethics of the Press           | 4              |
|                                   | Professional Core                     | 6-8            |
|                                   | Liberal Arts*                         | 12             |
|                                   | General Education Electives           | 8              |
|                                   | University-wide Electives             | 8              |
|                                   | Mathematics Requirement‡              | 4              |
|                                   | Cooperative Education (two quarters)  | Co-op          |
| <b>Fourth Year</b>                |                                       |                |
| 0535-464                          | Public Relations Writing              | 4              |
|                                   | Journalism Elective                   | 4              |
| 0535-590                          | Senior Project                        | 4              |
|                                   | Professional Core                     | 6-8            |
|                                   | Liberal Arts*                         | 4              |
|                                   | General Education Electives           | 8              |
|                                   | University-wide Electives             | 12             |
| <b>Total Quarter Credit Hours</b> |                                       | <b>187-189</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum for more information.

### Cooperative education

Students are required to complete two quarters of cooperative education or an internship experience in a professional position. This experience gives students the opportunity to apply their classroom learning to a professional work environment. Past co-op positions have included placements at newspapers, including the *Democrat and Chronicle*, Rochester's daily newspaper. The Office of Cooperative Education and Career Services can assist students in identifying co-op and internship positions as well as permanent placement upon graduation.

### Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.



Additional information

Advisers

Every student is assigned a faculty adviser, who is available for both academic advising and career counseling. Students find that frequent consultation with their adviser is helpful in planning course scheduling, co-ops, and post-graduation work. In addition to their faculty adviser, students are assigned a co-op and placement adviser, who is located in the Office of Cooperative Education and Career Services. Finally, peer mentors—other journalism students—are available to answer questions about classes, clubs on campus, student-run activities, and other matters from the student's perspective.

Faculty

Nearly all 18 faculty members in the department of communication hold the highest degrees in their fields. Many have won awards for teaching, and all have been published within their areas of expertise.

Careers

Journalism majors have a wide range of career options to choose from. It is expected that the market for writers and editors will increase by nearly 20 percent in the next few years, and graduates with experience in new media technologies will have a significant edge. The program also is ideal for those who wish to pursue graduate study in journalism or communication. The department of communication offers an MS degree in communication and media technologies. Please consult RIT's *Graduate Bulletin* for more information.

Museum Studies, BS

http://www.rit.edu/cla/crs

Tina Olsin Lent, Department Chairperson  
(585) 475-2460, tnlgsh@rit.edu

Program overview

The bachelor of science degree in museum studies is an innovative, interdisciplinary, technically-based program that prepares students for careers in museums, archives, photo collections, and libraries.

Curriculum

The program includes a set of introductory and advanced core courses to familiarize students with the fundamentals of museum studies, including the history, theory, and practice of institutional collecting, conservation, and the technical investigation of art. To broaden and deepen their knowledge, students will also choose to pursue one of two specialized professional tracks: museum and information studies or art conservation.

Internship

The program requires students to complete a 200-hour internship in a cultural institution. This experience gives students the opportunity to apply what they've learned in the classroom to a professional setting and gain valuable work experience before they graduate.

Professional tracks

Both professional tracks (museum and information studies or art conservation) include course work that meets the criteria established by professionals in the field and reflects current opinion about necessary skill sets. Since 2000, the International Council of Museums (ICOM) and the Committee on Museum Professional Training (COMPT) have called for revisions in the training of museum professionals that reflect evolving needs for management, leadership, information technology, fundraising, and grant writing skills—all of which the cultural resource and information studies track includes. The art conservation track features the traditional criteria for entry into the field as well as course work in chemistry and studio arts, two areas that have been identified as deficient in other undergraduate programs.

Museum and Information Studies Track

Program core

|          |  |
|----------|--|
| 0533-370 | Introduction to Museums and Collecting                               |
| 0533-423 | Art Materials: Photography   |
| 0533-422 | Art Materials: Panel Painting  |
| 0533-438 | Conservation of Cultural Materials                                   |
| 0533-424 | Legal and Ethical Issues for Collecting Institutions                 |
| 0533-425 | Display and Exhibition Design  |
| 0533-426 | Collections Management and Museum Administration                     |
| 0533-427 | Fundraising, Grant Writing, and Marketing for Nonprofit Institutions |
| 0533-437 | Forensic Investigation of Art and Research Methods                   |
| 0533-510 | Senior Thesis in Cultural Resource Studies                           |

Art history and studio arts

|   |   |
|---|---|
| 2039-225, 226, 227                          | Survey of Western Art and Architecture I, II, III |
| Freshman-level studio (select two courses): |   |
| 2042-215                                    | Freshman Metals and Jewelry                       |
| 2044-215                                    | Freshman Wood and Woodworking                     |
| 2040-215                                    | Freshman Ceramics                                 |
| 2041-215                                    | Freshman Glass and Glass Sculpture                |
| 2021-251                                    | FTDN: Fine Arts Studio                            |
| 2067-264                                    | Introduction to Photography for Non-majors        |

Business core

|          |                         |
|----------|-------------------------|
| 0101-301 | Financial Accounting    |
| 0102-430 | Organizational Behavior |
| 0105-363 | Principles of Marketing |

Management information systems

|          |                                  |
|----------|----------------------------------|
| 0112-325 | Applying Business Technology     |
| 0112-331 | Business Application Development |
| 0112-340 | Database Management Systems      |
| 0112-370 | Systems Analysis and Design      |
| 0112-390 | Emerging Business Technologies   |

General education electives

Institute free electives

Museum studies, BS degree, typical course sequence, museum and information studies track

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| First Year         |   |               |
| 0533-370           | Introduction to Museums and Collection            | 4             |
| 2039-225, 226, 227 | Survey of Western Art and Architecture I, II, III | 9             |
|                    | Freshman Studio                                   | 2             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 2067-264                          | Introduction to Photography  | 4             |
|                                   | Liberal Arts*  | 12            |
|                                   | Mathematics and Science Requirements‡                                | 13            |
| 1105-051, 052                     | First-Year Enrichment  | 2             |
| <b>Second Year</b>                |  |               |
| 0533-423                          | Art Materials: Photography   | 4             |
| 0533-422                          | Art Materials: Panel Painting  | 4             |
|                                   | Freshman Studio  | 2             |
|                                   | Liberal Arts*  | 24            |
|                                   | Mathematics and Science Requirements‡                                | 8             |
|                                   | General Education Electives  | 8             |
|                                   | Wellness Education†  | 0             |
| <b>Third Year</b>                 |  |               |
| 0533-425                          | Display and Exhibition Design  | 4             |
| 0533-426                          | Collections Management and Museum Administration                     | 4             |
| 0533-427                          | Fundraising, Grant Writing, and Marketing for Nonprofit Institutions | 4             |
|                                   | Business Core  | 12            |
|                                   | Management Information Systems                                       | 12            |
|                                   | Institute Free Elective  | 12            |
| <b>Fourth Year</b>                |  |               |
| 0533-438                          | Conservation of Cultural Materials                                   | 4             |
| 0533-424                          | Legal and Ethical Issues for Collecting Institutions                 | 4             |
| 0533-437                          | Forensic Investigation of Art and Research Methods                   | 4             |
| 0533-510                          | Senior Thesis  | 4             |
|                                   | Management Information Systems                                       | 8             |
|                                   | General Education Electives  | 12            |
|                                   | Institute Free Elective  | 4             |
| <b>Total Quarter Credit Hours</b> |  | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science Requirements for more information.

## Art Conservation Track

### Program Core

|          |  |
|----------|--|
| 0533-370 | Introduction to Museums and Collecting               |
| 0533-423 | Art Materials: Photography                           |
| 0533-422 | Art Materials: Panel Painting                        |
| 0533-438 | Conservation of Cultural Materials                   |
| 0533-424 | Legal and Ethical Issues for Collecting Institutions |
| 0533-437 | Forensic Investigation of Art and Research Methods   |
| 0533-510 | Senior Thesis in Cultural Resource Studies           |

### Art history and studio arts

|  |   |
|--|---|
| 2039-225, 226, 227                                   | Survey of Western Art and Architecture I, II, III |
| <i>Freshman-level studio (select two courses):</i>   |   |
| 2042-215   | Freshman Metals and Jewelry                       |
| 2044-215   | Freshman Wood and Woodworking                     |
| 2040-215   | Freshman Ceramics                                 |
| 2041-215   | Freshman Glass and Glass Sculpture                |
| 2021-251   | FTDN: Fine Arts Studio                            |
| 2067-264   | Introduction to Photography for Non-majors        |
| 2012-211, 212, 213                                   | Drawing I, II, III                                |
| <i>Sophomore-level studio (select one sequence):</i> |   |
| 2042-301, 302, 303                                   | Sophomore Metals Studio I, II, III                |
| 2044-301, 302, 303                                   | Sophomore Wood and Woodworking I, II, III         |
| 2040-301, 302, 303                                   | Sophomore Ceramics Studio I, II, III              |
| 2041-301, 302, 303                                   | Sophomore Glass Studio I, II, III                 |
| 2021-305, 315, 361                                   | Painting, Printmaking, Sculpture                  |

## Mathematics and science

|                    |                                       |
|--------------------|---------------------------------------|
| 1013-231, 232, 233 | Organic Chemistry I, II, III and Labs |
|--------------------|---------------------------------------|

## General education electives

### Institute free electives

## Museum studies, BS degree, typical course sequence, art conservation track

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 0533-370                          | Introduction to Museums and Collection               | 4             |
| 2039-225, 226, 227                | Survey of Western Art and Architecture I, II, III    | 9             |
|                                   | Freshman Studio                                      | 2             |
| 2067-264                          | Introduction to Photography                          | 4             |
|                                   | Liberal Arts*  | 12            |
|                                   | Mathematics and Science Requirements‡                | 13            |
| 1105-051, 052                     | First-Year Enrichment                                | 2             |
| <b>Second Year</b>                |  |               |
| 0533-423                          | Art Materials: Photography                           | 4             |
| 0533-422                          | Art Materials: Panel Painting                        | 4             |
|                                   | Freshman Studio                                      | 2             |
| 1013-231, 232, 233                | Organic Chemistry I, II, III                         | 12            |
|                                   | Liberal Arts*  | 16            |
|                                   | Mathematics and Science Requirements‡                | 4             |
|                                   | General Education Electives                          | 8             |
|                                   | Wellness Education†                                  | 0             |
| <b>Third Year</b>                 |  |               |
| 2013-211, 212, 213                | Drawing I, II, III                                   | 9             |
|                                   | Liberal Arts   | 8             |
|                                   | General Education Electives                          | 8             |
|                                   | Institute Free Elective                              | 17            |
| <b>Fourth Year</b>                |  |               |
| 0533-438                          | Conservation of Cultural Materials                   | 4             |
| 0533-424                          | Legal and Ethical Issues for Collecting Institutions | 4             |
| 0533-437                          | Forensic Investigation of Art and Research Methods   | 4             |
| 0533-510                          | Senior Thesis  | 4             |
|                                   | Sophomore-Level Studio                               | 18            |
|                                   | General Education Electives                          | 8             |
|                                   | Institute Free Elective                              | 5             |
| <b>Total Quarter Credit Hours</b> |  | <b>185</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science Requirements for more information.

## Additional information

### Career opportunities

Upon graduation students will be prepared to work in public and private institutions that collect cultural objects, such as museums of various types, historical sites, historical societies, libraries, archives, and corporations. Students are also prepared to further their education in graduate programs, such as an MA in museum studies, art history, informatics, or arts management; an MLS in library and information studies; or an MBA. The Bureau of Labor Statistics reports that there were approximately 27,000 archivists, curators, and museum technicians in the U.S. in 2004 and about 159,000 librarians. Both areas are expected to grow as current professionals reach retirement age and will have to be replaced with

those whose education has prepared them for the new responsibilities of the field.

Advisers

Every student is assigned a faculty adviser who provides academic advising and career counseling. All of the fine arts department faculty members in cultural resource studies hold the highest degrees in their field and all have been published within their areas of expertise.

Philosophy, BS

http://www.rit.edu/philosophy

John T. Sanders, Program Coordinator  
(585) 475-2465, jts@rit.edu

Program overview

The philosophy program provides a thorough grounding in the three main areas of philosophy (history, value theory, and reasoning/epistemology), as well as a four-course specialization within philosophy. The program concludes with a senior thesis integrating philosophy with a field of application.

Most of the skills required for student and career success—how to learn, how to apply that learning in professional and personal environments, and how to communicate that knowledge—are central to philosophical training. Philosophy students are taught to evaluate complex problems, identify and examine underlying principles, investigate issues from diverse perspectives, and communicate clearly in both written and oral forms.

Students combine philosophy with a core competence (or even a double major) in another discipline, encouraging them to creatively pursue cross-disciplinary relationships. The program is designed for students to obtain employment after graduation, or to pursue an advanced degree.

Curriculum

Philosophy Core

History of Philosophy

Required courses:

|          |                    |
|----------|--------------------|
| 0509-456 | Ancient Philosophy |
| 0509-457 | Modern Philosophy  |

Choose one of the following:

|          |                         |
|----------|-------------------------|
| 0509-462 | Contemporary Philosophy |
| 0509-467 | Medieval Philosophy     |
| 0509-469 | 19th Century Philosophy |

Value Theory

Required course:

|          |                |
|----------|----------------|
| 0509-476 | Ethical Theory |
|----------|----------------|

Choose one of the following courses:

|          |                                 |
|----------|---------------------------------|
| 0509-442 | Philosophy of Art/Aesthetics    |
| 0509-445 | Social and Political Philosophy |
| 0509-446 | Philosophy of Law               |

Reasoning/Epistemology

Choose one of the following courses:

|          |                       |
|----------|-----------------------|
| 0509-441 | Logic                 |
| 0509-443 | Philosophy of Science |
| 0509-455 | Theories of Knowledge |

Philosophy specialization

Students complete four courses in an area of specialization within philosophy, usually related to their professional core. Seven pre-approved specializations are provided, but students may develop additional options with faculty advising.

Philosophy of Mind and Cognitive Science

|          |                           |
|----------|---------------------------|
| 0509-441 | Logic                     |
| 0509-458 | Philosophy of Mind        |
| 0509-468 | Metaphysics               |
| 0509-472 | Minds and Machines        |
| 0509-473 | Technology and Embodiment |
| 0509-474 | Philosophy of Language    |
| 0509-444 | Great Thinkers            |
| 0509-449 | Special Topics            |

Philosophy of Science and Technology

|          |                           |
|----------|---------------------------|
| 0509-441 | Logic                     |
| 0509-443 | Philosophy of Science     |
| 0509-452 | Philosophy of Technology  |
| 0509-455 | Theories of Knowledge     |
| 0509-473 | Technology and Embodiment |
| 0509-444 | Great Thinkers            |
| 0509-449 | Special Topics            |

Applied Ethics

|          |                             |
|----------|-----------------------------|
| 0509-446 | Philosophy of Law           |
| 0509-447 | Contemporary Moral Problems |
| 0509-448 | Philosophy of Peace         |
| 0509-451 | Professional Ethics         |
| 0509-453 | Environmental Philosophy    |
| 0509-444 | Great Thinkers              |
| 0509-449 | Special Topics              |

Philosophy of the Social Sciences and Political Philosophy

|          |                                   |
|----------|-----------------------------------|
| 0509-445 | Social and Political Philosophy   |
| 0509-446 | Philosophy of Law                 |
| 0509-447 | Contemporary Moral Problems       |
| 0509-448 | Philosophy of Peace               |
| 0509-453 | Environmental Philosophy          |
| 0509-454 | Feminist Theory                   |
| 0509-459 | Philosophy of the Social Sciences |
| 0509-460 | East Asian Philosophy             |
| 0509-473 | Technology and Embodiment         |
| 0509-444 | Great Thinkers                    |
| 0509-449 | Special Topics                    |

Philosophy of Art and Aesthetics

|          |                                  |
|----------|----------------------------------|
| 0509-442 | Philosophy of Art and Aesthetics |
| 0509-445 | Social and Political Philosophy  |
| 0509-470 | Philosophy and Literary Theory   |
| 0509-471 | Philosophy of Film               |
| 0509-475 | Philosophy of Vision and Imaging |
| 0509-444 | Great Thinkers                   |
| 0509-449 | Special Topics                   |

## History of Philosophy

|          |                               |
|----------|-------------------------------|
| 0509-460 | East Asian Philosophy         |
| 0509-461 | American Philosophy           |
| 0509-462 | Contemporary Philosophy       |
| 0509-465 | Critical Social Theory        |
| 0509-466 | Existentialism                |
| 0509-467 | Medieval Philosophy           |
| 0509-469 | Nineteenth-Century Philosophy |
| 0509-444 | Great Thinkers                |
| 0509-449 | Special Topics                |

## Philosophy of Law

|          |                                 |
|----------|---------------------------------|
| 0509-441 | Logic                           |
| 0509-445 | Social and Political Philosophy |
| 0509-446 | Philosophy of Law               |
| 0509-451 | Professional Ethics             |
| 0509-455 | Theories of Knowledge           |
| 0509-444 | Great Thinkers                  |
| 0509-449 | Special Topics                  |

## Seminar in philosophy

This course is an examination of a selected area or topic of philosophy at an advanced undergraduate level.

## Senior thesis

In this course, required during the senior year, students research and write a substantial paper on a specific philosophical topic. Students are encouraged to investigate a particular question in depth, likely building on their philosophy specialization and their professional core. Students choose a faculty member to serve as a primary adviser and to help identify a subject topic. The finished thesis is discussed and examined by a committee including two other faculty members.

## Program electives

Program electives can include philosophy courses not used to satisfy program requirements or complementary courses outside of the department of philosophy. Students are encouraged, with proper advising, to seek out non-philosophy courses that complement their philosophy specializations.

## Professional core

Students complete a series of courses designed to provide foundational knowledge in a professional/technical discipline outside of philosophy, which complements their studies in the program. The professional core can be fulfilled with a minor (outside of philosophy), by completing an individually designed professional core (subject to the approval of the student's philosophy adviser and the external department), or by completing a double major.

Please note that for transfer students, some (or even all) of the professional core requirements might be satisfied by courses already taken in the former department.

## Philosophy, BS degree, typical course sequence

| COURSE            | QTR. CR. HRS.                        |
|-------------------|--------------------------------------|
| <b>First Year</b> |                                      |
| 0509-456          | Ancient Philosophy                   |
| 0509-457          | Modern Philosophy                    |
| 0509-476          | Ethical Theory                       |
|                   | Professional Core or Free Electives  |
|                   | Liberal Arts*                        |
|                   | Mathematics and Science Requirement‡ |

| COURSE                            | QTR. CR. HRS.                        |
|-----------------------------------|--------------------------------------|
| 1105-051, 052                     | First-Year Enrichment                |
|                                   | Wellness Education†                  |
| <b>Second Year</b>                |                                      |
|                                   | Philosophy Core Courses              |
|                                   | Professional Core or Free Electives  |
|                                   | General Education Electives          |
|                                   | Liberal Arts*                        |
|                                   | Mathematics and Science Requirement‡ |
|                                   | Wellness Education†                  |
| <b>Third Year</b>                 |                                      |
|                                   | Philosophy Specialization            |
|                                   | Professional Core or Free Electives  |
|                                   | Program Electives                    |
|                                   | Liberal Arts*                        |
|                                   | General Education Electives          |
| <b>Fourth Year</b>                |                                      |
| 0509-450                          | Seminar in Philosophy                |
| 0509-595                          | Senior Thesis                        |
|                                   | Philosophy Specialization            |
|                                   | Professional Core or Free Elective   |
|                                   | Program Electives                    |
|                                   | General Education Electives          |
| <b>Total Quarter Credit Hours</b> | <b>184-186</b>                       |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum for more information.

## Additional information

### Advising

Each student is assigned a faculty adviser who will assist in planning course schedules, professional/technical core requirements, and a philosophy specialization area.

### Faculty

The philosophy department's faculty are outstanding teachers. They are active scholars, publishing regularly in journals, editing and authoring books, and organizing and delivering papers at conferences at RIT and elsewhere in the United States and abroad.

## Political Science, BS

<http://www.rit.edu/cia/politicalscience>

**Sean Sutton, Department Chairperson**  
(585) 475-4620, [sdsqsm@rit.edu](mailto:sdsqsm@rit.edu)

## Program overview

The bachelor of science degree in political science tightly integrates the traditional fields of American government and international relations in order to prepare students for a life and career in an increasingly globalized world. Moreover, the program includes tracks of courses in three areas: politics and life sciences, digital politics and the information age, and political institutions. Through these tracks students can study the influence of recent advances in biology and biotechnology on how we understand ourselves as human beings and citizens or the use of information technology for political organization and communication. There are few undergraduate political science programs in the country that so fully incorporate both these fields into their curricula, including the opportunity to

take courses from the biology and information technology departments as part of their program requirements.

The program will prepare principled leaders and responsible citizens for fruitful careers in the public and private sectors.

## Curriculum

### Core courses

The program consists of four core courses, plus a capstone project, designed to introduce students to the general themes of the degree program. The program culminates in a political science capstone course, which will tie together the themes of the program through a seminar and significant writing project.

|          |   |
|----------|---|
| 0513-211 | American Politics                       |
| 0513-214 | Introduction to International Relations |
| 0513-425 | Politics and the Life Sciences          |
| 0513-426 | Cyberpolitics                           |
| 0513-500 | Political Science Capstone              |

### Program tracks

The overarching goal of the political science program is to prepare undergraduates for the challenges of life and a career in a world that is increasingly globalized, where the application of biotechnology and biomedicine will become common, and where social computing will shape and influence democratic government and the wider community. Students are required to choose one track so that they can study in depth the political impact of modern biology and biotechnology, the changing role of political institutions in a globalized world, or develop technical skills drawn from RIT's business school and information technology program to give them firsthand experience in the technologies that increasingly influence political organization and communication.

### Politics and the life sciences

Choose four of the following courses (16 credits):

|          |  |
|----------|--|
| 1001-421 | Genetics                                       |
| 1001-311 | Cell Biology                                   |
| 1001-365 | Evolutionary Biology                           |
| 1001-359 | Evolution, Creationism, and Intelligent Design |
| 0508-484 | Environmental Policy                           |
| 0509-473 | Technology and Embodiment                      |
| 0513-427 | Evolutionary International Relations           |
| 0513-428 | Evolution and Law                              |
| 0513-429 | Primate Politics                               |

### Digital politics and the information age

Choose four of the following courses (16 credits):

|          |   |
|----------|---|
| 0112-340 | Database Management Systems                         |
| 0112-440 | Database Systems Development                        |
| 0509-217 | Ethics and the Information Age                      |
| 0513-454 | Political Parties and Voting                        |
| 0535-410 | Computer Mediated Communication                     |
| 4002-320 | Introduction to Multimedia: Internet and the Web    |
| 4002-310 | Digital Video for the WWW                           |
| 4002-360 | Introduction to Database and Data Modeling          |
| 4002-409 | Website Design and Implementation                   |
| 4002-535 | Network-Based Multimedia                            |
| 4002-484 | Fundamentals of Database Client/Server Connectivity |

### Political institutions

Choose four of the following courses (16 credits):

|          |                                      |
|----------|--------------------------------------|
| 0513-451 | Legislative Process                  |
| 0513-452 | The American Presidency              |
| 0513-456 | Judicial Process                     |
| 0513-487 | International Law and Organizations  |
| 0513-461 | Introduction to Comparative Politics |
| 0513-490 | International Political Economy      |

### Electives

Students are required to take eight courses (32 quarter credit hours) from the department's American politics and international relations/comparative government offerings with a minimum of three courses from each area. This requirement recognizes the increasing interdependence of domestic and international politics in this era of globalization. Students will focus their studies on American politics, international relations, and comparative politics to provide them with an integrated national and global political perspective.

### Political science, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 0513 310                          | Principles of American Politics           | 4             |
| 0513-311                          | Fundamentals of International Relations   | 4             |
| 0513-425                          | Politics and the Life Sciences            | 4             |
|                                   | Liberal Arts*                             | 20            |
|                                   | Math and Science Requirements‡            | 16            |
|                                   | First-Year Enrichment                     | 2             |
|                                   | Wellness Education†                       | 0             |
| <b>Second Year</b>                |   |               |
| 0513-426                          | Cyberpolitics                             | 4             |
|                                   | Political Science Program Electives       | 12            |
|                                   | Liberal Arts*                             | 16            |
|                                   | Math and Science Requirements‡            | 8             |
|                                   | Free Electives                            | 8             |
|                                   | Wellness Activity†                        | 0             |
| <b>Third Year</b>                 |   |               |
|                                   | Political Science Track                   | 12            |
|                                   | Political Science Program Electives       | 12            |
|                                   | Liberal Arts                              | 16            |
|                                   | Free Electives                            | 8             |
|                                   | Cooperative Education (optional) (summer) | Co-op         |
| <b>Fourth Year</b>                |   |               |
|                                   | Political Science Track                   | 4             |
|                                   | Political Science Program Electives       | 12            |
| 0513-500                          | Political Science Capstone                | 4             |
|                                   | Liberal Arts*                             | 12            |
|                                   | Free Elective                             | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.  
† Please see Wellness Education Requirement for more information.  
‡ Please see Mathematics and Science General Education Requirements for more information. Students are encouraged to take the general biology sequence in preparation for the program's emphasis on politics and the life sciences.

### Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.



## Additional information

### Double majors

The political science program is designed to comply with RIT's emphasis on curricula creativity, flexibility, and innovation. The program includes five free electives (20 credits), and its interdisciplinary and intercollegiate character ensures that pre-approved double majors in political science and other degree programs within the college and the university as a whole are readily available to students. Students in diverse fields such as computer science, criminal justice, economics, and philosophy have signed up for double majors with political science.

### Accelerated dual degree option

The Saunders College of Business and the political science department in the College of Liberal Arts offer a 4+1 BS/MBA option that permits qualified students who have earned a BS degree in political science to pursue an MBA. Selected MBA courses may be waived based upon completion of certain undergraduate courses. Students may be able to complete the MBA program in as few as four or five academic quarters.

### Experiential education

After completing 96 credit hours (or third-year status), students are eligible to participate in optional learning experiences that may include an internship and cooperative education (co-op). An internship or co-op provides students with hands-on experience in a variety of environments, from government agencies, non-profits, nongovernmental agencies, to political campaigns. These opportunities provide students with employment experience as well as the opportunity to further develop skills in their chosen profession.

### Study abroad

A study abroad opportunity provides students with a way to enhance their understanding of global politics and culture. They may study full time at a variety of host schools and are able to select courses in their major as well as liberal arts courses. To learn more about the Study Abroad program, please refer to the Academic Enrichment section of this book.

### Career opportunities

A degree in political science will prepare undergraduate students for careers in law; local, state, and national government; foreign service; business; government relations; and other areas of the private and public sector in which knowledge of the political process and the strengths and limitations of modern democracy and modern society is appropriate. In addition, students are well-prepared for graduate study in a variety of fields, ranging from business and law to political science and public policy.

### Advising

Each student in the political science program is assigned a faculty adviser who will help with registration, scheduling, course selection, academic concerns, and career counseling.

### Faculty

The political science faculty have extensive experience in the classroom and are well-published in their fields of expertise. Faculty members have broad backgrounds in addition to their political science training, including criminal justice, literature, philosophy, political campaigning, political polling, and public policy. Several

members have worked for the United Nations and in Washington, D.C., think tanks.

## Professional and Technical Communication, BS

<http://www.rit.edu/ptc>

**Patrick Scanlon, Department Chairperson**  
(585) 475-2879, [pmsgsl@rit.edu](mailto:pmsgsl@rit.edu)

### Program overview

The bachelor of science degree in professional and technical communication unites advanced education in the theory and practice of spoken, written, and visual communication with extensive instruction in a professional or technical program. This unique combination fosters an understanding of the central concepts and processes associated with the field of communication and a working familiarity with the principles and practices of a particular professional/technical field.

Graduates are qualified for a number of different functions as communications specialists within a specific professional area. Their career opportunities are numerous and varied. The degree also prepares them for graduate work in communication and related academic disciplines.

### Curriculum

#### Required communication courses

|          |                                 |
|----------|---------------------------------|
| 0535-200 | Foundations of Communications   |
| 0535-311 | Rhetorical Theory               |
| 0535-315 | Quantitative Research Methods   |
| 0535-317 | Critical Research Methods       |
| 0535-412 | Communication Law and Ethics    |
| 0502-444 | Technical Writing               |
| 0535-445 | Theories of Communication       |
| 0535-446 | Writing the Technical Manual    |
| 0535-450 | Visual Communication            |
| 0535-462 | Digital Design in Communication |
| 0535-481 | Persuasion                      |
| 0535-482 | Mass Communications             |
| 0535-501 | Public Speaking                 |
| 0535-532 | Professional Writing            |
| 0535-595 | Senior Thesis in Communication  |

### Professional core

The degree requires students to complete a professional core of five courses focused on a professional or technical area of interest. These courses may be taken from programs within the College of Science, the College of Imaging Arts and Sciences, the E. Philip Saunders College of Business, or from programs in other RIT colleges. Alternatively, an individually designed professional core, one tailored to a student's specific study and career interests, is available with the approval of an academic adviser and the program chairperson.

## University-wide electives (20 credit hours)

Five courses

### Program elective (4 credit hours)

Choose one of the following courses:

|          |                                    |
|----------|------------------------------------|
| 0535-316 | Qualitative Research Methods       |
| 0535-410 | Computer-Mediated Communication    |
| 0535-411 | Health Communication               |
| 0535-414 | Interpersonal Communication        |
| 0535-415 | Organizational Communication       |
| 0535-416 | Newswriting                        |
| 0535-417 | Newswriting II                     |
| 0535-420 | Argument and Discourse             |
| 0535-421 | Public Relations                   |
| 0535-422 | Ethics in Technical Communication  |
| 0535-426 | Archival Research                  |
| 0535-452 | Uses and Effects of the Mass Media |
| 0535-460 | Copywriting and Visualization      |
| 0535-461 | Principles of Advertising          |
| 0535-463 | Campaign Management and Planning   |
| 0535-464 | Public                             |
| 0535-465 | Rhetoric of Political Campaigns    |
| 0535-470 | Law and Ethics of the Press        |
| 0535-471 | History of Journalism              |
| 0535-472 | News Editing                       |
| 0535-474 | Reporting in Specialized Fields    |
| 0535-475 | eJournalism                        |
| 0535-476 | eJournalism II                     |
| 0535-483 | Small Group Communication          |
| 0535-484 | Rhetoric of Race Relations         |
| 0535-490 | Persuasion and Social Change       |
| 0535-502 | Speechwriting                      |
| 0535-503 | Advanced Public Speaking           |
| 0535-520 | Intercultural Communication        |
| 0535-525 | Special Topics in Communication    |
| 0535-534 | Communication and Documentary Film |
| 0535-550 | Film and Society                   |
| 0535-580 | International Media                |

### Professional and technical communication, BS degree, typical course sequence

| COURSE             | QTR. CR. HRS.                           |
|--------------------|---|
| <b>First Year</b>  |   |
| 0535-200           | Foundations of Communication 4          |
| 0535-311           | Rhetorical Theory 4                     |
| 0535-501           | Public Speaking 4                       |
| 0535-462           | Digital Design in Communication 4       |
| 4002-206           | Web Foundations 4                       |
|                    | Liberal Arts* 8                         |
|                    | Mathematics and Science Requirement‡ 16 |
| 1105-051, 052      | First-Year Enrichment 2                 |
|                    | Wellness Education† 0                   |
| <b>Second Year</b> |   |
| 0535-481           | Persuasion 4                            |
| 0502-444           | Technical Writing 4                     |
| 0535-450           | Visual Communication 4                  |
| 0535-482           | Mass Communications 4                   |
|                    | PTC Elective 4                          |
|                    | Professional Core 12                    |
|                    | Liberal Arts* 16                        |
|                    | Wellness Education† 0                   |

| COURSE                     |                                      | QTR. CR. HRS. |
|----------------------------|--------------------------------------|---------------|
| Third Year                 |                                      |               |
| 0535-445                   | Theories of Communication            | 4             |
| 0535-412                   | Communication Law and Ethics         | 4             |
|                            | Professional Core                    | 8             |
|                            | General Education Electives          | 16            |
|                            | Mathematics Requirement‡             | 4             |
|                            | University-wide Elective             | 4             |
|                            | Cooperative Education (two quarters) | Co-op         |
| Fourth Year                |                                      |               |
| 0535-315                   | Quantitative Research Methods        | 4             |
| 0535-317                   | Critical Research Methods            | 4             |
| 0535-532                   | Professional Writing                 | 4             |
| 0535-446                   | Writing the Technical Manual         | 4             |
| 0535-595                   | Senior Thesis in Communication       | 4             |
|                            | Liberal Arts*                        | 12            |
|                            | University-wide Electives            | 16            |
| Total Quarter Credit Hours |                                      | 182           |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum for more information.

### Cooperative education

Students complete two quarters of cooperative education as part of the program. Co-op is paid, practical work experience that deepens students' knowledge of their academic fields, allows them to determine their suitability for a particular professional position, and increases their chances for advantageous placement upon graduation. Many students use the extra income earned on co-op to help offset college expenses.

Students have access to a broad range of co-op opportunities, and there is no restriction on geographic location as long as the position is related to communication. The Office of Cooperative Education and Career Services assists students in identifying co-op and permanent placements with a large and diverse number of employers. Students have held co-ops across the United States at such organizations as Greenpeace, Bausch & Lomb, the Rochester Memorial Art Gallery, the Chicago Hearing Society, Eastman Kodak Co., City of New York Parks & Recreation, and the U.S. House of Representatives.

### Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

### Additional information

#### Students

The size of the program, averaging about 60 students, ensures close contact with the program's faculty and other students. The program attracts energetic students who are actively involved in numerous communication-related extracurricular activities, including RIT's FM radio station, WITR, and RIT's weekly magazine, *Reporter*. Many students have served as residence hall advisers as well as representatives to, and leaders of, student government.

#### Advisers

Every student in the program is assigned a faculty adviser who is available for both academic advising and career counseling.

Students find that frequent consultation with their adviser is helpful in planning course scheduling, co-ops, professional core areas, and post-graduation work. In addition to their faculty adviser, students are assigned a co-op and placement adviser, located in the Office of Cooperative Education and Career Services. Finally, peer mentors—other professional and technical communication students—are available to answer questions about classes, clubs on campus, student-run activities, and other matters from the student's perspective.

## Faculty

Nearly all 18 faculty members in the department of communication hold the highest degrees in their fields. All have proven teaching ability and are committed to professional growth in their areas of expertise. In addition to their teaching, research, and other professional responsibilities, faculty members act as academic advisers for students in the program. The department also offers students the opportunity to participate in specialized course work and research with faculty members.

## Careers

Upon graduation, students are prepared for immediate employment and long-term professional growth within the broad field of communication. Graduates qualify for positions in business, government, and the not-for-profit sector, and are employed as technical editors and writers, sales and marketing coordinators, document specialists, broadcast news and segment researchers, public relations practitioners, and staff members for various federal and state government officials.

## Graduate study

The program also prepares students for graduate study in law, public relations, communication, health services, and management. The department of communication offers an MS program in communication and media technologies. Please refer to the *Graduate Bulletin* or the department website for more information.

# Psychology, BS

<http://www.rit.edu/cia/psychology>

**Andrew M. Herbert, Department Chairperson**  
(585) 475-4554, [amhgss@rit.edu](mailto:amhgss@rit.edu)

## Program overview

The bachelor of science degree in psychology provides students with a strong grounding in the discipline of psychology, integrated with a technological focus. Upon entry, students are assigned a faculty adviser to mentor their progress through the program. Students also are provided with curriculum planning strategies and career discussions through the program's Freshman Seminar.

## Curriculum

The program is unique and encompasses three key elements: the choice among four interdisciplinary tracks, a technical/professional concentration, and a cooperative education requirement.

## Interdisciplinary tracks

Students choose one of the following interdisciplinary tracks: visual perception, information processing, biopsychology, or clinical psychology. Technology is integrated into these tracks to produce

a nontraditional and career-oriented psychology major. The tracks are also active fields of research in psychology, and students receive training that provides a strong foundation for graduate school and employment in related fields.

The visual perception track focuses on human perceptual systems. Vision is presented as the integration of anatomy, physiology, and behavior. Students learn psychophysical methods. The track covers cutting-edge topics such as color perception, the retinal mosaic, and neural plasticity. It stresses current research showing that visual perception is a living and growing field.

The information processing track uses an interdisciplinary approach to study cognitive processes such as judgment and decision making, memory, learning, language, problem solving, attention, and perception. The track explores the interaction of human factors, psychology, and technology.

The biopsychology track studies brain function as the basis of behavior. It focuses on topics such as lateralization, cortical specialization, brain injury, and psychopharmacology. Psychophysiological measures (including EEG, EMG, and skin conductance) are covered in depth along with the relationship between brain chemistry and behavior. Students perform laboratory work on the brain and its relationship to attention, memory, language, perception, and psychological disorders.

The clinical psychology track emphasizes the scientific and empirical foundations of clinical and applied work. Empirically based methods are introduced to understand and modify human psychological problems. This track prepares students for graduate programs in mental health.

## Technical/professional concentration

The program seeks students with an aptitude for technical and quantitative reasoning as well as an interest in psychology. There is sufficient curricular flexibility to permit completion of a technical concentration.

## Cooperative education

The program requires that students complete a cooperative education experience for two quarters between the sophomore and senior years of course work. The co-op experience is in a psychology-related field and does not carry academic credit.

## Psychology, BS degree, typical course sequence

| COURSE                  |                                | QTR. CR. HRS. |
|-------------------------|--------------------------------|---------------|
| <b>First Year</b>       |                                |               |
| 0514-201                | Freshman Seminar               | 1             |
| 0514-210                | Introduction to Psychology     | 4             |
| 0514-440                | Childhood and Adolescence      | 4             |
| 0514-443                | Cognitive Psychology           | 4             |
| 0514-444                | Social Psychology              | 4             |
| 1004-211, 212, 231, 232 | Human Biology I, II with Lab   | 8             |
| 1016-225                | Algebra for Management Science | 4             |
| 4002-206                | Web Foundations                | 4             |
|                         | Liberal Arts*                  | 12            |
| 1105-051, 052           | First-Year Enrichment I, II    | 2             |
|                         | Wellness Education†            | 0             |
| <b>Second Year</b>      |                                |               |
| 0514-315                | Scientific Writing             | 4             |
| 0514-350                | Psychological Statistics       | 4             |
| 0514-400                | Experimental Psychology        | 4             |
| 0514-446                | Psychology of Personality      | 4             |

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| 0514-447                   | Abnormal Psychology                    | 4             |
| 0514-448                   | Industrial/Organizational Psychology   | 4             |
| 1016-319, 320              | Data Analysis I, II                    | 8             |
|                            | Liberal Arts*                          | 12            |
|                            | Technical/Professional Concentration   | 4             |
|                            | Cooperative Education (summer quarter) | Co-op         |
| Third Year                 |  |               |
|                            | Interdisciplinary Courses              | 12            |
|                            | Technical/Professional Concentration   | 8             |
|                            | Liberal Arts*                          | 20            |
|                            | University Electives                   | 8             |
|                            | Cooperative Education (summer quarter) | Co-op         |
| Fourth Year                |  |               |
|                            | Interdisciplinary Course               | 4             |
|                            | University Electives                   | 12            |
| 0514-596, 597              | Senior Project in Psychology I, II     | 8             |
|                            | General Education Electives            | 16            |
| Total Quarter Credit Hours |  | 183           |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirements for more information.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

## Additional information

### Career opportunities

The unique requirements of this program ensure that each student should be well-prepared for advanced study in psychology or a related field, employment in industry or in human service agencies, or other career opportunities.

## Public Policy, BS

<http://www.rit.edu/cia/publicpolicy>

**Deborah Blizzard, Department Chairperson**  
(585) 475-4697, [dlbgsh@rit.edu](mailto:dlbgsh@rit.edu)

## Program overview

The public policy program explores the intersection of public policy, technology, and our natural world. The program provides students with an opportunity to integrate their interests in science, technology, government, economics, and other social science fields. The BS degree combines an understanding of these fields with the analytical tools needed to study the impact of public policy on society. Through the program, students acquire policy analysis skills, with particular attention on analyzing policies that emerge in a technology-based society. The program has many key features, including:

**Science and technology**—Graduates are trained in the vernacular, methodologies, and problem-solving approaches of the sciences and technologies relevant to their chosen policy study track, and they possess a well-grounded familiarity in that area. Policy tracks include environmental policy, information and communications policy, energy policy, biotechnology policy, and others designed to

meet the students' interests. Students have an option of tailoring a track to their interests.

**Interdisciplinary**—A sequence of eight public policy courses ensures the program provides integration of diverse disciplines. This sequence makes up the core of the curriculum and enables students to integrate diverse subjects and apply them to the analysis of public policy.

**Integrated qualitative and quantitative skills**—The program balances both quantitative and qualitative approaches to the analysis of public policy so that students are able to achieve a full systems-level grasp of policy issues.

**Solid grounding in liberal arts**—While our graduates will have quantitative and qualitative training, by the end of their academic career they also will have taken liberal arts courses with a broad disciplinary range. It is this grounding in humanistic values combined with technology and science that makes our program both balanced and unique.

## Curriculum

The curriculum is designed to train students to think and analyze policy in terms of complex, interconnected systems. This training is in high demand in the public, private, and nonprofit sectors.

### Track courses

Six track courses demand that students apply skills acquired in public policy courses to specific policy areas or domains. Students can concentrate in areas such as environmental policy, information and communications policy, energy policy, and biotechnology policy, among others. Many track courses, including those that provide a firm grounding in the science and technology aspects of the chosen track, are offered through other programs and colleges of the university. This gives students an opportunity to interact and study with researchers and faculty from a broad range of disciplines.

### Public policy colloquium

This required, noncredit-bearing colloquium meets twice each quarter. The colloquium is used to bring in policy practitioners and academics to talk about careers, research, and special topics. The colloquium series helps build and sustain a sense of community among policy majors by providing a context for their course work and research.

### Public policy, BS degree, typical course sequence

| COURSE              |                                      | QTR. CR. HRS. |
|---------------------|--------------------------------------|---------------|
| First Year          |                                      |               |
| Public Policy Core: |                                      |               |
| 0521-400            | Foundations of Public Policy         | 4             |
| 0508-441            | Science and Technology Policy        | 4             |
| Foundations:        |                                      |               |
| 0511-211            | Principles of Microeconomics         | 4             |
| 0511-402            | Principles of Macroeconomics         | 4             |
| 0513-211            | American Politics                    | 4             |
|                     | Mathematics and Science Requirement† | 20            |
|                     | Liberal Arts*                        | 4             |
|                     | Free Elective                        | 4             |
|                     | Policy Colloquium                    | 0             |



| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 1105-051, 052                     | First-Year Enrichment                      | 2             |
|                                   | Wellness Education†                        | 0             |
| <b>Second Year</b>                |  |               |
| <b>Public Policy Core:</b>        |  |               |
| 521-401                           | Values and Public Policy                   | 4             |
| 521-406                           | Qualitative Policy Analysis                | 4             |
| <b>Foundations:</b>               |  |               |
| 0511-450                          | Benefit-Cost Analysis                      | 4             |
| 1016-319                          | Data Analysis I                            | 4             |
| Choose one of the following:      |  | 4             |
| 0511-457                          | Applied Econometrics                       |               |
| 1016-320                          | Data Analysis II                           |               |
| 0513-458                          | American Political Thought                 | 4             |
| 0508-460                          | Environment and Society                    | 4             |
|                                   | Liberal Arts*                              | 20            |
|                                   | Policy Colloquium                          | 0             |
|                                   | Wellness Education†                        | 0             |
| <b>Third Year</b>                 |  |               |
| <b>Public Policy Core:</b>        |  |               |
| 0521-402, 403, 404                | Policy Analysis I, II, III                 | 12            |
|                                   | Public Policy Track Courses                | 12            |
|                                   | Liberal Arts*                              | 12            |
|                                   | Free Electives                             | 12            |
|                                   | Cooperative Education (Summer)             | Co-op         |
|                                   | Policy Colloquium                          | 0             |
| <b>Fourth Year</b>                |  |               |
| <b>Public Policy Core:</b>        |  |               |
| 0521-405                          | Senior Project I                           | 4             |
| 0521-408                          | Technological Innovation and Public Policy | 4             |
|                                   | Public Policy Track Courses                | 12            |
|                                   | Liberal Arts*                              | 12            |
|                                   | Free Elective                              | 4             |
| <b>Total Quarter Credit Hours</b> |  | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum for more information.

Note: Students may take up to 12 quarter credit hours of graduate-level courses in the fourth year if they are enrolled in the BS/MS program. This increases the total credit hours to 198.

## Additional information

### Accelerated dual degree option

Instead of the four-year BS degree, students can choose an accelerated five-year option leading to a BS in public policy and an MS in science, technology, and public policy. The five-year BS/MS option provides graduates with a considerable advantage in many policy-related careers.

### Cooperative education

Students complete a co-op or internship within the private, public, or nonprofit sectors. The co-op experience makes our students attractive to a wide range of agencies, businesses, and organizations.

### Employment opportunities

Exciting career opportunities await professionals who can integrate an understanding of science and technology with public policy decision making. RIT public policy graduates are uniquely positioned to take advantage of the growing job market in public policy, with career options in a range of fields within the private, government, and nonprofit sectors.

## Faculty

Faculty have extensive experience in the classroom and as practitioners in their respective fields. In addition to public policy, faculty members have a broad range of backgrounds, including physics, engineering, law, environmental science, energy management, and information technology.

## Urban and Community Studies, BS

<http://www.rit.edu/cla/sociology/urban/>

**Christine Kray, Department Chairperson**  
(585) 475-4686, [christine.kray@rit.edu](mailto:christine.kray@rit.edu)

## Program overview

Eighty percent of U.S. residents work, learn, and raise families in metropolitan areas. Countries around the world are rapidly urbanizing, and the urban populations of the world are linked participants in a global economic and cultural system. Cities also present challenges regarding land use, access to resources, cross-cultural communication, pollution, crowding, and traffic. The prominence and interdependence of today's urban landscape create a pressing need for individuals who possess the skills, aptitude, and commitment to create sustainable cities and communities for our shared future.

The bachelor of science program in urban and community studies explores the institutional and structural forces that shape, interconnect, and subdivide geographically bounded communities. The program's interdisciplinary combination of classes in the liberal arts, sciences, and computing gives students a broad knowledge base that lets them approach urban issues from a number of perspectives.

Students will enter the work force technically grounded in and knowledgeable of urban theories, policies, and practices. Upon graduation, students will be equipped to take on positions in many fields, including city and regional government, social services, and local or international development.

## Curriculum

### Core courses

Students will complete nine core courses that provide a strong foundation in the field.

|          |  |
|----------|--|
| 0515-442 | The Urban Experience                                 |
| 0515-413 | Urban Planning and Policy                            |
| 0515-406 | Qualitative Methods                                  |
| 0526-440 | Quantitative Methods                                 |
| 0515-444 | Social Change  |
| 0510-445 | Global Cities  |
| 0515-485 | Diversity in the City                                |
| 0526-441 | GIS Applications in Urban and Community Studies      |
| 4002-320 | Introduction to Multimedia: The Internet and the Web |

### Tracks

The urban and community studies program offers three distinct tracks, allowing students to focus their interests in one particular area. The urban and community development track investigates the role of public, private, and nonprofit organizations in how cities function, with an emphasis on topics such as housing, urban planning, neighborhood revitalization, and crime and justice. A



second track, communities in global perspective, is designed for students interested in regional economic and cultural issues within international settings. The third track, community: race, class, and gender, examines how political, economic, social, and environmental forces shape the life experiences of different subgroups. Special attention is paid to issues such as poverty, racial segregation, gender inequality, work and labor, and family life.

### Urban and community studies, BS degree, typical course sequence

| COURSE                               |  | QTR. CR. HRS. |
|--------------------------------------|--|---------------|
| <b>First Year</b>                    |  |               |
| 0515-442                             | The Urban Experience                                 | 4             |
| 0515-444                             | Social Change  | 4             |
| Choose one of the following courses: |  | 4             |
| 0515-210                             | Foundations of Sociology                             |               |
| 0510-210                             | Cultural Anthropology                                |               |
|                                      | Mathematics and Science Requirements‡                | 22            |
|                                      | Liberal Arts*  | 12            |
| 1105-051, 052                        | First-Year Enrichment                                | 2             |
|                                      | Wellness Education†                                  | 0             |
| <b>Second Year</b>                   |  |               |
| 0526-440                             | Quantitative Methods                                 | 4             |
| 0515-406                             | Qualitative Methods                                  | 4             |
| 0515-485                             | Diversity in the City                                | 4             |
| 0510-445                             | Global Cities  | 4             |
| 0515-413                             | Urban Planning and Policy                            | 4             |
| 4002-320                             | Introduction to Multimedia: The Internet and the Web | 4             |
|                                      | Liberal Arts*  | 24            |
|                                      | Wellness Education†                                  | 0             |
| <b>Third Year</b>                    |  |               |
| 0526-441                             | GIS Applications in Urban and Community Studies      | 4             |
|                                      | UCS Track  | 24            |
|                                      | General Education Electives                          | 20            |
|                                      | Cooperative Education or Internship (summer)         | Co-op         |
| <b>Fourth Year</b>                   |  |               |
|                                      | UCS Track  | 4             |
|                                      | General Education Electives                          | 12            |
|                                      | Senior Thesis  | 4             |
|                                      | Free Electives                                       | 20            |
| <b>Total Quarter Credit Hours</b>    |  | <b>184</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum.

## Additional information

### Cooperative education and field experience

Students will perform field work with government and not-for-profit agencies and organizations through summer- or quarter-long internships or co-op assignments.

### Accelerated dual degree option

The college offers an accelerated BS/MS program for students interested in pursuing advanced study. Students may obtain a BS degree in urban and community studies and an MS degree in science, technology, and public policy in five years. Students are encouraged to speak with an adviser to discuss planning for this option.

## Liberal Arts Exploration, Undeclared

<http://www.rit.edu/cla/exploration>

**John S. Smithgall, Program Director**  
(585) 475-2444, [jssgla@rit.edu](mailto:jssgla@rit.edu)

### Program overview

The liberal arts exploration program is an undeclared option designed to allow students to complete required liberal arts, mathematics, and science courses while actively pursuing career exploration and receiving individualized academic advising. Students may stay in the program for up to two years or 87 credit hours before they choose a major. This option offers students the flexibility and time to explore a variety of majors within the College of Liberal Arts without delaying their graduation.

Students will work closely with academic and faculty advisers to select courses each quarter based on ability, interests, and goals. Students will take on average 16 credits each quarter and may explore courses in any one of the college's degree programs. Through the exploration route, students may elect to complete a double major or multiple minors within the College of Liberal Arts.

## Curriculum

### Liberal arts exploration, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
|                                   | Liberal Arts*   | 20            |
|                                   | Mathematics and Science Requirements‡                           | 8             |
|                                   | Liberal Arts Electives**  | 12            |
| 1105-051, 052                     | First-Year Enrichment   | 2             |
| 0520-201                          | Career Exploration Seminar                                      | 1             |
|                                   | Wellness Education†   | 0             |
| <b>Second Year</b>                |   |               |
|                                   | Liberal Arts*   | 16            |
|                                   | Mathematics and Science Requirements‡                           | 12            |
| 4002-206                          | Web Foundations   | 4             |
|                                   | Liberal Arts Electives (chosen in consultation with an adviser) | 12            |
|                                   | Wellness Education†   | 0             |
| <b>Total Quarter Credit Hours</b> |   | <b>87§</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see Mathematics and Science General Education Curriculum.

§ Remaining degree requirements will be determined by selected major.

\*\* Liberal arts electives are chosen in consultation with an adviser.

## College of Liberal Arts

**James J. Winebrake**, BS, Lafayette College; MS, Massachusetts Institute of Technology; Ph.D., University of Pennsylvania—Dean; Professor

**M. Ann Howard**, BS, Cornell University; JD, Rutgers University—Senior Associate Dean; Professor

**Babak Elahi**, BA, San Diego State University; MA, University of California at San Diego; Ph.D., University of Rochester—Associate Dean; Associate Professor

**John S. Smithgall**, BA, Roberts Wesleyan College; MS, University of Rochester — Assistant Dean for Student Services

### Communication

**Patrick M. Scanlon**, BA, Albany State University; MA, Ph.D., University of Rochester—Department Chair; Professor

**Bruce A. Austin**, BA, Rider College; MS, Illinois State University; Ph.D., Temple University—Professor

**Keri Barone**, BA, MA, State University College at Brockport—Lecturer

**Grant C. Cos**, BA, University of Massachusetts at Amherst; MA, Emerson College; Ph.D., Kent State University—Associate Professor

**Andrea Hickerson**, BA, Syracuse University; MA, University of Texas at Austin; Ph.D., University of Washington—Assistant Professor

**Keith B. Jenkins**, BA, University of Arkansas; MA, Ph.D., Florida State University—Coordinator of Undergraduate Degree Programs; Associate Professor

**Mike Johansson**, MA, Syracuse University—Lecturer

**Ki-Young Lee**, BA, Hanyang University (South Korea); MA, Northwestern University; Ph.D., Michigan State University—Assistant Professor

**Hinda Mandell**, BA, Brandeis University; MA, Harvard University; Ph.D., Syracuse University—Assistant Professor

**Kelly Norris Martin**, BA, John Carroll University; MS, Ph.D., North Carolina State University—Assistant Professor

**David R. Neumann**, BA, Ithaca College; MA, Ph.D., Bowling Green State University—Coordinator of Undergraduate Minors, Concentrations, and Service Courses; Professor

**Elizabeth Reeves O'Connor**, BS, MS, Rochester Institute of Technology—Senior Lecturer

**Rudolph Pugliese**, BA, State University College at Oneonta; MA, State University College at Brockport; Ph.D., Temple University—Graduate Coordinator; Professor

**Jonathan E. Schroeder**, BA, University of Michigan; MA, Ph.D., University of California at Berkeley—William A. Kern Professor in Communications

**Xiao Wang**, BA, Beijing University of Aeronautics and Astronautics (China); MA, Marquette University; Ph.D., Florida State University—Assistant Professor

**Tracy R. Worrell**, BA, Otterbein College; MA, University of Cincinnati; Ph.D., Michigan State University—Assistant Professor

### Criminal Justice

**Laverne McQuiller Williams**, BS, Rochester Institute of Technology; JD, Albany Law School of Union University; MA, Buffalo State College; Ph.D., State University of New York at Buffalo—Department Chair, Associate Professor

**John M. Klofas**, BA, College of the Holy Cross; MA, Ph.D., State University of New York at Albany—Professor

**John McCluskey**, BA, MA, Ph.D., State University of New York at Albany—Associate Professor

**Cynthia Perez McCluskey**, BA, University of California at Irvine; MA, Ph.D., State University of New York at Albany—Associate Professor

**Judy Porter**, BA, University of Northern Colorado; MA, New Mexico State University; Ph.D., University of Nebraska at Omaha—Field Experience Director; Assistant Professor

**Christopher Schreck**, BA, University of Florida; MA, University of Arizona; Ph.D., Pennsylvania State University—Undergraduate Coordinator; Professor

**Jason Scott**, BS, Roberts Wesleyan College; MA, Ph.D., State University of New York at Albany—Associate Professor

**Tony Smith**, BA, MA, Ph.D., State University of New York at Albany—Assistant Professor

### Economics

**Michael J. Vernarelli**, AB, University of Michigan; MA, Ph.D., State University of New York at Binghamton—Department Chair; Professor

**Amit Batabyal**, BS, Cornell University; MS, University of Minnesota; Ph.D., University of California at Berkeley—Arthur J. Gosnell Professor in Economics

**Bharat Bhole**, BA, MA, University of Mumbai (India); Ph.D., University of Southern California—Associate Professor

**Jeffrey Burnette**, BA, State University of New York at Albany; MA, Ph.D., State University of New York at Buffalo—Senior Lecturer

**Shatakshee Dhongde**, BA, University of Pune (India); MA, Gokhale Institute of Politics and Economics, Pune (India); Ph.D., University of California at Riverside—Assistant Professor

**Ayşe M. Erdogan**, BA, MA, Bogazici University (Turkey); MA, Ph.D., University of Minnesota—Assistant Professor

**Javier Espinosa**, BS, Miami University; MA, Ph.D., University of Maryland at College Park—Assistant Professor

**Bridget Gleeson Hanna**, B.Comm, University College at Galway (Ireland); MA, University College at Dublin (Ireland); MA, University of Wisconsin at Madison—Associate Professor

**Thomas D. Hopkins**, BA, Oberlin College; MA, Ph.D., Yale University—Professor

**Jeanette C. Mitchell**, BA, Westminster College; Ph.D., University of Utah—Associate Professor

**Vicar Valencia**, BS, University of the Philippines; MC, Curtin University of Technology (Australia); Ph.D., University of Melbourne (Australia)—Visiting Assistant Professor

**M. Jeffrey Wagner**, BA, University of Missouri; MA, Ph.D., University of Illinois—Associate Professor

### English

**Lisa M. Hermesen**, BA, Briar Cliff University; MA, University of Missouri at Columbia; Ph.D., Iowa State University—Department Chair; Associate Professor

**Sharon M. Beckford-Foster**, BA, MA, Ph.D., York University—Visiting Assistant Professor

**Doris A. Borrelli**, BA, Ph.D., Cornell University—Associate Professor

**Mary Lynn Broe**, BA, St. Louis University; MA, Ph.D., University of Connecticut—Caroline Werner Gannett Professor in the Humanities

**A. J. Caschetta**, BA, Nazareth College; MA, University of Missouri; Ph.D., New York University—Lecturer

**Babak Elahi**, BA, San Diego State University; MA, University of California at San Diego; Ph.D., University of Rochester—Associate Dean; Associate Professor

**Vincent F. A. Golphin**, BA, Sacred Heart College; MA, University of Dayton; Ph.D., Binghamton University—Assistant Professor

**Gail Hosking**, BA, Alfred University; MS, Iowa State University; MFA, Bennington College—Lecturer

**Julie Johannes**, BA, State University College at Geneseo; MA, University of Rochester—Lecturer

**Katherine Mayberry**, BA, Smith College; MA, Ph.D., University of Rochester—Professor

**David S. Martins**, BA, St. Olaf College; MA, Northern Arizona University; Ph.D., Michigan Technological University—Writing Director; Associate Professor

**Cecilia Ovesdotter Alm**, BA, Universitat Wien (Austria); MA, Ph.D., University of Illinois—Visiting Assistant Professor

**Amit Ray**, BA, State University of New York at Buffalo; MA, Ph.D., University of Michigan—Associate Professor

**Linda Reinfeld**, BA, University of California at Los Angeles; MA, Ph.D., State University of New York at Buffalo—Lecturer

**John Roche**, BA, University of Connecticut; MA, University College Dublin (Ireland); Ph.D., State University of New York at Buffalo—Associate Professor

**Sandra E. Saari**, AB, Carleton College; MA, Ph.D., Occidental College—Professor

**Richard Santana**, AA, LaGuardia Community College; BA, City College of New York; MA, Hunter College; Ph.D., City University of New York Graduate School and University Center—Associate Professor

**Laura Shackelford**, BA, University of Minnesota; MA, Ph.D. Indiana University—Assistant Professor

**Elena Sommers**, BA, MA, Moscow State Pedagogical University (Russia); MA, University of Notre Dame; Ph.D., University of Rochester—Senior Lecturer

**Thomas M. Stone**, BA, Northern Arizona University; MA, Bucknell University; Ph.D., University of Rochester—Lecturer

**Paulette M. Swartzfager**, BA, St. Mary's Dominican College; MA, Louisiana State University—Lecturer

**Sharon Warycka**, BA, University of Pennsylvania; MFA, Vermont College—Lecturer

**Dianna Winslow**, BA, MA, California State University—Visiting Assistant Professor

## Fine Arts

**Tina Lent**, BA, MA, University of California at Los Angeles; Ph.D., University of Rochester—Department Chair; Professor

**Carl J. Atkins**, BM, Indiana University; DMA, Eastman School of Music; MM, New England Conservatory—Professor

**Charles D. Collins**, AB, Rutgers University; MA, Ph.D., University of Iowa—Professor

**Peter W. Ferran**, BA, College of the Holy Cross; MA, Ph.D., University of Michigan—Professor

**Elizabeth Goins**, BA, University of Delaware; Ph.D., University of London—Assistant Professor

**Jonathan Kruger**, BA, Carthage College; MM, DMA, Eastman School of Music—Associate Professor

**Jessica Lieberman**, BA, University of Pennsylvania; Ph.D., University of Michigan—Assistant Professor

**Cyril Reade**, BFA, Université Laval (Canada); MFA, Concordia University; Ph.D., University of Rochester—Assistant Professor

**Michael E. Ruhling**, BA, Goshen College; MA, University of Notre Dame; MM, University of Missouri; Ph.D., Catholic University of America—Professor

**Edward Schell**, B.Mus.Ed., Westminster College; MM, Westminster Choir College—Associate Professor

## Modern Languages and Cultures

**Hiroko Yamashita**, BA, University of Southern Mississippi; MA, Ph.D., The Ohio State University—Department Chair; Associate Professor

**Sara Scott Armengot**, BA, Oberlin College; MA, Ph.D., Pennsylvania State University—Assistant Professor

**Philippe Chavasse**, BA, MA, Université Lyon 2 (France); Ph.D., University of Oregon—Associate Professor

**Elisabetta D'Amanda**, BA, State University of New York; MA, Nazareth College of Rochester; Ph.D. Middlebury College—Lecturer

**Diane J. Forbes**, BA, State University College at Geneseo; MA, Ph.D., Pennsylvania State University—Associate Professor

**Yukiko Maru**, BA, Keio University (Japan); MA, MS, University of Illinois at Urbana-Champaign—Senior Lecturer

**Masako Murakami**, BA, Portland State University; MA, The Ohio State University—Lecturer

**Ulrike Stroszeck-Goemans**, BA, University of Akron; MA, Auburn University; Ph.D. University of North Carolina at Chapel Hill—Lecturer

**Wilma Wierenga**, BA, Calvin College; MA, Middlebury College; MS, University of Rochester—Associate Professor

## History

**Rebecca A. R. Edwards**, BA, College of the Holy Cross; Ph.D., University of Rochester—Department Chair; Associate Professor

**Joseph M. Henning**, BA, Colorado College; MIA, Columbia University; Ph.D., American University—Associate Professor

**Michael Laver**, BA, Purdue University; MA, Ph.D., University of Pennsylvania—Assistant Professor

**Richard Newman**, BA, State University of New York at Buffalo; MA, Brown University; Ph.D., State University of New York at Buffalo—Associate Professor

**Eric Nystrom**, BA, MA, University of Nevada at Las Vegas; Ph.D., Johns Hopkins University—Assistant Professor

**Rebecca Scales**, BA, Hollins College; MA, University of Georgia; Ph.D., Rutgers University—Assistant Professor

**Corinna Schlombs**, Diploma, Bielefeld University (Germany); MA, Ph.D., University of Pennsylvania—Assistant Professor

## Philosophy

**John Capps**, BA, St. John's College; MA, Ph.D., Northwestern University—Department Chair; Associate Professor

**Jesús Aguilar**, BA, Hampshire College and Universidad Veracruzana (Mexico); MA, Universidad Nacional Autónoma de México; Ph.D., McGill University (Canada)—Associate Professor

**Silvia Benso**, Laurea, University of Torino (Italy); MA, Ph.D., Pennsylvania State University—Professor

**Evelyn Brister**, BA, Austin College; MA, Ph.D., Northwestern University—Assistant Professor

**Timothy H. Engström**, BA, MA, Ph.D., University of Edinburgh (Scotland)—Professor

**Wade L. Robison**, BA, University of Maryland; Ph.D., University of Wisconsin—Ezra A. Hale Professor in Applied Ethics

**John T. Sanders**, BA, Purdue University; MA, Ph.D., Boston University—Coordinator of Undergraduate Degree Program; Professor

**Brian Schroeder**, BA, Edinboro College; M.Div., Princeton Theological Seminary; MA, Ph.D., State University of New York at Stony Brook—Professor

**Evan Selinger**, BA, State University of New York at Binghamton; MA, University of Memphis; Ph.D., State University of New York at Stony Brook—Associate Professor

**David B. Suits**, BA, Purdue University; MA, Ph.D., University of Waterloo (Canada)—Professor

**Katie Terezakis**, BA, Central Connecticut State University; MA, Ph.D., New School for Social Research—Associate Professor

**Lawrence G. Torcello**, BA, State University College at Brockport; MA, Ph.D., State University of New York at Buffalo—Assistant Professor

### Political Science

**Sean Sutton**, B. Econ., University of Queensland (Australia); MA, Ph.D., University of Dallas—Department Chair; Associate Professor

**Paul H. Ferber**, BA, American University; M.Ph., Ph.D., George Washington University—Professor

**Joseph Fornieri**, BA, State University College at Geneseo; BA, Boston College; Ph.D., Catholic University of America—Professor

**Ryan J.B. Garcia**, BA, University of California, Los Angeles; M.Ph., Ph.D., Yale University—Assistant Professor

**Lauren Hall**, BA, State University of New York at Binghamton; MA, Ph.D., Northern Illinois University—Assistant Professor

**Edward Kannyo**, BA, Makerere University (Uganda); M.Ph., Ph.D., Yale University—Associate Professor

**Dongryul Kim**, BA, MA, Seoul University (South Korea); Ph.D., University of Virginia—Assistant Professor

**John A. Murley**, BA, University of Dallas; MA, Ph.D., Claremont Graduate and University Center—Professor

### Psychology

**Andrew M. Herbert**, BS, McGill University (Canada); MA, Ph.D., University of Western Ontario (Canada)—Department Chair; Associate Professor

**Suzanne Bamonto**, AA, Finger Lakes Community College; BA, State University College at Geneseo; Ph.D., University of Oregon—Associate Professor

**Joseph S. Baschnagel**, BA, MA, Ph.D., State University of New York at Buffalo—Assistant Professor

**Robert Bowen**, BA, MA, State University College at Brockport; M.Ed, Ph.D., University of Rochester—Lecturer

**Kirsten Condry**, BA, Swarthmore College; Ph.D., University of Minnesota—Undergraduate Program Coordinator; Assistant Professor

**Caroline M. DeLong**, BA, New College of Florida; MA, Ph.D., University of Hawaii—Assistant Professor

**Nicholas DiFonzo**, MA, Rider College; MA, Ph.D., Temple University—Assistant Professor

**John E. Edlund**, BS, MA, Ph.D., Northern Illinois University—Assistant Professor

**Roger W. Harnish**, BA, University of Rochester; MS, Ph.D., Oklahoma State University—Professor

**Rhiannon Hart**, BA, University of Washington; MS, Ph.D., University of Pittsburgh—Assistant Professor

**Jennifer Lukomski**, BA, Williams College; MA, Gallaudet University; Ph.D., University of Arizona—Associate Professor

**Scott P. Merydith**, BA, M.Ed., Ph.D., Kent State University—Professor

**Vincent Pandolfi**, BA, Lafayette College; MA, Ph.D., Hofstra University—Associate Professor

**Esa M. Rantanen**, BS, MS, Embry-Riddle Aeronautical University; MS, Ph.D., Pennsylvania State University—Associate Professor

**Lindsay Schenkel**, BA, St. John Fisher College; MA, Ph.D., University of Nebraska at Lincoln—Assistant Professor

**Tywanquila Walker**, BS, Vanderbilt University; Ph.D., Cornell University — Assistant Professor

### Science, Technology, and Society/Public Policy

**Deborah Blizzard**, BA, Smith College; MS, Ph.D., Rensselaer Polytechnic Institute—Acting Department Chair; Associate Professor

**Robert Alexander**, BS, Duke University; MS, MPA, Indiana University at Bloomington; Ph.D., Syracuse University—Visiting Assistant Professor

**Thomas Cornell**, BA, Rhodes College; MS, Georgia Institute of Technology; Ph.D., Johns Hopkins University—Professor

**Paul H. Ferber**, BA, American University; M.Ph., Ph.D., George Washington University—Professor

**Franz A. Foltz**, BS, MA, Pennsylvania State University; Ph.D., Rensselaer Polytechnic Institute—Associate Professor

**Ronil Hira**, BS, Carnegie Mellon University; MS, Ph.D., George Mason University—Associate Professor

**M. Ann Howard**, BS, Cornell University; JD, Rutgers University—Sr. Associate Dean; Professor

**William A. Johnson, Jr.**, BA, MA, Howard University—Distinguished Professor

**Christine Keiner**, BA, Western Maryland College; Ph.D., Johns Hopkins University—Associate Professor

**Robert J. Paradowski**, BS, Spring Hill College; MA, Brandeis University; Ph.D., University of Wisconsin—Professor

**Richard Shearman**, BA, Western State College of Colorado; MS, Eastern New Mexico University; Ph.D., State University of New York College of Environmental Science and Forestry—Associate Professor

**James J. Winebrake**, BS, Lafayette College; MS, Massachusetts Institute of Technology; Ph.D., University of Pennsylvania—Dean; Professor

### Sociology and Anthropology

**Christine Kray**, BA, New Mexico State University; Ph.D., University of Pennsylvania—Department Chair; Associate Professor

**Brian P. Barry**, BA, St. John Fisher College; M.Sc., Ph.D., Syracuse University—Associate Professor

**Conerly Casey**, BA, University of Vermont; MA, Ph.D., University of California at Los Angeles—Associate Professor

**Kijana Crawford**, BA, Tougaloo College; MSW, Atlanta University; MA, Ed.D., University of Rochester—Associate Professor

**Paul F. Grebinger**, BS, Columbia University; Ph.D., University of Arizona—Professor

**Benjamin N. Lawrance**, BA, MA, London University; MA, Ph.D., Stanford University—Barber B. Conable Chair in International Studies; Associate Professor

**Uli Linke**, BA, Macalester College; MA, Ph.D., University of California at Berkeley—Professor

**William D. Middleton**, BA, University of California at San Diego; MA, San Francisco State University; Ph.D., University of Wisconsin at Madison—Assistant Professor

**Martha Morgan**, SB, Massachusetts Institute of Technology; MA, Ph.D., University of Arizona—Assistant Professor

**Jessica W. Pardee**, BA, MA, PhD,  
Tulane University—Assistant  
Professor

**Vincent Serravallo**, BA, State  
University College at Oswego; MA,  
University of Kansas; Ph.D., City  
University of New York Graduate  
Center—Associate Professor

**Danielle Taana Smith**, BA,  
Dartmouth College; MBA, Saint  
Martin's College; Ph.D., University  
of South Carolina—Associate  
Professor

**Robert C. Ulin**, BA, Whittier  
College; MA, Ph.D., New School  
for Social Research—Professor

**Jason T. Younker**, BA, Cameron  
University; M.Ed., Oklahoma City  
University; MS, Ph.D., University  
of Oregon—Assistant Professor

## Distinguished Professorships

### College of Liberal Arts

**Caroline Werner Gannett  
Professorship in the Humanities**  
Established: 1974

Donor: Mrs. Frank E. Gannett  
Purpose: To perpetuate Mrs.  
Gannett's lifelong interest in  
education, especially in those fields  
of study that have a humanistic  
perspective  
Held by: Mary Lynn Broe

**Arthur J. Gosnell Professorship  
in Economics**

Established: 1985  
Donor: Family and friends of  
Arthur J. Gosnell  
Purpose: To perpetuate the  
memory of Arthur J. Gosnell  
through recognition of the  
importance of good teaching in  
economics and by facilitating  
research into public policy  
questions  
Held by: Amit Batabyal

**Ezra A. Hale Professorship in  
Applied Ethics**

Established: 1989  
Donors: William B. and Patricia  
F. Hale and Lawyers Cooperative  
Publishing Company  
Purpose: To establish a permanent  
memorial to a long-time and  
valued friend of RIT, Ezra A. Hale,  
and to provide instruction in  
applied ethics in keeping with his  
beliefs in sportsman-like conduct,  
fair play and honesty  
Held by: Wade L. Robison

**William A. Kern Professorship  
in Communication**

Established: 1971  
Donor: Rochester Telephone  
Corporation  
Purpose: To commemorate the  
100th anniversary of that company  
and to provide a memorial for a  
former president of the company  
and a man who served as an RIT  
trustee from 1959 to 1964  
Held by: Jonathan E. Schroeder

**Barber B. Conable Jr. Professorship  
in International Studies**

Established: 2004  
Donor: The Starr Foundation  
Purpose: To honor the late  
statesman and former World Bank  
President and ensure that Barber  
Conable's legacy of principled  
and innovative leadership in the  
national and international arenas  
will be preserved for all time.  
Held by: Benjamin N. Lawrance



# Center for Multidisciplinary Studies

James Myers, Director

[www.rit.edu/cms](http://www.rit.edu/cms)

## Programs of Study

### Bachelor of Science degree in:

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| Applied Arts and Science | 132 |
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### Associate of Applied Science in:

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| Applied Arts and Science | 133 |
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| Business Administration | 133 |
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| Human Resource Administration | 134 |
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### Certificates in:

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| Computer Graphics | 133 |
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| Human Resource Development | 134 |
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| International Logistics and Transportation | 134 |
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| Management Development | 135 |
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| Manufacturing Technology* | 135 |
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| Organizational Change and Leadership | 136 |
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| Public Relations** | 136 |
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| Quality Management | 137 |
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| Small Business Management | 137 |
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| Technical Communication† | 137 |
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### Diplomas in:

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| Applied Arts and Science | 133 |
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|                         |     |
|-------------------------|-----|
| Management Development‡ | 135 |
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\*The manufacturing technology area of study includes certificates in computer-aided drafting, fundamentals of manufacturing management, manufacturing processes, and robotics.

\*\* The public relations area of study includes certificates in professional writing and graphic communication.

† The technical communication area of study includes certificates in basic technical communication and advanced technical communication.

‡ The management development diploma includes options in general management, human resources administration, and marketing.

Through the Center for Multidisciplinary Studies, students interested in more than one area of study have the option of creating personalized undergraduate programs directly related to their interests and aspirations. The diverse nature of this degree program values student's ideas and provides a multidisciplinary approach to learning that can be applied to the professional environment.

Like the center itself, students participating in the multidisciplinary studies program are anything but typical. Some are adults with families and careers attending classes online or at night, while others are full-time undergraduate students with nontraditional ideas about what they want in a college degree.

## Admission requirements

For information on undergraduate admission, including freshman and transfer admission guidelines, please refer to the Undergraduate Admission section of this bulletin.

**Enrollment policies:** The center allows a student to enroll in any course for which he or she has sufficient background. Many courses have prerequisites that students are expected to meet before enrolling. Academic advisers are available throughout the year to answer questions regarding course or program choices.

In support of and in compliance with RIT's policy of assuring competency in written communication, all students matriculated in a BS degree program must satisfy a writing competency requirement. Information about this requirement, and the various methods for satisfying it, is available at the CMS office or by visiting the center's website.

Students matriculated in the center's baccalaureate degree program are expected to complete the degree within seven years.

## Assessment of prior learning and credit by experience

Students with substantial work experience in a specific field may receive academic credit for their life experience. Their adviser will assist them in identifying and preparing the appropriate documentation to prove that their experience is at least equivalent to the breadth and depth of a college-level course. These materials, presented as portfolios of prior learning experience, are reviewed by faculty members within the center. There is a \$150 fee per quarter credit hour for any credit awarded through the assessment.

## Military experience

Students who have previously served in the armed forces and participated in any number of training programs may be eligible to receive credit for their responsibilities through the American

Council of Education (ACE). Students should contact Veterans Enrollment Services at (585) 475-6641 or mskecr@rit.edu for an evaluation and recommendation of college credit for their military experience. RIT also is an institutional member of the Service-members Opportunity Colleges (SOC), which is a consortium of more than 1,500 colleges and universities that provide educational opportunities for service members and their families. SOC is funded by the Department of Defense and managed by the Defense Activity for Non-Traditional Education Support (DANTES).

### Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

### Faculty

Full- and part-time faculty members use their extensive industry experiences to guide their classroom instruction. Our faculty are selected for their professional competence, academic background, and teaching ability.

### Cooperative education

While cooperative education and/or an internship experience are not required for the BS in applied arts and science degree, they are encouraged. Cooperative education gives students the opportunity to apply classroom-based knowledge to real world situations, where they gain experience working on and solving problems in industry.

### Advising

The center's faculty and academic advisers are experienced and trained across academic disciplines. They help match educational and career goals with an appropriate program of study. With an adviser's help, each program begins by taking into account what the student already knows and has accomplished. For example, college credits earned at RIT or other accredited institutions are reviewed to see how they might be applied to the program of study; professional certifications and experiences are evaluated for the possibility of receiving credit; and credits may be earned (by examination, portfolio reviews, or other documentation) for college-level learning that was gained on the job or through other educational experiences.

### Academic enrichment

**Honors Program:** Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admissions process.

**Study Abroad:** RIT encourages all students to consider a study abroad program. Students may study full time at a variety of host schools and are able to select both courses in their majors and/or liberal arts classes. The Study Abroad Office has information about foreign study options and opportunities.

**Minors:** RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

### Special opportunities

**Graduate study:** CMS offers a customizable graduate degree in professional studies. Please refer to the *Graduate Bulletin* or the college's website for more information.

**Online learning:** The center offers a variety of courses through online learning. Students have the option of completing certificates, diplomas, and AAS and BS degrees online. This option allows students flexibility in completing their courses while maintaining a class atmosphere through online discussions via chat/e-mail conferencing. Online learning courses use textbook readings, assignments, and exams to deliver course work. Students have access to instructors by e-mail, computer, telephone, or individual appointments.

## Applied Arts and Science, BS

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[www.rit.edu/cms](http://www.rit.edu/cms)

**Center for Multidisciplinary Studies**  
**(585) 475-2234, [cms@rit.edu](mailto:cms@rit.edu)**

### Program overview

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The Center for Multidisciplinary Studies offers students the opportunity to create individualized undergraduate programs of technical and professional study through its applied arts and science program. In this program, students work closely with faculty and advisers to design unique, multidisciplinary plans of study that combine several areas of professional knowledge.

The applied arts and science program is particularly appropriate for individuals who have prior college-level learning, are interested in changing majors, have unique ideas about how they want to design their academic areas of study, or want to prepare themselves for a career that requires skills and expertise from several disciplines.

### Curriculum

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The applied arts and science program is available as a bachelor of science program, an associate of applied science program, or as a diploma.

**Bachelor of science (BS) degree:** 180 credit hours total; 90 core credits in general education plus 90 credits in two to four areas of concentration

**Associate of applied science (AAS) degree:** 90 credit hours total; 52 core credits in general education plus 38 credits in one to two areas of concentration

**Diploma:** 36 credit hours; one area of concentration

Diploma, AAS, and BS degrees are available to full-time day students, part-time evening students, and online students. These degrees allow students to pursue several different professional and technical areas of study, selected specifically to meet individual career and personal goals.

For their professional concentrations, students may draw upon a wealth of educational resources from across RIT's colleges and departments. Examples of professional concentrations include:

#### Business/management focus

- Management
- Quality management
- Health systems administration
- Project management
- International logistics and transportation

#### Computer/technical focus

- Applied computing
- Technical communications
- Computer science studies
- Engineering technology studies
- Telecommunications
- Computer graphics
- Geographic information systems
- Mechanical technology

#### Liberal arts focus

- History
- Psychology studies
- Creative writing
- Cultural studies
- Foreign language

Students looking to complete the BS, AAS, or diploma online can choose from the following areas of professional concentration:

- Management
- Organizational change and leadership
- Health systems administration
- International logistics and transportation
- Computer graphics
- Project management
- Quality management
- Technical communications

No two applied arts and science programs will be exactly alike because each takes into account the student's previous learning and brings together a special combination of courses that are right for each student's career and professional development. For example, one individualized program might lead to a bachelor's degree with concentrations in information technology, graphic arts, and management, while another could lead to a bachelor's degree that combines the fields of technical communication and health systems administration.

As career plans evolve and the demands of their technical and professional fields change, students meet regularly with advisers to review and update plans of study.

## Applied Arts and Science, AAS

<http://www.rit.edu/cms>

### Program overview

The applied arts and science program offers students the opportunity to create individualized undergraduate programs of technical and professional study through three levels of study: a bachelor of science degree, an associate of applied science degree, and a diploma. Further information for all three levels can be found under the applied arts and science BS program.

## Applied Arts and Science, Diploma

The applied arts and science program offers students the opportunity to create individualized undergraduate programs of technical and professional study through three levels of study: a bachelor of science degree, an associate of applied science degree, and a diploma. Further information for all three levels can be found under the applied arts and science BS program.

## Business Administration, AAS

### Program overview

The associate degree in business administration includes core courses in organization and management, accounting, management, and business law. Approximately half of the credits in the program are earned through these professional courses. In addition, the program includes a broad spectrum of courses in communication, behavioral/social sciences, humanities, math, and science. Students must achieve a minimum GPA of 2.0 in order to be certified. The AAS degree in business administration is fully transferable into the bachelor of science degree in applied arts and science.

### Curriculum

#### Business administration, AAS degree, typical course sequence

| COURSE                     |                               | QTR. CR. HRS. |
|----------------------------|-------------------------------|---------------|
|                            | History or Fine Arts Elective | 4             |
| 3080-315                   | Legal Environment of Business | 4             |
|                            | Business Electives            | 12            |
| Total Quarter Credit Hours |                               | 20            |

## Computer Graphics, Cert.

### Program overview

Today's graphic communicators rely on computers for nearly every step of the creative process. This certificate's courses develop and enhance the computer graphic skills of students who find that their job responsibilities have broadened to include aspects of graphic design. The program will benefit technical communicators, administrators, public relations practitioners, educators, sales and marketing staff, and technical and business professionals who are called upon to design and produce effective brochures, advertising materials, presentations, proposals, flyers, and other communication products. In addition, this program provides an excellent transition path for practicing graphic designers who need to upgrade their skills and move into the arena of computer design.

Students develop skills in the use of a number of popular graphic design, illustration, presentation, photo manipulation, and Internet software programs. They learn to combine typography, images, and graphic elements into striking designs for both printed and online use and can develop a portfolio of professional-quality work.

## Curriculum

### Certificate in computer graphics

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 3088-271                          | Basic Computer Graphics                | 2             |
| 3088-371                          | Designing with Computers I             | 3             |
| 3088-372                          | Designing with Computers II            | 3             |
| 3088-373                          | Electronic Presentation Design         | 3             |
| 3088-381                          | Photographic Imaging with Computers I  | 3             |
| 3088-382                          | Photographic Imaging with Computers II | 3             |
| 3088-383                          | Introduction to Internet Design        | 3             |
| <b>Total Quarter Credit Hours</b> |  | <b>20</b>     |

A number of elective courses are available and may be substituted with the permission of the program chair. Examples include:

- 3088-428 Vector Illustration
- 3088-398 Effective Web Design I, II
- 3088-426 Designing for Print and Web
- 3088-398 Layout Design for Print
- 3088-398 Designing Web Graphics

Students not interested in taking an entire certificate program may take individual courses for which they have the proper prerequisites. Students must achieve a program GPA of at least 2.0 in order to be certified for completion or graduation.

## Human Resource Administration, AAS

<http://www.rit.edu/academicaaffairs/cms/undergrad/associate.html>

**Center for Multidisciplinary Studies**  
(585) 475-2234, [cms@rit.edu](mailto:cms@rit.edu).

### Program overview

The center offers an associate degree in human resources administration. The degree program includes a core group of business courses in organization and management, accounting, management, and business law. Approximately half of the credits in the degree program are earned through these professional courses. In addition, the program includes a broad spectrum of courses in communication, behavioral/social sciences, humanities, math, and science. Students must achieve a minimum GPA of 2.0 in order to be certified. The AAS degree in human resources administration is fully transferable into the bachelor of science degree in applied arts and science.

## Curriculum

### Human resource administration, AAS degree, typical course sequence

| COURSE                              |                               | QTR. CR. HRS. |
|-------------------------------------|-------------------------------|---------------|
| 0619-480                            | Human Resource Administration | 4             |
| 0626-234                            | Interviewing Techniques       | 4             |
| <i>Choose one of the following:</i> |                               |               |
| 3080-311                            | Business Law I                | 4             |
| 3080-315                            | Legal Environment of Business | 4             |
|                                     | Business Electives            | 8             |
| <b>Total Quarter Credit Hours</b>   |                               | <b>20</b>     |

## Human Resource Development, Cert.

### Program overview

The human resource development certificate blends the traditional human resource elements of interviewing, compensation, and benefits with the essentials of the organization as a whole—corporate culture dynamics and the challenges of learning how to create a collaborative learning environment for employees. From navigating employees through complex retirement packages to affirming that workers can expect personal attention if questions arise, these skills are used by the human resource department and all management-bound professionals.

## Curriculum

### Certificate in human resource development

| COURSE                            |                                 | QTR. CR. HRS. |
|-----------------------------------|---------------------------------|---------------|
| 3097-442                          | The Learning Organization       | 4             |
| 3097-431                          | Understanding Corporate Culture | 4             |
| 0626-234                          | Interviewing Techniques         | 4             |
| 0619-480                          | Human Resource Management       | 4             |
| 0626-390                          | Compensation and Benefits       | 4             |
| <b>Total Quarter Credit Hours</b> |                                 | <b>20</b>     |

## International Logistics and Transportation, Cert.

### Program overview

Logistics deals with managing the flow of goods from an organization's suppliers through its facilities and on to its customers. Successful logistics requires knowledge of such diverse fields as transportation, inventory management, warehousing, procurement and order processing, materials handling, packaging, supply chain management, product support, fulfillment, and customer service. Logistics also involves planning the arrival of raw materials, pre-manufactured assemblies, labor, and other resources at a manufacturing or assembly point; the warehousing and dispatch of products for sale; and the deployment of training, spare parts, support equipment, documentation, maintenance, and upgrades for equipment that is in the field. Independent third-party logistics suppliers have emerged to create a new and important service sector in the last decade.

Courses in this certificate program are offered through an online learning format only.

## Curriculum

### Certificate in international logistics and transportation

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 3081-451                          | Introduction to Logistics and Transportation | 4             |
| 3081-525                          | Strategic Logistics Management               | 4             |
| 3081-526                          | Logistic Law and Economics                   | 4             |
| <b>Total Quarter Credit Hours</b> |  | <b>12</b>     |

## Management Development Diplomas

### Program overview

The management development program has two components, the management certificate and the management diploma. The program is structured to first provide a broad foundation in applied general management and then tailor that foundation with focused study in a specialized field.

Students may take one or both parts of the program, and both may be completed in one academic year. Credits earned in the program can be applied to various degree programs. Students must achieve a minimum GPA of 2.0 in order to be certified for completion/graduation.

### Curriculum

Students in the management diploma program concentrate their studies in one of three areas: general management, marketing, human resource administration. The diploma is earned by completing 16 quarter credit hours in addition to the management certificate.

Courses applied toward a management diploma also may be counted as professional courses in appropriate degree programs. Students must achieve a minimum GPA of 2.0 in order to be certified for completion/graduation.

#### Diploma in general management

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| 3081-200, 201, 202         | Management Process (or approved alternative) | 12            |
| 3080-201                   | Financial Accounting                         | 4             |
| 3080-203                   | Managerial Accounting                        | 4             |
|                            | Business Elective                            | 4             |
| 3081-361                   | Marketing                                    | 4             |
| Total Quarter Credit Hours |  | 28            |

#### Diploma in marketing

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| 3081-200, 201, 202         | Management Process (or approved alternative) | 12            |
| 3081-361                   | Marketing                                    | 4             |
| 3081-261                   | Effective Selling                            | 4             |
| 3081-263                   | Advertising Principles                       | 4             |
|                            | Business Elective                            | 4             |
| Total Quarter Credit Hours |  | 28            |

#### Diploma in human resource administration

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| 3081-200, 201, 202         | Management Process (or approved alternative) | 12            |
| 0619-480                   | Human Resource Management                    | 4             |
| 0626-234                   | Interviewing Techniques                      | 4             |
| 3080-311                   | Business Law I                               | 4             |
|                            | Business Elective                            | 4             |
| Total Quarter Credit Hours |  | 28            |

## Management Development, Cert.

### Program overview

The management development certificate focuses on practical applications of management theory; management problems, solutions, and ideas; and personal development as an effective manager. In this program students associate with others who have similar career aspirations, job responsibilities, and challenging problems on the job. Through case studies, role play, simulations, and other instructional methods, students learn effective supervisory and management practices. Students must achieve a minimum GPA of 2.0 in order to be certified for completion/graduation.

### Curriculum

The certificate's three courses offer a comprehensive, integrated study of supervisory management with topics that cover effective motivation, decision making, team building, conflict resolution, problem solving, time and stress management, communication techniques and strategies, planning, organizing, staffing, performance appraisal, and leadership.

#### Certificate in management development

| COURSE                     |                        | QTR. CR. HRS. |
|----------------------------|------------------------|---------------|
| 3081-200                   | Management Process I   | 4             |
| 3081-201                   | Management Process II  | 4             |
| 3081-202                   | Management Process III | 4             |
| Total Quarter Credit Hours |                        | 12            |

## Manufacturing Technology Certificates

### Program overview

The manufacturing technology area of study has four certificates for students to choose from:

- computer-aided drafting,
- fundamentals of manufacturing management,
- manufacturing processes, and
- robotics.

### Curriculum

#### Certificate in computer-aided drafting\*

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| 0608-211                   | Engineering Graphics with CAD                     | 4             |
| 0614-262                   | Solid Modeling and Design (solid works)           | 4             |
| 0610-220                   | Design, Dimensioning, and Tolerance (solid works) | 4             |
| 0617-460                   | Computer-Aided Design (Unigraphics)               | 4             |
| Total Quarter Credit Hours |   | 16            |

\*Prerequisite: Computer Literacy



Certificate in fundamentals of manufacturing management\*

| COURSE                     |  | QTR. CR. HRS. |
|----------------------------|--|---------------|
| 0617-436                   | Engineering Economics†                   | 4             |
| 0617-440                   | Production and Operations Management I†  | 4             |
| 0617-441                   | Production and Operations Management II† | 4             |
| Total Quarter Credit Hours |  | 12            |

\* Prerequisites: College Algebra, Statistics, Computer Literacy  
† These courses are available online.

Certificate in manufacturing processes\*

| COURSE                     |                            | QTR. CR. HRS. |
|----------------------------|----------------------------|---------------|
| 0617-220                   | Manufacturing Processes I  | 4             |
| 0617-420                   | Manufacturing Processes II | 4             |
| 0617-471                   | Computer Numerical Control | 4             |
| Total Quarter Credit Hours |                            | 12            |

\* Prerequisites: Engineering Drawing, Computer Literacy

Certificate in robotics

| COURSE                     |                                       | QTR. CR. HRS. |
|----------------------------|---------------------------------------|---------------|
| 0618-231                   | Technical Programming I               | 4             |
| 0617-470                   | Controls for Manufacturing Automation | 4             |
| 0617-485                   | Robots in Manufacturing               | 4             |
| Total Quarter Credit Hours |                                       | 12            |

Organizational Change and Leadership, Cert.

Program overview

The organizational change and leadership certificate helps students understand corporate culture and develop the skills needed to manage organizational and individual change. Courses cover topics in leadership, corporate culture, change management, organizational behavior, and teams.

Curriculum

Certificate in organizational change

| COURSE                     |                                 | QTR. CR. HRS. |
|----------------------------|---------------------------------|---------------|
| 3097-430                   | Survey of Organizational Change | 4             |
| 3097-432                   | Managing Organizational Change  | 4             |
| 3097-431                   | Understanding Corporate Culture | 4             |
| 3097-435                   | Global Forces and Trends        | 4             |
| 3097-434                   | Change and Leadership Project   | 4             |
|                            | Elective                        | 4             |
| Total Quarter Credit Hours |                                 | 24            |

Public Relations Certificate

Program overview

Public relations is vital to virtually every business endeavor. Almost every organization employs individuals, either in-house or through public relations agencies, who can prepare press releases, brochures, newsletters, annual reports, point-of-purchase promotions, and other persuasive, informative materials in a variety of media formats. This program is offered online only.

Curriculum

The public relations area of study covers two key areas: graphic communication and professional writing. A set of core courses provides an introduction to public relations and teaches widely used principles and techniques of advertising, project management, and persuasion.

The graphic communication certificate (designed for non-artists) focuses on the components of the advertising process, the use of effective design principles in the preparation of layouts, and the combination of creative and technical skills to achieve design success.

The professional writing certificate provides specialized instruction in writing marketing materials, inbound and outbound publications, corporate-level communications, speeches, and scripts.

The certificates are for individuals who wish to enter the field of public relations or take on similar responsibilities, those who have been working in a particular aspect of public relations and wish to upgrade or broaden their skills, or those who have been performing public relations tasks for which they have had little formal preparation.

The prerequisite for the core courses is demonstration (by examination, portfolio, or transcript) of a command of standard written English.

The certificates may be completed in four quarters of part-time study. Students may earn one or both certificates. Students may also take individual courses.

Certificate in public relations-graphic communication

| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| Core Courses:                                     |  |               |
| 3088-350  | Introduction to Public Relations       | 2             |
| 3088-356  | Strategic Communications               | 2             |
| 3081-264  | Advertising Evaluation and Techniques  | 4             |
| 3088-348  | Managing the Project                   | 2             |
| 3088-355  | Coordinating Publication Production    | 2             |
| Electives*—Choose three of the following courses: |  | 9             |
| 3088-371  | Designing with Computers I             |               |
| 3088-372  | Designing with Computers II            |               |
| 3088-373  | Electronic Presentation Design         |               |
| 3088-381  | Photographic Imaging with Computers I  |               |
| 3088-382  | Photographic Imaging with Computers II |               |
| 3088-383  | Introduction to Internet Design        |               |
| 3088-374  | Designing with Corel                   |               |
| 3088-384  | Designing with QuarkXPress             |               |
| Total Quarter Credit Hours                        |  | 21            |

\* With adviser's approval

Certificate in public relations-professional writing

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| Core Courses:              |   |               |
| 3088-350                   | Introduction to Public Relations        | 2             |
| 3088-356                   | Strategic Communications                | 2             |
| 3081-264                   | Advertising Evaluation and Techniques   | 4             |
| 3088-348                   | Managing the Project                    | 2             |
| 3088-352                   | Writing for the Organization            | 2             |
| 3088-357                   | Media Relations                         | 2             |
| 3088-347                   | Promotional Writing                     | 2             |
| 3088-353                   | Scripting and Audio Video Presentations | 2             |
| 3088-354                   | Speechwriting                           | 2             |
| Total Quarter Credit Hours |   | 20            |

## Quality Management, Cert.

### Program overview

Poor quality in manufacturing and service can cost companies as much as 20 percent of revenue in rework, scrap, brand switching, and loss of goodwill.

The center's management-oriented certificate program focuses on quality as a priority. Developed in cooperation with industry, the courses can help students develop a total quality management environment to combine the theory and practice of statistical quality control with leadership, teamwork, and problem-solving concepts and skills. This program is offered online only.

### Curriculum

The certificate in quality management teaches the nuts and bolts of a quality organization, prepares students to introduce quality concepts to their organization, and teaches how to put quality principles to work. Overall, the certificate can prepare students to work as quality trainers, facilitators, team leaders, or managers at various levels of an organization.

#### Certificate in quality management

| COURSE                               |                                | QTR. CR. HRS. |
|--------------------------------------|--------------------------------|---------------|
| 3084-310                             | Introduction to Quality        | 4             |
| 3084-340                             | Quality Data Analysis          | 4             |
| 3084-410                             | Introduction to Lean Six Sigma | 4             |
| Choose one of the following courses: |                                | 4             |
| 3084-420                             | Statistical Quality Tools      |               |
| 3084-430                             | Management for Quality         |               |
| Total Quarter Credit Hours           |                                | 16            |

## Small Business Management, Cert.

### Program overview

The certificate program in small business management is designed for enterprising individuals who want to launch a new venture or improve an existing small business. It is especially appropriate for entrepreneurs, members of family-owned businesses, and key employees in companies with sales under \$2 million.

### Curriculum

The program's three courses are tightly integrated to provide a solid foundation in managing, marketing, and financing small businesses. The faculty includes academically qualified entrepreneurs who have managed their own small companies. This program is offered online only.

#### Certificate in small business management

| COURSE                     |                                       | QTR. CR. HRS. |
|----------------------------|---------------------------------------|---------------|
| 3081-221                   | New Venture Development               | 4             |
| 3081-222                   | Small Business Management and Finance | 4             |
| 3081-223                   | Small Business Marketing and Planning | 4             |
| Total Quarter Credit Hours |                                       | 12            |

## Technical Communication Certificates

### Program overview

In this age of rapidly expanding technologies, technical communication is an essential, challenging, and rewarding profession, one that can be practiced within an organization or outside through independent contracting.

As uses of technology expand, so does the need for communicators skilled in conveying many kinds of information, in many forms, to diverse audiences. Industrial, business, scientific, medical, and nonprofit sectors have recognized the importance of communication to their success. The ability to present information effectively—in forms such as manuals, brochures, data sheets, promotional materials, systems documentation, reports, trade and professional journals, websites, and videos—is a highly valued asset in today's workplace.

### Curriculum

This area of study offers advanced and basic certificates in technical communication and provides a strong, practical foundation in technical communication skills. The certificates may be completed in three quarters and may also be taken simultaneously. Both certificate programs are taught online only.

#### Certificate in advanced technical communication

| COURSE                     |                                     | QTR. CR. HRS. |
|----------------------------|-------------------------------------|---------------|
| 3088-544                   | Writing in the Sciences             | 4             |
| 3088-477                   | Managing Media Presentations        | 4             |
| 3088-475                   | Writing Software User Documentation | 4             |
| Total Quarter Credit Hours |                                     | 12            |

Technical Information Design (3088-510), Technical Proposals (3088-514), Technical Procedures (3088-512), and Document Usability (3088-511) may be substituted for one of the required advanced courses with permission of the program chair. In addition, various special topics courses (3088-398) offered in areas such as technical journalism, usability, and communications management may be substituted for one of the required courses with permission of the program chair. A course used as a substitute may not be used to fulfill the requirements of the certificate in basic technical communication. Students must achieve a minimum GPA of 2.0 to be certified for completion or graduation.

#### Certificate in basic technical communication

| COURSE                               |                                 | QTR. CR. HRS. |
|--------------------------------------|---------------------------------|---------------|
| 3088-333                             | Technical Writing and Editing   | 4             |
| 3088-363                             | Technical Document Design       | 4             |
| Choose one of the following courses: |                                 | 4             |
| 3088-361                             | Research Techniques             |               |
| 3088-476                             | Instructional Design Principles |               |
| Total Quarter Credit Hours           |                                 | 12            |

Prerequisites include a command of standard written English as demonstrated by examination, portfolio, or transcripts.

## Center for Multidisciplinary Studies

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**James Myers**, BS, MS, Rochester Institute of Technology; Ph.D., University of Michigan—Director; Professor

**Mary Boyd**, BA, Earlham College; MS, University of Iowa—Associate Director; Associate Professor

**Thomas Hanney**, Certificate, Rochester Institute of Technology; BA, St. John Fisher College; MPA, State University College at Brockport—Lecturer

**Guy Johnson**, BS, Pennsylvania State University; MS, Syracuse University—Professor

**Samuel McQuade III**, BA, Western Washington University; MPA, University of Washington; Ph.D., George Mason University—Graduate Program Coordinator; Professor

**Richard Morales**, BA, Michigan State University; MS, State University College at Brockport; MS, Ph.D., Syracuse University—Faculty Emeritus

**Thomas F. Moran**, BSME, California State Polytechnic College; MSME, California State College at Long Beach—Associate Professor

**Carol Romanowski**, BA, State University College at Plattsburgh; BS, MS, Ph.D., State University of New York at Buffalo—Associate Professor

# National Technical Institute for the Deaf

Gerald Buckley, President, NTID; Vice President and Dean, RIT

[www.ntid.rit.edu/](http://www.ntid.rit.edu/)

## Programs of Study

### Bachelor of Science degree in:

|                            |     |
|----------------------------|-----|
| ASL-English Interpretation | 146 |
|----------------------------|-----|

### Associate of Applied Science degrees in:

|                                    |     |
|------------------------------------|-----|
| ASL-English Interpretation         | 146 |
| Accounting Technology              | 147 |
| Administrative Support Technology  | 148 |
| Applied Computer Technology        | 149 |
| Applied Mechanical Technology      | 151 |
| Arts and Imaging Studies           | 152 |
| Automation Technologies            | 155 |
| Computer-Aided Drafting Technology | 158 |
| Laboratory Science Technology      | 162 |

### Associate of Occupational Science degrees in:

|  |     |
|--|-----|
| Applied Computer Technology              | 150 |
| Arts and Imaging Studies                 | 154 |
| Automation Technologies                  | 156 |
| Business Technology                      | 157 |
| Computer-Aided Drafting Technology       | 159 |
| Computer-Integrated Machining Technology | 160 |
| Laboratory Science Technology            | 163 |

### Associate of Science degrees in:

|                                    |     |
|------------------------------------|-----|
| Applied Computer Technology        | 148 |
| Applied Liberal Arts               | 151 |
| Business                           | 157 |
| Hospitality and Service Management | 161 |

### Certificates in:

|                           |     |
|---------------------------|-----|
| Deaf Cultural Studies/ASL | 161 |
| Performing Arts           | 163 |

The National Technical Institute for the Deaf (NTID) provides deaf and hard-of-hearing students with educational programs that lead to meaningful employment in business, industry, government, and education. NTID represents the world's first effort to educate large numbers of deaf and hard-of-hearing students within a college campus planned principally for hearing students. NTID's location benefits deaf and hearing students' academic, personal, social, and communication development. More than 1,300 deaf and hard-of-hearing students from across the United States, as well as from several U.S. territories and other countries, study and reside at RIT.

NTID provides deaf and hard-of-hearing students with technical and pre-professional training in more than 20 programs. An NTID education prepares students for technical careers in areas such as accounting technology, administrative support technology, applied computer technology, applied liberal arts, applied mechanical technology, arts and imaging studies, business, business technology, computer-aided drafting technology, computer-integrated machining technology, hospitality and service management, and laboratory science technology. NTID also offers a degree program in American Sign Language-English interpretation. Over the past five years, 93 percent of NTID graduates who chose to enter the workforce have found employment.

Deaf and hard-of-hearing students who take courses or matriculate into one of RIT's other colleges may request educational access services, which typically include sign language interpreting services, FM systems, notetaking, or real-time captioning services. Alternative services are provided as required. Students also may request educational support services such as tutoring, personal and career counseling, and academic advising.

In support of its national mission, NTID has research, teaching, and learning activities that focus on understanding and enhancing the educational, social, and communication opportunities for deaf and hard-of-hearing individuals. NTID provides services and programs that enhance teaching and learning within the NTID community and beyond via broad-based research activities and dissemination strategies, curriculum development, instructional design and evaluation, and instructional media services.

### NTID's academic programs

NTID provides student-oriented academic programming to ensure a rich, coherent set of educational experiences for students. NTID offers Associate+Bachelor's degree programs and career-focused associate degrees as well as general education course work in a variety of disciplines.

**Associate+Bachelor's degree programs:** NTID offers Associate+Bachelor's degree and pre-baccalaureate programs. Associate

in science (AS) degrees in applied computer technology, applied liberal arts, business, and hospitality and service management provide seamless transition to baccalaureate programs in the B. Thomas Golisano College of Computing and Information Sciences, the College of Liberal Arts, the E. Philip Saunders College of Business, and the College of Applied Science and Technology, respectively. In addition, several of our associate in applied science (AAS) degree programs, such as administrative support technology, applied mechanical technology, and laboratory science technology, provide students with the necessary skills to enroll in other RIT colleges. Pre-baccalaureate studies programs are designed to prepare qualified students for several specific bachelor's degree programs in other colleges of RIT.

**Career-focused programs:** Numerous career-focused options and concentrations, designed to lead directly to employment, are available within the following areas: accounting technology, administrative support technology, applied computer technology, arts and imaging studies, business technology, computer-aided drafting technology, computer-integrated machining technology, and laboratory science technology. Laboratories are equipped with the latest technology and maintain a curriculum that represents current industry trends and requirements, based on routine feedback from business and industry advisory groups. These programs lead to the associate degree in applied science and the associate degree in occupational studies. All career-focused programs require at least one 10-week cooperative education experience.

**General education:** NTID offers an array of general education courses to a broad-based population of NTID students, including those who are undecided about, or under-prepared for, matriculation into a program. In addition, NTID offers a degree program in American Sign Language-English interpretation and provides a comprehensive sign language education program for students, faculty, and staff members.

**Support and access services:** NTID provides comprehensive services in support of students enrolled in more than 200 baccalaureate or graduate programs in RIT's other colleges. The educational support services available include academic advising, faculty tutoring, audiological assistance, speech-language services, and personal and career counseling. In addition, NTID provides access services that are based upon each student's educational need and typically include sign language interpreting services, FM systems, notetaking, or real-time captioning services. Alternative services also will be provided as required. Through support and access services, students who are deaf are able to participate in all aspects of the RIT community.

## Educational opportunities through NTID

### Associate+Bachelor's degree programs

Associate+Bachelor's programs offered through NTID prepare qualified students to seamlessly enroll in baccalaureate degree programs in other colleges of RIT.

**Associate in science degree (AS):** Certification at this level requires the completion of 45–50 quarter credit hours of technical course work and 40–45 quarter credit hours in general education courses offered through the College of Liberal Arts, mathematics and science courses offered through the College of Science, and other courses as appropriate to the degree. This degree prepares students to enter and complete a bachelor's program in the B. Thomas Golisano College of Computing and Information Sciences, the College of Liberal Arts, the E. Philip Saunders College of Business, or the College of Applied Science and

Technology. Admission to these programs is available in the fall quarter only.

**Pre-baccalaureate studies:** The pre-baccalaureate studies program is available as a bridge to baccalaureate degree programs for students who are accepted by NTID and are close to, but not fully ready for, direct entry into a baccalaureate-level program. Pre-baccalaureate programs are offered through arts and imaging studies, liberal studies, science and mathematics, and engineering studies departments. The pre-baccalaureate studies career exploration option is available to students who are undecided as to their program of study.

The pre-baccalaureate studies program is appropriate for students who need to further develop mathematics, English, or discipline-related skills. This academic option is flexible and individualized and enables students to focus on needed skills while they progress toward their chosen field of study. Students take courses taught by NTID instructional/support faculty along with entry-level courses taught in other RIT colleges.

### Career-focused programs

Career-focused programs offered through NTID lead to the associate in applied science degree or the associate in occupational studies degree. These programs permit students to enter their careers directly.

**Associate in applied science degree (AAS):** Certification at this level requires 57–69 quarter credit hours of technical instruction. In addition to satisfactorily completing technical courses, students must complete 20 quarter credit hours in general education courses offered through the College of Liberal Arts as well as other required quarter credit hours as determined by the program of study. In some programs, this degree prepares students to apply for entry to bachelor's degree programs in other colleges of RIT.

**Associate in occupational studies degree (AOS):** Certification at this level requires 57–69 quarter credit hours of technical instruction. In addition to satisfactorily completing technical courses, students must complete a specific number of quarter credit hours in the NTID general education curriculum, as determined by the program of study.

### Career exploration studies

The career exploration studies program offers opportunities for students to collect information about NTID majors and career paths before deciding on a program of study. It also assists students who need additional academic preparation and study in order to be ready for their chosen major.

This option allows students the opportunity to do an intensive career search while they develop a better understanding of themselves through career and personal counseling; decision-making classes; intensive sampling of various majors at RIT/NTID; use of a computer guidance program in the Career Resource and Testing Center; interest testing; and interpretation of aptitude, ability, and achievement tests. In addition, students take courses in mathematics, English, social and physical sciences, the humanities, and deaf cultural studies/American Sign Language (ASL) as well as technical sampling courses or experiences. Some students also may take introductory courses in specific programs of study and general education courses and be involved in extracurricular or other college-oriented activities.

A career development counselor is assigned to help students evaluate the information and make career decisions. Students can remain in the career exploration studies program for one to three academic quarters. Additional quarters in the program are possible with the approval of the program director.



## Educational opportunities in other RIT colleges

In addition to NTID's programs, qualified deaf and hard-of-hearing students may enroll as baccalaureate or master's degree students in one of the more than 200 professional programs offered through RIT's other colleges and institutes: College of Applied Science and Technology, E. Philip Saunders College of Business, B. Thomas Golisano College of Computing and Information Sciences, Kate Gleason College of Engineering, College of Health Sciences and Technology, College of Imaging Arts and Sciences, College of Liberal Arts, Center for Multidisciplinary Studies, College of Science, and Golisano Institute for Sustainability. NTID students also may take classes in the other RIT colleges individually, on a course-by-course basis.

Each of RIT's colleges has NTID instructional/support faculty that provide services for deaf and hard-of-hearing students. These services include tutoring, advising, and personal and career counseling. The department of access services provides sign language interpreting

services, FM systems, notetaking, and real-time captioning services for deaf and hard-of-hearing students taking courses in the other eight colleges of RIT and for campus activities outside the classroom. Alternative services also will be provided as required.

Deaf and hard-of-hearing students who wish to enroll in a program in another RIT college must meet that college's admission requirements. Furthermore, deaf and hard-of-hearing students supported by NTID also must meet NTID admission requirements, submit an audiological record completed by a certified audiologist (CCC-A), and complete standard RIT admission forms. Please see the Admissions section for more information.

Qualified students may choose to enroll in courses taught through the other eight colleges of RIT for several reasons: as part of the elective requirements in their NTID programs; to complete their programs of study at NTID, then continue their education at another RIT college; to enter a program of another RIT college directly from high school; or to enroll directly into a program in one of RIT's colleges from another postsecondary program.

| CAREER-FOCUSED AND ASSOCIATE+BACHELOR'S DEGREE PROGRAMS OF NTID   |  | RELATED EDUCATIONAL PROGRAMS OF OTHER RIT COLLEGES   |   |   |
|---|--|--|---|---|
| Leading to associate degrees  |  | Leading to associate, bachelor's, or master's degrees in the other RIT colleges; students may request educational access services such as sign language interpreting services, FM systems, notetaking, or real-time captioning services. Alternative services also will be provided as required. |   |   |
| NTID PROGRAMS   | OTHER RIT COLLEGES   | OTHER RIT PROGRAMS   |   |   |
| <b>Applied Computer Technology</b><br>Concentrations:<br>• PC Technical Support<br>• Networking and Cyber Security<br>AS Program                              | College of Computing and Information Sciences  | • Computer Science<br>• Information Technology<br>• Networking Security and System Administration<br>• Information Security and Forensics  | • Game Design Development   | • Medical Informatics<br>• Software Engineering   |
| <b>Applied Mechanical Technology</b><br><b>Applied Liberal Arts</b>   | College of Applied Science and Technology<br>College of Liberal Arts   | • Mechanical Engineering Technology<br>• Advertising and Public Relations<br>• Criminal Justice<br>• Economics<br>• Journalism   | • Manufacturing Engineering Technology<br>• Museum Studies<br>• Philosophy<br>• Political Science<br>• Professional and Technical Communication   | • Psychology<br>• Public Policy<br>• Urban and Community Studies  |
| <b>Arts and Imaging Studies</b><br>Concentrations:<br>• Graphic Design<br>• Graphic Technology  | College of Imaging Arts and Sciences   | <b>School for American Crafts</b><br>• Ceramics/Ceramic Sculpture<br>• Glass<br>• Metalcrafts and Jewelry<br>• Woodworking and Furniture Design<br><b>School of Art</b><br>• Fine Arts Illustration<br>• Medical Illustration  | <b>School of Design</b><br>• 3D Digital Graphics<br>• Graphic Design<br>• Industrial Design<br>• Interior Design<br>• New Media Design and Imaging<br><b>School of Film and Animation</b><br>• Film and Animation<br>• Motion Picture Science | <b>School of Photographic Arts and Sciences</b><br>• Advertising Photography<br>• Biomedical Photographic Communication<br>• Fine Arts Photography<br>• Imaging and Photographic Technology<br>• Photojournalism<br>• Visual Media<br><b>School of Print Media</b><br>• Media Arts and Technology |
| <b>Automation Technologies†</b>   | College of Applied Science and Technology  | <b>School of Engineering Technology</b><br>• Mechanical Engineering Technology   | • Manufacturing Engineering Technology  | • Electrical/Mechanical Engineering Technology  |
| <b>Business Studies</b><br>Accounting Technology<br>Business<br>Business Technology<br>Administrative Support Technology                                      | College of Business, Center for Multidisciplinary Studies  | • Accounting<br>• Finance<br>• International Business<br>• Management  | • Management Information Systems<br>• Marketing<br>• New Media Marketing<br>• Human Resource Development  |   |
| <b>Computer-Aided Drafting Technology</b><br><b>Computer-Integrated Machining Technology</b><br>Electives:<br>• Machining<br>• Precision Optics Manufacturing | College of Applied Science and Technology<br>College of Imaging Arts and Sciences<br>College of Applied Science and Technology | • Civil Engineering Technology<br>• Interior Design<br>• Manufacturing Engineering Technology  |   |   |
| <b>Hospitality and Service Management</b><br>Concentrations:<br>• Hotel and Resort Management<br>• Food Management  | College of Applied Science and Technology  | <b>School of International Hospitality and Service Innovation</b><br>• Hotel and Resort Management<br>• Food Management  |   |   |
| <b>Laboratory Science Technology</b>  | Center for Multidisciplinary Studies, College of Science   | • Applied Arts and Science<br>• Environmental Management and Technology  | • Biology<br>• Biotechnology  | • Chemistry<br>• Environmental Science  |

Note: In addition to the Associate+Bachelor's degree and career-focused programs noted above, NTID also offers pre-baccalaureate studies. This program is available as a bridge for qualified students accepted by NTID and interested in enrolling in another RIT college but not yet ready to enter a baccalaureate-level program.

† This program has been suspended. No new students will be admitted in 2011-2012.

# First-Year Experiences Programming

## NTID programs

Beginning with a summer orientation program, NTID provides a special array of curricular and co-curricular activities to help maximize each student’s potential for success in the first year. These experiences are designed to enhance students’ bonding with the community while providing time and support to select and enter into a major and/or progress within a career program.

First-year students qualified to enter NTID in the fall quarter are required to participate in a summer orientation program called the Summer Vestibule Program. This program includes:

- placement testing in English and mathematics
- orientation/transition to college life activities
- career sampling
- counseling
- application to a career-focused or Associate+Bachelor’s degree program, career exploration studies, pre-baccalaureate studies, or baccalaureate program

This summer program is followed by additional first-year experiences that allow students to work with a counselor to select courses and activities that meet individual goals and needs. Components of first-year experiences programming include:

- enrollment in the Freshman Seminar course during the first quarter
- completion of preparatory courses, as needed
- work with an academic adviser and counselor
- participation in career exploration and introductory courses, when and if appropriate
- completion of degree requirements, as appropriate
- participation in co-curricular and mentoring activities of choice
- if undecided, declaring a major and degree level by the end of the first year

## Other colleges of RIT

Students who qualify to enter baccalaureate programs in other colleges of RIT participate in the first-year programming and activities designed by the affiliated instructional/support faculty and the colleges. Most first-year students enrolled in colleges other than NTID are required to:

- participate in the summer orientation options and in RIT’s My-Orientation program as well as NTID’s support service orientation workshops
- enroll in the First-Year Enrichment program

- participate in opportunities to explore and select a major, if needed
- work with an academic adviser and counselor

# NTID’s General Education Curriculum

At NTID and in the other colleges of RIT, education in a chosen program of study and preparation for a career are complemented by study in general education. The NTID general education curriculum fosters a spirit of lifelong learning and inquiry. Courses in science, mathematics, English, the social sciences, the humanities, and deaf cultural studies/ASL are designed to provide students with the opportunity to develop knowledge, intellectual and communication skills, and an understanding of the creative process that will enable them to actively shape their personal, professional, and community lives.

The general education curriculum satisfies the general education distribution requirements for the AOS programs offered at NTID, prepares students for completing the College of Liberal Arts courses required for AAS and AS programs and, along with other curricula offered by NTID, prepares qualified students to pursue course work and degrees in other RIT colleges.

## Degree requirements

Students must complete a minimum number of general education credits for each degree. The general education distribution requirements chart shows the credit hour and distribution requirements for the AS, AAS, and AOS degrees. (See the course sequences for individual programs of study.)

## Level of courses in the curriculum

Degree requirements must be completed at the appropriate level in the curriculum. There are four levels of courses in the NTID general education curriculum: introductory (A), fundamental (B), intermediate (C), and bridging (D). Students not yet prepared for courses required for their degree begin with courses at a lower level and enter required courses when they have completed the prerequisites.

## Course placement

The goal of assessment for course placement is to ensure that each student begins his or her study in the appropriate course. Assessment for initial course placement will be made during summer orientation in the following areas: mathematics, American Sign Language, and writing and reading.

## General education distribution requirements

| Degree | Freshman Seminar | Math and Science | Deaf Cultural Studies/ASL1 | Language and Literature | Humanities           | Social Sciences      | Capstone |
|--------|------------------|------------------|----------------------------|-------------------------|----------------------|----------------------|----------|
| AS     | 2                | 6                |                            | Liberal Arts (CLA)-82   | Liberal Arts (CLA)-8 | Liberal Arts (CLA)-8 |          |
| AAS    | 2                | 6                | 3                          | Liberal Arts (CLA)-43   | Liberal Arts (CLA)-8 | Liberal Arts (CLA)-8 | 34       |
| AOS    | 2                | 6                | (3)1                       | 12                      | 65                   | 65                   | 34       |

1 The deaf cultural studies/ASL requirement can be satisfied by taking three credits in American Sign Language or an identified deaf cultural studies course. The 3-credit course taken to fulfill the deaf cultural studies/ASL requirement can fulfill three credits in either the humanities or social sciences, depending upon which discipline offers the course selected.

2 Students earning the AS degree are required to take Writing Seminar (0502-227) and one 4-credit Arts of Expression (0505-319) course.

3 Students earning the AAS degree are required to take Writing Seminar.

4 The capstone requirement can be satisfied by taking either Capstone: Society and Technology (0882-297) or Capstone: Explorations in Social Responsibility (0880-294). Students in AAS Associate+Bachelor’s degree programs, only, may take Science, Technology, and Values (0508-211) as a substitute, providing they take two additional courses to satisfy the College of Liberal Arts humanities requirement.

5 Students earning AOS degrees are required to complete one C-level course in communication studies (Group Dynamics and Effective Teams, Interpersonal Relationships, or Organizational Communication and the Deaf Employee). These credits may be used to satisfy the humanities or social sciences requirements.

## Course requirements

**Freshman Seminar:** Freshman Seminar is required for all students entering the first year of college. This course helps students identify personal, social, and academic skills that lead to a successful college experience.

**Science and mathematics:** All students take science and mathematics courses that foster the reasoning and problem-solving skills that are a part of the foundation of their technical studies. In addition, the curriculum provides an opportunity to develop the mathematical and scientific literacy demanded in today's society.

Students are required to complete three credits in mathematics and three credits in science at the fundamental (B) level or higher. Some students will have additional requirements established by their technical programs. (See the course sequences for individual technical programs.)

**English language:** The English program is designed to enable students to develop English literacy skills. The program includes course sequences at four levels (A-D), which offer instruction in reading and writing. Courses at levels A-C of this program provide the English literacy skills needed for career-focused associate degrees. However, there are two course sequences at level C: Career English and Intensive English. Career English is designed for students completing the AOS degree. Intensive English is designed for students who demonstrate strong potential for improving their skills sufficiently to access the College of Liberal Arts' writing curriculum required for the AAS and AS degrees. A grade of C is required at the completion of each Intensive English course in order to progress through the sequence, and each Intensive English course must be taken in conjunction with its co-requisite course. At no time may an Intensive English course be repeated. Level D courses prepare students to access the College of Liberal Arts' writing curriculum required for Associate+Bachelor's degree programs and baccalaureate programs.

Students who plan to graduate with the AOS degree are required to complete 12 credits of English at level C or higher. Students who enter NTID with English skills below the level required for their degree of choice will need to successfully complete additional courses before taking the required English courses.

**Social sciences and humanities:** The social sciences courses provide students with a broad exposure to key concepts and issues in anthropology, sociology, psychology, economics, and political science.

The humanities curriculum includes courses in communication studies, history, fine arts, performing arts, and philosophy. Students also have the opportunity to study foreign languages in the College of Liberal Arts. The communication studies curriculum offers courses to enhance students' understanding of the communication process and develop effective individual, group, professional, and cross-cultural communication skills based on linguistic background, communication preferences, and needs of a variety of audiences.

The performing arts curriculum includes performance and technical components. The curriculum makes use of NTID's Panara Theatre and a smaller experimental theater where students stage plays and performances and create their own works in American Sign Language and English. This curriculum provides a bridge to the BFA program in film/video/animation in the College of Imaging Arts and Sciences.

Each of the social sciences and humanities curricula have courses at three levels (B-D). Students who plan to graduate with

the AOS degree are required to complete six credits of social sciences courses and six credits of humanities courses at level C or higher. Students who, upon entry to NTID, place below level C in the social sciences/humanities will need to successfully complete courses at level B before taking courses at level C.

## Deaf cultural studies/American Sign Language

Students have an opportunity to study American Sign Language and learn about their heritage as deaf people through the deaf cultural studies/ASL curriculum. All students are required to complete one 3-credit course in deaf cultural studies or ASL at the fundamental (B) level or higher. Students who are not skilled in sign language are strongly encouraged to take additional ASL courses, and students proficient in ASL are encouraged to take advanced courses. Deaf cultural studies courses also satisfy the social sciences and humanities requirements.

## Capstone

All students at the AAS and AOS levels are required to complete a capstone course. This is an interdisciplinary course that applies the knowledge and skills acquired in the technical and general education courses to a selected topic, resulting in a team project and presentation. The capstone requirement can be satisfied by taking either Capstone: Society and Technology (0882-297) or Capstone: Explorations in Social Responsibility (0880-294). Students in AAS Associate+Bachelor's degree programs, only, may take Science, Technology, and Values (0508-211) as a substitute providing they take two additional courses to satisfy the College of Liberal Arts humanities requirement.

## College of Liberal Arts composition sequence

The College of Liberal Arts, through the NTID department of liberal studies, offers a two-course writing sequence, Written Communication I and II (0502-110, 111) as preparation for the College of Liberal Arts course Writing Seminar. These courses provide additional experience in writing, reading, and critical thinking techniques needed for success in Writing Seminar (0502-227). Eligible students must meet with the liberal arts instructional/support faculty before registering for these courses.

## Liberal arts requirements

Deaf and hard-of-hearing students enrolled in baccalaureate, AS, or AAS degree programs take required liberal arts courses through the College of Liberal Arts. At the lower division, students can choose between course sections taught by either NTID or College of Liberal Arts faculty members.

Where liberal arts courses are taught by NTID faculty members, instructors communicate directly with students utilizing a variety of communication strategies that include sign language, spoken language, printed/visual aids, Web-based instructional materials, and individual tutoring. The faculty member is responsible for facilitating communication in the classroom.

Liberal arts courses taught by College of Liberal Arts faculty members include both deaf and hearing students. Educational access services, such as sign language interpreting services, FM systems, notetaking, or real-time captioning services may be requested by students. Alternative services also will be provided as required. Students also may request educational support services such as tutoring and academic advising.

Deaf and hard-of-hearing students are advised to earn a passing grade in the Writing Seminar course before taking any additional

liberal arts courses. Students studying in colleges other than NTID should consult with their program departments about required liberal arts courses.

Placement in Writing Seminar (0502-227) is based on the Liberal Arts Placement Test or upon satisfactory completion of Written Communication II (0502-111).

## Admission Information

### Costs of attending RIT through NTID

The total cost of attending RIT through NTID sponsorship includes tuition, room, board, and fees. Charges to NTID-sponsored students are updated each year. The cost of books and supplies is students' responsibility. These costs vary depending on each student's program of study. The estimated cost for books and supplies for the 2011-12 academic year is \$1,900.

New students attending the Summer Vestibule Program will be charged a fee. Students participating in cooperative education are not charged tuition or fees for that particular quarter. They will be charged room, board, and residence hall fees, however, if they live on campus while participating in a co-op.

All students are required to carry accident and sickness insurance. Students may choose insurance coverage through RIT, or they may waive this coverage if they provide evidence of other insurance coverage. Waiver cards will be sent to all accepted students during the summer and will be available at registration. The fee for health insurance for 2011-12 is approximately \$950.

### Deaf and hard-of-hearing applicants

Deaf and hard-of-hearing students may apply for admission to any of RIT's colleges. All applicants with a hearing loss should check the appropriate box on the application and submit an audiological record completed by a certified audiologist (CCC-A) in order to qualify for educational access and support services as well as NTID's federally supported tuition rate. Send application materials to the NTID Office of Admissions. For further details regarding application requirements, please refer to the information in the Admission to Undergraduate Study section of this bulletin.

### Transfer credit

Deaf and hard-of-hearing students may transfer into an NTID program, or they may qualify to enroll directly in a program in another RIT college with NTID sponsorship. The transfer credit of deaf students accepted to the Summer Vestibule Program will be evaluated in the fall, when they are accepted into a specific program.

### Campus visits

Deaf and hard-of-hearing students who wish to visit RIT may contact NTID's Office of Admissions at (585) 475-6700 (voice/TTY), by videophone at (585) 743-1366, or via e-mail at [visitNTID@rit.edu](mailto:visitNTID@rit.edu). Students may take tours of campus and arrange personal interviews. Both of these are strongly encouraged but are not required for admission.

### Facilities

A modern academic and residential building complex on the RIT campus is designed to meet the specific needs of deaf and hard-of-hearing students. Lyndon Baines Johnson Hall and Hugh L. Carey Hall house laboratories, offices, communication studies and services centers, classrooms, and a theater. These classrooms and laboratories support the latest technologies for teaching and include high-resolution projection displays, digital document displays, DVDs, FM systems, Internet access, smart display boards, and other computer-based services. In addition, classrooms are specifically designed to meet the unique needs of both students and teachers.

The Communication Service for the Deaf (CSD) Student Development Center, interconnecting Johnson Hall and The Commons, which is an adjacent dining hall, is the focal point for students, faculty, and staff to engage in social events and community activities. In addition to a large multipurpose space for formal and informal lectures, small meeting rooms and offices provide workspace for student government groups, clubs, and organizations.

NTID's main academic building, Johnson Hall, boasts a state-of-the-art learning center. Using the latest technologies available, this center provides academic experiences, tutorial services, and course enrichment opportunities for all students. It provides students with access to networked computer workstations, videoconferencing capability, and a special technology-centered classroom.

## NATIONAL TECHNICAL INSTITUTE FOR THE DEAF FIXED CHARGES 2011-2012 (DOMESTIC STUDENTS)

|                                 | Summer Vestibule<br>Program<br>8/20-9/4/11 | NSSO*<br>8/31-9/4/11 | Fall<br>9/5-11/19/11 | Winter<br>11/28/11-3/3/12 | Spring<br>3/12-5/25/12 | Summer<br>6/4-8/18/12 |
|---------------------------------|--|----------------------|----------------------|---------------------------|------------------------|-----------------------|
| Tuition                         | \$671                                      | 0                    | \$3,861              | \$3,861                   | \$3,861                | \$3,861               |
| Room                            | \$416                                      | 0                    | \$2,032              | \$2,032                   | \$2,032                | \$2,032               |
| Board (standard meal plan)      | \$210                                      | 0                    | \$1,439              | \$1,439                   | \$1,439                | \$1,439               |
| Student fees†                   | 0  | 0                    | \$151                | \$151                     | \$151                  | \$151                 |
| Orientation fee‡                |  |                      | \$200                |                           |                        |                       |
| Student sickness insurance fee§ |  |                      | \$950                |                           |                        |                       |
| <b>Total</b>                    | <b>\$1,297</b>                             | <b>0</b>             | <b>\$8,633</b>       | <b>\$7,483</b>            | <b>\$7,483</b>         | <b>\$7,483</b>        |

\* NSSO (NTID Support Service Orientation) workshops for NTID-supported students accepted to other RIT colleges

† Student fees are required of all full-time students and include: student health fee (\$75) and student activities fee (\$76)

‡ Charge to defray cost of fall Orientation program for freshmen and new students only.

§ Student sickness insurance fee is estimated.

Notes: Required books and supplies will impact these figures.

The standard academic year includes the fall, winter, and spring quarters. New students accepted to the Summer Vestibule Program will be charged according to the prorated fee schedule indicated above.

Students on co-op are not charged tuition or fees for that particular quarter and will be charged room and board only if they live on campus while they work.

Incidental personal expenses for students average \$50-60 a month. This accounts for such things as local transportation, laundry and dry cleaning, toiletries, entertainment, hearing aid batteries, etc.

One of the features of Johnson Hall is the Joseph F. and Helen C. Dyer Arts Center. This 7,000-square-foot facility features art exhibits as well as NTID's permanent art collection. The center also incorporates art-related educational activities, such as lectures and demonstrations, while serving as a multiuse facility. Johnson Hall also includes the Panara Theatre, a 500-seat facility where theatrical productions are produced simultaneously in American Sign Language and English. The theater also hosts a wide range of cultural activities from all over the world, enriching student life and broadening students' world view.

All residence hall rooms, campus apartments, classrooms, laboratories, and administrative areas can access the campus-wide computer network with wired or wireless connections.

All RIT and NTID residence halls are aggressively maintained and provide students with an appealing, highly functional living environment. Special rooms have been created to serve physically challenged students. Students are encouraged to bring their own computers to connect to the campus network and Internet from their rooms. A selection of apartment units also is available. Visual emergency strobe lights and visual doorbells are present throughout residence halls, apartments, and academic buildings.

Television, a basic part of the college's communication network, is used for both education and entertainment. Campus cable connections are provided in residence hall rooms, classrooms, and various other locations. The system supports 22 channels of basic service, which includes ABC, CBS, NBC, Fox, WB, PBS, a local news channel, a local public access channel, and several channels used on campus for distribution of educational programming. This basic service is free, although students may elect to purchase full cable service from the Rochester cable system provider.

A well-equipped television facility provides studio services to produce class and self-instruction media for use within the university.

### **Telecommunications**

Deaf, hard-of-hearing, and speech-impaired students can access telephone services through TTY, VRS, and computer-based relay services. CapTel service also is available in New York state.

Public videophones are available to students in several on-campus locations. Students who have their own videophones are encouraged to bring them to campus at move-in, and students who do not yet have videophones will be encouraged to work with the VRS provider of their choice to acquire one.

### **Communication skills**

Communication competence is considered an important component of the student's educational experience at NTID. Students have opportunities to develop skills through a wide range of curricular and co-curricular activities that promote communication success in educational, social, and work situations. The communication studies and services department, the department of American Sign Language and interpreting education, and the department of cultural and creative studies provide intensive support and instruction for the development of communication skills. Faculty and staff conduct assessments and provide course work, workshops, and individualized instruction. They also work collaboratively with instructional/support faculty and professional staff.

### **Hearing aid shop**

The NTID Hearing Aid Shop provides the RIT community with services related to hearing loss, hearing aids, and cochlear im-

plants. Students may visit the shop to receive information about hearing loss and cochlear implants or to schedule clinical appointments, obtain new ear molds and batteries, have hearing aids repaired and other services. The shop is located in Johnson 3130 and can be contacted by calling (585) 475-6473 (voice/TTY).

### **NTID counseling and academic advising services**

Every NTID-supported student is assigned a counselor in the NTID counseling and academic advising services department. Counselors provide individual, personal, social, and career counseling, and academic advising services to their students. In addition, counselors work closely with students and faculty in students' academic programs to help students achieve academic success. Counselors also consult and network extensively with families and internal and external resources with the goal of helping students achieve personal, career, and educational success. Students can contact their assigned counselors to arrange for appointments.

### **Career resource and testing center**

The innovative Career Resource and Testing Center provides NTID students with useful educational, career, and assessment services. Print, video, and online sources of information allow students to learn about personal interests, values, and skills as well as suitable college and career options. Computerized guidance and assessment programs allow students to compare their personal characteristics with occupations. The center also supports our college's Career Decision Making course, which helps undecided students develop a personal career plan. The center is coordinated by a professional counselor from NTID Counseling and Academic Advising Services and is open weekdays and evenings. For additional information or an appointment, call (585) 475-6589 (videophone), (585) 475-6597 (v), or e-mail: dddnbu@rit.edu.

### **Mental health/psychological counseling**

Mental health counseling services for deaf and hard-of-hearing students are part of a range of services at the RIT Counseling Center. Individual and group therapy are offered for psychological and adjustment issues such as depression, anxiety, family conflicts, relationships, college success, and identity issues, to name a few. Mental health emergency services and crisis intervention are provided by the RIT Counseling Center on a 24-hour basis in collaboration with other campus service providers. The Counseling Center also coordinates medication consultation and management, when appropriate, through the RIT psychiatrist.

Psychoeducational programs and workshops also are offered on a variety of topics, including body image, stress management, depression, and social skills.

Counseling Center staff provides consultation about mental health issues and deafness on campus, locally, nationally, and internationally.

### **Cooperative education**

A feature of most RIT academic programs, including those offered through NTID, is cooperative education. Co-op provides students with the opportunity to gain hands-on experience in their chosen career field. NTID AAS and AOS programs require a co-op education experience. A majority of students complete the co-op experience during the summer. However, co-op can be completed any time during the year, consistent with a student's course schedule.

### **Employment**

Employment of deaf and hard-of-hearing graduates is a high prior-



ity for NTID. To help ensure that graduates obtain program-related employment, NTID's Center on Employment assigns each new student an adviser experienced in employment assistance in the various academic concentrations. To help prepare them for obtaining cooperative education experiences and full-time employment, students in AAS and AOS programs take required courses, Job Search Process (0806-101) and Employment Seminar (0806-201).

The center's employment advisers are in constant contact with potential employers throughout the United States. In addition, the center hosts an annual job fair attended by national employers. Such services have contributed to a high employment rate of deaf and hard-of-hearing graduates. Over the past five years, 93 percent of NTID graduates who chose to enter the workforce have found employment.

Research

NTID is a nationally known center of research on deafness. Faculty and staff at NTID conduct research to understand how deaf and hard-of-hearing students learn, work, and live in society. The dual mission of the research program at NTID is to gather new information and to make this information available to students, parents, teachers, and other professionals. Students may become involved in this research by volunteering to participate in a research study, by becoming a research assistant, or by conducting their own research under the supervision of NTID faculty and staff members.

ASL-English Interpretation, BS

www.rit.edu/NTID/aslie

Kim Brown Kurz, Chairperson  
(585) 475-6255 (V/TTY), kbknss@rit.edu

On-the-job responsibilities

The BS degree program in ASL-English interpretation prepares sign language interpreters for work in settings where deaf, hard-of-hearing, and hearing people interact and communicate. This degree allows students to develop foundation skills for general interpreting, with opportunities to explore specialized fields such as those in educational and medical settings, and/or community interpreting.

Places of employment

Graduates will find work in a variety of settings, including elementary, secondary, and post-secondary educational institutions; community service organizations; hospitals or clinics; vocational rehabilitation agencies; business/industry; and government agencies.

Special entrance requirements

In addition to RIT's general admissions procedures, the ASL-English interpretation program requires applicants to complete admission materials from the NTID Admissions Office.

Academic preparation

Applicants are required to have at least a high school diploma or equivalent. High school preparation should include a college preparatory program with a minimum of four years of English (with a minimum of a B average), three years of science and mathematics, and two years of a foreign language.

The middle 50 percent of accepted NTID applicants possess SAT scores of 1530-1940. Equivalent ACT composite scores are 22-29. Both SAT and ACT tests may be submitted.

For those applicants who have had college experience, college transcripts should document a GPA of 3.0 or better, with evidence of

very good performance in English courses. A writing sample will be judged on vocabulary, grammar, structure, style, and creativity.

To succeed in this program, students must be able to understand a speaker who is behind them; understand a speaker who is far away; focus on what a speaker is saying in a noisy room; and understand recorded voices through headphones. To see a list of the major skills and abilities needed to study sign language interpreting, please visit the section "Is Interpreting the Career for Me?" on our website.

ASL-English interpretation, BS degree, typical course sequence

| COURSE                     |   | QTR. CR. HRS. |
|----------------------------|---|---------------|
| First Year                 |   |               |
| 0875-201, 202, 203         | American Sign Language I, II, III         | 12            |
| 1105-051, 052              | First-Year Enrichment I, II               | 2             |
|                            | Mathematics/Science†                      | 12            |
|                            | Liberal Arts*                             | 20            |
|                            | General Education Elective                | 4             |
| Second Year                |   |               |
| 0875-301, 302, 303         | American Sign Language IV, V, VI          | 12            |
| 0875-213                   | Introduction to the Field of Interpreting | 4             |
|                            | Mathematics/Science†                      | 8             |
|                            | General Education Electives               | 12            |
|                            | Liberal Arts*                             | 4             |
| 0875-311                   | Processing Skills Development             | 4             |
| 0875-212                   | Deaf Culture and Community                | 4             |
|                            | Wellness Education‡                       | 0             |
| Third Year                 |   |               |
| 0875-315, 325              | English to ASL Interpreting I, II         | 8             |
| 0875-316, 326              | ASL to English Interpreting I, II         | 8             |
|                            | Liberal Arts Concentration                | 12            |
| 0875-320                   | Practical and Ethical Applications        | 4             |
| 0875-400                   | Interactive Interpreting                  | 4             |
|                            | General Education Electives               | 4             |
|                            | Interpreting Electives                    | 8             |
|                            | Wellness Education‡                       | 0             |
| Fourth Year                |   |               |
| 0875-501                   | English to ASL Interpreting III           | 4             |
| 0875-502                   | ASL to English Interpreting III           | 4             |
|                            | Free Electives                            | 12            |
| 0875-350, 510              | Practicum and Seminar I, II               | 8             |
| 0875-520                   | Issues in Interpreting                    | 4             |
|                            | General Education Electives               | 6             |
| Total Quarter Credit Hours |   | 184           |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see the Mathematics and Science General Education Curriculum for more information.

‡ Please see Wellness Education Requirement for more information.

ASL-English Interpretation, AAS

www.rit.edu/NTID/aslie

Kim Brown Kurz, Chairperson  
(585) 475-6255 (V/TTY), kbknss@rit.edu

On-the-job responsibilities

The program in ASL-English interpretation prepares entry-level sign language interpreters for work in settings where deaf, hard-of-hearing, and hearing people interact and communicate. The degree allows students to develop foundation skills.

Places of employment

Graduates will find entry work in a variety of settings, including

elementary, secondary, and post-secondary educational institutions; community service organizations; vocational rehabilitation agencies; business/industry; and government agencies.

### Admission requirements

In addition to RIT's general admissions procedures, the ASL-English interpretation program requires applicants to complete admission materials from the NTID Admissions Office.

### Academic preparation

Direct entry to the associate degree option is available for students who demonstrate proficiency at the ASL III level (0875-203) and are ready to enter ASL IV (0875-301) (see course descriptions). It is strongly recommended that applicants possess a BS degree. (Note: By the year 2012, candidates for national interpreter certification must possess a baccalaureate degree.) For those applicants who have had college experience, college transcripts should document a GPA of 3.0 or better, with evidence of very good performance in English courses. A writing sample will be judged on vocabulary, grammar, structure, style, and creativity.

To succeed in this program, students must be able to understand a speaker who is behind them; understand a speaker who is far away; focus on what a speaker is saying in a noisy room; and understand recorded voices through headphones. To see a list of the major skills and abilities needed to study sign language interpreting, please visit the section "Is Interpreting the Career for Me?" on our website.

### ASL-English interpretation, AAS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 0875-301, 302, 303                | American Sign Language IV, V, VI                          | 12            |
| 0875-213                          | Introduction to the Field of Interpreting                 | 4             |
| 0875-300                          | Intermediate Fingerspelling and Number Skills Development | 4             |
| 0875-311                          | Processing Skills Development                             | 4             |
| 0875-212                          | Deaf Culture and Community                                | 4             |
|                                   | Liberal Arts*   | 20            |
|                                   | Mathematics/Science†                                      | 8             |
| 1105-051, 052                     | First-Year Enrichment I, II                               | 2             |
|                                   | Wellness Education‡                                       | 0             |
| <b>Second Year</b>                |   |               |
| 0875-316, 326                     | ASL to English Interpreting I, II                         | 8             |
| 0875-315, 325                     | English to ASL Interpreting I, II                         | 8             |
| 0875-320                          | Practical and Ethical Applications                        | 4             |
| 0875-400                          | Interactive Interpreting                                  | 4             |
|                                   | Interpreting Elective                                     | 4             |
|                                   | Liberal Arts*   | 4             |
| 0875-350                          | Practicum Seminar I                                       | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>94</b>     |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Please see the Mathematics and Science General Education Curriculum for more information.

## Accounting Technology, AAS

[www.rit.edu/NTID/acctech](http://www.rit.edu/NTID/acctech)

**Mary Lou Basile, Chairperson, Business Studies**  
(585) 475-6460 (V/TTY), [mlnbt@rit.edu](mailto:mlnbt@rit.edu)

The AAS degree in accounting technology prepares students for entry-level employment in accounting-related occupations.

Students learn the functions of the complete accounting cycle for service, merchandising, and manufacturing businesses.

### On-the-job responsibilities

Graduates will use computers to maintain and reconcile various financial records, verify business records, and perform other clerical and administrative duties.

### Places of employment

Graduates will find employment in a variety of settings, including business, industry, and government, as well as self-employment. Positions for which graduates qualify include junior accounting technician, cost accounting clerk, accounts receivable/payable clerk, payroll clerk, general accounting clerk, and microcomputer accounting clerk.

### Prerequisites

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course. Students typically enter Writing Seminar with reading scores equivalent to 10.0 on the California Reading Test. However, students who complete AAS degrees typically enter NTID with reading scores equivalent to 9.0 on the California Reading Test.

**Mathematics:** Mathematics Applications for Business Technology (0884-155) is required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science.

### Accounting technology, AAS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 0801-201, 202      | Accounting I, II                         | 8             |
| 0804-101           | Orientation to Business                  | 3             |
| 0804-110           | Business English                         | 3             |
| 0804-111           | Keyboarding                              | 2             |
| 0804-112           | OAS Formatting                           | 3             |
| 0804-113           | OAS Document Production I                | 4             |
| 0804-211           | Records Management/Business Calculations | 3             |
| 0804-212           | Payroll/Spreadsheet Applications         | 3             |
| 0804-286           | Fundamentals of Marketing                | 3             |
|                    | Mathematics Requirement‡                 | 7             |
| 0887-200           | Freshman Seminar                         | 2             |
|                    | Deaf Cultural Studies/ASL*               | 3             |
| 0502-227           | Writing Seminar                          | 4             |
|                    | Liberal Arts*                            | 8             |
|                    | Science (Level B)                        | 3             |
|                    | Wellness Education‡                      | 0             |
| <b>Second Year</b> |  |               |
| 0801-203, 204      | Accounting III, IV                       | 8             |
| 0801-252, 253      | Cost Accounting I, II                    | 8             |
| 0804-221           | OAS Document Production II               | 4             |
| 0804-284           | Fundamentals of Management               | 3             |
|                    | Liberal Arts*                            | 4             |
| 0806-101           | Job Search Process                       | 2             |
| 0882-242           | Law and Society                          | 3             |
| 0801-299           | Cooperative Education                    | Co-op         |
| <b>Third Year</b>  |  |               |
| 0511-211           | Principles of Microeconomics             | 4             |
| 0801-260           | Applied Accounting Techniques            | 2             |

| COURSE                            | QTR. CR. HRS.      |
|-----------------------------------|--------------------|
| 0806-201                          | Employment Seminar |
|                                   | Liberal Arts*      |
|                                   | Capstone*          |
| <b>Total Quarter Credit Hours</b> | <b>105</b>         |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Mathematics Applications for Business Technology (0884-155) and another mathematics elective at level B or higher are required.

### Microsoft certification

The department operates an authorized testing center for Microsoft Office Specialist. Preparatory courses are offered for several exams each quarter.

## Administrative Support Technology, AAS

[www.rit.edu/NTID/ast](http://www.rit.edu/NTID/ast)

**Mary Lou Basile, Chairperson**

**(585) 475-6460 (V/TTY), [mlbnbt@rit.edu](mailto:mlbnbt@rit.edu)**

The AAS program in administrative support technology provides students with opportunities to develop skills needed in processing information using a variety of integrated office software applications as well as appropriate professional interpersonal communication skills. Graduates will input, manipulate, and retrieve data; use interactive office software, e-mail, and information processing skills for applications such as word processing, spreadsheet, presentation, and database; and perform other office duties.

The Associate+Bachelor's degree program provides students with the foundation needed for transfer into a bachelor's degree program. Students begin their studies in the associate of applied science program in administrative support technology. Upon successful completion of seven quarters of the AAS program, and with a minimum GPA of 2.5, students may enroll directly in the Center for Multidisciplinary Studies to pursue a bachelor's degree in applied arts and science. In this program, students may choose a concentration in human resource development. More information is available at [www.rit.edu/NTID/astAplusB](http://www.rit.edu/NTID/astAplusB).

### Places of employment

Graduates will find employment in a variety of settings, including business, industry, government, and education. Positions for which graduates qualify include administrative assistant, office assistant, word processor, and secretary.

### Prerequisites

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course. Students typically enter Writing Seminar with reading scores equivalent to 10.0 on the California Reading Test. However, students who complete AAS degrees typically enter NTID with reading scores equivalent to 9.0 on the California Reading Test.

**Mathematics:** Mathematics Applications for Business Technology (0884-155) is required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science.

## Administrative support technology, AAS degree, typical course sequence

| COURSE                            | QTR. CR. HRS.                                |
|-----------------------------------|--|
| <b>First Year</b>                 |  |
| 0804-101                          | Orientation to Business                      |
| 0804-110                          | Business English                             |
| 0804-111                          | Keyboarding                                  |
| 0804-112                          | OAS Formatting                               |
| 0804-113                          | OAS Document Production I                    |
| 0804-221                          | OAS Document Production II                   |
| 0804-211                          | Records Management/Business Calculations     |
| 0804-212                          | Payroll/Spreadsheet Applications             |
| 0804-286                          | Fundamentals of Marketing                    |
|                                   | Mathematics Elective‡                        |
| 0887-200                          | Freshman Seminar                             |
| 0502-227                          | Writing Seminar                              |
|                                   | Liberal Arts*                                |
|                                   | Deaf Cultural Studies/ASL*                   |
|                                   | Wellness Education†                          |
| <b>Second Year</b>                |  |
| 0801-201, 202                     | Accounting I, II                             |
| 0805-211                          | Web Development for Business                 |
| 0804-230                          | Administrative Support Technology Seminar    |
| 0804-284                          | Fundamentals of Management                   |
| 0804-302                          | Advanced Applications for Word Processing    |
| 0804-303                          | Business Graphics                            |
| 0804-304                          | Database Applications for Business           |
|                                   | Liberal Arts*                                |
| 0806-101                          | Job Search Process                           |
| 0882-242                          | Law and Society                              |
|                                   | Science (Level B)                            |
| 0804-299                          | Cooperative Education                        |
| <b>Third Year</b>                 |  |
| 0804-291                          | Applied Business Techniques                  |
| 0804-310                          | Desktop Publishing Concepts and Applications |
|                                   | Liberal Arts*                                |
| 0806-201                          | Employment Seminar                           |
|                                   | Capstone*                                    |
| <b>Total Quarter Credit Hours</b> | <b>102</b>                                   |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Satisfied by Foundations of Algebra (0884-180) or Mathematics Applications for Business Technology (0884-155).

### Microsoft certification

As an authorized testing center for Microsoft Office Specialist, preparatory courses are offered to prepare students for several exams each quarter.

## Applied Computer Technology, AS

<http://www.rit.edu/NTID/actAplusB>

**Elissa Olsen, Chairperson**

**(585) 475-2225 (V), [emondp@rit.edu](mailto:emondp@rit.edu)**

The associate of science in applied computer technology is an Associate+Bachelor's degree program designed to prepare deaf and hard-of-hearing students to enter and successfully complete a bachelor's degree in the B. Thomas Golisano College of Computing and Information Sciences. NTID's AS degree is a program specifi-

cally designed so that students can enroll directly in one of the following programs in the Golisano College: applied networking and system administration, information security and forensics, or information technology. Coordination between the two colleges maximizes the number of credits a student may apply toward the baccalaureate degree. Admission to this program is available for the fall quarter only.

### Prerequisites

The following prerequisites are necessary for admission into the applied computer technology AS program:

**ACT:** composite test score of 18 or better

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course; students who qualify for Written Communications II (0502-111) will be considered for admission.

**Mathematics:** Entrance into NTID's Elements of Trigonometry (0884-220) course

To transfer to the Golisano College, students must possess a GPA of 2.8 or higher upon graduating with the AS degree in applied computer technology.

Students in the applied computer technology program receive a foundation in computer hardware, networking, and computer applications.

### Applied computer technology, AS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 0805-224                          | Introduction to Networking and Security Awareness | 3             |
| 0805-216, 217                     | PC Hardware I, II                                 | 6             |
| 0884-220                          | Elements of Trigonometry                          | 4             |
| 0887-200                          | Freshman Seminar                                  | 2             |
| 0805-220                          | Introduction to UNIX                              | 3             |
| 0884-275                          | Advanced Math                                     | 4             |
|                                   | Liberal Arts*                                     | 4             |
| 0502-227                          | Writing Seminar                                   | 4             |
| 0805-215                          | PC Operating Systems                              | 3             |
| 0805-390                          | Programming Fundamentals                          | 4             |
|                                   | Lab Science§                                      | 4             |
|                                   | Communications Elective‡                          | 3-4           |
|                                   | Wellness Education†                               | 0             |
| <b>Second Year</b>                |   |               |
|                                   | IT Programming sequence**                         | 12            |
| 4002-320                          | Introduction to Multimedia                        | 4             |
| 4002-351                          | Computer Networking Fundamentals                  | 4             |
|                                   | Liberal Arts*                                     | 16            |
|                                   | Lab Science§                                      | 4             |
| 1016-205                          | Discrete Math                                     | 4             |
|                                   | General Education Elective                        | 4             |
| <b>Total Quarter Credit Hours</b> |   | <b>92-93</b>  |

\* Please see General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Communications elective—options include a course in professional communication, technical writing, foreign language, public speaking, sign language, or another course relating to interpersonal communications (including Written Communication II). This course may be taken from the College of Liberal Arts or NTID.

§ Lab Science—Any NTID science courses numbered 200 or higher offered for 4 credits with an included lab component. These courses include: Human Genetics and Evolution (0885-281), Scientific Basis of Social Responsibility (0885-282), and Developmental Human Anatomy and Physiology (0885-283). Any two courses from the College of Science also can be used.

\*\* Students must complete a three-quarter course sequence in programming from the IT department. Students must take 4002-217, 218, 219, or 4002-217, 220, 221. Appropriate course sequence will be determined after successful completion of 4002-217.

## Applied Computer Technology, AAS

<http://www.rit.edu/NTID/act>

**Elissa Olsen, Chairperson**

**(585) 475-2225 (V), [emondp@rit.edu](mailto:emondp@rit.edu)**

Computers are important to all parts of the economy, and the number of careers that involve work with computers is constantly expanding. Students in the AAS degree program in applied computer technology take courses to prepare them for careers that involve maintaining computer software and hardware, installing and maintaining computer networks, and working with a variety of computer applications.

### Program concentrations

Students will select a program concentration in the second year. Concentrations involve either computer technical support or networking and cyber security.

**Computer technical support:** This concentration develops skills specific to working with office professionals to solve computer-related problems. These skills prepare students to work at a help desk responding to a client's computer problems and performing setup, upgrades, and repairs to computers and computer peripherals.

**Networking and cyber security:** Students in this concentration develop skills specific to network and network security support. The skills include server setup, support and administration, network setup, troubleshooting and repair, identifying and implementing security policies, and installing appropriate hardware and software to support a secure and robust network.

### On-the-job responsibilities

Students work as computer technicians, computer support specialists, network technicians, network security technicians, and network administrators.

### Places of employment

Graduates can expect to work in a variety of environments, including banks, insurance companies, large stores, manufacturing companies, public utilities, government agencies, health care agencies, hospitals, and many other kinds of departments and businesses that use computers and networks.

### Prerequisites

Successful completion of a sampling experience in applied computer technology, either through the Summer Vestibule Program or equivalent career exploration course, is a prerequisite for this program, as are the following:

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course. Students typically enter Writing Seminar with reading scores equivalent to 10.0 on the California Reading Test. However, students who complete AAS degrees typically enter NTID with reading scores equivalent to 9.0 on the California Reading Test.

**Mathematics:** Placement into Foundations of Algebra (0884-180) or a higher-level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science.



## Applied computer technology, AAS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 0805-201                          | Applications Software                             | 3             |
| 0805-216, 217                     | PC Hardware I, II                                 | 6             |
| 0805-215                          | PC Operating Systems                              | 3             |
| 0805-224                          | Introduction to Networking and Security Awareness | 3             |
| 0805-225                          | Networking Essentials                             | 3             |
| 0805-226                          | Client/Server Networks                            | 3             |
| 0805-251                          | Introduction to Web Development                   | 3             |
| 0805-220                          | Introduction to Unix                              | 3             |
| 0884-180                          | Foundations of Algebra                            | 4             |
|                                   | Math Elective (Level B or above)                  | 4             |
| 0887-200                          | Freshman Seminar                                  | 2             |
| 0502-227                          | Writing Seminar                                   | 4             |
|                                   | Deaf Cultural Studies/ASL*                        | 3             |
|                                   | Wellness Education†                               | 0             |
| <b>Second Year</b>                |   |               |
| 0805-230                          | Introduction to Programming                       | 3             |
| 0805-351                          | Introduction to Mac                               | 3             |
| Choose one of the following:      |   | 3             |
| 0805-310                          | Microcomputer Database Software                   |               |
| 0805-325                          | Database Systems                                  |               |
| 0806-101                          | Job Search Process                                | 2             |
|                                   | Math Elective (Level B or above)                  | 4             |
|                                   | Concentration Courses‡                            | 12            |
|                                   | Technical Electives§                              | 3             |
|                                   | Science (B Level or above)                        | 3             |
|                                   | Liberal Arts*                                     | 12            |
| 0805-299                          | Cooperative Education                             | 0             |
| <b>Third Year</b>                 |   |               |
|                                   | Technical Electives§                              | 3             |
| 0805-395                          | ACT Technical Capstone                            | 3             |
| 0806-201                          | Employment Seminar                                | 1             |
|                                   | Liberal Arts*                                     | 4             |
|                                   | Capstone*   | 3             |
| <b>Total Quarter Credit Hours</b> |   | <b>103</b>    |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Concentration courses for computer technical support are: Help Desk Support (0805-332), Introduction to Computer Forensics (0805-353), Server Management and Security (0805-337), and Digital Technology Integration (0805-350). Concentration courses for networking and cyber security are: LAN/WAN Design (0805-335), Network Security (0805-336), Server Management and Security (0805-337), and Firewall and IDS (0805-338).

§ Students may select from applied computer technology electives or approved electives from other majors.

## Applied Computer Technology, AOS

<http://www.rit.edu/NTID/act>

**Elissa Olsen, Chairperson**  
(585) 475-2225, [emondp@rit.edu](mailto:emondp@rit.edu)

Computers are important to all parts of the economy, and the number of careers that involve work with computers is constantly expanding. Students in the AOS degree program in applied computer technology take courses to prepare them for careers that involve maintaining computer software and hardware, installing and maintaining computer networks, and working with a variety of computer applications.

### Program concentrations

Students select a program concentration in the second year. Concentrations involve either computer technical support or networking cyber security.

**Computer technical support:** This concentration develops skills specific to working with office professionals to solve computer-related problems. These skills prepare students to work at a help desk responding to a client's computer problems and performing setup, upgrades, and repairs to computers and computer peripherals.

**Networking and cyber security:** Students in this concentration develop skills specific to network and network security support. The skills include server setup, support and administration, network setup, troubleshooting and repair, identifying and implementing security policies, and installing appropriate hardware and software to support a secure and robust network.

### On-the-job responsibilities

Students work as computer technicians, computer support specialists, network technicians, network security technicians, and network administrators.

### Places of employment

Graduates can expect to work in a variety of environments, including banks, insurance companies, large stores, manufacturing companies, public utilities, government agencies, health care agencies, hospitals, and many other kinds of departments and businesses that use computers and networks.

### Prerequisites

Successful completion of a sampling experience in applied computer technology, either through the Summer Vestibule Program or equivalent career exploration course, is a prerequisite for this program, as are the following:

**English:** Placement into English level C or above. Students successfully completing the AOS degree typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Placement into Foundations of Algebra (0884-180) or a higher-level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science.

## Applied computer technology, AOS degree, typical course sequence

| COURSE             |   | QTR. CR. HRS. |
|--------------------|---|---------------|
| <b>First Year</b>  |   |               |
| 0805-201           | Applications Software                             | 3             |
| 0805-216, 217      | PC Hardware I, II                                 | 6             |
| 0805-215           | PC Operating Systems                              | 3             |
| 0805-224           | Introduction to Networking and Security Awareness | 3             |
| 0805-225           | Networking Essentials                             | 3             |
| 0805-226           | Client/Server Networks                            | 3             |
| 0805-251           | Introduction to Web Development                   | 3             |
| 0805-220           | Introduction to Unix                              | 3             |
| 0884-180           | Foundations of Algebra                            | 4             |
| 0883-212, 213, 214 | Career English I, II, III                         | 12            |
| 0887-200           | Freshman Seminar                                  | 2             |
|                    | Wellness Education†                               | 0             |
| <b>Second Year</b> |   |               |
| 0805-230           | Introduction to Programming                       | 3             |



| COURSE                            |                                  | QTR. CR. HRS. |
|-----------------------------------|----------------------------------|---------------|
| 0805-351                          | Introduction to Mac              | 3             |
| Choose one of the following:      |                                  | 3             |
| 0805-310                          | Microcomputer Database Software  |               |
| 0805-325                          | Database Systems                 |               |
| 0806-201                          | Job Search                       | 2             |
|                                   | Concentration Courses†           | 12            |
|                                   | Technical Elective§              | 3             |
|                                   | Science (B Level or above)       | 3             |
|                                   | Math Elective (Level B or above) | 4             |
|                                   | Social Sciences*                 | 3             |
|                                   | Humanities*                      | 3             |
|                                   | Communications*                  | 3             |
| 0805-299                          | Cooperative Education            | Co-op         |
| <b>Third Year</b>                 |                                  |               |
|                                   | Technical Electives§             | 3             |
| 0805-395                          | ACT Technical Capstone           | 3             |
| 0806-201                          | Employment Seminar               | 1             |
|                                   | Deaf Cultural Studies/ASL*       | 3             |
|                                   | Capstone*                        | 3             |
| <b>Total Quarter Credit Hours</b> |                                  | <b>100</b>    |

\* Please see the NTID General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Concentration courses for computer technical support are Help Desk Support (0805-352), Introduction to Computer Forensics (0805-353), Server Management and Security (0805-337), and Digital Technology Integration (0805-350). Concentration courses for networking and cyber security are LAN/WAN Design (0805-335), Network Security (0805-336), Server Management and Security (0805-337), and Firewall and IDS (0805-338).

§ Students may select from applied computer technology electives or approved electives from other majors.

## Applied Liberal Arts, AS

[www.rit.edu/NTID/laAplusB](http://www.rit.edu/NTID/laAplusB)

**Kathryn Schmitz, Chairperson**

**(585) 475-6327 (V), (585) 475-6813 (TTY)**

The associate in science degree in applied liberal arts is designed to prepare deaf and hard-of-hearing students to enter and successfully complete a bachelor's degree in the College of Liberal Arts, which offers programs in advertising and public relations, criminal justice, economics, journalism, museum studies, philosophy, political science, professional and technical communication, psychology, public policy, and urban and community studies.

By the end of the first year, students choose a College of Liberal Arts program they wish to enroll in after completing the AS degree. During the second year, students take five professional courses in their chosen liberal arts major. In addition, as a part of their AS course work, students complete five mathematics and science courses to meet the graduation requirements of their program.

The AS degree maximizes the number of credits a student may transfer toward a baccalaureate degree within the College of Liberal Arts. Admission to this program is available throughout the academic year.

### Prerequisites

**ACT:** Composite test score of 18 and above.

**English:** Placement into the College of Liberal Arts' Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227) course.

**Mathematics:** Placement into level C mathematics course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into any level D science course numbered 0885-250 or higher. Typically, students entering this program will have completed at least two years of high school science.

### Enrollment requirements

To enroll in the College of Liberal Arts, students must have a grade-point average of 2.5 or higher upon graduating with the AS degree in applied liberal arts.

### Applied liberal arts, AS degree, typical course sequence

| COURSE                            |                                  | QTR. CR. HRS. |
|-----------------------------------|----------------------------------|---------------|
| <b>First Year</b>                 |                                  |               |
| 0502-110, 111                     | Written Communication I, II      | 8             |
| 0502-227                          | Writing Seminar                  | 4             |
| 0887-200                          | Freshman Seminar                 | 2             |
| 0880-2xx                          | NTID Humanities‡                 | 3             |
| 0882-2xx                          | NTID Social Science‡             | 3             |
| 0515-210                          | Foundations of Sociology         | 4             |
| 0514-210                          | Introduction to Psychology       | 4             |
| 0507-301                          | Modern American History          | 4             |
| 08xx-xxx, 10xx-xxx                | Mathematics and Science courses§ | 12            |
|                                   | Wellness Education†              | 0             |
| <b>Second Year</b>                |                                  |               |
|                                   | Liberal Arts Concentration*      | 12            |
| 10xx-xxx                          | Mathematics and Science courses§ | 8             |
| 0505-213                          | Fine Arts/Visual Arts            | 4             |
|                                   | Arts of Expression               | 4             |
|                                   | Professional Electives‡          | 20            |
| <b>Total Quarter Credit Hours</b> |                                  | <b>92</b>     |

\* Please see College of Liberal Arts Concentration Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Students will take five courses in a College of Liberal Arts professional area of study.

§ Students will take five specific mathematics and science courses as required by their chosen professional area.

## Applied Mechanical Technology, AAS

[www.rit.edu/NTID/amtAplusB](http://www.rit.edu/NTID/amtAplusB)

**Dino Laury, Chairperson**

**(585) 286-4613 (VP), [dino@mail.rit.edu](mailto:dino@mail.rit.edu)**

The AAS in applied mechanical technology is an Associate+Bachelor's degree program that prepares students to enter and successfully complete a baccalaureate program in the College of Applied Science and Technology in manufacturing engineering technology or mechanical engineering technology. Students strengthen their skills by taking NTID English and science courses or NTID math and science courses, as well as program courses. These courses systematically address the preparatory challenges that deaf and hard-of-hearing students face upon entry to the programs in the College of Applied Science and Technology.

Students in the applied mechanical technology program receive a comprehensive foundation in precision measurement, precision machining, computer-aided design applications, strength of materials, and machine design. Upon successful completion of the AAS degree in applied mechanical technology, students enroll directly into the bachelor's degree program in either manufacturing engineering technology or mechanical engineering technology.

### Prerequisites

**ACT:** Composite test score of 18 or higher

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course; students who qualify for Written Communication II (0502-111) will be considered for admission.

**Mathematics:** Entrance into NTID's Elements of Trigonometry (0884-220) course.

**Science:** Entrance into the College of Science's College Physics I course after a single NTID science course.

### Enrollment requirements

Students who graduate in good standing from NTID and have maintained a grade of C or better in the six NTID applied mechanical technology technical courses should be well-prepared for the College of Applied Science and Technology.

### Applied mechanical technology, AAS degree, typical course sequence

| COURSE                                      |  | QTR. CR. HRS. |
|---|--|---------------|
| <b>First Year</b>                           |  |               |
| 0813-220                                    | Engineering Fundamentals                   | 4             |
| 0890-212                                    | Computing Tools for Engineering Technology | 4             |
| <i>Choose two of the following courses:</i> |  | 8             |
| 0884-220                                    | Elements of Trigonometry                   |               |
| 0885-201                                    | Physics                                    |               |
| 0502-111                                    | Written Communication II                   |               |
| 0887-200                                    | Freshman Seminar                           | 2             |
| 0813-222                                    | Manufacturing Processes                    | 4             |
| 0890-214                                    | CAD Applications in Engineering Tech       | 4             |
| 0884-275                                    | Advanced Math                              | 4             |
|   | Liberal Arts*                              | 4             |
| 0502-227                                    | Writing Seminar                            | 4             |
| 0813-224                                    | Industrial Processes                       | 4             |
| 0890-216                                    | Design, Dimensioning, and Tolerancing      | 4             |
| 1017-211                                    | College Physics I                          | 4             |
|   | Wellness Education†                        | 0             |
| <b>Second Year</b>                          |  |               |
| 0610-211                                    | Introduction to Materials Technology       | 3             |
| 0610-304                                    | Materials Testing                          | 1             |
| 1017-212                                    | College Physics II                         | 4             |
| 0610-302                                    | Introduction to Statics                    | 4             |
| 0610-303                                    | Strength of Materials                      | 4             |
| 1016-231, 232                               | Calculus for Engineering Technology I, II  | 8             |
| 1017-213                                    | College Physics III                        | 4             |
| 0610-315                                    | Principles of Mechanical Design 1          | 4             |
| 0610-305                                    | Pneumatic and Hydraulic Systems            | 4             |
|   | Liberal Arts*                              | 12            |
| <b>Total Quarter Credit Hours</b>           |  | <b>98</b>     |

\* Please see General Education Distribution Requirements chart for more information. (AMT students are not required to take Capstone or Deaf cultural studies/ASL courses.)

† Please see Wellness Education Requirement for more information.

## Arts and Imaging Studies, AAS

[www.rit.edu/NTID/ais](http://www.rit.edu/NTID/ais)

**Kenneth F. Hoffmann, Chairperson**

**(585) 475-2890 (V/TTY), [kenneth.hoffmann@rit.edu](mailto:kenneth.hoffmann@rit.edu)**

People who work in the arts and imaging field are responsible for designing, organizing, and producing print and Web-based media for business, communication, publishing, manufacturing, entertainment, and advertising markets. This is a very large, exciting field that requires a variety of computer-based and traditional vi-

sual skills. The arts and imaging studies program provides opportunities for students to enter various careers ranging from creative to highly technical positions at various degree levels.

### Program description

The arts and imaging studies programs include a core component of nine courses (27 credits) plus a required cooperative work experience. The core courses provide a solid foundation for continuing in advanced courses, a baccalaureate program, and employment. Several of the core courses are scheduled during the first year, and additional courses are completed during the second year.

In addition to the core courses taken in the first year, students immediately begin course work in their concentration. Students may choose a concentration in graphic design or graphic technology. Both concentrations consist of 24 credit hours.

All students entering the program will be given an aptitude assessment experience. As a result of this assessment profile, students will be counseled and placed into an initial concentration: graphic design for students with creative aptitude and interest; graphic technology for students with technical/production aptitude and interest. The assessment is not final. Based on success and demonstrated capabilities, students may request or be counseled to change their program concentration.

The program's curriculum includes nine credits of technical electives and three credits of free electives. Students may select their technical elective courses from four different professional focus areas that provide additional depth of skill and knowledge specific to a career pathway:

- graphic design
- photography
- print publishing
- Web design

Technical electives may be chosen from a concentration area, a list of technical electives or, as appropriate, courses from other related programs. Free electives can be selected from any program within RIT, depending on availability and prerequisites.

All students gain real work experience through one quarter of required cooperative education employment. Upon satisfactory conclusion of the co-op, students complete a required portfolio presentation course in which they refine and complete their portfolio as needed for an application to a baccalaureate program or the search for employment.

### On-the-job responsibilities

Depending on the specific program concentration and elective course selection, graduates use computer-based methods to produce drawings, layouts, illustrations, and digital photographic images; prepare documents for print, Web, and digital distribution; produce interactive digital media; perform digital retouching and restoration of photographic images; produce composite digital images; design and produce websites; produce computer animations; plan and produce short edited videos; and operate electrophotographic digital printing and inkjet systems, simple bindery, and finishing equipment.

### Places of employment

Graduates usually find employment in a variety of commercial, corporate, government, and educational settings. Examples include computer graphics firms, advertising agencies, art studios, printing or manufacturing plants, prepress companies, in-house printing or

marketing departments, book and magazine publishing houses, newspaper facilities, government agencies, industrial training or media departments, educational media centers, and educational institutions.

Graduates may qualify for positions such as production graphic artist, graphic designer, digital photo artist, digital photography technician, digital prepress technician, video technician, website designer, website technician, and digital printing systems operator.

### Prerequisites

Successful completion of a sampling experience offered during the Summer Vestibule Program and also during the academic year is required. The sampling activities provide opportunities for students to learn about the arts and imaging field, identify career opportunities, and evaluate their interest and aptitude for a degree program.

**ACT-AAS** minimum score = 18

**ACT-AOS** minimum score = 15

**English-AAS:** Placement into the Written Communication II (0502-111) course.

**English-AOS:** Placement into English level C or above. Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics-AAS/AOS:** Placement into the Concepts of Measurement (0884-150) course. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science-AAS/AOS:** Typically, students entering this program will have completed at least two years of high school science.

### Arts and imaging studies, AAS degree, graphic design concentration, typical course sequence

| COURSE             |                            | QTR. CR. HRS. |
|--------------------|----------------------------|---------------|
| <b>First Year</b>  |                            |               |
| 0855-311           | Basic Drawing              | 3             |
| 0855-252           | Vector Graphics            | 3             |
| 0855-255           | Principles of Design       | 3             |
| 0855-251           | Bitmap Graphics            | 3             |
| 0855-253, 318      | Typography I, II           | 6             |
| 0855-314           | Color in Design            | 3             |
| 0855-331           | Desktop Publishing I       | 3             |
| 0855-319           | Graphic Design             | 3             |
| 0502-227           | Writing Seminar            | 4             |
| 0887-200           | Freshman Seminar           | 2             |
|                    | Mathematics (Level B)‡     | 3             |
|                    | Liberal Arts*              | 8             |
|                    | Wellness Education†        | 0             |
| <b>Second Year</b> |                            |               |
| 0855-342           | Web Design I               | 3             |
| 0855-361           | Grid Systems               | 3             |
| 0855-315           | History of Graphic Design  | 3             |
| 0855-362           | Publication Design         | 3             |
| 0855-323           | Digital Photography I      | 3             |
| 0855-363           | Identity Systems Design    | 3             |
|                    | Technical Electives        | 9             |
| 0806-101           | Job Search Process         | 2             |
|                    | Liberal Arts*              | 8             |
|                    | Science (Level B or above) | 3             |
|                    | Deaf Cultural Studies/ASL* | 3             |
| 0855-299           | Cooperative Education      | Co-op         |
| <b>Third Year</b>  |                            |               |
| 0855-353           | Portfolio Presentation     | 3             |
| 0855-351           | Production Workshop        | 3             |
|                    | Free Elective              | 3             |

| COURSE                            |                    | QTR. CR. HRS. |
|-----------------------------------|--------------------|---------------|
| 0806-201                          | Employment Seminar | 1             |
|                                   | Capstone*          | 3             |
| <b>Total Quarter Credit Hours</b> |                    | <b>100</b>    |

\* Please see General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Satisfied by Concepts of Measurement (0884-150) or higher-level course.

### Arts and imaging studies, AAS degree, graphic technology concentration, typical course sequence

| COURSE                            |                             | QTR. CR. HRS. |
|-----------------------------------|-----------------------------|---------------|
| <b>First Year</b>                 |                             |               |
| 0855-251                          | Bitmap Graphics             | 3             |
| 0855-252                          | Vector Graphics             | 3             |
| 0855-323                          | Digital Photography I       | 3             |
| 0855-254                          | Applied Color Theory        | 3             |
| 0855-253                          | Typography I                | 3             |
| 0855-255                          | Principles of Design        | 3             |
| 0855-331                          | Desktop Publishing I        | 3             |
| 0855-321                          | Image Acquisition           | 3             |
| 0855-342                          | Web Design I                | 3             |
| 0502-227                          | Writing Seminar             | 4             |
| 0887-200                          | Freshman Seminar            | 2             |
|                                   | Mathematics (Level B)‡      | 3             |
|                                   | Liberal Arts*               | 8             |
|                                   | Wellness Education†         | 0             |
| <b>Second Year</b>                |                             |               |
| 0855-322                          | Bitmap Graphics II          | 3             |
| 0855-344                          | Videography I               | 3             |
| 0855-324                          | Wide-Format Graphics        | 3             |
| 0855-333                          | Publication Production I    | 3             |
| 0855-332                          | PDF Production and Workflow | 3             |
| 0855-352                          | Color Management            | 3             |
|                                   | Technical Electives         | 9             |
| 0806-101                          | Job Search Process          | 2             |
|                                   | Liberal Arts*               | 8             |
|                                   | Science (Level B or above)  | 3             |
|                                   | Deaf Cultural Studies/ASL*  | 3             |
| 0855-299                          | Cooperative Education       | Co-op         |
| <b>Third Year</b>                 |                             |               |
| 0855-353                          | Portfolio Presentation      | 3             |
| 0855-351                          | Production Workshop         | 3             |
|                                   | Free Elective               | 3             |
| 0806-201                          | Employment Seminar          | 1             |
|                                   | Capstone*                   | 3             |
| <b>Total Quarter Credit Hours</b> |                             | <b>100</b>    |

\* Please see General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Satisfied by Concepts of Measurement (0884-150) or higher-level course.

### Professional electives

Students select nine credit hours from one of the following professional areas.

| COURSE                |                           | QTR. CR. HRS. |
|-----------------------|---------------------------|---------------|
| <b>Graphic design</b> |                           |               |
| 0855-310              | Visual Idea Development   | 3             |
| 0855-312              | Intermediate Drawing      | 3             |
| 0855-313              | Advanced Drawing          | 3             |
| 0855-316              | Art History I             | 3             |
| 0855-317              | Art History II            | 3             |
| 0855-364              | Digital Illustration      | 3             |
| <b>Photography</b>    |                           |               |
| 0855-371              | Dynamic Image Preparation | 3             |

| COURSE                  |                            | QTR. CR. HRS. |
|-------------------------|----------------------------|---------------|
| 0855-372                | Composite Imaging          | 3             |
| 0855-373                | Digital Photography II     | 3             |
| 0855-374                | Image Retouch and Restore  | 3             |
| <b>Print publishing</b> |                            |               |
| 0855-334                | Database Publishing        | 3             |
| 0855-381                | Desktop Publishing II      | 3             |
| 0855-382                | Interactive PDF Publishing | 3             |
| 0855-383                | Publication Production II  | 3             |
| 0855-384                | Digital Printing Systems   | 3             |
| <b>Web design</b>       |                            |               |
| 0855-341                | Graphics for the Web       | 3             |
| 0855-343                | Computer Animation         | 3             |
| 0855-391                | Web Design II              | 3             |
| 0855-392                | Web Design III             | 3             |
| 0855-394                | Interactive Digital Media  | 3             |

## Arts and Imaging Studies, AOS

[www.rit.edu/NTID/ais](http://www.rit.edu/NTID/ais)

**Kenneth F. Hoffmann, Chairperson**  
**(585) 475-2890 (V/TTY), [kenneth.hoffmann@rit.edu](mailto:kenneth.hoffmann@rit.edu)**

People who work in the arts and imaging field are responsible for designing, organizing, and producing print and Web-based media for business, communication, publishing, manufacturing, entertainment, and advertising markets. This is a large, exciting field that requires a variety of computer-based and traditional visual skills. The arts and imaging studies program provides opportunities for students to enter various careers ranging from creative to highly technical positions at various degree levels.

### Program description

The arts and imaging studies programs include nine required core courses (27 credits) plus a required cooperative education experience. The core courses provide a solid foundation for continuing in advanced courses, a baccalaureate program, and employment. Several of the core courses are scheduled during the first year, and additional courses are completed during the second year.

In addition to the core courses taken in the first year, students immediately begin course work in their concentration. Students may choose a concentration in graphic design or graphic technology. Both concentrations consist of 24 credit hours.

All students entering the program will be given an aptitude assessment experience. As a result of this assessment profile, students will be counseled and placed into an initial concentration: graphic design for students with creative aptitude and interest; graphic technology for students with technical/production aptitude and interest. The assessment is not final. Based on success and demonstrated capabilities, students may request or be counseled to change their program concentration.

The program's curriculum includes nine credits of technical electives and three credits of free electives. Students may select their technical elective courses from four different professional focus areas that provide students with additional depth of skill and knowledge specific to a career pathway:

- graphic design
- photography
- print publishing
- Web design

Technical electives may be chosen from a concentration area, a list of technical electives, or, as appropriate, courses from other related programs. Free electives can be selected from any program within RIT, depending on availability and prerequisites.

All students gain real work experience through one quarter of required cooperative education employment. Upon satisfactory conclusion of the co-op, students complete a required portfolio presentation course in which they refine and complete their portfolio as needed for an application to a baccalaureate program or the search for employment.

### On-the-job responsibilities

Depending on the specific program concentration and elective course selection, graduates use computer-based methods to produce drawings, layouts, illustrations, and digital photographic images; prepare documents for print, Web, and digital distribution; produce interactive digital media; perform digital retouching and restoration of photographic images; produce composite digital images; design and produce websites; produce computer animations; plan and produce short edited videos; and operate electrophotographic digital printing and inkjet systems, simple bindery, and finishing equipment.

### Places of employment

Graduates usually find employment in a variety of commercial, corporate, government, and educational settings. Examples include computer graphics firms, advertising agencies, art studios, printing or manufacturing plants, prepress companies, in-house printing or marketing departments, book and magazine publishing houses, newspaper facilities, government agencies, industrial training or media departments, educational media centers, and educational institutions.

Graduates may qualify for positions such as production graphic artist, graphic designer, digital photo artist, digital photography technician, digital prepress technician, video technician, website designer, website technician, and digital printing systems operator.

### Prerequisites

Successful completion of a sampling experience offered during the Summer Vestibule Program and also during the academic year is required. The sampling activities provide opportunities for students to learn about the arts and imaging field, identify career opportunities, and evaluate their interest and aptitude for a degree program.

**ACT-AAS** minimum score = 18

**ACT-AOS** minimum score = 15

**English-AAS:** Placement into the Written Communication II (0502-111) course.

**English-AOS:** Placement into English level C or above. Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics-AAS/AOS:** Placement into the Concepts of Measurement (0884-150) course. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science-AAS/AOS:** Typically, students entering this program will have completed at least two years of high school science.



## Arts and imaging studies, AOS degree, graphic design concentration, typical course sequence

| COURSE                            |                            | QTR. CR. HRS. |
|-----------------------------------|----------------------------|---------------|
| <b>First Year</b>                 |                            |               |
| 0855-311                          | Basic Drawing              | 3             |
| 0855-252                          | Vector Graphics            | 3             |
| 0855-255                          | Principles of Design       | 3             |
| 0855-251                          | Bitmap Graphics            | 3             |
| 0855-253, 318                     | Typography I, II           | 6             |
| 0855-314                          | Color in Design            | 3             |
| 0855-331                          | Desktop Publishing I       | 3             |
| 0855-319                          | Graphic Design             | 3             |
|                                   | English Level C            | 12            |
| 0887-200                          | Freshman Seminar           | 2             |
|                                   | Mathematics (Level B)†     | 3             |
|                                   | Wellness Education†        | 0             |
| <b>Second Year</b>                |                            |               |
| 0855-342                          | Web Design I               | 3             |
| 0855-361                          | Grid Systems               | 3             |
| 0855-315                          | History of Graphic Design  | 3             |
| 0855-362                          | Publication Design         | 3             |
| 0855-323                          | Digital Photography I      | 3             |
| 0855-363                          | Identity Systems Design    | 3             |
|                                   | Technical Electives        | 9             |
| 0806-101                          | Job Search Process         | 2             |
|                                   | Social Science*            | 3             |
|                                   | Humanities*                | 3             |
|                                   | Communication Studies*     | 3             |
|                                   | Deaf Cultural Studies/ASL* | 3             |
|                                   | Science (Level B or above) | 3             |
| 0855-299                          | Cooperative Education      | Co-op         |
| <b>Third Year</b>                 |                            |               |
| 0855-353                          | Portfolio Presentation     | 3             |
| 0855-351                          | Production Workshop        | 3             |
|                                   | Free Elective              | 3             |
| 0806-201                          | Employment Seminar         | 1             |
|                                   | Capstone*                  | 3             |
| <b>Total Quarter Credit Hours</b> |                            | <b>101</b>    |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Satisfied by Concepts of Measurement (0884-150) or higher-level course.

## Arts and imaging studies, AOS degree, graphic technology concentration, typical course sequence

| COURSE             |                        | QTR. CR. HRS. |
|--------------------|------------------------|---------------|
| <b>First Year</b>  |                        |               |
| 0855-251           | Bitmap Graphics        | 3             |
| 0855-252           | Vector Graphics        | 3             |
| 0855-323           | Digital Photography I  | 3             |
| 0855-254           | Applied Color Theory   | 3             |
| 0855-253           | Typography I           | 3             |
| 0855-255           | Principles of Design   | 3             |
| 0855-331           | Desktop Publishing I   | 3             |
| 0855-321           | Image Acquisition      | 3             |
| 0855-342           | Web Design I           | 3             |
|                    | English Level C        | 12            |
| 0887-200           | Freshman Seminar       | 2             |
|                    | Mathematics (Level B)† | 3             |
|                    | Wellness Education†    | 0             |
| <b>Second Year</b> |                        |               |
| 0855-322           | Bitmap Graphics II     | 3             |
| 0855-344           | Videography I          | 3             |

| COURSE                            |                             | QTR. CR. HRS. |
|-----------------------------------|-----------------------------|---------------|
| 0855-324                          | Wide-Format Graphics        | 3             |
| 0855-333                          | Publication Production I    | 3             |
| 0855-332                          | PDF Production and Workflow | 3             |
| 0855-352                          | Color Management            | 3             |
|                                   | Technical Electives         | 9             |
| 0806-101                          | Job Search Process          | 2             |
|                                   | Social Science*             | 3             |
|                                   | Humanities*                 | 3             |
|                                   | Communication Studies*      | 3             |
|                                   | Deaf Cultural Studies/ASL*  | 3             |
|                                   | Science (Level B or above)  | 3             |
| 0855-299                          | Cooperative Education       | Co-op         |
| <b>Third Year</b>                 |                             |               |
| 0855-353                          | Portfolio Presentation      | 3             |
| 0855-351                          | Production Workshop         | 3             |
|                                   | Free Elective               | 3             |
| 0806-201                          | Employment Seminar          | 1             |
|                                   | Capstone*                   | 3             |
| <b>Total Quarter Credit Hours</b> |                             | <b>101</b>    |

\* Please see General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Satisfied by Concepts of Measurement (0884-150) or higher-level course.

## Professional electives

Students select nine credit hours from one of the following professional areas.

| COURSE                  |                            | QTR. CR. HRS. |
|-------------------------|----------------------------|---------------|
| <b>Graphic design</b>   |                            |               |
| 0855-310                | Visual Idea Development    | 3             |
| 0855-312                | Intermediate Drawing       | 3             |
| 0855-313                | Advanced Drawing           | 3             |
| 0855-316                | Art History I              | 3             |
| 0855-317                | Art History II             | 3             |
| 0855-364                | Digital Illustration       | 3             |
| <b>Photography</b>      |                            |               |
| 0855-371                | Dynamic Image Preparation  | 3             |
| 0855-372                | Composite Imaging          | 3             |
| 0855-373                | Digital Photography II     | 3             |
| 0855-374                | Image Retouch and Restore  | 3             |
| <b>Print publishing</b> |                            |               |
| 0855-334                | Database Publishing        | 3             |
| 0855-381                | Desktop Publishing II      | 3             |
| 0855-382                | Interactive PDF Publishing | 3             |
| 0855-383                | Publication Production II  | 3             |
| 0855-384                | Digital Printing Systems   | 3             |
| <b>Web design</b>       |                            |               |
| 0855-341                | Graphics for the Web       | 3             |
| 0855-343                | Computer Animation         | 3             |
| 0855-391                | Web Design II              | 3             |
| 0855-392                | Web Design III             | 3             |
| 0855-394                | Interactive Digital Media  | 3             |

## Automation Technologies, AAS

[www.rit.edu/NTID/esd](http://www.rit.edu/NTID/esd)

**Dino Laury, Chairperson**

**(585) 286-4613 (VP), [dino@mail.rit.edu](mailto:dino@mail.rit.edu)**

ADMISSION TO THIS AAS PROGRAM HAS BEEN SUSPENDED FOR THE 2011-12 ACADEMIC YEAR.



The automation technologies program prepares graduates to function in complex automated system environments. The program promotes skill development in electrical/electronic, mechanical, and computer technologies. Graduates will be particularly well-suited to take advantage of growing employment opportunities in these expanding industries.

### On-the-job responsibilities

An automation technology technician's responsibilities include installing, troubleshooting, repairing, upgrading, and maintaining automated systems and their components.

### Places of employment

The program prepares graduates for technical jobs in industries with automation systems, including robotics. Positions for which graduates qualify include robotics technician, automation systems technician, electromechanical technician, instrumentation technician, engineering technician, fluid power controls/system technician, quality control technician, and process control technician.

### Automation technologies, AAS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 0813-220                          | Engineering Fundamentals                   | 4             |
| 0890-212                          | Computing Tools for ET                     | 4             |
| 0884-212                          | Integrated Algebra                         | 4             |
| 0887-200                          | Freshman Seminar                           | 2             |
| 0813-222                          | Manufacturing Processes                    | 4             |
| 0890-214                          | CAD Applications in Engineering Technology | 4             |
| 0884-220                          | Elements of Trigonometry                   | 4             |
| 0502-227                          | Writing Seminar                            | 4             |
| 0891-216                          | Programming Concepts                       | 4             |
| 0885-201                          | Physics I                                  | 4             |
| 0891-212                          | Industrial Electronics                     | 4             |
|                                   | Liberal Arts*                              | 4             |
|                                   | Wellness Education†                        | 0             |
| <b>Second Year</b>                |  |               |
| 0891-214                          | Electromechanical Devices                  | 4             |
| 0891-314                          | PLC Programming                            | 4             |
| 0891-210                          | Pneumatic and Hydraulic Systems            | 3             |
|                                   | Liberal Arts*                              | 8             |
| 0891-230                          | Automated Systems Troubleshooting I        | 4             |
| 0891-220, 320                     | Automated Systems I, II                    | 8             |
| 0891-316                          | Mechanical Devices and Systems             | 3             |
|                                   | Deaf Cultural Studies/ASL*                 | 3             |
| 0891-318                          | Applied Robotics                           | 4             |
|                                   | Technical Elective                         | 3             |
| 0886-101                          | Job Search                                 | 2             |
| 0891-299                          | Cooperative Education                      | Co-op         |
| <b>Third Year</b>                 |  |               |
| 0891-330                          | Automated Systems Troubleshooting II       | 4             |
|                                   | Liberal Arts*                              | 4             |
|                                   | Technical Elective                         | 3             |
|                                   | Capstone*                                  | 3             |
| <b>Total Quarter Credit Hours</b> |  | <b>106</b>    |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

## Automation Technologies, AOS

[www.rit.edu/NTID/esd](http://www.rit.edu/NTID/esd)

**Dino Laury, Chairperson**

**(585) 286-4613 (VP), [dino@mail.rit.edu](mailto:dino@mail.rit.edu)**

*ADMISSION TO THIS AOS PROGRAM HAS BEEN SUSPENDED FOR THE 2011-12 ACADEMIC YEAR.*

The automation technologies program prepares students to function in complex automated system environments. The program promotes skill development in electrical/electronic, mechanical, and computer technologies. Graduates are particularly well-suited to take advantage of growing employment opportunities in these expanding industries.

### On-the-job responsibilities

An automation technology technician's responsibilities include installing, troubleshooting, repairing, upgrading, and maintaining automated systems and their components.

### Places of employment

The program prepares graduates for technical jobs in industries with automation systems, including robotics. Positions for which graduates qualify include robotics technician, automation systems technician, electromechanical technician, instrumentation technician, engineering technician, fluid power controls/system technician, quality control technician, and process control technician.

### Automation technologies, AOS degree, typical course sequence

| COURSE             |                                      | QTR. CR. HRS. |
|--------------------|--------------------------------------|---------------|
| <b>First Year</b>  |                                      |               |
| 0813-220           | Engineering Fundamentals             | 4             |
| 0890-212           | Computing Tools for ET               | 4             |
| 0884-212           | Integrated Algebra                   | 4             |
| 0887-200           | Freshman Seminar                     | 2             |
| 0813-222           | Manufacturing Processes              | 4             |
| 0890-214           | CAD Applications in ET               | 4             |
| 0884-220           | Elements of Trigonometry             | 4             |
|                    | English Level C                      | 8             |
| 0891-216           | Programming Concepts                 | 4             |
| 0891-212           | Industrial Electronics               | 4             |
| 0885-201           | Physics I                            | 4             |
|                    | Wellness Education†                  | 0             |
| <b>Second Year</b> |                                      |               |
| 0891-214           | Electromechanical Devices            | 4             |
| 0891-314           | PLC Programming                      | 4             |
| 0891-210           | Pneumatic and Hydraulic Systems      | 3             |
|                    | English Level C                      | 4             |
| 0891-316           | Mechanical Devices and Systems       | 3             |
|                    | Deaf Cultural Studies/ASL*           | 3             |
|                    | Communication Studies*               | 3             |
| 0886-101           | Job Search                           | 2             |
| 0891-230           | Automated Systems Troubleshooting I  | 4             |
| 0891-220, 320      | Automated Systems I, II              | 8             |
| 0891-318           | Applied Robotics                     | 4             |
|                    | Social Science*                      | 3             |
| 0891-299           | Cooperative Education                | Co-op         |
| <b>Third Year</b>  |                                      |               |
| 0891-330           | Automated Systems Troubleshooting II | 4             |
|                    | Humanities*                          | 3             |

| COURSE                            | QTR. CR. HRS. |
|-----------------------------------|---------------|
| Technical Elective                | 3             |
| Capstone*                         | 3             |
| <b>Total Quarter Credit Hours</b> | <b>104</b>    |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

## Business, AS

[www.rit.edu/NTID/busAplusB](http://www.rit.edu/NTID/busAplusB)

**Mary Lou Basile, Chairperson**

**(585) 475-6460 (V/TTY), [mlbnbt@rit.edu](mailto:mlbnbt@rit.edu)**

The AS degree in business is an Associate+Bachelor's degree program designed to prepare deaf and hard-of-hearing students to enter and successfully complete a bachelor's degree program in the E. Philip Saunders College of Business, which offers a portfolio of comprehensive programs designed to prepare students for leadership in the business environment. The Saunders College is accredited by the Association to Advance Collegiate Schools of Business International, the premier accrediting organization for business schools.

Upon completion of the AS program, students with a minimum GPA of 2.5 will enroll directly in the Saunders College, where they complete their bachelor's degree in accounting, finance, international business, management, management information systems, marketing, or new media marketing. Admission to this program is available during the fall quarter only.

### Prerequisites

**ACT:** composite test score of 18 and above.

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course. Students who qualify for Written Communication II (0502-111) will be considered for admission if they are at level D or higher in mathematics.

**Mathematics:** Placement into level C mathematics course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into any level D science course numbered 0885-250 or higher. Typically, students entering this program will have completed at least two years of high school science.

### Enrollment requirements

To enroll in the Saunders College, students must have a minimum grade-point average of 2.5 upon graduation with the AS degree in business.

### Business, AS degree, typical course sequence

| COURSE                                   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>                        |               |
| 0884-210 Applications of Algebra†        | 4             |
| 0884-250 Science (Level D or above)      | 4             |
| 0804-101 Orientation to Business         | 3             |
| 0887-200 Freshman Seminar                | 2             |
| Liberal Arts*                            | 4             |
| 0502-227 Writing Seminar                 | 4             |
| 0884-260 Explorations in College Algebra | 4             |
| 0801-211, 212 Financial Accounting I, II | 8             |
| 0804-284 Fundamentals of Management      | 3             |
| 1016-225 Algebra for Management Science  | 4             |

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| 0112-270 Business Software Applications          | 2             |
| Wellness Education†                              | 0             |
| <b>Second Year</b>                               |               |
| Liberal Arts*                                    | 16            |
| 1016-226 Calculus for Management Science         | 4             |
| 0801-221, 222 Managerial Accounting I, II        | 8             |
| Laboratory Science (College of Science)          | 4             |
| 0535-352 Professional Communication for Business | 4             |
| 0511-211 Principles of Microeconomics§           | 4             |
| 0511-402 Principles of Macroeconomics**          | 4             |
| 0112-315 Business Information Systems            | 4             |
| 0804-286 Fundamentals of Marketing               | 3             |
| <b>Total Quarter Credit Hours</b>                | <b>93</b>     |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Entering students who have the math proficiency to waive this course may take Explorations in College Algebra (0884-260).

§ Principles of Microeconomics (0511-211) is a social science course in the College of Liberal Arts.

However, for students in the E. Philip Saunders College of Business, it is a required professional course.

Therefore, graduates of this AS program who transfer to the E. Philip Saunders College will be required to take an additional College of Liberal Arts lower-division social science course to fulfill College of Liberal Arts General Education requirements. Principles of Microeconomics will be allocated to the business core in the E. Philip Saunders College of Business.

\*\*Principles of Macroeconomics (0511-402) is a course in the E. Philip Saunders College of Business and is not allocated to the College of Liberal Arts distribution requirements.

### Microsoft certification

As an authorized testing center for Microsoft Office Specialist, preparatory courses are offered for several exams each quarter.

## Business Technology, AOS

[www.rit.edu/NTID/bustech](http://www.rit.edu/NTID/bustech)

**Mary Lou Basile, Chairperson**

**(585) 475-6460 (V/TTY), [mlbnbt@rit.edu](mailto:mlbnbt@rit.edu)**

The business technology AOS degree program includes technical course work in accounting, computers, payroll, general office skills, and word processing/information processing skills. Students complete a sequence of courses that provides either an accounting technology or administrative support technology concentration.

This is a nontransfer occupational program, with primary emphasis on preparation for immediate employment.

### Places of employment

Graduates of this program will find employment in a variety of settings, including business, industry, government, and education.

### On-the-job responsibilities

Graduates will input, manipulate, and retrieve data; use interactive software, e-mail, and information processing skills; and use computers to maintain and reconcile various financial records. Positions for which graduates qualify include general office clerk, accounts receivable/payables clerk, payroll records clerk, word processing technician, cost accounting clerk, and microcomputer accounting clerk.

### Prerequisites

**English:** Placement into English level C or above. Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Mathematics Applications for Business Technology (0884-155) is required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science.

### Business technology, AOS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS.  |
|-----------------------------------|---|----------------|
| <b>First Year</b>                 |   |                |
| 0801-201, 202                     | Accounting I, II                            | 8              |
| 0804-101                          | Orientation to Business                     | 3              |
| 0804-110                          | Business English                            | 3              |
| 0804-111                          | Keyboarding                                 | 2              |
| 0804-112                          | OAS Formatting                              | 3              |
| 0804-113                          | OAS Document Production I                   | 4              |
| 0804-211                          | Records Management/Business Calculations    | 3              |
| 0804-212                          | Payroll/Spreadsheet Applications            | 3              |
|                                   | Mathematics requirement§                    | 3              |
| 0887-200                          | Freshman Seminar                            | 2              |
|                                   | English Level C                             | 12             |
|                                   | Wellness Education†                         | 0              |
| <b>Second Year</b>                |   |                |
| 0801-203                          | Accounting III                              | 4              |
| Choose one of the following:      |   | 7-8            |
| 0801-252, 253                     | Cost Accounting I, II‡                      |                |
| 0804-304                          | Database Applications for Business**        |                |
| 0804-230                          | Administrative Support Technology Seminar** | 3              |
| 0804-221                          | OAS Document Production II                  | 4              |
| 0804-284                          | Fundamentals of Management                  | 3              |
| 0804-286                          | Fundamentals of Marketing                   | 3              |
| 0804-302                          | Advanced Applications for Word Processing   | 4              |
| 0804-303                          | Business Graphics                           | 4              |
|                                   | Humanities*                                 | 3              |
|                                   | Science (Level B)                           | 3              |
|                                   | Communication Studies*                      | 3              |
| 0806-101                          | Job Search Process                          | 2              |
|                                   | Deaf Cultural Studies/ASL*                  | 3              |
| 0805-211                          | Web Development for Business**              | 3              |
| 0804-299                          | Cooperative Education                       | Co-op          |
| <b>Third Year</b>                 |   |                |
| Choose one of the following:      |   | 2-3            |
| 0801-260                          | Applied Accounting Techniques‡              |                |
| 0804-310                          | Desktop Publishing for Business**           |                |
| 0804-291                          | Applied Business Techniques                 | 2              |
| 0806-201                          | Employment Seminar                          | 1              |
| 0882-242                          | Law and Society                             | 3              |
|                                   | Social Science*                             | 3              |
|                                   | Capstone*                                   | 3              |
| <b>Total Quarter Credit Hours</b> |   | <b>104/107</b> |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Courses required for accounting technology option.

§ Mathematics Applications for Business Technology (0884-155) is required.

\*\* Courses required for administrative support technology option.

### Microsoft certification

The department operates an authorized testing center for Microsoft Office Specialist. Preparatory courses are offered for several exams each quarter.

## Computer-Aided Drafting Technology, AAS

[www.rit.edu/NTID/cadt](http://www.rit.edu/NTID/cadt)

**Dino Laury, Chairperson**

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People who work in computer-aided drafting technology use their skills to create two- and three-dimensional drawings on the computer. These drawings are used to visually represent buildings, bridges, canals, and houses. Computer-aided drafting operators (technicians) take the sketches of an engineer, architect, or designer and produce a set of technical drawings.

In addition to a strong emphasis on computer-aided drafting, the program provides students with a background in mathematics, building systems, construction regulations, site utilities, and materials and methods used in the architecture, engineering, and construction industries.

### On-the-job responsibilities

Graduates will enter businesses and industries that need technical employees with skills in computer drafting technology and a broad knowledge of applications and procedures. Graduates will work for architectural, engineering, or construction firms creating engineering drawings.

### Places of employment

Graduates will find work in a variety of settings, including government agencies and architectural, construction, and engineering firms. Positions for which graduates qualify include drafters/technicians for architectural, highway design, and civil environments.

### Prerequisites

**English:** Placement in the College of Liberal Arts' Writing Seminar (0502-227) course. Students typically enter Writing Seminar with reading scores equivalent to 10.0 on the California Reading Test. However, students who complete AAS degrees typically enter NTID with reading scores equivalent to 9.0 on the California Reading Test.

**Mathematics:** Placement in Integrated Algebra (0884-212). Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into Physics I (0885-201) or a higher-level course. Typically, students entering this program will have completed at least three years of high school science. High school physics would be beneficial.

### Computer-aided drafting technology, AAS degree, typical course sequence

| COURSE            |  | QTR. CR. HRS. |
|-------------------|--|---------------|
| <b>First Year</b> |  |               |
| 0813-220          | Engineering Fundamentals                   | 4             |
| 0890-212          | Computing Tools for Engineering Technology | 4             |
| 0884-212          | Integrated Algebra                         | 4             |
| 0887-200          | Freshman Seminar                           | 2             |
| 0813-222          | Manufacturing Processes                    | 4             |
| 0890-214          | CAD Applications in Engineering Technology | 4             |
| 0884-220          | Elements of Trigonometry                   | 4             |
| 0502-227          | Writing Seminar                            | 4             |
| 0890-210          | Construction CAD I                         | 4             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 0890-208                          | A/E/C Measuring Systems                      | 2             |
| 0885-201                          | Physics I                                    | 4             |
|                                   | Liberal Arts*                                | 4             |
|                                   | Wellness Education†                          | 0             |
| <b>Second Year</b>                |  |               |
| 0890-220, 230                     | Construction CAD II, III                     | 8             |
| 0890-255, 265                     | Construction Materials and Methods I, II     | 6             |
| 0884-275                          | Advanced Math                                | 4             |
|                                   | Liberal Arts*                                | 12            |
| 0890-275                          | Principles of Structural Systems             | 3             |
| 0806-101                          | Job Search Process                           | 2             |
| 0890-310                          | Advanced Construction CAD                    | 4             |
|                                   | Technical Elective                           | 3             |
| 0890-375                          | Construction Regulations                     | 3             |
| 0890-299                          | Cooperative Education                        | Co-op         |
| <b>Third Year</b>                 |  |               |
| 0890-320                          | Presentation Graphics                        | 4             |
|                                   | Deaf Cultural Studies/ASL*                   | 3             |
| 0890-280                          | GIS Fundamentals                             | 3             |
| 0890-355                          | Site Utilities Mechanical/Electrical Systems | 3             |
|                                   | Capstone*                                    | 3             |
| <b>Total Quarter Credit Hours</b> |  | <b>105</b>    |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

## Computer-Aided Drafting Technology, AOS

[www.rit.edu/NTID/cadt](http://www.rit.edu/NTID/cadt)

**Dino Laury, Chairperson**

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People who work in computer-aided drafting technology use their skills to create two- and three-dimensional drawings on the computer. These drawings are used to visually represent buildings, bridges, canals, and houses. Computer-aided drafting operators (technicians) take the sketches of an engineer, architect, or designer and produce a set of technical drawings.

In addition to a strong emphasis on computer-aided drafting, the program gives students a background in mathematics, building systems, construction regulations, site utilities, and materials and methods used in the architecture, engineering, and construction industries.

### On-the-job responsibilities

Graduates will enter businesses and industries that need technical employees with skills in computer-aided drafting technology and a broad knowledge of applications and procedures. Graduates will work in architectural, engineering, or construction firms creating engineering drawings.

### Places of employment

Graduates of this program will find work in a variety of settings, including engineering firms, government agencies, and architectural and construction firms. Positions for which graduates qualify include drafters/technicians for architectural, highway design, and civil environments.

### Prerequisites

Successful completion of a sampling experience either through the Summer Vestibule Program or an equivalent career exploration course is a prerequisite, as are the following:

**English:** Placement into English level C or above. Students successfully completing an AOS degree typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Placement into Foundations of Algebra (0884-180) or a higher-level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into Physics of Matter (0885-154) or a higher-level course. Typically, students entering this program will have completed at least three years of high school science. High school physics would be beneficial.

### Computer-aided drafting technology, AOS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 0813-220                          | Engineering Fundamentals                     | 4             |
| 0890-212                          | Computing Tools for Engineering Technology   | 4             |
| 0884-180                          | Foundations of Algebra                       | 4             |
| 0887-200                          | Freshman Seminar                             | 2             |
|                                   | English Level C                              | 12            |
| 0813-222                          | Manufacturing Processes                      | 4             |
| 0890-214                          | CAD Applications in Engineering Technology   | 4             |
| 0884-212                          | Integrated Algebra                           | 4             |
| 0890-210                          | Construction CAD I                           | 4             |
| 0890-208                          | A/E/C Measuring Systems                      | 2             |
| 0885-154                          | Physics of Matter                            | 3             |
|                                   | Wellness Education†                          | 0             |
| <b>Second Year</b>                |  |               |
| 0890-220, 230                     | Construction CAD II, III                     | 8             |
| 0890-255, 265                     | Construction Materials and Methods I, II     | 6             |
|                                   | Humanities*                                  | 3             |
| 0884-220                          | Elements of Trigonometry                     | 4             |
| 0890-275                          | Principles of Structural Systems             | 3             |
|                                   | Communication Studies*                       | 3             |
| 0806-101                          | Job Search Process                           | 2             |
| 0890-310                          | Advanced Construction CAD                    | 4             |
|                                   | Social Science*                              | 3             |
|                                   | Technical Elective                           | 3             |
| 0890-375                          | Construction Regulations                     | 3             |
|                                   | Deaf Cultural Studies/ASL*                   | 3             |
| 0890-299                          | Cooperative Education                        | Co-op         |
| <b>Third Year</b>                 |  |               |
| 0890-320                          | Presentation Graphics                        | 4             |
| 0890-280                          | GIS Fundamentals                             | 3             |
| 0890-355                          | Site Utilities Mechanical/Electrical Systems | 3             |
|                                   | Capstone*                                    | 3             |
| <b>Total Quarter Credit Hours</b> |  | <b>105</b>    |

† Please see Wellness Education Requirement for more information.

\* Please see NTID's General Education Distribution Requirements chart for more information.

# Computer-Integrated Machining Technology, AOS

[www.rit.edu/NTID/cimt](http://www.rit.edu/NTID/cimt)

**Dino Laury, Chairperson**

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Computer-integrated machining technology students prepare for employment in precision machining and/or precision optics manufacturing occupations. These include tool and die making, mold making, instrument making, manufacturing of optical elements, and computer numerical control machining (CNC). Graduates are successfully employed in both large manufacturing corporations and small contract manufacturing shops. In addition, graduates can continue their education in manufacturing and engineering technology programs.

## On-the-job responsibilities

Graduates will set up and operate lathes, milling machine tools, grinders, polishers, and computer numerical controlled machine tools; shape material into precision parts by conventional and nonconventional processes; follow blueprints; and use advanced measuring techniques to inspect work.

## Places of employment

Graduates will find work in a variety of settings, including manufacturing, metal and/or precision optics manufacturing industries, engineering firms, and engineering research firms. Positions for which graduates qualify include entry-level and apprenticeship programs for positions such as a tool and die maker, instrument maker, mold maker, pattern maker, model maker, machinist, computer numerical control operator, or computer numerical control programmer trainee. Graduates who choose precision optics electives are also qualified for an entry-level position as a precision optics manufacturing technician. Graduates also work for companies that produce optical elements for a variety of applications.

## Electives

Students primarily interested in traditional machining positions typically choose the following electives: technical elective, Design, Dimensioning, and Tolerancing (0890-216) from the applied mechanical technology program; advanced technical elective, CNC Toolpaths (0813-257); and machining technical elective, Automated Machining (0813-258).

Students primarily interested in precision optics manufacturing positions typically choose these electives: technical elective, Lens Design and Application (0813-240); advanced technical elective, Optical Testing (0813-242); and machining technical elective, Precision Optics Manufacturing II (0813-245).

## Prerequisites

Successful completion of a sampling experience either through the Summer Vestibule Program or an equivalent career exploration course is a prerequisite, as are the following:

**English:** Placement into English level C or above. Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Placement into Foundations of Algebra (0884-180) or a higher-level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science.

## Computer-integrated machining technology, AOS degree, typical course sequence

| COURSE   |  | QTR. CR. HRS. |
|--|--|---------------|
| <b>First Year</b>  |  |               |
| 0813-220   | Engineering Fundamentals                         | 4             |
| 0890-212   | Computing Tools for Engineering Technology       | 4             |
| 0884-180   | Foundations of Algebra                           | 4             |
|  | English Level C                                  | 12            |
| 0887-200   | Freshman Seminar                                 | 2             |
| 0813-222   | Manufacturing Processes                          | 4             |
| 0890-214   | CAD Applications in Engineering Technology       | 4             |
| 0885-154   | Physics of Matter                                | 3             |
| 0813-231   | Computer-Integrated Machining Technology 1       | 3             |
| 0813-250   | Introduction to CNC                              | 2             |
| 0813-255   | Precision Measurement                            | 2             |
| 0884-205   | Trigonometry for Coordinate Analysis I           | 3             |
| 0813-239   | Blueprint Reading                                | 2             |
|  | Wellness Education†                              | 0             |
| <b>Second Year</b>   |  |               |
| 0813-232, 233, 234   | Computer-Integrated Machining Technology 2, 3, 4 | 12            |
| 0813-252   | CNC Graphics                                     | 3             |
| 0813-251   | Industrial Materials                             | 3             |
| 0884-206   | Trigonometry for Coordinate Analysis II          | 3             |
| 0813-254   | CNC Solids                                       | 3             |
| 0813-244   | Precision Optics Manufacturing I                 | 2             |
| Choose one of the following technical electives:               |  | 3             |
| 0813-240   | Lens Design and Applications                     |               |
| 0885-201   | Physics I  |               |
| 0890-216   | Design, Dimensioning, and Tolerancing            |               |
| Choose one of the following advanced technical electives:      |  | 3             |
| 0813-257   | CNC Toolpaths                                    |               |
| 0813-242   | Optical Testing                                  |               |
| 0806-101   | Job Search Process                               | 2             |
|  | Communication Studies*                           | 3             |
|  | Social Science*                                  | 3             |
|  | Deaf Cultural Studies/ASL*                       | 3             |
| 0813-299   | Cooperative Education                            | Co-op         |
| <b>Third Year</b>  |  |               |
| Choose one of the following manufacturing technical electives: |  | 6             |
| 0813-258   | Automated Machining                              |               |
| 0813-245   | Precision Optics Manufacturing II                |               |
|  | Humanities*                                      | 3             |
| 0806-201   | Employment Seminar                               | 1             |
|  | Capstone*  | 3             |
| <b>Total Quarter Credit Hours</b>                              |  | <b>105</b>    |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.



## Deaf Cultural Studies/American Sign Language, Cert.

[www.rit.edu/NTID/ds](http://www.rit.edu/NTID/ds)

**Joseph Bochner, Chairperson**  
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**J. Matt Searls, Program Contact**  
(585) 475-5707, [jmsdhd@rit.edu](mailto:jmsdhd@rit.edu)

The deaf cultural studies/American Sign Language certificate program offers deaf and hard-of-hearing students the opportunity to understand the deaf community as an entity unto itself and within the context of society as a whole. The program consists of two tracks: the advocacy and community track and the American Sign Language studies track.

Both tracks address the historical, anthropological, linguistic, literary, artistic, and multicultural aspects of deaf people's lives. Knowledge, skills, and abilities learned through this program of study include: understanding the structure of ASL and the application of linguistic principles to other languages (specifically English); enhancement of bilingual skills to improve communication; increased knowledge of deaf culture and deaf history; a heightened sense of self-concept, self-esteem, and self-confidence; improved presentation skills; and enhanced literacy and critical thinking skills.

The advocacy and community track improves students' ability to advocate for their rights in the workplace and contribute to leadership in the greater community. The ASL studies track enhances students' marketability as teachers of ASL and deaf culture in the workplace, at schools, or within the greater community.

Candidates are granted the certificate upon successful completion of the course requirements in either of the tracks. Courses are offered as part of the NTID social sciences and humanities curricula. Applicants for the deaf cultural studies/American Sign Language certificate must be either matriculated students in good standing in an undergraduate degree program at RIT/NTID or graduates holding a degree from an RIT/NTID program. Introduction to Deaf Cultural Studies and ASL (0880-190) is a prerequisite for admission to the program.

| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| <b>Advocacy and community track: required courses</b>         |  |               |
| 0882-222  | Deaf Culture and Community                         | 3             |
| 0882-285  | Civil Rights and Deaf People                       | 3             |
| 0886-249  | Structure of ASL                                   | 3             |
| 0880-207  | Organizational Communication and the Deaf Employee | 3             |
| Total Quarter Credit Hours                                    |  | 12            |
| <b>American Sign Language studies track: required courses</b> |  |               |
| 0882-222  | Deaf Culture and Community                         | 3             |
| 0886-249  | Structure of ASL                                   | 3             |
| 0886-250  | Introduction to ASL Teaching                       | 3             |
| Choose one of the following electives:                        |  | 3             |
| 0880-207  | Organizational Communication and the Deaf Employee |               |
| 0882-221  | Deaf Heritage                                      |               |
| 0882-223  | Deaf Women's Studies                               |               |
| 0882-285  | Civil Rights and Deaf People                       |               |
| <b>Total Quarter Credit Hours</b>                             |  | <b>12</b>     |

## Hospitality and Service Management, AS

[www.ntid.edu/NTID/hsmAplusB](http://www.ntid.edu/NTID/hsmAplusB)

**Mary Lou Basile, Chairperson**  
(585) 475-6460 (V/TTY), [mlbnbt@rit.edu](mailto:mlbnbt@rit.edu)

The associate of science degree in hospitality and service management is an Associate+Bachelor's degree program designed to prepare deaf and hard-of-hearing students to enter and successfully complete a baccalaureate program in the College of Applied Science and Technology's School of International Hospitality and Service Innovation.

Upon completion of the AS program with a minimum GPA of 2.5, students will enroll directly in the College of Applied Science and Technology, where they will pursue a bachelor's degree in hospitality and service management. Students may choose one of two concentrations: hotel and resort management, or food management. Admission to this program is available for the fall quarter only.

### Prerequisites

**ACT:** composite test score of 18 and above.

**English:** Placement into the College of Liberal Arts' Writing Seminar (0502-227) course. Students who qualify for Written Communication II (0502-111) will be considered for admission if they are at level D or higher in mathematics.

**Mathematics:** Placement into level C mathematics course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement in any level D science course numbered 0885-250 or higher. Typically, students entering this program will have completed at least two years of high school science.

### Enrollment requirements

To enroll in the College of Applied Science and Technology's School of International Hospitality and Service Innovation, the student must present a grade-point average of 2.5 or higher upon graduation with the associate in science degree.

### Hospitality and service management, AS degree, hotel and resort management concentration, typical course sequence

| COURSE             |                                      | QTR. CR. HRS. |
|--------------------|--------------------------------------|---------------|
| <b>First Year</b>  |                                      |               |
| 0502-227           | Writing Seminar                      | 4             |
| 0887-200           | Freshman Seminar                     | 2             |
| 0884-210           | Applications of Algebra              | 4             |
| 0622-200           | Hotel Operations                     | 4             |
| 0619-220           | Survey of Service Management         | 2             |
| 0622-210           | Hotel Marketing and Sales Management | 4             |
| 0801-211, 212      | Financial Accounting I, II           | 8             |
|                    | NTID Science (Level D)               | 4             |
| 0619-221           | Basic Computer Applications          | 2             |
| 0884-260           | Explorations in College Algebra      | 4             |
|                    | Liberal Arts*                        | 4             |
| 0622-310           | Resort Development and Management    | 4             |
| 1016-225           | Algebra for Management Science       | 4             |
|                    | Wellness Education†                  | 0             |
| <b>Second Year</b> |                                      |               |
|                    | Liberal Arts*                        | 16            |
| 0801-221, 222      | Managerial Accounting I, II          | 8             |
| 0511-211           | Principles of Microeconomics         | 4             |
| 0622-315           | Facility and Property Management     | 4             |

| COURSE                            |                                 | QTR. CR. HRS. |
|-----------------------------------|---------------------------------|---------------|
|                                   | Science with Lab‡               | 4             |
| 0622-355                          | Financial Management for Hotels | 4             |
| 1016-319                          | Data Analysis I                 | 4             |
| 0804-286                          | Fundamentals of Marketing       | 3             |
| 0621-499                          | Cooperative Education           | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                 | <b>97</b>     |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Health Awareness (1026-221) or Medical Laboratory Procedures (1026-220) is recommended.

## Hospitality and service management, AS degree, food management concentration, typical course sequence

| COURSE                            |                                 | QTR. CR. HRS. |
|-----------------------------------|---------------------------------|---------------|
| <b>First Year</b>                 |                                 |               |
| 0502-227                          | Writing Seminar                 | 4             |
| 0887-200                          | Freshman Seminar                | 2             |
| 0884-210                          | Applications of Algebra         | 4             |
| 0621-225                          | Principles of Food Production   | 4             |
| 0619-220                          | Survey of Service Management    | 2             |
| 0884-260                          | Explorations in College Algebra | 4             |
| 0801-211, 212                     | Financial Accounting I, II      | 8             |
|                                   | NTID Science (Level D)          | 4             |
| 0619-221                          | Basic Computer Applications     | 2             |
|                                   | Liberal Arts*                   | 4             |
|                                   | Science with Lab‡               | 4             |
| 0621-314                          | Sanitation and Safety           | 2             |
| 1016-225                          | Algebra for Management Science  | 4             |
|                                   | Wellness Education†             | 0             |
| <b>Second Year</b>                |                                 |               |
|                                   | Liberal Arts*                   | 16            |
| 0621-331                          | Restaurant Operations           | 6             |
| 0801-221, 222                     | Managerial Accounting I, II     | 8             |
| 0511-211                          | Principles of Microeconomics    | 4             |
| 0621-318                          | Food and Beverage Management    | 4             |
| 1016-319                          | Data Analysis I                 | 4             |
| 0804-286                          | Fundamentals of Marketing       | 3             |
|                                   | HSM Program Elective            | 4             |
| 0621-499                          | Cooperative Education           | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                 | <b>97</b>     |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Health Awareness (1026-221) or Medical Laboratory Procedures (1026-220) is recommended.

## Laboratory Science Technology, AAS

[www.rit.edu/NTID/lst](http://www.rit.edu/NTID/lst)

**Vincent A. Daniele, Chairperson**  
(585) 475-6744, [vadntm@rit.edu](mailto:vadntm@rit.edu)

The laboratory science technology program was developed primarily from an industry perspective. The program prepares students for employment as laboratory technicians and includes a foundation of course sequences in chemistry, biology, instrumental analysis, laboratory mathematics, and a unique six-part laboratory applications series. The program has several significant factors that set it apart, including the application of real-world analyses and a state-of-the-art instrumentation laboratory. Graduates are prepared to work in a broad range of fields, including chemical, biological, biotechnical, environmental, industrial, forensic, and food analysis. Students may choose from AAS and AOS degree programs.

Students earning an AAS degree have the option of finding employment or continuing to work toward a baccalaureate degree. Under the program's agreement with the Center for Multidisciplinary Studies, individuals who maintain a grade-point average of 3.0 or better while in the AAS program enroll directly in the center's bachelor's degree program. Through this program students complete a BS degree in applied arts and science with a concentration in biotechnology studies. For more information go to [www.rit.edu/lstAplusB](http://www.rit.edu/lstAplusB).

### On-the-job responsibilities

Technicians are involved with the collection and preparation of samples. They also perform instrumental, volumetric, gravimetric, and biological analyses. Additional job responsibilities may include the interpretation and reporting of experimental results.

### Places of employment

The program prepares graduates for technical jobs in municipal, public, private, and industrial laboratories.

### Prerequisites

**English—AAS:** Placement in the College of Liberal Arts' Writing Seminar (0502-227) course. Students typically enter Writing Seminar with reading scores equivalent to 10.0 on the California Reading Test. However, students who complete AAS degrees typically enter NTID with reading scores of 9.0 on the California Reading Test.

**Mathematics:** Placement in level C mathematics or higher. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science. Completion of high school chemistry recommended.

### Laboratory science technology, AAS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 0879-200           | Introduction to Laboratory Science Technology              | 2             |
| 0885-215           | Fundamentals of Cellular Biology                           | 4             |
| 0885-205, 206      | Fundamentals of Chemistry I, II                            | 8             |
| 0502-227           | Writing Seminar  | 4             |
| 0887-200           | Freshman Seminar   | 2             |
| 0879-201, 202      | Laboratory Science Technology Lab Applications I, II       | 4             |
| 0885-291           | Principles of Analytical Chemistry                         | 4             |
| 0884-212           | Integrated Algebra   | 4             |
| 0884-231           | Laboratory Math I  | 3             |
|                    | Liberal Arts*  | 8             |
|                    | Deaf Cultural Studies/ASL*                                 | 3             |
| <b>Second Year</b> |  |               |
| 0879-203, 204, 205 | Laboratory Science Technology Lab Applications III, IV, V  | 6             |
| 0879-301, 302, 303 | Instrumental Analysis I, II, III                           | 10            |
| 0885-292           | Principles of Organic Chemistry                            | 4             |
| 0884-232           | Laboratory Math II   | 3             |
| 0879-398           | ST: Molecular Biology                                      | 4             |
| 0879-218           | Introduction to Laboratory Science Technology Microbiology | 3             |
| 0879-313           | Chemical Technology  | 4             |
| 0879-314           | Biotechnology  | 4             |
| 0806-101           | Job Search Process   | 2             |
|                    | Liberal Arts*  | 4             |
|                    | Wellness Education†  | 0             |

| COURSE                            |   | QTR. CR. HRS.  |
|-----------------------------------|---|----------------|
| 0879-299                          | Cooperative Education                             | Co-op          |
| <b>Third Year</b>                 |   |                |
| 0879-206                          | Laboratory Science Technology Lab Applications VI | 2              |
| 0879-250                          | Senior Seminar                                    | 2              |
|                                   | Technical Elective‡                               | 3-4            |
|                                   | Liberal Arts*                                     | 4              |
|                                   | Capstone*   | 3              |
| <b>Total Quarter Credit Hours</b> |   | <b>104-105</b> |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Students must choose one technical elective from the list of laboratory science technology courses or seek department approval for a course from another college.

## Laboratory Science Technology, AOS

[www.rit.edu/NTID/lst](http://www.rit.edu/NTID/lst)

**Vincent A. Daniele, Chairperson**  
(585) 475-6744, [vadntm@rit.edu](mailto:vadntm@rit.edu)

The laboratory science technology program was developed primarily from an industry perspective. The program prepares students for employment as laboratory technicians and includes a foundation of course sequences in chemistry, biology, instrumental analysis, laboratory mathematics, and a unique six-part laboratory applications series. The program has several significant factors that set it apart, including the application of real-world analyses and a state-of-the-art instrumentation laboratory. Graduates are prepared to work in a broad range of fields, including chemical, biological, biotechnical, environmental, industrial, forensic, and food analysis. Students may choose from AAS and AOS degree programs.

### On-the-job responsibilities

Technicians are involved with the collection and preparation of samples. They also perform instrumental, volumetric, gravimetric, and biological analyses. Additional job responsibilities may include the interpretation and reporting of experimental results.

### Places of employment

The program prepares graduates for technical jobs in municipal, public, private, and industrial laboratories.

### Prerequisites

**English—AOS:** Placement in English level C or above. Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Placement in level C mathematics or higher. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Typically, students entering this program will have completed at least two years of high school science. Completion of high school chemistry recommended.

### Laboratory science technology, AOS degree, typical course sequence

| COURSE            |   | QTR. CR. HRS. |
|-------------------|---|---------------|
| <b>First Year</b> |   |               |
| 0879-200          | Introduction to Laboratory Science Technology | 2             |
| 0885-215          | Fundamentals of Cellular Biology              | 4             |

| COURSE        |  | QTR. CR. HRS. |
|---------------|--|---------------|
| 0885-205, 206 | Fundamentals of Chemistry I, II                      | 8             |
|               | English Level C                                      | 12            |
| 0887-200      | Freshman Seminar                                     | 2             |
| 0879-201, 202 | Laboratory Science Technology Lab Applications I, II | 4             |
| 0885-291      | Principles of Analytical Chemistry                   | 4             |
| 0884-212      | Integrated Algebra                                   | 4             |
| 0884-231      | Laboratory Math I                                    | 3             |
|               | Wellness Education†                                  | 0             |

### Second Year

|                                   |  |                |
|-----------------------------------|--|----------------|
| 0879-203, 204, 205                | Laboratory Science Technology Lab Applications III, IV, V  | 6              |
| 0879-301, 302, 303                | Instrumental Analysis I, II, III                           | 10             |
| 0884-232                          | Laboratory Math II   | 3              |
| 0885-292                          | Principles of Organic Chemistry                            | 4              |
| 0879-398                          | ST: Molecular Biology                                      | 4              |
| 0879-218                          | Introduction to Laboratory Science Technology Microbiology | 3              |
| 0879-313                          | Chemical Technology  | 4              |
| 0879-314                          | Biotechnology  | 4              |
| 0806-101                          | Job Search Process   | 2              |
|                                   | Deaf Cultural Studies/ASL*                                 | 3              |
|                                   | Humanities*  | 3              |
|                                   | Social Sciences*   | 3              |
| 0879-299                          | Cooperative Education                                      | Co-op          |
| <b>Third Year</b>                 |  |                |
| 0879-206                          | Laboratory Science Technology Lab Applications VI          | 2              |
| 0879-250                          | Senior Seminar   | 2              |
|                                   | Technical Elective‡  | 3-4            |
|                                   | Communication Studies*                                     | 3              |
|                                   | Capstone*  | 3              |
| <b>Total Quarter Credit Hours</b> |  | <b>105-106</b> |

\* Please see NTID's General Education Distribution Requirements chart for more information.

† Please see Wellness Education Requirement for more information.

‡ Students must choose one technical elective from the list of laboratory science technology courses or seek department approval for a course from another college.

## Performing Arts, Cert.

[www.rit.edu/NTID/pa](http://www.rit.edu/NTID/pa)

**Joseph Bochner, Chairperson**  
(585) 475-6250, [jhbnpc@rit.edu](mailto:jhbnpc@rit.edu)

The performing arts certificate is designed to provide students with an additional set of marketable skills. Students develop knowledge of standard theatrical operating procedures as well as principles and practices of theater accessibility for deaf people, allowing them to work in professional, regional, and community theater. The program also provides a solid foundation for both deaf and hearing students who wish to pursue further education in film, video, theater, and related forms of performing arts.

The certificate includes knowledge of theater terminology, practices, and protocols; issues in script analysis; ASL translation and accessibility; and experience in performance and technical theater. Students may take four 3-credit courses in the performance/script track (for students interested in acting, dramaturgy, translation, and dance/movement) or the technical theater track (for students interested in scenic, lighting, and costume design/technology, and stage management). A 3-credit production practicum is required for both tracks. Students will be granted the performing arts

certificate in either performance/script or technical theater upon successful completion of 15 credit hours.

This program is not intended as a stand-alone certification. Applicants for the performing arts certificates must be matriculated and in good standing in an undergraduate program at RIT/NTID or graduates holding an undergraduate degree from one of those programs. Introduction to Performing Arts (0881-250) is a prerequisite.

### Performing arts certificate–performance/script emphasis

| COURSE                                       | QTR. CR. HRS. |
|--|---------------|
| <b>Required course</b>                       |               |
| 0881-298 Performing Arts Practicum           | 3             |
| <b>Elective courses</b>                      |               |
| Choose four of the following:                | 12            |
| 0881-256 Script Analysis                     |               |
| 0881-210 Acting I                            |               |
| 0881-260 Acting II                           |               |
| 0881-258 Introduction to Play Creating       |               |
| 0881-168 Jazz                                |               |
| 0881-266 Ballet                              |               |
| 0881-267 Fundamentals of Choreography        |               |
| 0881-202 History of Theater                  |               |
| 0881-204 Deaf Theater History                |               |
| 0881-217 Stage Combat                        |               |
| 0881-218 Dance History                       |               |
| 0881-166 Sign Mime and Creative Movement     |               |
| 0881-253 Arts Management                     |               |
| 0881-259 Creative Translation                |               |
| 0881-261 Audition Technique                  |               |
| 0881-167 Dance Performance                   |               |
| 0881-257 Introduction to Dramatic Literature |               |
| <b>Total Quarter Credit Hours</b>            | <b>15</b>     |

### Performing arts certificate–technical theater emphasis

| COURSE                             | QTR. CR. HRS. |
|------------------------------------|---------------|
| <b>Required course</b>             |               |
| 0881-298 Performing Arts Practicum | 3             |
| <b>Elective courses</b>            |               |
| Choose four of the following:      | 12            |
| 0881-256 Script Analysis           |               |
| 0881-222 Scenic Technology I       |               |
| 0881-223 Scenic Technology II      |               |
| 0881-224 Scene Painting            |               |
| 0881-231 Costume Technology I      |               |
| 0881-232 Costume Technology II     |               |
| 0881-233 Stage Make-up             |               |
| 0881-241 Lighting Technology I     |               |
| 0881-242 Lighting Technology II    |               |
| 0881-253 Arts Management           |               |
| 0881-272 Stage Management          |               |
| <b>Total Quarter Credit Hours</b>  | <b>15</b>     |

## Pre-baccalaureate Studies

### General information

The pre-baccalaureate studies program is available to students who are accepted by NTID and are close to, but not fully ready for, direct entry into a baccalaureate-level program through one of the other colleges of RIT. It is a bridge program for qualified students, based on academic transcripts, scores on admissions tests, and other evidence that supports a reasonable expectation of success in baccalaureate course work. Qualified students who are undecided as to a program of study may choose the pre-baccalaureate studies career exploration option.

Pre-baccalaureate studies is appropriate for students who need to further develop mathematics, English, or discipline-related skills. The academic program is flexible and individualized and allows students to focus on needed skills while concurrently progressing toward their chosen field of study. Students take courses taught by support department and other NTID faculty, along with entry-level courses taught in other RIT colleges. While in the program, students receive academic advising as well as career counseling.

Students do not receive a degree in pre-baccalaureate studies. They apply for admission into a baccalaureate program as soon as they are academically ready and the college offering their chosen baccalaureate program reviews their application for admission. After completing an entire academic year in the program, a student must transfer to a degree-granting program in NTID or one of the other colleges of RIT.

### Arts and Imaging Studies

#### **Kenneth F. Hoffmann, Chairperson, Arts and Imaging Studies**

Students entering pre-baccalaureate studies in arts and imaging studies will typically be required to have:

**ACT:** minimum score of 18

**English:** Placement in the Writing Seminar (0502-227) course

**Mathematics:** Placement in level B mathematics course, Concepts of Measurement (0884-150) or higher, for BFA degrees or level D, 0884-250 or higher, for BS degrees

**Science:** Placement in level B science, 0885-150 or higher, for BFA degrees or level D, 0885-250 or higher, for BS degrees.

### Pre-baccalaureate studies in the imaging arts and sciences in the schools of Art, Design, and American Crafts, typical course sequence.

| COURSE   | Qtr. Cr. Hrs. |
|--|---------------|
| <b>First Year</b>  |               |
| 0855-310 Visual Idea Development                         | 3             |
| 0855-311, 312, 313 Basic, Intermediate, Advanced Drawing | 9             |
| 0855-251 Bitmap Graphics                                 | 3             |
| 0855-255 Design Concept Development                      | 3             |
| 0855-252 Vector Graphics                                 | 3             |
| 0855-253 Typography I, II                                | 6             |
| 0855-314 Color in Design                                 | 3             |
| Elective   | 3             |
| Liberal Arts*  | 12            |
| 0887-200 Freshman Seminar                                | 2             |
| <b>Total Quarter Credit Hours</b>                        | <b>44</b>     |

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

Note: Portfolio of original artwork is required to determine admission. See the College of Imaging Arts and Sciences support coordinator for further information.



## Pre-baccalaureate studies in imaging arts and sciences in the School of Photographic Arts and Sciences, BFA degree, typical course sequence

| COURSE                                       | Qtr. Cr. Hrs. |
|--|---------------|
| <b>First Year</b>                            |               |
| 0855-323, 373 Digital Photography I, II      | 6             |
| 0855-311, 312 Basic and Intermediate Drawing | 6             |
| 0855-310 Visual Idea Development             | 3             |
| 0855-255 Design Concept Development          | 3             |
| 0855-254 Applied Color Theory                | 3             |
| 0855-251 Bitmap Graphics                     | 3             |
| 0855-321 Image Acquisition                   | 3             |
| 0855-322 Image Manipulation                  | 3             |
| Liberal Arts*                                | 12            |
| 0887-200 Freshman Seminar                    | 2             |
| <b>Total Quarter Credit Hours</b>            | <b>44</b>     |

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

## Pre-baccalaureate studies in imaging arts and sciences in the School of Photographic Arts and Sciences, BS degree, typical course sequence

| COURSE                              | Qtr. Cr. Hrs. |
|-------------------------------------|---------------|
| <b>First Year</b>                   |               |
| 0855-251 Bitmap Graphics            | 3             |
| 0855-310 Visual Idea Development    | 3             |
| 0855-254 Applied Color Theory       | 3             |
| 0855-255 Design Concept Development | 3             |
| 0855-321 Image Acquisition          | 3             |
| 0855-322 Image Manipulation         | 3             |
| 0855-323 Digital Photography I      | 3             |
| 0884-250 or higher Level D Math     | 4             |
| 0885-250 or higher Level D Science  | 4             |
| Liberal Arts*                       | 12            |
| 0887-200 Freshman Seminar           | 2             |
| <b>Total Quarter Credit Hours</b>   | <b>43</b>     |

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

## Pre-baccalaureate studies in imaging arts and sciences, film and animation option, typical course sequence

| COURSE                                   | Qtr. Cr. Hrs. |
|--|---------------|
| <b>First Year</b>                        |               |
| 2065-217 Digital Video for Multimedia#   | 4             |
| 2065-331 Introduction to Animation       | 4             |
| 2065-342 Scriptwriting I                 | 3             |
| 2065-222 Film Language                   | 2             |
| Theater Electives/NTID Performing Arts** | 2-8           |
| Liberal Arts*                            | 12            |
| <b>Total Quarter Credit Hours</b>        | <b>27-33</b>  |

\*\*See College of Imaging Arts and Sciences support coordinator for current information regarding theater electives.

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

#With departmental permission.

## Pre-baccalaureate studies in imaging arts and sciences in the School of Print Media, typical course sequence

| COURSE                   | Qtr. Cr. Hrs. |
|--------------------------|---------------|
| <b>First Year</b>        |               |
| 0855-251 Bitmap Graphics | 3             |
| 0855-252 Vector Graphics | 3             |
| 0855-253 Typography I    | 3             |

|                                   |                                 |           |
|-----------------------------------|---------------------------------|-----------|
| 0855-254                          | Applied Color Theory            | 3         |
| 0855-321                          | Image Acquisition               | 3         |
| 0855-322                          | Image Manipulation              | 3         |
| 0884-180                          | Foundations of Algebra          | 4         |
| 0884-210                          | Applications of Algebra         | 4         |
| Choose one of the following:      |                                 | 4         |
| 0884-260                          | Explorations in College Algebra |           |
| 1016-225                          | Algebra for Management Science  |           |
| 0885-250 or higher                | Level D Science                 | 4         |
|                                   | Liberal Arts*                   | 12        |
| 0887-200                          | Freshman Seminar                | 2         |
| <b>Total Quarter Credit Hours</b> |                                 | <b>48</b> |

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

## Liberal Studies

### Kathryn L. Schmitz, Chairperson, Liberal Studies

Students entering pre-baccalaureate studies in liberal studies will typically be required to have:

**ACT:** Minimum composite score of 19 with a reading score of 20 and all other skill area scores of 18 or higher

**English:** Placement in Written Communication II (0502-111)

**Mathematics:** Placement in the NTID Advanced Mathematics (0885-275) course or higher

## Pre-baccalaureate studies in liberal arts, typical course sequence

| COURSE   | Qtr. Cr. Hrs. |
|--|---------------|
| <b>First Year</b>                                      |               |
| 0853-200 Freshman Seminar                              | 2             |
| First-year major courses depending on program of study | 12            |
| Liberal Arts*  | 12            |
| Mathematics or Science                                 | 4             |
| NTID Humanities or Social Science course               | 3             |
| Pre-baccalaureate courses#                             | 6-8           |
| <b>Total Quarter Credit Hours</b>                      | <b>39-41</b>  |

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

#Pre-baccalaureate courses are an option to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.

## Science and Mathematics

### Vincent A. Daniele, Chairperson, Science and Mathematics

Students entering pre-baccalaureate studies in science or mathematics will typically be required to have:

**ACT:** Minimum composite score of 19 with reading and mathematics scores of 20 and English and science scores of 18

**English:** Placement in Written Communication II (0502-111)

**Mathematics:** Placement in the NTID Advanced Mathematics (0885-275) course or higher



Pre-baccalaureate studies in biology, biotechnology, medical sciences, environmental science, and environmental management, typical course sequence

| COURSE                     |                                  | Qtr. Cr. Hrs. |
|----------------------------|----------------------------------|---------------|
| First Year                 |                                  |               |
| 0853-200                   | Freshman Seminar                 | 2             |
|                            | Pre-baccalaureate courses#       | (2-5)         |
| 1001-201, 202, 203         | General Biology I, II, III       | 9             |
| 1001-205, 206, 207         | General Biology Lab              | 3             |
|                            | Liberal Arts*                    | 12            |
| 1016-204                   | College Algebra and Trigonometry | 4             |
| 1016-214, 215              | Elementary Calculus I, II ‡      | 6             |
| Total Quarter Credit Hours |                                  | 38-41         |

#Pre-baccalaureate courses are an available option to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

‡Alternative mathematics courses may be required as prerequisites, depending on placement.

Pre-baccalaureate studies in science, chemistry option, typical course sequence

| COURSE                       |   | Qtr. Cr. Hrs. |
|------------------------------|---|---------------|
| First Year                   |   |               |
| 0853-200                     | Freshman Seminar                            | 2             |
|                              | Pre-baccalaureate courses#                  | 2-5           |
| 1011-215, 216, 217           | General and Analytical Chemistry I, II, III | 10            |
| 1011-205, 206, 227           | Chemistry Labs                              | 3             |
| Choose one group of courses: |   | 8-12          |
| Group A:                     |   |               |
| 1016-261, 262                | Calculus with Foundations I, II             |               |
| Group B:                     |   |               |
| 1016-271, 272, 273           | Calculus A, B, C                            |               |
|                              | Liberal Arts*                               | 12            |
| Total Quarter Credit Hours   |   | 37-44         |

#Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

Pre-baccalaureate studies in science, math, or physics options, typical course sequence

| COURSE   |  | Qtr. Cr. Hrs. |
|--|--|---------------|
| First Year                                     |  |               |
| 0853-200                                       | Freshman Seminar                         | 2             |
|  | Pre-baccalaureate courses#               | 2-5           |
| Choose one of the following science sequences: |  | 12            |
| 1011-205, 206, 207                             | Chemical Principles I, II, III with Labs |               |
| 1017-311, 312, 313                             | University Physics I, II, III ‡§         |               |
| Choose one group of courses:                   |  | 12            |
| Group A:                                       |  |               |
| 1016-271, 272, 273                             | Calculus A, B, C                         |               |
| Group B:                                       |  |               |
| 1016-281, 282, 283                             | Project-Based Calculus I, II, III        |               |
|  | Liberal Arts*                            | 12            |
| Total Quarter Credit Hours                     |  | 40-43         |

#Pre-baccalaureate courses are an option to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.

‡Alternate mathematics courses may be required as prerequisites, depending on placement.

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

§Students must choose one of the two physics sequences for the physics option.

Engineering Studies

Dino Laury, Chairperson, Engineering Studies

Pre-baccalaureate studies in engineering option, typical course sequence

| COURSE                     |   | Qtr. Cr. Hrs. |
|----------------------------|---|---------------|
| First Year                 |   |               |
| 0853-200                   | Freshman Seminar                                    | 2             |
|                            | Pre-baccalaureate courses#                          | (2)           |
|                            | Major-related courses depending on area of interest | 16            |
| 1011-208                   | College Chemistry                                   | 4             |
| 1017-311, 312              | University Physics I, II                            | 8             |
|                            | Liberal Arts*                                       | 12            |
| 1016-281, 282, 283         | Calculus I, II, III ‡                               | 12            |
| Total Quarter Credit Hours |   | 54-56         |

#Pre-baccalaureate courses are an option to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

‡Alternative mathematics courses may be required as prerequisites, depending on placement.

Pre-baccalaureate studies in engineering technology option, typical course sequence

| COURSE                     |   | Qtr. Cr. Hrs. |
|----------------------------|---|---------------|
| First Year                 |   |               |
| 0853-200                   | Freshman Seminar                                    | 2             |
|                            | Pre-baccalaureate courses#                          | (2)           |
| 0606-101                   | Engineering Technology Seminar                      | 2             |
|                            | Major-related courses depending on area of interest | 16            |
|                            | Liberal Arts*                                       | 12            |
| 0692-221, 222              | Technical Math I, II ‡                              | 8             |
|                            | Pre-calculus for Engineering Technology‡            | (4)           |
| 1016-231, 232              | Calculus for Engineering Technology I, II ‡         | 8             |
| Total Quarter Credit Hours |   | 48-54         |

#Pre-baccalaureate courses are an option to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.

\*Please see Liberal Arts General Education Requirements for more information. Depending on placement, the writing sequence may begin with Written Communication I (0502-110), Written Communication II (0502-111), or Writing Seminar (0502-227).

‡Alternative mathematics courses may be required as prerequisites, depending on placement.

# National Technical Institute for the Deaf

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Sophia Maggelakis, Dean  
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### Bachelor of Science degrees in:

|  |     |
|--|-----|
| Applied Mathematics                    | 180 |
| Applied Statistics                     | 181 |
| Biochemistry                           | 185 |
| Biology                                | 176 |
| Bioinformatics                         | 175 |
| Chemistry                              | 183 |
| Computational Mathematics              | 182 |
| Environmental Science                  | 177 |
| Imaging Science                        | 189 |
| Molecular Bioscience and Biotechnology | 179 |
| Physics                                | 189 |
| Polymer Chemistry                      | 187 |

Undergraduates in the College of Science receive a unique education, one that emphasizes the applications of science and mathematics in the professional world while providing a comprehensive liberal arts education in the humanities and social sciences. The College of Science curricula, under the direction of our faculty members, reflects current trends in the application of science and mathematics while preparing students for graduate study or for immediate employment in business, industry, government, and the medical science professions.

Within an academic community committed to diversity and student centeredness, our emphasis is on the practical aspects of science and mathematics as found in science and computer laboratories. While we are career-oriented, we recognize the value of the liberal arts for the intellectual enrichment of our students. In addition to technical competence, many of the skills acquired through the study of liberal arts also are required by employers for promotion and career advancement.

### Admission requirements

For information on undergraduate admission, including transfer and freshman admission guidelines, please see the Undergraduate Admission section of this bulletin.

### Financial aid and scholarships

Please refer to the Financial Aid and Scholarships section of this bulletin for information regarding financial aid, scholarships, loans, and grants.

### Faculty

The college has more than 160 faculty members teaching in the fields of science and mathematics. All are committed to the education of undergraduate and graduate students, and most hold a doctoral degree. A variety of faculty expertise means students are likely to find a faculty member with similar interests to serve as a mentor.

Our faculty members are dedicated professors who also practice their professions outside of the classroom, participating in research and professional activities.

### Facilities

The College of Science's programs are conducted in three major facilities on campus: Gosnell Hall, the Chester F. Carlson Center for Imaging Science, and the Center for Bioscience Education and Technology.

Gosnell Hall has nine classrooms, 22 teaching laboratories, and 16 research laboratories that provide space for laboratory course work and student research projects. Some of the facilities within Gosnell Hall have specialized purposes. For example, we have a

thin films laboratory, an animal care facility, a plasma etching laboratory, an electronics laboratory, a quantum optics laboratory, and a nuclear magnetic resonance laboratory.

The Bates Science Study Center in Gosnell Hall provides a comfortable, wireless computing environment for study groups and individual tutoring sessions with faculty. The 60,000-square-foot south wing of Gosnell Hall—the Center for Excellence in Mathematics, Science, and Technology—has an additional nine media-supported classrooms, three computer laboratories, two statistical computing laboratories, five science laboratories, a laser light scattering laboratory, a greenhouse, and community areas, including the Bruce and Nora James Atrium.

The Chester F. Carlson Center for Imaging Science has teaching and research facilities, including laboratories for visual perception, digital imaging, astronomical imaging, optics, multi-modal biomedical imaging, video analysis and remote sensing. There are also laboratories dedicated to the study of optics, magnetic materials and granular materials. The Color Science Hall is dedicated to the study of color science.

The Center for Bioscience Education and Technology provides a comprehensive environment to support academic, community, and career-training programs in biotechnology and the emerging life and medical sciences. The facility consists of multi-purpose, high-tech laboratories and classrooms for workforce development, academic programs, continuing education programs, research, K-12 student workshops, and secondary school training programs.

State-of-the-art computer facilities are available in the college as well as in labs throughout the university. A valuable resource for the college's programs, these facilities utilize computers in the application of mathematics and science. The college also operates an observatory on campus.

### Cooperative education/Internships

In our cooperative education plan, a student alternates quarters of paid work experience with on-campus academic study. Co-op employment experience has many advantages. It helps students gain insight into how classroom learning is applied in real work settings, gives them a chance to experience their professional field of study, and helps them acquire practical experience that is valuable in obtaining employment or applying to a graduate program. Salaries earned from cooperative education experiences enable students to offset a portion of the cost of their education.

Co-op is not a requirement in most of our programs, although it is strongly encouraged. Full participation in a co-op experience means a student will graduate in five years. The Office of Cooperative Education and Career Services assists students in obtaining co-op positions. The following tables outline the co-op options.

### Cooperative education schedule for five-year programs in biology, biotechnology, computational mathematics, applied mathematics, applied statistics (A and B block), and physics (C block):

| YEAR    |   | FALL  | WINTER | SPRING | SUMMER |
|---------|---|-------|--------|--------|--------|
| 1 and 2 |   | RIT   | RIT    | RIT    | —      |
| 3 and 4 | A | RIT   | Co-op  | RIT    | Co-op  |
|         | B | Co-op | RIT    | Co-op  | RIT    |
|         | C | RIT   | RIT    | Co-op  | Co-op  |
| 5       | A | RIT   | Co-op  | RIT    | —      |
|         | B | Co-op | RIT    | RIT    | —      |
|         | C | RIT   | RIT    | Co-op  | —      |

### Cooperative education schedule for five-year chemistry and biochemistry programs\*:

| YEAR       |   | FALL  | WINTER    | SPRING | SUMMER |
|------------|---|-------|-----------|--------|--------|
| 1          |   | RIT   | RIT       | RIT    | Co-op  |
| 2, 3 and 4 | A | RIT   | Co-op/RIT | RIT    | Co-op  |
|            | B | Co-op | RIT       | Co-op  | RIT    |
| 5          | A | RIT   | Co-op     | RIT    | —      |
|            | B | Co-op | RIT       | RIT    | —      |

\* Some students may elect to co-op for a double block (i.e., winter and spring).

Students in the environmental science and imaging science programs are encouraged to participate in optional co-op blocks beginning the summer of the second year of their program. Students in the bioinformatics program are required to complete one cooperative education experience.

### Research

Our students are encouraged to work with faculty members as they pursue their research. Many joint student-faculty research projects have resulted in publication in professional literature. Student research is conducted in campus laboratories and through field studies. Opportunities for research across disciplines develop from the collaboration of students and faculty who share common interests. The results of student research projects are recognized in weekly forums and at the Undergraduate Research Symposium at the end of summer.

### Accreditation

Programs in chemistry and biochemistry are approved by the Committee on Professional Training of the American Chemical Society.

### Advising

Each student is assigned an academic adviser who provides counsel on course selection, advice about careers, and information on RIT services. It is common for a science major to have several mentors among the faculty who help with academic, career, and personal questions.

### Academic enrichment

*Honors Program:* Students who demonstrate a high level of achievement at the high school level may be invited to join the Honors program. These students will participate in Honors course work throughout their program of study and experiential learning activities under the guidance of a faculty mentor. Honors students will be selected during the admissions process.

*Minors:* RIT offers students more than 95 minors to choose from to enhance their academic program or further develop a personal area of interest. For a detailed list of minors, including courses, please refer to the Minors section of this bulletin.

*Study Abroad:* RIT encourages all students to consider a study abroad program. Students may study full time at a variety of host schools and are able to select courses that fulfill requirements in their academic field of study and/or RIT liberal arts general education requirements. RIT's Study Abroad Office has information about foreign study options and opportunities.

*Professional student organizations:* The college maintains memberships in the following professional organizations: Imaging Science and Technology Student Chapter, Honorary Physics Society, the Society of Physics Students, American Society for Biochemistry and Molecular Biology Student Affiliates, American Mathematical Society, Mathematical Society of America, and the Society for Industrial and Applied Mathematics, to name a few.

## Special opportunities

**Accelerated dual degree options:** Some programs offer accelerated, five-year dual BS/MS degree options. These degrees offer students the opportunity to earn a bachelor's degree and a master's degree in less time than pursuing each degree individually. Please refer to individual programs, the *Graduate Bulletin*, or the college's website for more information.

**Graduate study:** The college offers doctorate degrees in astrophysical sciences and technology, color science, and imaging science; and master of science degrees in applied and computational mathematics, astrophysical sciences and technology, bioinformatics, chemistry, color science, environmental science, imaging science, and materials science and engineering (offered jointly with the Kate Gleason College of Engineering). For more information regarding these graduate programs, please refer to the *Graduate Bulletin* or visit the college's website.

## Premedical Studies Advisory Program

The premedical studies advisory program is designed to provide guidance and assistance to all RIT students who are interested in continuing their education in one of the health professions; e.g., medicine, osteopathy, dentistry, optometry, podiatry, or veterinary science. Faculty members who participate in this program provide advice on the prerequisites (course selection, health-related experiences, extracurricular activities) needed for application to various health-related professional schools. In addition, they provide assistance with the application process.

### Enrollment in premedical studies

The premedical studies advisory program is available to students who are enrolled in one of the degree granting programs offered at RIT or to nonmatriculated students taking the premedical core courses or preprofessional prerequisite courses. To enroll in the program, students must contact the premedical studies office in room 1109 in the Center for Bioscience Education and Technology (CBET), or call Kristen Waterstram-Rich, Director, at (585) 475-7105.

### Premedical core courses and academic programs

To complete the academic requirements necessary to gain admission to doctoral programs in the health professions, a student may enroll in any BS program at RIT and combine that program's course requirements with the premedical core courses. The way in which program requirements are combined with the premedical core courses varies according to the program in which the student is enrolled. The curricula of certain programs—in particular, those in the College of Science—include all of the premedical core courses. Other programs require only a few of the required courses, so students in these programs may require additional time, perhaps summers, to complete all required courses. It is important that these courses be completed by the end of the third year or before the student expects to take the MCAT, DAT, OAT, GRE, or other standardized tests required for admission to a health-related professional school. Careful planning and scheduling, with the guidance of the premedical studies advisers, is crucial to success. The prerequisites for medical school, and most health-related professional schools, are provided as follows:

|                   |        |   |
|-------------------|--------|---|
| Biology           | 1 year | With laboratory                                   |
| Chemistry         | 1 year | General and analytical chemistry, with laboratory |
| Organic chemistry | 1 year | With laboratory                                   |
| Physics           | 1 year | With laboratory                                   |
| English           | 1 year |   |

Note: In addition to these core courses, which are required by nearly all U.S. medical schools, courses in mathematics, psychology/behavioral sciences, or biology may be required by specific medical schools. The admission requirements of each medical school are published and may be obtained from the premedical advising committee. Some medical schools refuse to accept advanced placement credit for these core courses.

## Combining the requirements of a degree program in the College of Science with the science premedical core courses\*

| If you major in:                       | You will need to take the courses required for your major, plus:                             |
|--|--|
| Applied mathematics                    | †  |
| Applied statistics                     | †  |
| Biochemistry                           | None   |
| Bioinformatics                         | One year of physics and one year of organic chemistry  |
| Biology                                | None   |
| Chemistry                              | One year of biology  |
| Computational mathematics              | †  |
| Environmental science                  | One year of organic chemistry  |
| Imaging science                        | †  |
| Molecular bioscience and biotechnology | One year of physics  |
| Physics                                | One year of biology, one year of organic chemistry, and an additional quarter of mathematics |

\* Some rearrangement of the typical pattern of course work within a program may be necessary.

† Course credits beyond the usual 12 quarters needed to complete degree requirements may be necessary.

Note: Students enrolled in other RIT programs should consult with premedical advisers for assistance in planning a curriculum that includes the premedical core courses.

**Health-related experience:** All students interested in the health professions should obtain as much experience as possible in the profession of their choice. This may include volunteer activities, internships, shadowing practitioners in the field, or employment in a health care setting.

**Actuarial studies:** A plan of study is available for students interested in a career in the actuarial sciences. Actuarial science is a discipline that applies mathematical and statistical methods to assess risk in the insurance, finance, and other industries. Course work provides a foundation for students who will work as actuaries and also prepares students to take the first actuarial exams. These courses may count for credit in any of the three major programs in the School of Mathematical Sciences, or may be taken independently.

## General Science Exploration, Undeclared

<http://www.rit.edu/cos/uds/main.html>

**Roger Dube, Program Director**

### Program overview

Many high school students are interested in the sciences, but may be undecided as to which major best meets their interests and career goals. The general science exploration program allows students to investigate various degree options before deciding on a program of study.

## Curriculum

A customized schedule of courses in science and mathematics is developed for each student based on individual strengths, interests, and goals. During fall and winter quarters, students participate in an interdisciplinary first-year seminar, which includes a combination of academic support, career development, and science exploration activities. Along with a team of academic advisers, students will select courses that help them explore the traditional science options of biology, chemistry, physics, and math, as well as courses in the fields of environmental science, imaging science, or other areas of interest.

Students may choose a major at any time over the course of the academic year. Some students find the decision is easily made after only one quarter of course work. Others take advantage of a full year of exploration. Students in the general science exploration program are able to delay their choice of a major without losing time toward the completion of a degree.

### General science exploration option, typical course sequence

| COURSE                                    | QTR. CR. HRS. |
|---|---------------|
| <b>First Year</b>                         |               |
| Freshman Seminar                          | 2             |
| Mathematics or calculus sequence          | 10-12         |
| <i>Choice of two laboratory sciences:</i> |               |
| Biology                                   | 12            |
| Chemistry                                 | 13            |
| Physics                                   | 8-12          |
| Imaging Science                           | 6             |
| <i>Additional course choices:</i>         |               |
| Computer Science                          | 4-8           |
| Liberal Arts*                             | 4-12          |
| First-Year Enrichment                     | 2             |
| Wellness Education†                       | 0             |
| <b>Total Credit Hours (each quarter)</b>  | <b>16-18</b>  |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

## School of Biological and Medical Sciences

[www.rit.edu/cos/biology/SBMS.php](http://www.rit.edu/cos/biology/SBMS.php)

**Anne Houtman, Head**

The School of Biological and Medical Sciences offers BS degrees in bioinformatics, biology, environmental science, and molecular bioscience and biotechnology. In addition to master of science degrees, the school offers accelerated dual degree programs (BS/MS) in bioinformatics or environmental science. The BS/MS programs may be completed in five years of study.

## Bioinformatics, BS

<http://www.bioinformatics.rit.edu/>

**Michael Osier, Program Director**

**(585) 475-4392, [michael@bioinformatics.rit.edu](mailto:michael@bioinformatics.rit.edu)**

### Program overview

Bioinformatics represents the marriage of biotechnology and the computing sciences. Bioinformaticists use computers to analyze, organize, and visualize biological data in ways that increase our

understanding of this data and lead to new discoveries. Graduates receiving the BS degree are well-qualified for many rewarding careers, including those in bioinformatics software development, biomedical research, biotechnology, comparative genomics, genomics, molecular imaging, pharmaceutical research and development, proteomics, and vaccine development.

The BS program in bioinformatics is a truly interdisciplinary degree and its curriculum was developed by faculty in the departments of biological sciences, chemistry, computer science, mathematics and statistics, and information technology, with the guidance of individuals in the bioinformatics and biotechnology industries. The program meets the needs of prospective employers in this challenging and rapidly changing field.

### Requirements for the BS degree in bioinformatics

Students must meet the minimum graduation requirements of the university as described in this bulletin. In addition, the program requires successful completion of all the courses listed in the typical course schedule, plus one cooperative education experience.

### Cooperative education

The bioinformatics degree requires the completion of one cooperative education experience. This experience permits the student to participate in applied bioinformatics, using current technologies to gain a practical perspective. More than 65 organizations in industry, government, and academia employ our students in short-term (10-20 week), full-time paid positions. Co-op positions can be held during the summer and/or the regular academic year. No tuition is charged for co-op participation. If a student elects to pursue co-op during the regular academic year, he or she will take the same number of academic class terms and may need to extend the date of graduation beyond the traditional four years.

### Bioinformatics, BS degree, typical course sequence

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| <b>First Year</b>                                       |               |
| 1001-200 Freshman Symposium                             | 1             |
| 1001-251, 252, 253 Introduction to Biology I, II, III   | 12            |
| 1001-265 Unix Under the Hood                            | 2             |
| 1001-260 Introduction to Bioinformatics                 | 2             |
| 4003-241 Problem-Based Introduction to Computer Science | 4             |
| 4003-242 Data Structure Problem Solving                 | 4             |
| 1016-281, 282 Calculus I, II                            | 8             |
| Liberal Arts*   | 12            |
| 1105-051, 052 First-Year Enrichment                     | 2             |
| Wellness Education†                                     | 0             |
| <b>Second Year</b>                                      |               |
| 1001-311 Cell Biology                                   | 4             |
| 1001-350 Molecular Biology                              | 4             |
| 1001-493 Bioinformatics                                 | 4             |
| 4003-243 Object-Oriented Programming                    | 4             |
| 1011-215, 216 General and Analytical Chemistry I, II    | 7             |
| 1011-205, 206 Chemical Principles Lab I, II             | 2             |
| 1016-265, 366 Discrete Math I, II                       | 8             |
| 1016-319 Data Analysis                                  | 4             |
| Liberal Arts*   | 12            |
| <b>Third and Fourth Years</b>                           |               |
| 1001-404 Introduction to Microbiology                   | 4             |
| 4002-462 Introduction to Bioinformatics Computing       | 4             |
| 1001-450 Genetic Engineering                            | 5             |



| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 1001-421                          | Genetics                                    | 4             |
| 1001-492                          | Genomics                                    | 4             |
| 1001-494                          | Molecular Modeling and Proteomics           | 4             |
| 4002-563                          | Functional and Translational Bioinformatics | 4             |
| 4003-531                          | Parallel Computing I                        | 4             |
| 1009-502                          | Biochemistry: Conformation and Dynamics     | 3             |
| 1013-231                          | Organic Chemistry I                         | 3             |
| 1013-235                          | Organic Chemistry Lab I                     | 1             |
| 1009-503                          | Biochemistry: Metabolism                    | 3             |
| 4002-360                          | Introduction to Databases and Data Modeling | 4             |
| 4003-334                          | Computer Science 4                          | 4             |
| 1016-415                          | Statistical Analysis for Bioinformatics     | 4             |
|                                   | Liberal Arts*                               | 12            |
|                                   | University-wide Electives                   | 18            |
| 1001-499                          | Cooperative Education (required)            | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

### Accelerated dual degree option

The BS program may be combined with the MS program in bioinformatics, allowing undergraduate students to acquire both degrees in as few as five years. Undergraduate students with a minimum overall GPA of 3.2 may apply to the bioinformatics committee for entry before the completion of their third year of study. Students in the combined option are required to take graduate-level courses during their fourth year and complete an approved MS thesis during their final year of study.

### Bioinformatics, BS/MS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 1001-200           | Freshman Symposium                             | 1             |
| 1001-251, 252, 253 | Introduction to Biology I, II, III             | 12            |
| 1001-265           | Unix Under the Hood                            | 2             |
| 1001-260           | Introduction to Bioinformatics                 | 2             |
| 4003-241           | Problem-Based Introduction to Computer Science | 4             |
| 4003-242           | Data Structure Problem Solving                 | 4             |
| 1016-281, 282      | Calculus I, II                                 | 8             |
|                    | Liberal Arts*                                  | 16            |
| 1105-051, 052      | First-Year Enrichment                          | 2             |
|                    | Wellness Education†                            | 0             |
| <b>Second Year</b> |  |               |
| 1001-311           | Cell Biology                                   | 4             |
| 1001-350           | Molecular Biology                              | 4             |
| 1001-493           | Bioinformatics                                 | 4             |
| 4003-243           | Object-Oriented Programming                    | 4             |
| 1011-215, 216      | General and Analytical Chemistry I, II         | 7             |
| 1011-205, 206      | Chemical Principles Lab I, II                  | 2             |
| 1016-265, 366      | Discrete Math I, II                            | 8             |
| 1016-319           | Data Analysis                                  | 4             |
|                    | Liberal Arts*                                  | 8             |
|                    | University-wide Elective                       | 4             |
| <b>Third Year</b>  |  |               |
| 1001-404           | Introduction to Microbiology                   | 4             |
| 4002-462           | Introduction to Bioinformatics Computing       | 4             |
| 1001-450           | Genetic Engineering                            | 5             |
| 4002-563           | Functional and Translational Bioinformatics    | 4             |
| 4002-360           | Introduction to Databases and Data Modeling    | 4             |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| 1013-231                          | Organic Chemistry I                     | 3             |
| 1013-235                          | Organic Chemistry I Lab                 | 1             |
| 1016-415                          | Statistical Analysis for Bioinformatics | 4             |
| 4003-334                          | Computer Science 4                      | 4             |
|                                   | Liberal Arts*                           | 8             |
|                                   | University-wide Electives               | 8             |
| 1001-499                          | Cooperative Education (required)        | Co-op         |
| <b>Fourth Year</b>                |   |               |
| 1001-421                          | Genetics                                | 4             |
| 1001-492                          | Genomics                                | 4             |
| 1001-725                          | Ethics in Bioinformatics                | 3             |
| 1001-494                          | Molecular Modeling and Proteomics       | 4             |
| 4005-735                          | Parallel Computing I                    | 4             |
| 1009-702, 703, 704                | Biochemistry I, II, III                 | 9             |
|                                   | Liberal Arts*                           | 4             |
|                                   | University-wide Electives               | 8             |
| <b>Fifth Year</b>                 |   |               |
| Choose one of the following:      |   | 2             |
| 1001-759                          | Advanced Database Topics                |               |
| 1001-722                          | Bioinformatics Seminar                  |               |
| 1001-890                          | Thesis                                  | 10            |
|                                   | Graduate Electives‡                     | 22            |
| <b>Total Quarter Credit Hours</b> |   | <b>223</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Graduate electives may be comprised of any graduate-level course in biological sciences, chemistry, mathematics and statistics, computer science, information technology, or business. These courses provide flexibility so that students can pursue a course of study consistent with their personal interests and professional goals.

## Biology, BS

[http://www.rit.edu/cos/biology/programs\\_degrees\\_BSBiology.html](http://www.rit.edu/cos/biology/programs_degrees_BSBiology.html)

**Larry Buckley, Program Director**  
(585) 475-7507, [ljbsbl@rit.edu](mailto:ljbsbl@rit.edu)

### Program overview

The BS degree in biology prepares students for rewarding positions in occupations related to the life sciences, including: biomedical research, scientific management, science journalism, forensic science, ecology and environmental science, agriculture, genetic counseling, and education.

The program also includes all of the course work and support services to prepare students for entrance into schools of medicine, dentistry, veterinary medicine, optometry, podiatry, and chiropractic medicine.

Graduates are well-prepared to pursue a master's or doctoral degree in a wide variety of fields in the life sciences.

### Curriculum

#### Requirements for the BS degree in biology

Students must meet the minimum graduation requirements of the university as described in this bulletin. In addition, the program requires successful completion of all courses listed in the typical course schedule.

#### Cooperative education

The biology degree curriculum provides opportunities for students to participate in our optional cooperative education program.

More than 65 organizations in private industry, government, and academia employ our students in short-term (10 to 20 weeks), full-time paid positions directly related to the students' academic areas of interest. Co-op positions can be held during the summer and/or during the regular academic year. No tuition is charged for any co-op participation. If a student elects to hold a co-op position during the regular academic year, he or she will take the same number of academic class quarters and may need to extend the date of graduation beyond the traditional four years.

### Biology, BS degree, typical course sequence

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>First Year</b>                 |   |               |
| 1001-200                          | Freshman Symposium                          | 1             |
| 1001-251, 252, 253                | Introduction to Biology I, II, III          | 12            |
| 1011-215, 216, 217                | General and Analytical Chemistry I, II, III | 10            |
| 1011-205, 206                     | Chemical Principles Lab I, II               | 2             |
| 1011-227                          | General and Analytical Chemistry Lab        | 1             |
| 1016-214, 215                     | Elementary Calculus I, II                   | 6             |
|                                   | Liberal Arts*                               | 12            |
| 1105-051, 052                     | First-Year Enrichment                       | 2             |
|                                   | Wellness Education†                         | 0             |
| <b>Second Year</b>                |   |               |
| 1001-311                          | Cell Biology                                | 4             |
| 1001-350                          | Molecular Biology                           | 4             |
| 1001-365                          | Evolutionary Biology                        | 4             |
| 1013-231, 232, 233                | Organic Chemistry I, II, III                | 9             |
| 1013-235, 236, 237                | Organic Chemistry Lab I, II, III            | 3             |
| 1016-319                          | Data Analysis I                             | 4             |
|                                   | Biology Elective‡                           | 4             |
|                                   | Liberal Arts*                               | 12            |
| <b>Third/Fourth Years§</b>        |   |               |
| 1001-340                          | General Ecology                             | 4             |
| 1001-413                          | Comparative Physiology                      | 4             |
| 1001-421                          | Genetics                                    | 4             |
| 1001-422                          | Developmental Biology                       | 4             |
| 1017-211, 212, 213                | College Physics I, II, III                  | 12            |
|                                   | Biology Electives‡                          | 20            |
|                                   | Liberal Arts*                               | 12            |
|                                   | General Education Courses                   | 7             |
|                                   | University-wide Electives                   | 23            |
| 1001-499                          | Cooperative Education (optional)§           | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>180</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Biology electives: minimum of 12 quarter credits must be 400-level or above.

§ Students who elect to participate in the optional cooperative education program may be scheduling courses in a fifth year, but will use the same number of academic quarters to complete the degree.

## Environmental Science, BS

<http://www.rit.edu/cos/environmental/>

**Karl Korfmacher, Program Director**  
(585) 475-5554, [kfksci@rit.edu](mailto:kfksci@rit.edu)

### Program overview

Environmental scientists solve problems relating to power generation, waste reduction and recycling, pollution control, land use and land cover change, preserving biodiversity and ecological services, transportation, forestry, agriculture, economics, and a wide range of other areas. They study our relationship to nature and to each other, developing solutions that prevent or reverse environmental

deterioration and work toward sustainability. Meeting these challenges requires problem-solving abilities based in science, mathematics, the social sciences, and other disciplines. The BS and BS/MS environmental science programs provide students with the education and experiences they need to be successful.

## Curriculum

### Environmental science concentration/track requirement

The practice of environmental science demands that students be well-rounded specialists. To accomplish this, each student is required to select an aspect of environmental science as a specialization. Students in the BS program are required to complete a minimum of 20 quarter credit hours in a specified concentration. The program director can assist students in selecting an appropriate concentration. The available concentrations are: digital imaging, environmental biology, environmental economics, environmental public policy, mathematics and statistics, and remote sensing. Students also may develop a self-designed concentration in an area of personal interest, subject to approval from an environmental science review committee.

### Environmental science, BS degree, typical course sequence

| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| <b>First Year</b>                                     |  |               |
| 1001-200  | Freshman Symposium                           | 1             |
| 1001-251, 252, 253                                    | Introduction to Biology I, II, III           | 12            |
| 1011-215, 216   | General and Analytic Chemistry I, II         | 7             |
| 1011-205, 206   | Chemistry Principles I, II Labs              | 2             |
| <i>Choose one of the following math sequences:</i>    |  |               |
| 1016-214, 215   | Elementary Calculus I, II**                  | 6             |
| 1016-281, 282, 283                                    | Project-Based Calculus I, II, III            | 12            |
| 0508-460  | Environment and Society                      | 4             |
| 1006-202  | Concepts in Environmental Science            | 4             |
|   | Liberal Arts*                                | 4             |
| 1105-051, 052   | First-Year Enrichment                        | 2             |
|   | Wellness Education†                          | 0             |
| <b>Second Year</b>                                    |  |               |
| 1006-203  | Environmental Science Field Studies          | 4             |
| 1006-350  | Applications of GIS                          | 4             |
| 1011-202  | Fundamentals of Organic Chemistry            | 3             |
| 1011-207  | Introduction to Organic Chemistry Lab        | 1             |
| <i>Choose one of the following physics sequences:</i> |  |               |
| 1017-211, 212, 213                                    | College Physics                              |               |
| 1017-311, 312, 313                                    | University Physics                           |               |
| 1016-319, 320   | Data Analysis I, II                          | 10            |
| 0630-370, 372   | Environmental Geology and Lab                | 4             |
|   | Liberal Arts*                                | 12            |
| <b>Third Year</b>                                     |  |               |
| 1001-340  | General Ecology                              | 4             |
| 1001-475  | Conservation Biology                         | 4             |
| 1006-503  | Capstone in Environmental Science            | 4             |
| 0508-463, 464   | Great Lakes I, II                            | 8             |
| 0630-380, 382   | Introduction to Hydrology and Lab            | 4             |
|   | Environmental Science Concentration§         | 8             |
|   | Liberal Arts*                                | 12            |
|   | General Education Elective‡                  | 0-4           |
| <b>Fourth Year</b>                                    |  |               |
| 1051-420  | Environmental Applications of Remote Sensing | 4             |

| COURSE                               | QTR. CR. HRS.  |
|--------------------------------------|----------------|
| Environmental Science Concentration§ | 12             |
| University-wide Electives            | 20             |
| Liberal Arts*                        | 8              |
| <b>Total Quarter Credit Hours</b>    | <b>182-185</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Number of general education elective credits will depend on choice of calculus courses.

§ See environmental science concentrations. It is highly recommended that students, in consultation with their faculty adviser, take additional environmental science electives during the fourth year.

\*\*Students selecting this sequence must complete an additional 3 credits in general education course work.

## Accelerated dual degree option

Students in the environmental science program may choose the accelerated five-year BS/MS option, which provides them with a considerable advantage over other environmental science graduates in the job market. The curriculum was developed in conjunction with an advisory board of environmental leaders to ensure that students' education meets the current and future needs of the industry. In order to function as an environmental scientist, an individual must have an extensive background in mathematics, physical science, and life science. The BS/MS program is one of the strongest programs available with respect to mathematics and science.

Students must meet the minimum requirements of the university as described in this bulletin and the requirements contained in the program shown here or its equivalent, as determined and approved by the environmental science program director. Undergraduate students with an overall and professional field-of-study GPA of 3.0 or greater may apply to the program director for entry into the program.

## Environmental science, BS/MS degree, typical course sequence

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| <b>First Year</b>                                     |               |
| 1001-200 Freshman Symposium                           | 1             |
| 1001-251, 252, 253 Introduction to Biology I, II, III | 12            |
| 1011-215, 216 General and Analytic Chemistry I, II    | 7             |
| 1011-205, 206 Chemistry Principles Labs I, II         | 2             |
| <i>Choose one of the following math sequences:</i>    |               |
| 1016-214, 215 Elementary Calculus I, II**             | 6             |
| 1016-281, 282, 283 Project-Based Calculus I, II, III  | 12            |
| 0508-460 Environment and Society                      | 4             |
| 1006-202 Concepts in Environmental Science            | 4             |
| Liberal Arts*   | 4             |
| 1105-051, 052 First-Year Enrichment                   | 2             |
| Wellness Education†                                   | 0             |
| <b>Second Year</b>                                    |               |
| 1006-203 Environmental Science Field Studies          | 4             |
| 1006-350 Applications of GIS                          | 4             |
| 1011-202 Fundamentals of Organic Chemistry            | 3             |
| 1011-207 Introduction to Organic Chemistry Lab        | 1             |
| <i>Choose one of the following physics sequences:</i> |               |
| 1017-211, 212, 213 College Physics                    | 12            |
| 1017-311, 312, 313 University Physics                 |               |
| 1016-319, 320 Data Analysis I, II                     | 10            |
| 0630-370, 372 Environmental Geology and Lab           | 4             |
| Liberal Arts*   | 12            |
| <b>Third Year</b>                                     |               |

| COURSE   | QTR. CR. HRS.  |
|--|----------------|
| 1001-340 General Ecology   | 4              |
| 1001-475 Conservation Biology                                      | 4              |
| 1006-503 Capstone in Environmental Science                         | 4              |
| 0508-463, 464 Great Lakes I, II                                    | 8              |
| 0630-380, 382 Introduction to Hydrology and Lab                    | 4              |
| Environmental Science Concentration§                               | 8              |
| Liberal Arts*  | 12             |
| General Education Elective‡  | 0-4            |
| <b>Fourth Year</b>   |                |
| 1006-711, 712, 713 Environmental Science Graduate Study I, II, III | 5              |
| 1006-879 Environmental Science Graduate Research                   | 3              |
| 1006-710 Graduate Readings Seminar                                 | 3              |
| 1015-720 Environmental Chemistry                                   | 3              |
| 1051-420 Environmental Applications of Remote Sensing              | 4              |
| Environmental Science Concentration§                               | 4              |
| University-wide Electives (undergraduate)                          | 12             |
| Liberal Arts*  | 8              |
| <b>Fifth Year</b>  |                |
| 1006-890 Thesis/Project/891  | 5-9            |
| Environmental Science Core Graduate Elective                       | 4              |
| Environmental Public Policy Core Graduate Elective                 | 4              |
| Environment and Society Core Graduate Elective                     | 4              |
| Professional Electives   | 12-20          |
| Environmental Science Concentration§                               | 8              |
| University-wide Electives (undergraduate)                          | 4              |
| <b>Total Quarter Credit Hours</b>                                  | <b>233-236</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Number of general education elective credits will depend on choice of calculus courses.

§ Please see environmental science concentrations.

Note: The articulation of the BS and the MS curriculum is accomplished by the inclusion of 11 quarter credit hours of graduate work in the fourth year of the curriculum.

\*\*Students selecting this sequence must complete an additional 3 credits in general education course work.

## Additional information

### Cooperative education

Although cooperative education is optional for environmental science majors, it offers students a great way to get a head start on their career with paid professional work experience. Students can participate in cooperative education as soon as the summer quarter of the second year. Co-op placements are typically with local, state, or federal government agencies, nonprofit environmental organizations, and a host of environmental consulting firms.

### Employment opportunities

There is a great need for individuals who have both a strong background in environmental science and the ability to participate on an interdisciplinary problem-solving team. Upon graduation, students will be valued for their broad understanding of environmental science, their depth of knowledge in a particular aspect of environmental science, and their ability to attack and solve tough environmental problems.

## Molecular Bioscience and Biotechnology, BS

[http://www.rit.edu/cos/biology/programs\\_degrees\\_BSBiotechnology.html](http://www.rit.edu/cos/biology/programs_degrees_BSBiotechnology.html)

**Michael Savka, Program Director**  
(585) 475-5141, [massbi@rit.edu](mailto:massbi@rit.edu)

### Program overview

The BS degree in molecular bioscience and biotechnology prepares students to immediately assume challenging positions in research, development, and management in biotechnology research. Students are also well-prepared for positions in the fields of plant biotechnology, human genetics, agriculture, food products, pharmaceuticals and vaccine development, environment and energy, forensic science, and genetic counseling.

The advanced nature of the third- and fourth-year courses, as well as the opportunity to participate in faculty-sponsored undergraduate research, provides a sound foundation to those graduates wishing to pursue a master's or doctoral degree.

The program also can be designed to include the education necessary for the pursuit of a career in a medical field.

Specialized areas of emphasis include recombinant DNA, microbial and plant genetic engineering, mammalian and plant tissue culture, monoclonal antibody production and purification, large-scale fermentation techniques (bacterial and mammalian cell), and methods for characterization and separation of proteins and nucleic acids in yeast, bacterial, viral, and plant systems.

### Curriculum

#### Requirements for the BS degree in molecular bioscience and biotechnology

Students must meet the minimum graduation requirements of the university, as described in this bulletin. In addition, the program requires successful completion of all of the courses listed in the following typical course schedule.

#### Cooperative education

This program provides students the option of participating in cooperative education. More than 65 organizations in industry, government, and academia employ our students in short-term (10 to 20 weeks), full-time paid positions directly related to students' academic areas of interest. Co-op positions can be held during the summer and/or during the regular academic year. Tuition is not charged while a student is on co-op. If a student elects to hold a co-op position during the regular academic year, he or she will take the same number of academic quarters and may need to extend the date of graduation beyond the traditional four years.

#### Molecular bioscience and biotechnology, BS degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>  |               |
| 1001-200 Freshman Symposium                                    | 1             |
| 1001-251, 252, 253 Introduction to Biology I, II, III          | 12            |
| 1011-215, 216, 217 General and Analytical Chemistry I, II, III | 10            |
| 1011-205, 206 Chemical Principles Lab I, II                    | 2             |
| 1011-227 General and Analytical Chemistry Lab                  | 1             |
| 1016-214, 215 Elementary Calculus I, II                        | 6             |
| Liberal Arts*  | 12            |
| 1105-051, 052 First-Year Enrichment                            | 2             |

| COURSE  | QTR. CR. HRS. |
|---|---------------|
| Wellness Education†                                 | 0             |
| <b>Second Year</b>                                  |               |
| 1001-311 Cell Biology                               | 4             |
| 1001-312 Immunology                                 | 3             |
| 1001-314 Tissue Culture                             | 5             |
| 1001-350 Molecular Biology                          | 4             |
| 1013-231, 232, 233 Organic Chemistry I, II, III     | 9             |
| 1013-235, 236, 237 Organic Chemistry Lab I, II, III | 3             |
| 1016-319 Data Analysis I                            | 4             |
| Liberal Arts*                                       | 12            |
| <b>Third and Fourth Years‡</b>                      |               |
| 1001-404 Introductory Microbiology                  | 4             |
| 1001-421 Genetics                                   | 4             |
| 1008-312 Analytical Chemistry: Separations          | 3             |
| 1008-319 Analytical Chemistry: Separations Lab      | 1             |
| 1009-502 Biochemistry: Conformation and Dynamics    | 3             |
| 1009-503 Biochemistry: Metabolism                   | 3             |
| Biotechnology Electives                             | 24            |
| Liberal Arts*                                       | 12            |
| General Education Courses                           | 9             |
| University-wide Electives                           | 27            |
| 1001-499 Cooperative Education (optional)‡          | Co-op         |
| <b>Total Quarter Credit Hours</b>                   | <b>180</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

‡If a student elects to participate in our co-op program, she or he may be scheduling courses in a fifth year but will be using the same number of academic quarters of classes to complete the degree.

#### Bioinformatics option

This BS degree includes a bioinformatics option. Bioinformatics is a developing field that represents a marriage between biotechnology and computer technologies. The field encompasses all aspects of the application of computer technologies to biological data. The option includes curriculum that features a combination of science and biotechnology courses with computer science courses to help students organize, link, analyze, and visualize complex sets of biological data.

#### Molecular bioscience and biotechnology, bioinformatics option, BS degree, typical course sequence

| COURSE   | QTR. CR. HRS. |
|--|---------------|
| <b>First Year</b>  |               |
| 1001-200 Freshman Symposium                                    | 1             |
| 1001-251, 252, 253 Introduction to Biology I, II, III          | 12            |
| 1011-215, 216, 217 General and Analytical Chemistry I, II, III | 10            |
| 1011-205, 206 Chemical Principles Lab I, II                    | 2             |
| 1011-227 General and Analytical Chemistry Lab                  | 1             |
| 4003-231, 232 Computer Science 1, 2                            | 8             |
| Liberal Arts*  | 12            |
| 1105-051, 052 First-Year Enrichment                            | 2             |
| Wellness Education†  | 0             |
| <b>Second Year</b>   |               |
| 1016-214, 215 Elementary Calculus I, II                        | 6             |
| 1001-311 Cell Biology  | 4             |
| 1001-350 Molecular Biology                                     | 4             |
| 1001-312 Immunology  | 3             |
| 1001-314 Tissue Culture  | 5             |
| 4003-233 Computer Science 3                                    | 4             |
| 1013-231, 232, 233 Organic Chemistry Lecture I, II, III        | 9             |
| 1013-235, 236, 237 Organic Chemistry Lab I, II, III            | 3             |
| Liberal Arts*  | 8             |

| COURSE                            |   | QTR. CR. HRS. |
|-----------------------------------|---|---------------|
| <b>Third and Fourth Years‡</b>    |   |               |
| 1001-404                          | Introduction to Microbiology                | 4             |
| 1001-421                          | Genetics                                    | 4             |
| 1001-492                          | Genomics                                    | 4             |
| 1001-493                          | Bioinformatics                              | 4             |
| 1001-450                          | Genetic Engineering                         | 5             |
|                                   | Biotechnology Electives                     | 12            |
| 1008-312, 319                     | Analytical Chemical Separations             | 4             |
| 1009-502                          | Biochemistry: Confirmation and Dynamics     | 3             |
| 1009-503                          | Biochemistry: Metabolism                    | 3             |
| 4002-360                          | Introduction to Databases and Data Modeling | 4             |
| 4003-334                          | Computer Science 4                          | 4             |
| 1016-319                          | Data Analysis                               | 4             |
|                                   | Liberal Arts*                               | 16            |
|                                   | University-wide Electives                   | 13            |
| 1001-499                          | Cooperative Education (optional)‡           | Co-op         |
| <b>Total Quarter Credit Hours</b> |   | <b>180</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

‡Please see Wellness Education Requirement for more information.

‡If a student elects to participate in our co-op program, she or he may be scheduling courses in a fifth year but will be using the same number of academic quarters of classes to complete the degree.

## Concentrations/Electives

Below are upper-division elective courses suggested for students interested in certain sub-disciplines of agriculture/plant, environmental, industrial, and medical biotechnology. Students may select courses from any suggested concentrations.

### Concentrations

#### Agricultural/Plant

|          |                                  |
|----------|----------------------------------|
| 1001-416 | Plant Biotechnology              |
| 1001-418 | Plant Molecular Biology          |
| 1001-492 | Genomics                         |
| 1001-450 | Genetic Engineering              |
| 1001-405 | Plants, Medicine, and Technology |
| 1001-559 | Special Topics*                  |

\*Special topics may include the following: Plant Pathology, Fundamentals of Plant Biochemistry, and Bio-Separations: Principles and Practices.

#### Environmental

|          |                            |
|----------|----------------------------|
| 1001-567 | Environmental Microbiology |
| 1001-530 | Bioremediation             |
| 1001-418 | Plant Molecular Biology    |
| 1001-559 | Special Topics*            |

\*Special topics may include the following: Plant Pathology.

#### Industrial

|          |                                  |
|----------|----------------------------------|
| 1001-530 | Bioremediation                   |
| 1001-492 | Genomics                         |
| 1001-416 | Plant Biotechnology              |
| 1001-315 | Hybridoma Techniques             |
| 1001-450 | Genetic Engineering              |
| 1001-403 | Cell Physiology                  |
| 1001-405 | Plants, Medicine, and Technology |

#### Medical

|          |                            |
|----------|----------------------------|
| 1001-312 | Immunology                 |
| 1001-525 | Eukaryotic Gene Expression |
| 1001-406 | Virology                   |
| 1001-422 | Developmental Biology      |

|          |                                    |
|----------|------------------------------------|
| 1001-451 | Introduction to Infectious Disease |
| 1001-715 | Genetic Diseases and Disorders     |
| 1004-315 | Medical Genetics                   |
| 1001-315 | Hybridoma Techniques               |
| 1001-502 | Advanced Immunology                |
| 1001-427 | Microbial and Viral Genetics       |
| 1001-492 | Genomics                           |
| 1001-559 | Special Topics*                    |

\*Special topics courses include the following: Cancer Biology, Infectious Disease: Impact on Society and Culture, Medical Parasitology, and Bacterial-Host Interactions.

## School of Mathematical Sciences

### Douglas Meadows, Head

[www.math.rit.edu](http://www.math.rit.edu)

The School of Mathematical Sciences has programs leading to BS degrees in applied mathematics, computational mathematics, and applied statistics. Its graduate program leads to an MS degree in applied and computational mathematics. The school also offers students a number of five-year accelerated dual degree (BS/MS) programs.

The small student-to-faculty ratio fosters many opportunities for students and faculty to engage in undergraduate research. These often lead to external opportunities, and sometimes to joint publications between students and faculty. Students have been successful in National Science Foundation summer research programs around the country and some have sought and gained acceptance into prestigious international programs.

Owing to problem-solving skills that a degree in mathematics or statistics cultivates, students find exciting career paths open to them. Many find work in industry or government, in areas as diverse as actuarial science, mathematical modeling, software design, and cryptography, to name just a very few. Others find success pursuing graduate work and further research, leading to opportunities in academia, industry, and government.

## Applied Mathematics, BS

<http://www.math.rit.edu/>

**Douglas Meadows, Head, School of Mathematical Sciences**  
(585) 475-5129, [dsmsma@rit.edu](mailto:dsmsma@rit.edu)

### Program overview

The applied mathematics program focuses on the study and solution of problems that can be mathematically analyzed. Industry, academia, and government all have a great need for individuals with this type of education. Students choose a sequence of courses from one of more than 20 application areas that provide them with the knowledge and skills to collaborate on complex problems with scientists, engineers, computer specialists, or other analysts. Some application areas are applied statistics; biology; business; economics; chemistry; electrical, industrial, or mechanical engineering; operations research; and imaging science.

Graduates typically are employed in scientific, engineering, business, or government environments, applying their mathematics background to the analysis and solution of real-world problems.

Applied mathematics students who minor in business can earn the MBA degree from RIT with one year of additional study through careful choice of undergraduate courses.



## Curriculum

### Applied mathematics, BS degree, typical course sequence

| COURSE  |   | QTR. CR. HRS. |
|---|---|---------------|
| <b>First Year</b>                                     |   |               |
| 1016-210, 211   | Mathematics and Statistics Seminar              | 2             |
| 1016-281, 282, 283                                    | Project-Based Calculus I, II, III               | 12            |
| 1016-265  | Discrete Math I                                 | 4             |
|   | Science Electives                               | 12            |
|   | Liberal Arts*                                   | 16            |
| 0502-444  | Technical Writing                               | 4             |
| 1105-051, 052   | First-Year Enrichment                           | 2             |
|   | Wellness Education†                             | 0             |
| <b>Second Year</b>                                    |   |               |
| 1016-305  | Multivariable Calculus                          | 4             |
| 1016-306  | Differential Equations I                        | 4             |
| 1016-351  | Probability                                     | 4             |
| 1016-352  | Applied Statistics                              | 4             |
| 1016-399  | Cooperative Education Seminar                   | 0             |
|   | Mathematics Elective                            | 4             |
| 1016-331  | Linear Algebra I                                | 4             |
|   | Liberal Arts*                                   | 8             |
| Choose one of the following computer science options: |   | 8             |
| 4003-241  | Computer Science Option 1 4003-212 and 4003-241 |               |
| 4003-242  | Computer Science Option 2 4003-241 and 4003-242 |               |
| 1016-410  | Vector Calculus                                 | 4             |
|   | University-wide Electives                       | 10            |
| <b>Third Year</b>                                     |   |               |
| Choose one of the following courses:                  |   | 4             |
| 1016-511  | Numerical Analysis                              |               |
| 1016-512  | Numerical Linear Algebra                        |               |
| 1016-432  | Linear Algebra II                               | 4             |
| 1016-461  | Mathematical Modeling                           | 4             |
|   | Mathematics Electives                           | 8             |
|   | Liberal Arts*                                   | 12            |
|   | General Education Electives                     | 8-12          |
| 1016-499  | Cooperative Education (optional)‡               | Co-op         |
| <b>Fourth Year</b>                                    |   |               |
| 1016-411, 412   | Real Variables I, II                            | 8             |
|   | Mathematics Electives                           | 4             |
|   | Application Area                                | 4             |
|   | General Education Electives                     | 10            |
| 1016-499  | Cooperative Education (optional)‡               | Co-op         |
| <b>Fifth Year</b>                                     |   |               |
| 1016-531, 532   | Abstract Algebra I, II                          | 8             |
|   | Application Area                                | 8             |
| 1016-499  | Cooperative Education (optional)                | Co-op         |
| <b>Total Quarter Credit Hours</b>                     |   | <b>188</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ This program can be completed in four years if the cooperative education option is omitted.

## Applied Statistics, BS

<http://www.math.rit.edu/>

**Douglas Meadows, Head, School of Mathematical Sciences**  
(585) 475-5129, [dsmsma@rit.edu](mailto:dsmsma@rit.edu)

### Program overview

The applied statistics program provides students with a solid foundation in mathematical and statistical principles, experience in the application of statistics, thorough knowledge of computers and statistical software, and the skills to communicate the results of a statistical analysis. The demand for graduates with this type of preparation is precipitated by the recognition of business, industry, and government that a large number of problems can be analyzed.

Graduates of the program collaborate with specialists in both scientific and non-technical areas to design and conduct experiments and interpret the results. Application areas include product designs, quality control, marketing, customer satisfaction, and actuarial sciences.

## Curriculum

### Applied statistics, BS degree, typical course sequence

| COURSE                               |   | QTR. CR. HRS. |
|--------------------------------------|---|---------------|
| <b>First Year</b>                    |   |               |
| 1016-210, 211                        | Mathematics and Statistics Seminar            | 2             |
| 1016-281, 282, 283                   | Project-Based Calculus I, II, III             | 12            |
| 1016-265                             | Discrete Math I                               | 4             |
| 1016-260                             | Statistical Computing with Excel and Minitab  | 2             |
| 4003-241                             | Computer Science Option: 4003-212 or 4003-241 | 4             |
|                                      | Science Electives                             | 12            |
|                                      | University-wide Electives                     | 2             |
|                                      | Liberal Arts*                                 | 8             |
| 1105-051, 052                        | First-Year Enrichment                         | 2             |
|                                      | Wellness Education†                           | 0             |
| <b>Second Year</b>                   |   |               |
| 1016-305                             | Multivariable Calculus                        | 4             |
| 1016-306                             | Differential Equations                        | 4             |
| 1016-351                             | Probability                                   | 4             |
| 1016-352                             | Applied Statistics                            | 4             |
| 1016-399                             | Co-op Seminar                                 | 0             |
|                                      | Mathematics Elective†                         | 4             |
| 0307-442                             | Statistical Computing                         | 4             |
| 1016-331                             | Linear Algebra I                              | 4             |
| Choose one of the following courses: |   | 4             |
| 1016-358                             | Statistical Quality Control                   |               |
| 1016-457                             | Research Sampling Techniques                  |               |
| 0502-444                             | Technical Writing                             | 4             |
|                                      | Liberal Arts*                                 | 16            |
| <b>Third Year</b>                    |   |               |
| 1016-432                             | Linear Algebra II                             | 4             |
| 1016-354                             | Regression Analysis                           | 4             |
| 1016-355                             | Design of Experiments                         | 4             |
|                                      | Mathematics Elective†                         | 4             |
|                                      | Liberal Arts*                                 | 8             |
|                                      | General Education Electives                   | 8             |
| 1016-499                             | Cooperative Education (optional)§             | Co-op         |

| COURSE                            |                                   | QTR. CR. HRS. |
|-----------------------------------|-----------------------------------|---------------|
| <b>Fourth Year</b>                |                                   |               |
| 1016-454                          | Nonparametric Statistics          | 4             |
|                                   | Mathematics Electives†            | 12            |
|                                   | University-wide Electives         | 6             |
|                                   | General Education Electives       | 6             |
|                                   | Liberal Arts*                     | 4             |
| 1016-499                          | Cooperative Education (optional)§ | Co-op         |
| <b>Fifth Year</b>                 |                                   |               |
| 1016-451, 452                     | Mathematical Statistics I, II     | 8             |
| 1016-555                          | Statistics Seminar                | 4             |
|                                   | Mathematics Elective‡             | 4             |
|                                   | General Education Electives       | 8-12          |
| 1016-499                          | Cooperative Education (optional)§ | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                   | <b>188</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Up to 16 quarter credits of mathematics electives may be chosen from the applied mathematics application areas.

§ This program can be completed in four years if the cooperative education option is omitted.

### Accelerated dual degree option

Students may be interested in combining the BS in applied statistics with an MS in applied and computational mathematics for an accelerated option that allows them to earn both degrees following one year of graduate study. A BS in applied statistics and an MS in quality and applied statistics may also be earned through a dual degree option.

## Computational Mathematics, BS

<http://www.math.rit.edu/>

**Douglas Meadows, Head, School of Mathematical Sciences**  
(585) 475-5129, [dsmsma@rit.edu](mailto:dsmsma@rit.edu)

### Program overview

Computational mathematics prepares students for a mathematical career that incorporates extensive computer science skills. In this program, much emphasis is given to the use of the computer as a tool to solve mathematically modeled physical problems. Graduates of the program often choose positions as mathematical analysts, scientific programmers, software engineers, or systems analysts. Job opportunities in private industry and government abound in this field.

### Curriculum

#### Computational mathematics, BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 1016-210, 211      | Mathematics and Statistics Seminar             | 2             |
| 1016-281, 282, 283 | Project-Based Calculus I, II, III              | 12            |
| 1016-265           | Discrete Math I                                | 4             |
| 4003-241           | Problem-Based Introduction to Computer Science | 4             |
| 4003-242           | Data Structures for Problem Solving            | 4             |
| 4003-243           | Object-Oriented Programming                    | 4             |
|                    | Science Electives                              | 12            |
|                    | Liberal Arts*                                  | 8             |
| 1105-051, 052      | First-Year Enrichment                          | 2             |

| COURSE                            |                                  | QTR. CR. HRS. |
|-----------------------------------|----------------------------------|---------------|
|                                   | Wellness Education†              | 0             |
| <b>Second Year</b>                |                                  |               |
| 1016-305                          | Multivariable Calculus           | 4             |
| 1016-306                          | Differential Equations I         | 4             |
| 1016-351                          | Probability                      | 4             |
| 1016-352                          | Applied Statistics               | 4             |
| 1016-399                          | Co-op Seminar                    | 0             |
| 1016-331                          | Linear Algebra I                 | 4             |
| 4003-334                          | Computer Science 4               | 4             |
| 3010-361                          | Software Engineering             | 4             |
| 0502-444                          | Technical Writing                | 4             |
|                                   | Computational Math Concentration | 4             |
|                                   | University-wide Elective         | 4             |
|                                   | Liberal Arts*                    | 12            |
| <b>Third Year</b>                 |                                  |               |
| 1016-432                          | Linear Algebra II                | 4             |
| 1016-467                          | Graph Theory                     | 4             |
| 1016-461                          | Mathematical Modeling            | 4             |
|                                   | Computational Math Concentration | 8             |
|                                   | University-wide Elective         | 4             |
|                                   | Liberal Arts*                    | 4             |
| 1016-499                          | Cooperative Education (optional) | Co-op         |
| <b>Fourth Year</b>                |                                  |               |
| 1016-411                          | Real Variables I                 | 4             |
| 1016-511                          | Numerical Analysis               | 4             |
| 1016-512                          | Numerical Linear Algebra         | 4             |
|                                   | Computational Math Concentration | 4             |
|                                   | University-wide Elective         | 2             |
|                                   | General Education Electives      | 8             |
|                                   | Liberal Arts*                    | 12            |
| 1016-499                          | Cooperative Education (optional) | Co-op         |
| <b>Fifth Year‡</b>                |                                  |               |
| 1016-531, 532                     | Abstract Algebra I, II           | 8             |
|                                   | Computational Math Concentration | 4             |
|                                   | General Education Electives      | 6             |
| 1016-499                          | Cooperative Education (optional) | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                  | <b>188</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ This program can be completed in four years if the cooperative education option is omitted.

### Accelerated dual degree option

Students may be interested in combining the BS in computational mathematics with an MS in applied and computational mathematics for an accelerated option that allows them to earn both degrees following one year of graduate study. A BS in computational mathematics and an MS in computer science may also be earned through a dual degree option.

## Department of Chemistry

### L. Paul Rosenberg, Department Head

[www.rit.edu/cos/chemistry/](http://www.rit.edu/cos/chemistry/)

The department of chemistry offers programs leading to BS degrees in chemistry, a BS degree in biochemistry, and a BS degree in polymer chemistry. The department also offers graduate and accelerated dual degree programs in the following areas: MS degree and a five-year combined BS/MS in chemistry, BS biochemistry/MS chemistry, and a BS chemistry/MS materials science and engineering.

# Chemistry, BS

<http://chemistry.rit.edu/>

**L. Paul Rosenberg, Department Head**  
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## Program overview

The BS degree in chemistry may be completed in four or five years, depending on the amount of cooperative education experience the student elects. Co-op may begin as early as the summer of the first year. The five-year course schedule assumes that the student will participate in co-op assignments for a total of eight academic quarters. Students may elect to complete the BS degree requirements in a traditional four-year program with three summers of co-op work experience.

The program prepares graduates for positions in several fields of chemistry, including professional industrial work in processing and laboratory operations, research and experimental work, supervision of technical projects, and managerial positions. A substantial number of graduates continue their education and earn advanced degrees in chemistry or pursue careers in pharmacy, medicine, and dentistry.

The chemistry program allows for flexibility in the type and number of chemistry and university-wide elective courses taken by the student. The program also provides students with the option of planning an elective concentration in complementary fields such as imaging science, business, graphic arts, psychology, biology, criminal justice, computer science, engineering, environmental science, forensics, mathematics, packaging science, physics, and printing.

## Curriculum

### Chemistry (ACS certified), BS degree, typical course sequence

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 1010-200           | Chemical Safety  | 1             |
| 1010-230           | Introduction to Cooperative Education and Chemical Careers | 1             |
| 1010-251, 252      | General Chemistry I, II                                    | 7             |
| 1010-255           | General Chemistry I Lab                                    | 1             |
| 1008-261, 262      | Quantitative Analysis I, II                                | 7             |
| 1008-265, 266      | Quantitative Analysis Lab I, II                            | 3             |
| 1016-281, 282, 283 | Calculus I, II, III  | 12            |
|                    | Liberal Arts*  | 16            |
| 1105-051, 052      | First-Year Enrichment                                      | 2             |
|                    | Wellness Education†  | 0             |
| 1010-499           | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Second Year</b> |  |               |
| 1008-311           | Instrumental Analysis                                      | 3             |
| 1008-318           | Instrumental Analysis Lab                                  | 1             |
| 1008-312           | Separations Techniques                                     | 3             |
| 1008-319           | Separations Techniques Lab                                 | 1             |
| 1016-305           | Multivariable Calculus                                     | 4             |
| 1013-431, 432, 433 | Organic Chemistry I, II, III                               | 9             |
| 1013-435, 436      | Preparative Organic Chemistry Lab I, II                    | 2             |
| 1013-437           | Systematic Identification of Organic Compounds III Lab     | 2             |
|                    | Liberal Arts*  | 8             |
| 1010-499           | Cooperative Education (optional)                           | Co-op         |

| COURSE                            |                                       | QTR. CR. HRS. |
|-----------------------------------|---------------------------------------|---------------|
| <b>Third Year</b>                 |                                       |               |
| 1016-306                          | Differential Equations                | 4             |
| 1017-311, 312, 313                | University Physics I, II, III         | 12            |
| 1014-441                          | Chemical Thermodynamics               | 4             |
| 1014-445                          | Chemical Thermodynamics Lab           | 1             |
|                                   | Liberal Arts*§                        | 12            |
| 1010-499                          | Cooperative Education (optional)      | Co-op         |
| <b>Fourth Year</b>                |                                       |               |
| 1014-442                          | Quantum Chemistry                     | 4             |
| 1014-446                          | Quantum Chemistry Lab                 | 1             |
| 1014-443                          | Chemical Kinetics                     | 4             |
| 1014-447                          | Chemical Kinetics Lab                 | 1             |
| 1010-401                          | Chemical Literature                   | 2             |
| 1012-562, 563                     | Inorganic Chemistry I, II**           | 8             |
| 1009-502                          | Biochemistry**                        | 3             |
|                                   | University-wide Electives‡            |               |
| 1010-499                          | Cooperative Education (optional)      | Co-op         |
| <b>Fifth Year</b>                 |                                       |               |
| 1012-565                          | Preparative Inorganic Chemistry Lab** | 3             |
| 1008-511                          | Advanced Instrumental Analysis**      | 3             |
| 1008-621                          | Advanced Instrumental Analysis Lab**  | 2             |
|                                   | Chemistry Electives§                  |               |
|                                   | University-wide Electives‡            |               |
| 1010-499                          | Cooperative Education (optional)      | Co-op         |
| <b>Total Quarter Credit Hours</b> |                                       | <b>182</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

‡Chemistry Research (1010-541, 542, 543) may be used as a university-wide elective and is highly recommended. Electives are necessary to bring the total quarter credit hours to 180 for graduation. Twelve quarter credit hours are necessary for full-time status.

§ACS highly recommends a foreign language (preferably German).

\*\*Required only for ACS certification.

### Accelerated dual degree options

The BS chemistry program may be combined with the MS chemistry program or the MS in materials science and engineering program, allowing undergraduate students to acquire both a bachelor's and a master's degree in a total of five years. There are two BS/MS options:

- BS chemistry/MS chemistry
- BS chemistry/MS materials science and engineering

### BS Chemistry (environmental chemistry option) (ACS certified)/MS Chemistry option

*THIS OPTION HAS BEEN SUSPENDED FOR THE 2011-2012 ACADEMIC YEAR.*

The environmental chemistry option in the BS chemistry program requires the following courses: General Biology and Lab (1001-201, 1001-205), Microbiology (1004-210), Environmental Chemistry (1015-520), Atmospheric Chemistry (1015-521), and Aquatic Toxicology and Chemistry (1015-522) in place of chemistry electives, university-wide electives, and Inorganic Chemistry II. The environmental studies concentration is recommended as part of the liberal arts upper-level electives.

In addition, environmentally related science courses may be selected according to the student's interests in areas such as field biology, ecology, oceanography, hydrology, environmental monitoring, geology, treatment of waste and sewage, packaging, polymer technology, and chemical research.

## Chemistry, combined BS (environmental chemistry option)/MS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 1010-200                          | Chemical Safety  | 1             |
| 1010-230                          | Introduction to Cooperative Education and Chemical Careers | 1             |
| 1010-251, 252                     | General Chemistry I, II                                    | 7             |
| 1010-255                          | General Chemistry I Lab                                    | 1             |
| 1008-261, 262                     | Quantitative Analysis I, II                                | 7             |
| 1008-265, 266                     | Quantitative Analysis Lab I, II                            | 3             |
| 1016-281, 282, 283                | Calculus I, II, III  | 12            |
|                                   | Liberal Arts*  | 12            |
| 1105-051, 052                     | First-Year Enrichment                                      | 2             |
|                                   | Wellness Education†  | 0             |
| 1001-201                          | General Biology  | 3             |
| 1001-205                          | General Biology Lab  | 1             |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Second Year</b>                |  |               |
| 1008-311                          | Instrumental Analysis                                      | 3             |
| 1008-318                          | Instrumental Analysis Lab                                  | 1             |
| 1008-312                          | Separations Techniques                                     | 3             |
| 1008-319                          | Separations Techniques Lab                                 | 1             |
| 1016-305                          | Multivariable Calculus                                     | 4             |
| 1013-431, 432, 433                | Organic Chemistry I, II, III                               | 9             |
| 1013-435, 436                     | Preparative Organic Chemistry Lab I, II                    | 2             |
| 1013-437                          | Systematic Identification of Organic Compounds Lab         | 2             |
| 1004-210                          | Microbiology in Health and Disease                         | 4             |
|                                   | Liberal Arts*  | 12            |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Third Year</b>                 |  |               |
|                                   | Liberal Arts*‡   | 12            |
| 1016-306                          | Differential Equations                                     | 4             |
| 1008-511                          | Advanced Instrumental Analysis                             | 3             |
| 1008-621                          | Advanced Instrumental Analysis Lab                         | 2             |
| 1017-311, 312, 313                | University Physics I, II, III                              | 12            |
| 1015-522                          | Aquatic Toxicology and Chemistry                           | 3             |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 1009-702                          | Biochemistry   | 3             |
| 1014-441                          | Chemical Thermodynamics                                    | 4             |
| 1014-445                          | Chemical Thermodynamics Lab                                | 1             |
| 1014-442                          | Quantum Chemistry  | 4             |
| 1014-446                          | Quantum Chemistry Lab                                      | 1             |
| 1014-443                          | Chemical Kinetics  | 4             |
| 1014-447                          | Chemical Kinetics Lab                                      | 1             |
| 1015-720                          | Environmental Chemistry                                    | 3             |
| 1012-562                          | Inorganic Chemistry I                                      | 4             |
| 1012-565                          | Preparative Inorganic Chemistry Lab                        | 3             |
|                                   | Chemistry Electives§                                       |               |
| 1010-879                          | Research and Thesis Guidance**                             | 3             |
| 1010-401                          | Chemical Literature  | 2             |
| <b>Fifth Year††</b>               |  |               |
| 1015-721                          | Atmospheric Chemistry                                      | 3             |
| 1010-870                          | Chemistry Seminar  | 2             |
| 1010-879                          | Research and Thesis Guidance**                             | 6–13          |
| <b>Total Quarter Credit Hours</b> |  | <b>225</b>    |

\*Please see Liberal Arts General Education Requirements for more information. Environmental studies concentration is recommended.

†Please see Wellness Education Requirement for more information.

‡ACS (American Chemical Society) highly recommends a foreign language (preferably German).

§ A minimum of 36 hours of 700–level or higher chemistry courses is required to graduate with both a BS and MS degree.

\*\*A student will be required to have 9 to 16 credit hours of Research and Thesis Guidance (1010-879).

††Course work in this year will be determined by the graduate committee and will need to fulfill the requirement of 225 credit hours.

## BS chemistry/MS chemistry option

### Chemistry, combined BS/MS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 1010-200                          | Chemical Safety  | 1             |
| 1010-230                          | Introduction to Cooperative Education and Chemical Careers | 1             |
| 1010-251, 252                     | General Chemistry I, II                                    | 7             |
| 1010-255                          | General Chemistry I Lab                                    | 1             |
| 1008-261, 262                     | Quantitative Analysis I, II                                | 7             |
| 1008-265, 266                     | Quantitative Analysis Lab I, II                            | 3             |
| 1016-281, 282, 283                | Calculus I, II, III  | 12            |
|                                   | Liberal Arts*  | 16            |
| 1105-051, 052                     | First-Year Enrichment                                      | 2             |
|                                   | Wellness Education†  | 0             |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Second Year</b>                |  |               |
| 1008-311                          | Instrumental Analysis                                      | 3             |
| 1008-318                          | Instrumental Analysis Lab                                  | 1             |
| 1008-312                          | Separations Techniques                                     | 3             |
| 1008-319                          | Separations Techniques Lab                                 | 1             |
| 1016-305                          | Multivariable Calculus                                     | 4             |
| 1016-306                          | Differential Equations                                     | 4             |
| 1013-431, 432, 433                | Organic Chemistry I, II, III                               | 9             |
| 1013-435, 436                     | Preparative Organic Chemistry Lab I, II                    | 2             |
| 1013-437                          | Systematic Identification of Organic Compounds III Lab     | 2             |
|                                   | Liberal Arts*  | 8             |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Third Year</b>                 |  |               |
| 1010-401                          | Chemical Literature  | 2             |
| 1017-311, 312, 313                | University Physics I, II, III                              | 12            |
| 1014-441                          | Chemical Thermodynamics                                    | 4             |
| 1014-445                          | Chemical Thermodynamics Lab                                | 1             |
|                                   | Liberal Arts*‡   | 12            |
|                                   | Chemistry Electives§                                       |               |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 1014-442                          | Quantum Chemistry  | 4             |
| 1014-446                          | Quantum Chemistry Lab                                      | 1             |
| 1014-443                          | Chemical Kinetics  | 4             |
| 1014-447                          | Chemical Kinetics Lab                                      | 1             |
| 1009-702                          | Biochemistry††   | 3             |
| 1008-711                          | Advanced Instrumental Analysis††                           | 3             |
| 1008-621                          | Advanced Instrumental Analysis Lab††                       | 2             |
| 1012-562, 563                     | Inorganic Chemistry I, II††                                | 8             |
| 1012-765                          | Preparative Inorganic Chemistry Lab††                      | 3             |
|                                   | Chemistry Electives§                                       |               |
| 1010-879                          | Research and Thesis Guidance**                             | 3             |
| <b>Fifth Year§§</b>               |  |               |
| 1012-870                          | Chemistry Seminar  | 2             |
| 1010-879                          | Research and Thesis Guidance**                             | 6–13          |
| <b>Total Quarter Credit Hours</b> |  | <b>225</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

‡ACS highly recommends a foreign language (preferably German).

§ A minimum of 6 to 8 quarter credit hours of 500–level course work.

§§ Course work in the fifth year will be determined by the graduate committee and will need to fulfill the requirement of 225 total credit hours. A minimum of 36 hours of 700–level or higher chemistry courses is required to graduate with both a BS and MS degree in chemistry.

\*\*A student will normally have 9 to 16 credit hours of Research and Thesis Guidance.

†† Required only for ACS certification.

## BS Chemistry/MS materials science and engineering option

The combined BS chemistry/MS materials science and engineering option is designed for students who wish to enter industrial applications of chemistry in the areas of developing new materials (polymers, plastics, natural product substitutes), new processes for producing those materials, and research into new applications for existing materials.

## Chemistry, BS/MS materials science and engineering degree option, typical course sequence (BS is ACS certified)

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 1010-200           | Chemical Safety  | 1             |
| 1010-230           | Introduction to Cooperative Education and Chemical Careers | 1             |
| 1010-251, 252      | General Chemistry I, II                                    | 7             |
| 1010-255           | General Chemistry I Lab                                    | 1             |
| 1008-261, 262      | Quantitative Analysis I, II                                | 7             |
| 1008-265, 266      | Quantitative Analysis Lab I, II                            | 3             |
| 1016-281, 282, 283 | Calculus I, II, III  | 12            |
|                    | Liberal Arts*  | 16            |
| 1105-051, 052      | First-Year Enrichment                                      | 2             |
|                    | Wellness Education†  | 0             |
| 1010-499           | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Second Year</b> |  |               |
| 1008-311           | Instrumental Analysis                                      | 3             |
| 1008-318           | Instrumental Analysis Lab                                  | 1             |
| 1008-312           | Separations Techniques                                     | 3             |
| 1008-319           | Separations Techniques Lab                                 | 1             |
| 1013-431, 432, 433 | Organic Chemistry I  | 9             |
| 1013-435, 436      | Preparative Organic Chemistry Lab I, II                    | 2             |
| 1013-437           | Systematic Identification of Organic Compounds Lab         | 2             |
| 1016-305           | Multivariable Calculus                                     | 4             |
| 1016-306           | Differential Equations                                     | 4             |
| 1017-311, 312, 313 | University Physics I, II, III                              | 12            |
|                    | Liberal Arts*‡   | 4             |
| 1010-499           | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Third Year</b>  |  |               |
| 1010-401           | Chemical Literature  | 2             |
| 1014-441           | Chemical Thermodynamics                                    | 4             |
| 1014-445           | Chemical Thermodynamics Lab                                | 1             |
| 1014-442           | Quantum Chemistry  | 4             |
| 1014-446           | Quantum Chemistry Lab                                      | 1             |
| 1014-443           | Chemical Kinetics  | 4             |
| 1014-447           | Chemical Kinetics Lab                                      | 1             |
|                    | Liberal Arts*‡   | 16            |
|                    | University-wide elective                                   | 4             |
| 1010-499           | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Fourth Year</b> |  |               |
| 1008-511           | Advanced Instrumental Analysis (or 711)**                  | 3             |
| 1008-621           | Advanced Instrumental Analysis Lab**                       | 2             |
| 1009-502           | Biochemistry: Conformation and Dynamics**                  | 3             |
| 1012-562, 563      | Inorganic Chemistry I, II**                                | 8             |
| 1012-565           | Preparative Inorganic Chemistry Lab**                      | 3             |
|                    | Advanced Chemistry Electives§                              |               |
| 1028-701           | Introduction to Materials Science                          | 4             |
| 1028-702           | Introduction to Polymer Science                            | 4             |
| 1028-705           | Introduction to Experimental Techniques                    | 4             |
| 1028-879           | Research and Thesis Guidance††                             |               |
|                    | Materials Science Electives§                               |               |

| COURSE                            |                                     | QTR. CR. HRS. |
|-----------------------------------|-------------------------------------|---------------|
| <b>Fifth Year</b>                 |                                     |               |
| 1015-721                          | Atmospheric Chemistry               | 3             |
| 1028-703                          | Solid State Science                 | 4             |
| 1028-704                          | Introduction to Theoretical Methods | 4             |
| 1028-710                          | Materials Properties and Selection  | 4             |
| 1028-780                          | Sensors and Actuators               | 4             |
| 1028-785                          | Sensors and Actuators Lab           | 2             |
|                                   | Materials Science Electives§        |               |
| 1028-879                          | Research and Thesis Guidance††      |               |
| 1028-890                          | Seminar                             | 1             |
| <b>Total Quarter Credit Hours</b> |                                     | <b>185</b>    |

\*Please see Liberal Arts General Education Requirements for more information.

†Please see Wellness Education Requirement for more information.

‡ACS highly recommends a foreign language (preferably German).

§A minimum of 36 hours of 700-level or higher chemistry/materials science courses is required to graduate with both a BS and MS degree.

\*\*Required only for ACS certification.

††A student will be required to have 9 to 16 credit hours of Research and Thesis Guidance (1028-879).

## Biochemistry, BS

<http://chemistry.rit.edu/>

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## Program overview

Biochemistry is an exciting variation of the BS chemistry program and may be completed in four or five years, depending on the amount of cooperative education. Co-op may begin as early as the summer of the first year. Students who enroll in the program often have an interest in combining the life and health sciences with a chemistry degree. Students take a year of general biology, in addition to a typical chemistry curriculum, during the first two or three years. During the upper-level years, students in the biochemistry program take a substantial core of courses in biochemistry, physical chemistry, chemical literature, and the liberal arts as well as elective courses in biology, biotechnology, and clinical science. Students must take a minimum of two upper-division biology electives.

Employment opportunities for biochemistry graduates exist in the chemical, pharmaceutical, agricultural, forensic, and rapidly expanding biotechnological fields. Graduates also are well-prepared to enter advanced degree programs in biochemistry, medicine, dentistry, and veterinary medicine.

## Curriculum

The biochemistry program offers two tracks, one that follows the guidelines of the American Society of Biochemists and Molecular Biologists (ASBMB) and one that is certified by the American Chemical Society (ACS). The ASBMB program allows more science and university-wide electives in such fields as biology, while the ACS program is for students interested in a graduate chemistry program such as that offered by RIT.

## Biochemistry, BS degree, typical course sequence (follows ASBMB guidelines)

| COURSE            |                         | QTR. CR. HRS. |
|-------------------|-------------------------|---------------|
| <b>First Year</b> |                         |               |
| 1010-200          | Chemical Safety         | 1             |
| 1010-230          | Freshman Symposium      | 1             |
| 1010-251, 252     | General Chemistry I, II | 7             |



| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| 1010-255  | General Chemistry I Lab                                | 1             |
| 1008-261, 262   | Quantitative Analysis I, II                            | 7             |
| 1008-265, 266   | Quantitative Analysis Lab I, II                        | 3             |
| 1016-281, 282, 283                                    | Calculus I, II, III                                    | 12            |
| 1001-201, 202, 203                                    | General Biology  | 9             |
| 1001-205, 206, 207                                    | General Biology Lab                                    | 3             |
|   | Liberal Arts*  | 4             |
| 1105-051, 052   | First-Year Enrichment                                  | 2             |
|   | Wellness Education‡                                    | 0             |
| 1010-499  | Cooperative Education (optional, summer)               | Co-op         |
| <b>Second Year</b>                                    |  |               |
| 1010-401  | Chemical Literature                                    | 2             |
| 1016-305  | Multivariable Calculus                                 | 4             |
| 1013-431, 432, 433                                    | Organic Chemistry I, II, III                           | 9             |
| 1013-435, 436   | Preparative Organic Chemistry Lab I, II                | 2             |
| 1013-437  | Systematic Identification of Organic Compounds III Lab | 2             |
| 1001-322  | Cell Biology   | 4             |
| 1001-350  | Molecular Biology                                      | 4             |
| 1009-502  | Biochemistry: Conformation and Dynamics                | 3             |
|   | Biology Elective                                       | 4             |
|   | Liberal Arts*  | 12            |
|   | University-wide Electives§                             |               |
| 1010-499  | Cooperative Education (optional)                       | Co-op         |
| <b>Third Year</b>                                     |  |               |
| 1008-311  | Instrumental Analysis                                  | 3             |
| 1008-318  | Instrumental Analysis Lab                              | 1             |
| 1009-503  | Biochemistry: Metabolism                               | 3             |
| 1009-504  | Biochemistry: Nucleic Acids                            | 3             |
| 1009-505  | Biochemistry: Experimental Techniques Lab              | 2             |
| <i>Choose one of the following physics sequences:</i> |  | 12            |
| 1017-311, 312, 313                                    | University Physics I, II, III                          |               |
| 1017-211, 212, 213                                    | College Physics I, II, III                             |               |
|   | Biology Elective                                       | 4             |
|   | Liberal Arts*  | 12            |
|   | University-wide Electives§                             |               |
| 1010-499  | Cooperative Education (optional)                       | Co-op         |
| <b>Fourth Year</b>                                    |  |               |
| 1014-441  | Chemical Thermodynamics                                | 4             |
| 1014-445  | Chemical Thermodynamics Lab                            | 1             |
| 1014-443  | Chemical Kinetics                                      | 4             |
| 1014-447  | Chemical Kinetics Lab                                  | 1             |
|   | Liberal Arts*  | 8             |
|   | University-wide Electives§                             |               |
| 1010-499  | Cooperative Education (optional)                       | Co-op         |
| <b>Total Quarter Credit Hours</b>                     |  | <b>183</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

‡ Please see Wellness Education Requirement for more information.

§ Biochemistry Research (1009-541, 542, 543) may be used as a science elective and is highly recommended. Two electives must be upper-division biology courses (300 or higher) that include laboratory, for a minimum of eight credit hours. Electives are necessary to bring the total quarter credit hours to 183 for graduation.

## Biochemistry, BS degree, typical course sequence (ACS certified)

| COURSE            |                         | QTR. CR. HRS. |
|-------------------|-------------------------|---------------|
| <b>First Year</b> |                         |               |
| 1010-200          | Chemical Safety         | 1             |
| 1010-230          | Freshman Symposium      | 1             |
| 1010-251, 252     | General Chemistry I, II | 7             |
| 1010-255          | General Chemistry I Lab | 1             |

| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| 1008-261, 262   | Quantitative Analysis I, II                            | 7             |
| 1008-265, 266   | Quantitative Analysis Lab I, II                        | 3             |
| 1016-281, 282, 283                                    | Calculus I, II, III                                    | 12            |
| 1001-201, 202, 203                                    | General Biology I, II, III                             | 9             |
| 1001-205, 206, 207                                    | General Biology Lab                                    | 3             |
|   | Liberal Arts*  | 4             |
| 1105-051, 052   | First-Year Enrichment                                  | 2             |
|   | Wellness Education‡                                    | 0             |
| 1010-499  | Cooperative Education (optional, summer)               | Co-op         |
| <b>Second Year</b>                                    |  |               |
| 1010-401  | Chemical Literature                                    | 2             |
| 1016-305  | Multivariable Calculus                                 | 4             |
| 1016-306  | Differential Equations                                 | 4             |
| 1013-431, 432, 433                                    | Organic Chemistry I, II, III                           | 9             |
| 1013-435, 436   | Preparative Organic Chemistry Lab I, II                | 2             |
| 1013-437  | Systematic Identification of Organic Compounds III Lab | 2             |
| 1001-322  | Cell Biology   | 4             |
| 1001-350  | Molecular Biology                                      | 4             |
| 1009-502  | Biochemistry: Conformation and Dynamics                | 3             |
|   | Biology Elective                                       | 4             |
|   | Liberal Arts*  | 8             |
|   | University-wide Electives§                             |               |
| 1010-499  | Cooperative Education (optional)                       | Co-op         |
| <b>Third Year</b>                                     |  |               |
| 1008-311  | Instrumental Analysis                                  | 3             |
| 1008-318  | Instrumental Analysis Lab                              | 1             |
| 1009-503  | Biochemistry: Metabolism                               | 3             |
| 1009-504  | Biochemistry: Nucleic Acids                            | 3             |
| 1009-505  | Biochemistry: Experimental Techniques Lab              | 2             |
| <i>Choose one of the following physics sequences:</i> |  | 12            |
| 1017-311, 312, 313                                    | University Physics I, II, III                          |               |
| 1017-211, 212, 213                                    | College Physics I, II, III                             |               |
|   | Biology Elective                                       | 4             |
|   | Liberal Arts*  | 12            |
|   | Cooperative Education (optional)                       | Co-op         |
| <b>Fourth Year</b>                                    |  |               |
| 1014-441  | Chemical Thermodynamics                                | 4             |
| 1014-445  | Chemical Thermodynamics Lab                            | 1             |
| 1014-442  | Quantum Chemistry                                      | 4             |
| 1014-446  | Quantum Chemistry Lab                                  | 1             |
| 1014-443  | Chemical Kinetics                                      | 4             |
| 1014-447  | Chemical Kinetics Lab                                  | 1             |
| 1012-562  | Inorganic Chemistry I                                  | 4             |
| 1011-565  | Preparative Inorganic Chemistry Lab                    | 3             |
|   | Liberal Arts*  | 12            |
| 1010-499  | Cooperative Education (optional)                       | Co-op         |
| <b>Total Quarter Credit Hours</b>                     |  | <b>183</b>    |

\* Please See Liberal Arts General Education Requirements for more information. ACS certification recommends a foreign language (preferably German).

‡ Please see Wellness Education Requirement for more information.

§ Biochemistry Research (1009-541, 542, 543) may be used as a science elective and is highly recommended. Two electives must be upper-division biology courses (300 or higher) that include laboratory, for a minimum of eight credit hours. Electives are necessary to bring the total quarter credit hours to 183 for graduation.

## Accelerated dual degree option

Either of the BS chemistry programs may be combined with the MS chemistry program, allowing students to acquire both degrees in a total of five years.

## Biochemistry, combined BS/MS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 1010-200                          | Chemical Safety  | 1             |
| 1010-230                          | Freshman Symposium                                     | 1             |
| 1010-251, 252                     | General Chemistry I, II                                | 7             |
| 1010-255                          | General Chemistry Lab                                  | 1             |
| 1008-261, 262                     | Quantitative Analysis I, II                            | 7             |
| 1008-265, 266                     | Quantitative Analysis Lab I, II                        | 3             |
| 1016-281, 282, 283                | Calculus I, II, III                                    | 12            |
| 1001-201, 202, 203                | General Biology I, II, III                             | 9             |
| 1001-205, 206, 207                | General Biology Lab                                    | 3             |
|                                   | Liberal Arts*  | 4             |
| 1105-051, 052                     | First-Year Enrichment                                  | 2             |
|                                   | Wellness Education†                                    | 0             |
| 1010-499                          | Cooperative Education (optional, summer)               | Co-op         |
| <b>Second Year</b>                |  |               |
| 1008-311                          | Instrumental Analysis                                  | 3             |
| 1008-318                          | Instrumental Analysis Lab                              | 1             |
| 1016-305                          | Multivariable Calculus                                 | 4             |
| 1016-306                          | Differential Equations                                 | 4             |
| 1013-431, 432, 433                | Organic Chemistry I, II, III                           | 9             |
| 1013-435, 436                     | Preparative Organic Chemistry Lab I, II                | 2             |
| 1013-437                          | Systematic Identification of Organic Compounds III Lab | 2             |
| 1017-311, 312, 313                | University Physics I, II, III                          | 12            |
|                                   | Liberal Arts*  | 16            |
| 1010-499                          | Cooperative Education (optional, summer)               | Co-op         |
| <b>Third Year</b>                 |  |               |
| 1014-441                          | Chemical Thermodynamics                                | 4             |
| 1014-445                          | Chemical Thermodynamics Lab                            | 1             |
| 1010-401                          | Chemical Literature                                    | 2             |
| 1014-442                          | Quantum Chemistry                                      | 4             |
| 1014-446                          | Quantum Chemistry Lab                                  | 1             |
| 1014-443                          | Chemical Kinetics                                      | 4             |
| 1014-447                          | Chemical Kinetics Lab                                  | 1             |
|                                   | Liberal Arts*  | 16            |
| 1010-499                          | Cooperative Education (optional, summer)               | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 1009-702                          | Biochemistry   | 3             |
| 1012-562                          | Inorganic Chemistry I                                  | 4             |
| 1008-711                          | Advanced Instrumental Analysis                         | 3             |
| 1011-765                          | Preparative Inorganic Chemistry Lab                    | 3             |
| 1009-703                          | Biochemistry: Metabolism                               | 3             |
| 1009-704                          | Biochemistry: Nucleic Acids                            | 3             |
| 1009-705                          | Biochemistry: Experimental Techniques Lab              | 3             |
|                                   | Biology Electives**                                    |               |
|                                   | Chemistry Electives§                                   |               |
| 1010-879                          | Research and Thesis Guidance#                          |               |
| <b>Fifth Year</b>                 |  |               |
| 1010-870                          | Chemistry Seminar                                      | 2             |
| 1008-621                          | Advanced Instrumental Analysis Lab                     | 2             |
| 1013-737                          | Advanced Organic Chemistry                             | 4             |
| 1014-743                          | Advanced Physical Chemistry 1014-741 or                | 4             |
|                                   | Chemistry Electives§                                   |               |
| 1010-879                          | Research and Thesis Guidance††                         |               |
| <b>Total Quarter Credit Hours</b> |  | <b>225</b>    |

\* Please see Liberal Arts General Education Requirements for more information. ACS certification recommends a foreign language (preferably German).

† Please see Wellness Education Requirement for more information.

§ A minimum of 36 hours of 700-level or higher chemistry courses is required to graduate with a BS and MS degree.

\*\* Two upper-division biology electives with laboratory. Biology electives may be Cell Biology (1001-311), Molecular Biology (1001-350), Genetics (1001-421), or Genetic Engineering (1001-450).

†† A student will be required to have 9 to 16 hours of Research and Thesis Guidance (1010-879).

## Polymer Chemistry, BS

<http://chemistry.rit.edu/>

**L. Paul Rosenberg, Department Head**  
(585) 475-6159, [lporsch@rit.edu](mailto:lporsch@rit.edu)

*ADMISSION TO THIS PROGRAM HAS BEEN SUSPENDED FOR THE 2011-2012 ACADEMIC YEAR.*

### Program overview

Polymer science is an increasingly important area of modern science. When the MS program includes the Preparative Inorganic Chemistry Lab (1012-765), the curriculum meets the requirements for approval by the Committee on Professional Training of the American Chemical Society. The program is one of a handful in the nation and provides students with a solid background in the traditional areas of chemistry (general, analytical, organic, physical, and inorganic) supplemented with advanced courses and intensive laboratory experiences in polymer science. The polymer program may be completed in four or five years, depending on the number of cooperative education blocks, which may begin as early as the summer of the first year. It is highly recommended that students take the undergraduate chemistry research courses as university-wide electives in this program. Because two-thirds of all chemists work with polymers during their professional lives, this program provides the background important for success in many industrial research areas. It also enables graduates to pursue further education in chemistry, polymer chemistry, or materials science and engineering.

### Curriculum

#### Polymer chemistry, BS degree, typical course sequence (ACS certified)

| COURSE             |  | QTR. CR. HRS. |
|--------------------|--|---------------|
| <b>First Year</b>  |  |               |
| 1010-200           | Chemical Safety  | 1             |
| 1010-230           | Introduction to Cooperative Education and Chemical Careers | 1             |
| 1010-251, 252      | General Chemistry I, II                                    | 7             |
| 1010-255           | General Chemistry I Lab                                    | 1             |
| 1008-261, 262      | Quantitative Analysis I, II                                | 7             |
| 1008-265, 266      | Quantitative Analysis Lab I, II                            | 3             |
| 1016-281, 282, 283 | Calculus I, II, III  | 12            |
|                    | Liberal Arts*  | 16            |
| 1105-051, 052      | First-Year Enrichment                                      | 2             |
|                    | Wellness Education†  | 0             |
| 1010-499           | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Second Year</b> |  |               |
| 1008-311           | Instrumental Analysis                                      | 3             |
| 1008-318           | Instrumental Analysis Lab                                  | 1             |
| 1008-312           | Separations Techniques                                     | 3             |
| 1008-319           | Separations Techniques Lab                                 | 1             |
| 1016-305           | Multivariable Calculus                                     | 4             |
| 1013-431, 432, 433 | Organic Chemistry I, II, III                               | 9             |
| 1013-435, 436      | Preparative Organic Chemistry Lab I, II                    | 2             |

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| 1013-437                          | Systematic Identification of Organic Compounds III Lab | 2             |
|                                   | Liberal Arts*  | 8             |
| 1010-499                          | Cooperative Education (optional)                       | Co-op         |
| <b>Third Year</b>                 |  |               |
| 1029-301                          | Introduction to Polymer Technology                     | 2             |
| 1016-306                          | Differential Equations                                 | 4             |
| 1017-311, 312, 313                | University Physics I, II, III                          | 12            |
| 1014-441                          | Chemical Thermodynamics                                | 4             |
| 1010-401                          | Chemical Literature                                    | 2             |
| 1014-445                          | Chemical Thermodynamics Lab                            | 1             |
|                                   | Liberal Arts*‡   | 4             |
| 1010-499                          | Cooperative Education (optional)                       | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 1014-442                          | Quantum Chemistry                                      | 4             |
| 1014-446                          | Quantum Chemistry Lab                                  | 1             |
| 1014-443                          | Chemical Kinetics                                      | 4             |
| 1014-447                          | Chemical Kinetics Lab                                  | 1             |
| 1029-501                          | Organic Chemistry of Polymers                          | 4             |
| 1029-505                          | Synthesis of High Polymers Lab                         | 2             |
| 1012-562                          | Inorganic Chemistry I                                  | 4             |
| 1029-502                          | Polymer Chemistry: Chains and Solutions                | 4             |
|                                   | Liberal Arts*  | 8             |
| 1010-499                          | Cooperative Education (optional)§                      | Co-op         |
| <b>Fifth Year</b>                 |  |               |
| 1009-502                          | Biochemistry**   | 3             |
| 1029-503                          | Polymer Chemistry: Properties of Bulk Materials        | 4             |
| 1029-504                          | Polymer Characterization Lab                           | 2             |
| 1012-765                          | Preparative Inorganic Chemistry Lab**                  | 3             |
|                                   | Chemistry Electives**                                  | 4             |
|                                   | University-wide Electives††                            |               |
| 1010-499                          | Cooperative Education (optional)§                      | Co-op         |
| <b>Total Quarter Credit Hours</b> |  | <b>182</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ ACS highly recommends a foreign language (preferably German).

§ Students must take A-block co-op.

\*\* Required only for ACS certification

†† Chemistry Research (1010-541, 542, 543) may be used as a university-wide elective and is highly recommended. Electives are necessary to bring the total quarter credit hours to 180 for graduation. Twelve credits are necessary for full-time status.

## Accelerated dual degree option

*ADMISSION TO THIS PROGRAM HAS BEEN SUSPENDED FOR THE 2011-2012 ACADEMIC YEAR.*

The polymer chemistry program may be combined with the MS chemistry program, allowing undergraduate majors to acquire both degrees in a total of five years. Undergraduate students with both an overall and professional field-of-study GPA of 3.0 or above may apply to the chemistry graduate committee for entry as early as the third year. Students in a combined BS/MS program will be advised to complete only three quarters of cooperative education and to take graduate-level chemistry elective courses and thesis guidance (1010-879) during the fourth and fifth years. Students will complete the undergraduate degree requirements and 45 quarter credit hours toward the MS chemistry degree.

## Polymer chemistry, combined BS/MS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
| 1010-200                          | Chemical Safety  | 1             |
| 1010-230                          | Introduction to Cooperative Education and Chemical Careers | 1             |
| 1010-251, 252                     | General Chemistry I, II                                    | 7             |
| 1010-255                          | General Chemistry I Lab                                    | 1             |
| 1008-261, 262                     | Quantitative Analysis I, II                                | 7             |
| 1008-265, 266                     | Quantitative Analysis Lab I, II                            | 3             |
| 1016-281, 282, 283                | Calculus I, II, III  | 12            |
|                                   | Liberal Arts*  | 20            |
| 1105-051, 052                     | First-Year Enrichment                                      | 2             |
|                                   | Wellness Education†  | 0             |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Second Year</b>                |  |               |
| 1008-311                          | Instrumental Analysis                                      | 3             |
| 1008-318                          | Instrumental Analysis Lab                                  | 1             |
| 1008-312                          | Separations Techniques                                     | 3             |
| 1008-319                          | Separations Techniques Lab                                 | 1             |
| 1016-305                          | Multivariable Calculus                                     | 4             |
| 1016-306                          | Differential Equations                                     | 4             |
| 1013-431, 432, 433                | Organic Chemistry I, II, III                               | 9             |
| 1013-435, 436                     | Preparative Organic Chemistry Lab I, II                    | 2             |
| 1013-437                          | Systematic Identification of Organic Compounds III Lab     | 2             |
|                                   | Liberal Arts*  | 12            |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Third Year</b>                 |  |               |
| 1029-301                          | Introduction to Polymer Technology                         | 1             |
| 1010-401                          | Chemical Literature  | 2             |
| 1017-311, 312, 313                | University Physics I, II, III                              | 12            |
| 1014-441                          | Chemical Thermodynamics                                    | 4             |
| 1014-445                          | Chemical Thermodynamics Lab                                | 1             |
|                                   | Liberal Arts*‡   | 4             |
|                                   | Chemistry Electives§                                       |               |
| 1010-499                          | Cooperative Education (optional, summer)                   | Co-op         |
| <b>Fourth Year</b>                |  |               |
| 1014-442                          | Quantum Chemistry  | 4             |
| 1014-446                          | Quantum Chemistry Lab                                      | 1             |
| 1029-701                          | Organic Chemistry of Polymers                              | 4             |
| 1029-702                          | Polymer Chemistry: Chains and Solutions                    | 4             |
| 1029-704                          | Polymer Characterization Lab                               | 2             |
| 1029-705                          | Preparative Polymer Chemistry                              | 4             |
| 1014-443                          | Chemical Kinetics  | 4             |
| 1014-447                          | Chemical Kinetics Lab                                      | 1             |
| 1008-711                          | Advanced Instrumental Analysis**                           | 3             |
| 1008-621                          | Advanced Instrumental Analysis Lab**                       | 2             |
| 1012-562                          | Inorganic Chemistry I                                      | 4             |
| 1012-765                          | Preparative Inorganic Chemistry Lab**                      | 3             |
|                                   | Chemistry Electives§                                       |               |
| 1010-879                          | Research and Thesis Guidance**                             | 3             |
| <b>Fifth Year§</b>                |  |               |
| 1009-702                          | Biochemistry**   | 3             |
| 1029-703                          | Polymer Chemistry: Properties of Bulk Materials            | 4             |
| 1010-870                          | Chemistry Seminar  | 2             |
| 1010-879                          | Research and Thesis Guidance††                             | 6-13          |
| <b>Total Quarter Credit Hours</b> |  | <b>225</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ ACS highly recommends a foreign language (preferably German).

§ Course work in the fifth year will be determined by the graduate committee and will need to fulfill the requirement of 225 total credit hours. A minimum of 36 hours of 700-level or higher chemistry courses is required to graduate with both a BS and MS degree in chemistry.

\*\* Required only for ACS certification.

†† A student will normally have 9 to 16 credit hours of Research and Thesis Guidance (1010-879).

## Department of Physics

**Michael Kotlarchyk, Head**

[www.rit.edu/cos/physics/](http://www.rit.edu/cos/physics/)

## Physics, BS

<http://www.rit.edu/cos/physics/>

**Michael Kotlarchyk, Department Head**  
(585) 475-6115, [mnksp@rit.edu](mailto:mnksp@rit.edu)

### Program overview

The department of physics offers a BS degree in physics, which can be completed in either four or five years, depending on the number of cooperative education experiences a student chooses to complete. Graduates find employment opportunities with industrial, academic, and governmental agencies or continue their education in master's or doctoral programs in physics or physics-related areas such as astrophysics, biophysics, geophysics, atmospheric science, imaging science, and engineering. Students also may prepare for entry into medical, law, or business school.

### Curriculum

#### Requirements for the BS degree

The student must meet the minimum requirements of the university as described in this bulletin. In addition, he or she must complete the requirements contained in the program shown here or its equivalent, as determined and approved by the department of physics. In conjunction with a faculty adviser, individual student programs may be established to meet particular needs, interests, and goals. A planned elective concentration in another field such as biology, chemistry, mathematics, computer science, business, or imaging science is possible.

For additional information on BS degree requirements or requirements for the minors in physics or astronomy, contact the head of the department of physics.

#### Physics, BS degree, typical course sequence

| COURSE  |  | QTR. CR. HRS. |
|---|--|---------------|
| <b>First Year</b>                             |  |               |
| 1017-200                                      | Introduction to Special Relativity                                 | 2             |
| 1017-311, 312                                 | University Physics I, II   | 10            |
| 1016-281, 282, 283                            | Project-Based Calculus I, II, III                                  | 12            |
| Choose one of the following course sequences: |  | 9 or 8        |
| 1011-205, 206                                 | General and Analytical Chemistry I, II 1011-215, 216 and Lab I, II |               |
| 1001-251, 252                                 | Introduction to Biology I, II                                      |               |
| 1017-317                                      | Introduction to Computational Physics and Programming              | 4             |
|   | Liberal Arts*  | 16            |
| 1105-051, 052                                 | First-Year Enrichment  | 2             |
|   | Wellness Education†  | 0             |
| <b>Second Year</b>                            |  |               |
| 1017-313                                      | University Physics III   | 4             |

| COURSE                            |                                       | QTR. CR. HRS.  |
|-----------------------------------|---------------------------------------|----------------|
| 1017-314, 315                     | Modern Physics I, II                  | 8              |
| 1017-431                          | Electronic Measurements               | 4              |
| 1017-374                          | Experiments in Modern Physics I       | 2              |
| 1017-318                          | Vibrations and Waves                  | 4              |
| 1017-350                          | Sophomore Physics Seminar             | 1              |
| 1016-305                          | Multivariable Calculus                | 4              |
| 1016-306                          | Differential Equations I              | 4              |
|                                   | University-wide Elective              | 4              |
|                                   | Liberal Arts*                         | 12             |
| <b>Third Year</b>                 |                                       |                |
| 1017-401, 402                     | Intermediate Mechanics I, II          | 8              |
| 1017-411, 412                     | Electricity and Magnetism I, II       | 8              |
| 1017-415                          | Thermal Physics                       | 4              |
| 1017-321                          | Introduction to Laboratory Techniques | 4              |
| 1017-480                          | Mathematical Methods in Physics I     | 4              |
| 1017-378                          | Experiments in Modern Physics II      | 2              |
| 1017-400                          | Capstone Preparation                  | 1              |
|                                   | Liberal Arts*                         | 8              |
|                                   | University-wide Elective              | 4              |
|                                   | General Education Elective‡           | 4              |
| <b>Fourth Year</b>                |                                       |                |
| 1017-455                          | Physical Optics I                     | 4              |
| 1017-502, 503                     | Capstone Project I, II                | 7              |
| 1017-522, 523                     | Quantum Mechanics I, II               | 8              |
|                                   | Physics Electives                     | 8              |
|                                   | University-wide Elective              | 4              |
|                                   | General Education Electives‡          | 10             |
| <b>Total Quarter Credit Hours</b> |                                       | <b>189-190</b> |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ General education elective is generally defined as any course from the College of Science (excluding physics) and the College of Liberal Arts; certain courses to be defined later. There are exceptions. Check with your academic adviser for approval.

## Chester F. Carlson Center for Imaging Science

**Stefi A. Baum, Director**

[www.cis.rit.edu](http://www.cis.rit.edu)

The Carlson Center for Imaging Science offers a BS degree in imaging science as well as MS and Ph.D. degrees in imaging science and in color science. The science of imaging encompasses a wide range of subject areas, from the physics of light sources to the psychophysics of high-level visual perception. From how light is generated to how the world is perceived, imaging science addresses questions about every aspect of systems and techniques that are used to create, perceive, analyze, and optimize images. Application areas of imaging are equally diverse. Thus, imaging science is interdisciplinary in its content and multi-disciplinary in its applications. The center conducts research and prepares students for challenging and rewarding careers in a range of imaging application areas.

## Imaging Science, BS

<http://www.cis.rit.edu/>

**Carl Salvaggio, Program Coordinator**  
(585) 475-6380, [salvaggio@cis.rit.edu](mailto:salvaggio@cis.rit.edu)

### Program overview

Imaging science is a multidisciplinary field based on physics, mathematics, computer science, systems engineering, and chemis-

try. Students in imaging science study the theory behind the technologies used to create images, the integration of those technologies into imaging systems, and the application of those systems to solve scientific problems. The imaging science curriculum includes the study of:

- the physical observables associated with the subject of an image, such as reflected or emitted electromagnetic radiation;
- how those observables are captured by devices using optics and detectors such as satellites, digital cameras, and astronomical observatories;
- how the captured observables are processed using computers and specialized software;
- how processed signals are converted into images displayed on paper or electronic devices and perceived by humans; and
- how image quality is assessed and scientific information is extracted.

Concepts presented in the classroom are reinforced through laboratory experiments and a capstone research experience, which can examine a problem in any of several imaging applications such as remote sensing, astronomy, medical imaging, document restoration, image microstructure, optics, color science, image quality, or visual perception. Students may choose to pursue a minor to supplement their major field of study. Both theoretical studies and practical application of technologies are integral parts of the program.

Career opportunities are many and varied. Graduates are in demand by both industry and governmental agencies to work on the design, development, testing, or production of specialized imaging systems or technologies, or to use imaging systems to perform scientific research. The imaging science faculty members are deeply committed professionals who divide their time between teaching and the pursuit of scientific advances.

Faculty, staff, and students conduct research sponsored by both industry and the government. The research support ensures that students are exposed to the latest developments in a rapidly expanding field.

Graduate programs are offered in both imaging science and color science leading to MS and doctoral degrees. Students also may choose to minor in imaging science.

## Curriculum

Students must meet the minimum requirements of the university as described in this bulletin. In addition, they must complete the requirements contained in the program shown here or its equivalent, as determined and approved by the imaging science faculty. Cooperative education experience is not required but is recommended for the summers following the second and third years of the program. In consultation with a faculty adviser, a two-quarter co-op block is possible. Opportunities also exist to participate in research work with faculty during academic and summer quarters.

## Imaging science, BS degree, typical course sequence

| COURSE                            |  | QTR. CR. HRS. |
|-----------------------------------|--|---------------|
| <b>First Year</b>                 |  |               |
|                                   | Freshman Imaging Project (sequence)      | 6             |
|                                   | Science Electives‡                       | 8             |
| 1016-281, 282, 283                | Project-Based Calculus I, II, III        | 12            |
| 1017-311, 312                     | University Physics I, II                 | 10            |
|                                   | General Education Elective               | 4             |
|                                   | Liberal Arts*                            | 8             |
|                                   | First-Year Enrichment                    | 1             |
| <b>Second Year</b>                |  |               |
| 1051-211                          | Programming for Imaging Science          | 4             |
| 1051-300                          | Introduction to Imaging Systems          | 4             |
| 1051-303                          | Geometrical Optics                       | 4             |
| 1051-320                          | Linear Mathematics for Imaging           | 4             |
| 1051-553                          | Mathematical Methods for Imaging         | 4             |
| 1051-350                          | Vision and Psychophysics                 | 4             |
| 1051-361                          | Digital Image Processing                 | 4             |
| 1051-370                          | Radiometry                               | 4             |
| 1016-305                          | Multivariable Calculus                   | 4             |
| 1017-313                          | University Physics III                   | 4             |
| 1017-314                          | Modern Physics I                         | 4             |
|                                   | Liberal Arts*                            | 4             |
|                                   | Wellness Education†                      | 0             |
| <b>Third Year</b>                 |  |               |
|                                   | Imaging Science Laboratory (sequence)    | 3             |
| 1051-452                          | Modulation Transfer Function             | 3             |
| 1051-453                          | Noise and Random Processes               | 3             |
| 1051-402                          | Color Science                            | 4             |
| 1051-462                          | Digital Image Processing II              | 4             |
| 1051-553                          | Probability and Statistics for Imaging   | 4             |
| 1051-313                          | Interactions Between Light and Matter    | 4             |
| 1051-455                          | Physical Optics                          | 4             |
| 1051-465                          | Detectors                                | 4             |
|                                   | Statistical Tools and Research Practices | 3             |
|                                   | Liberal Arts*                            | 12            |
| <b>Fourth Year</b>                |  |               |
| 1051-502                          | Senior Project                           | 4             |
| 1051-503                          | Senior Project                           | 4             |
|                                   | University-wide Electives                | 12            |
|                                   | Professional Electives                   | 8             |
|                                   | Liberal Arts*                            | 12            |
| <b>Total Quarter Credit Hours</b> |  | <b>185</b>    |

\* Please see Liberal Arts General Education Requirements for more information.

† Please see Wellness Education Requirement for more information.

‡ Consult with adviser for suggested science electives.



## College of Science

**Sophia A. Maggelakis**, BS, MS, Ph.D., Old Dominion University—Dean; Professor

**Mark D. Fairchild**, BS, MS, Rochester Institute of Technology; Ph.D., University of Rochester—Associate Dean of Research and Graduate Education; Professor

**Laura Ellen Tubbs**, BA, Hood College; Ph.D., University of Rochester—Associate Dean for Undergraduate Education; Professor

**Catherine Mahrt-Washington**, BS, Niagara University; MS, Rochester Institute of Technology—Assistant Dean for Student Affairs; College of Science Honors Advocate

## School of Biological and Medical Sciences

**Anne Houtman**, BA, Pomona College; MA, UCLA; Ph.D., University of Oxford (U.K.)—Head; Professor

**Gregory A. Babbitt**, BA, Ohio Wesleyan University; MS, Ph.D., University of Florida—Visiting Assistant Professor

**Larry Buckley**, BA, University of Missouri at St. Louis; MS, Southern Illinois University at Edwardsville; Ph.D., Southern Illinois University at Carbondale—Program Director, Biology; Associate Professor

**Dawn Carter**, B.Sc., Botany University of Manchester (U.K.); Ph.D., University of Nottingham (U.K.)—Lecturer

**Sandra Connelly**, BS, Juniata College; MS, State University of New York at Buffalo; Ph.D., Miami University of Ohio—Lecturer

**Jean A. Douthwright**, BA, Skidmore College; MS, Pennsylvania State University; MS, Ph.D., University of Rochester—Professor

**Irene M. Evans**, BA, University of Rochester; MS, Wesleyan University; Ph.D., University of Rochester—Professor

**Maureen C. Ferran**, BS, Fordham University; MS, Ph.D., University of Connecticut—Associate Professor

**G. Thomas Frederick**, BS, MS, Ph.D., The Ohio State University—Professor

**Elizabeth N. Hane**, BA, Rice University; MA, University of Kansas; Ph.D., Brown University—Associate Professor

**André O. Hudson**, BS, Virginia Union University; Ph.D., Rutgers University—Assistant Professor

**Karl F. Korfmacher**, BA, Carleton College; MEM, Ph.D., Duke University—Director, Environmental Science; Associate Professor

**David A. Lawlor**, BA, University of Texas; MS, Ph.D., University of Texas Health Science Center at San Antonio—Associate Professor

**Michele Lennox**, AAS, Rochester Institute of Technology—Lecturer

**Jeffrey S. Lodge**, BA, University of Delaware; Ph.D., University of Mississippi—Associate Professor

**Douglas P. Merrill**, BS, Ph.D., State University of New York College of Environmental Science and Forestry—Director, Center for Bioscience Education and Technology; Professor

**Dina L. Newman**, BS, Cornell University; MS, Ph.D., University of Chicago—Assistant Professor

**Michael V. Osier**, BS, University of Vermont; Ph.D., Yale University—Program Director, Bioinformatics; Associate Professor

**Elizabeth Perry**, BS, State University College at Brockport; MS, Ph.D., University of Rochester—Lecturer

**Harvey Pough**, BA, Amherst College; MA, Ph.D., University of California—Professor

**Vincent M. Reyes**, BS, University of the Philippines; Ph.D., California Institute of Technology—Assistant Professor

**Robert H. Rothman**, BA, Ph.D., University of California at Berkeley; MA, California State University at San Diego—Professor

**Michael A. Savka**, BS, West Virginia University; MS, Ph.D., University of Illinois at Urbana-Champaign—Program Director, Biotechnology; Professor

**Paul A. Shipman**, BS, MS, Emporia State University; Ph.D., Oklahoma State University—Associate Professor

**Gary R. Skuse**, BA, University of Rochester; Ph.D., Syracuse University—Professor

**Susan B. Smith**, BS, State University College at Oswego; MS, State University College at Brockport; Ph.D., University of Rhode Island—Assistant Professor

**Hyla C. Sweet**, BS, Union College; Ph.D., University of Texas at Austin—Associate Professor

**Bolaji Thomas**, BS, MS, Ph.D., University of Lagos (Nigeria)—Assistant Professor

**John M. Waud**, BS, Lehigh University; MS, University of Pennsylvania; Ph.D., Lehigh University—Professor

**Leslie Kate Wright**, BS, Rochester Institute of Technology; MS, Ph.D., University of Rochester—Assistant Professor

## School of Mathematical Sciences

**Douglas S. Meadows**, BS, Stanford University; MS, New York University; Ph.D., Stanford University—Head; Professor

**Anurag Agarwal**, BS, MS, Indian Institute of Technology; Ph.D., State University of New York at Buffalo—Assistant Professor

**Ephraim Agyingi**, BS, MS, University of Ilorin (Nigeria); Ph.D., University of Manchester (U.K.)—Assistant Professor

**David S. Barth-Hart**, BS, Syracuse University; MA, University of Rochester—Associate Professor

**William Basener**, BA, Marist College; Ph.D., Boston University—Professor

**Maurino P. Bautista**, BS, Ateneo de Manila University (Philippines); MS, Ph.D., Purdue University—Professor

**Bernard Brooks**, BS, University of Toronto (Canada); MS, Ph.D., University of Guelph (Canada)—Associate Professor

**Nathan D. Cahill**, BS, MS, Rochester Institute of Technology; Ph.D., University of Oxford (U.K.)—Associate Professor

**Manuela Campanelli**, Laurea in Mathematics, University of Perugia (Italy); Ph.D., University of Bern (Switzerland)—Professor

**Linlin Chen**, BS, Beijing University (China); MCS, Rice University; MA, Ph.D., University of Rochester—Assistant Professor

**Elizabeth Cherry**, BS, Georgetown University; Ph.D., Duke University—Assistant Professor

**Patricia A. Clark**, SB, SM, Massachusetts Institute of Technology; Ph.D., University of Rochester—Professor

**Matthew Coppengbarger**, BS, University of Arizona; MA, Ph.D., University of Rochester—Associate Professor

**Alejandro B. Engel**, BS, Universidad de Chile; MS, Ph.D., State University of New York at Buffalo—Professor

**Joshua Faber**, BS, State University of New York at Stony Brook; Ph.D., Massachusetts Institute of Technology—Assistant Professor

**David L. Farnsworth**, BS, Union College; MA, Ph.D., University of Texas—Professor

**Raluca Felea**, BS, University of Iasi (Romania); Ph.D., University of Rochester—Associate Professor

**Marvin H. Gruber**, BS, Brooklyn College; MA, Johns Hopkins University; MS, Rochester Institute of Technology; MA, Ph.D., University of Rochester—Professor

**James J. Halavin**, BS, Clarkson University; MA, Ph.D., State University of New York at Buffalo—Professor

**John F. Hamilton**, BA, Cornell University; MA, Ph.D., Indiana University—Visiting Research Faculty

**Anthony J. Harkin**, BS, State University College at Brockport; MS, Massachusetts Institute of Technology; Ph.D., Boston University—Associate Professor

**Jobby Jacob**, BS, Bharata Mata College (India); MS, Indian Institute of Technology; Ph.D., Clemson University—Assistant Professor

**Akhtar Khan**, MS, Technical University Kaiserslautern (Germany); Ph.D., Michigan Technological University—Assistant Professor

**Chulmin Kim**, BS, Kyunghe University (South Korea); MS, Wichita State University; Ph.D., University of Iowa—Assistant Professor

**Seshavadhani Kumar**, BS, MS, University of Madras (India); Ph.D., University of Delaware—Professor

**Manuel Lopez**, AB, Princeton University; Ph.D., Wesleyan University—Associate Professor

**Carlos Lousto**, MS, Universidad Nacional de la Plata (Argentina); Ph.D., Universidad de Buenos Aires (Argentina)—Associate Professor

**Carl V. Lutzer**, BS, Michigan State University; MA, Ph.D., University of Kentucky—Professor

**Sophia A. Maggelakis**, BS, MS, Ph.D., Old Dominion University—Professor

**Carol E. Marchetti**, BS, Case Institute of Technology; MS, Weatherhead School of Management; MA, Ph.D., University of Rochester—Associate Professor

**James E. Marengo**, BA, MS, California State University; Ph.D., Colorado State University—Professor

**Darren A. Narayan**, BS, State University of New York at Binghamton; MS, Ph.D., Lehigh University—Director of Undergraduate Research; Professor

**Richard J. Orr**, BS, John Carroll University; MS, Case Institute of Technology; MS, State University of New York at Buffalo—Professor

**Michael Radin**, BA, Rowan University; MS, Ph.D., University of Rhode Island—Associate Professor

**David Ross**, BA, Columbia College; Ph.D., New York University Courant Institute of Mathematical Sciences—Professor

**Hossein Shahmohamad**, BS, MA, California State University at Long Beach; Ph.D., University of Pittsburgh—Professor

**Likin Simon Romero**, BS, Universidad Nacional Autonoma de Mexico; Ph.D., West Virginia University—Assistant Professor

**Wanda Szpunar-Lojasiewicz**, BS, Jagiellonian University (Poland); MS, Ph.D., University of Cracow (Poland)—Associate Professor

**Wondimu Tekalign**, BS, MS, Addis Ababa University (Ethiopia); Ph.D., State University of New York at Buffalo—Assistant Professor

**Christopher Wahle**, BS, MS, Illinois Institute of Technology; Ph.D., Northwestern University—Assistant Professor

**John Whelan**, BA, Cornell University; Ph.D., University of California at Santa Barbara—Associate Professor

**Tamas Wiandt**, BS, Jozsef Attila University (Hungary); Ph.D., University of Minnesota—Associate Professor

**Paul R. Wilson**, BA, MA, University of Cincinnati; Ph.D., University of Illinois—Professor

**Elmer L. Young**, BA, Amherst College; MS, Ph.D., The Ohio State University—Associate Professor

**Yosef Zlochow**, BS, Ph.D., University of Pittsburgh—Assistant Professor

## Chemistry

**L. Paul Rosenberg**, BS, Bridgewater State College; Ph.D., University of New Hampshire—Department Head; Professor

**Alla Bailey**, BS, University of St. Petersburg (Russia); Ph.D., Russian Academy of Science—Senior Lecturer

**Jeremy Cody**, BS, Indiana University of Pennsylvania; Ph.D., University of Rochester —Assistant Professor

**Michael Coleman**, BS, Ph.D., University of Buffalo—Visiting Assistant Professor

**Christina G. Collison**, BA, Colby College; Ph.D., University of Rochester—Associate Professor

**Christopher Collison**, BS, Ph.D., Imperial College, University of London (U.K.)—Associate Professor

**Paul Craig**, BS, Oral Roberts University; Ph.D., University of Michigan—Professor

**Joseph P. Hornak**, BS, Utica College of Syracuse University; MS, Purdue University; Ph.D., University of Notre Dame—Professor

**Marvin L. Illingsworth**, BS, Lafayette College; Ph.D., University of Massachusetts—Professor

**Thomas Kim**, BS, Loyola College; Ph.D., University of Wisconsin at Madison—Associate Professor

**Joseph Lanzafame**, BS, St. John Fisher College; Ph.D., University of Rochester—Senior Lecturer

**Lea Michel**, BS, Colgate University; MS, Ph.D., University of Rochester—Assistant Professor

**Massoud J. Miri**, BS, MS, Ph.D., University of Hamburg (Germany)—Associate Professor

**Suzanne F. O’Handley**, BS, Rutgers University; MS, Ph.D., University of Rochester—Associate Professor

**Christian G. Reinhardt**, BS, Lafayette College; Ph.D., University of Rochester—Professor

**K.S.V. Santhanam**, B.Sc., MA, Ph.D., Sri Venketaswara University (India)—Professor

**Thomas W. Smith**, BS, John Carroll University; Ph.D., University of Michigan—Professor

**Gerald A. Takacs**, BS, University of Alberta (Canada); Ph.D., University of Wisconsin—Professor

**Loraine Tan**, BS, Rensselaer Polytechnic Institute; Ph.D., University of Buffalo—Visiting Assistant Professor

**Laura Ellen Tubbs**, BA, Hood College; Ph.D., University of Rochester—Professor

## Physics

**Michael Kotlarchyk**, BS, MS, Ph.D., Massachusetts Institute of Technology—Department Head; Professor

**John D. Andersen**, BS, State University of New York at Buffalo; MA, Ph.D., University of Rochester—Professor

**David J. Axon**, B.Sc., Ph.D., University of Durham (U.K.)—Research Professor

**Linda S. Barton**, BS, Massachusetts Institute of Technology; MS, Ph.D., University of Illinois—Associate Professor

**Peter A. Cardegna**, BS, Loyola College; Ph.D., Clemson University—Professor

**Tracy A. Davis**, BA, BS, Wofford College; Ph.D., Clemson University—Associate Professor

**Alan B. Entenberg**, AB, Washington University; Ph.D., University of Rochester—Professor

**Scott V. Franklin**, BA, University of Chicago; Ph.D., University of Texas—Professor

**Edwin Hach III**, BS, MS, St. Bonaventure University; Ph.D., University of Arkansas—Lecturer

**Ian M. Hodge**, BS, MS, University of Auckland (New Zealand); Ph.D., Purdue University—Lecturer

**Dawn Hollenbeck**, BS, University of California at Davis; MS, Ph.D., University of Texas at Dallas—Associate Professor

**Seth M. Hubbard**, BS, Drexel University; MS, Case Western Reserve University; Ph.D., University of Michigan—Assistant Professor

**James R. Kern**, BS, Indiana University of Pennsylvania; MA, Indiana University; Ph.D., Clemson University—Professor

**Brian Koberlein**, BS, Southern Illinois University; MS, Ph.D., University of Connecticut—Senior Lecturer

**Vern W. Lindberg**, B.Sc., University of Alberta (Canada); MS, Ph.D., Case Western Reserve University—Professor

**Amir Maharjan**, B.Sc., Tri-chandra College (Nepal); M.Sc., Tribhuban University (Nepal); MS, Ph.D., University of Cincinnati—Lecturer

**Manasse R. Mbonye**, BS, University of Pennsylvania; MA, Wayne State University; Ph.D., University of Connecticut—Visiting Assistant Professor

**David Merritt**, BS, University of Santa Clara; Ph.D., Princeton University—Professor

**Evelyn H. Monsay**, BA, University of Pennsylvania; MA, Ph.D., Princeton University; MBA, Syracuse University—Lecturer

**Vivek Narayanan**, M.Sc., Indian Institute of Technology; MA, Ph.D., University of Texas—Lecturer

**Christopher O'Dea**, BS, Massachusetts Institute of Technology; Ph.D., University of Massachusetts—Professor

**Michael W. Richmond**, BA, Princeton University; MA, Ph.D., University of California at Berkeley—Professor

**Andrew Robinson**, BS, Ph.D., University of Manchester (U.K.)—Professor

**Joel D. Shore**, BS, Haverford College; Ph.D., Cornell University—Lecturer

**Grover Swartzlander**, BS, Drexel University; MS, Purdue University; Ph.D., Johns Hopkins University—Associate Professor

**Robert B. Teese**, BS, North Carolina State University; MS, Ph.D., University of Texas—Professor

**George M. Thurston**, AB, Oberlin College; Ph.D., Massachusetts Institute of Technology—Professor

**Greg Trayling**, B.Sc., Simon Fraser University (Canada); M.Sc., University of Victoria (Canada); Ph.D., University of Windsor (Canada)—Lecturer

**David J. Urminsky**, B.Sc., McMaster University (Canada); M.Sc., University of British Columbia (Canada); Ph.D., University of Edinburgh (U.K.)—Lecturer

**Jerome Wagner**, BS, Case Institute of Technology; MS, Ph.D., University of Wisconsin—Professor

**Eric J. West**, BS, BA, University of Minnesota, Duluth; MS, Ph.D., Syracuse University—Visiting Assistant Professor

**John J. Zielinski**, BS, University of Notre Dame; MS, University of Illinois; Ph.D., University of Texas—Lecturer

## **Center for Materials Science and Engineering**

**K.S.V. Santhanam**, B.Sc., MA, Ph.D., Sri Venketaswara University (India)—Director; Professor

**John Andersen**, BS, State University of New York at Buffalo; Ph.D., University of Rochester—Professor

**Linda Barton**, BS, Massachusetts Institute of Technology; MS, Ph.D., University of Illinois—Associate Professor

**David A. Borkholder**, BS, Rochester Institute of Technology; MS, Ph.D., Stanford University—Associate Professor

**Robert J. Bowman**, BS, Pennsylvania State University; MS, San Jose State University; Ph.D., University of Utah—Professor

**Peter A. Cardegna**, BS, Loyola College; Ph.D., Clemson University—Professor

**Robert A. Clark**, BS, Massachusetts Institute of Technology; Ph.D., University of Maryland—Professor Emeritus

**Tracy Davis**, BA, BS, Wofford College; Ph.D., Clemson University—Associate Professor

**Alan B. Entenberg**, AB, Washington University; Ph.D., University of Rochester—Professor

**Surendra K. Gupta**, B.Tech., Indian Institute of Technology; MS, University of Notre Dame; Ph.D., University of Rochester—Professor

**Richard K. Hailstone**, BS, Northern Illinois University; MS, Indiana University—Associate Professor

**Joseph P. Hornak**, BS, Utica College of Syracuse University; MS, Purdue University; Ph.D., University of Notre Dame—Professor

**Seth M. Hubbard**, BS, Drexel University; MS, Case Western Reserve University; Ph.D., University of Michigan—Assistant Professor

**Marvin L. Illingsworth**, BS, Lafayette College; Ph.D., University of Massachusetts—Professor

**Michael Jackson**, BS, MS, Ph.D., State University of New York at Buffalo—Associate Professor

**Michael Kotlarchyk**, BS, MS, Ph.D., Massachusetts Institute of Technology—Professor

**Santosh Kuriniec**, BS, MS, Ph.D., University of Delhi (India)—Professor

**Kathleen Lamkin-Kennard**, BS, Worcester Polytechnic Institute; MS, Ph.D., Drexel University—Assistant Professor

**Vern W. Lindberg**, BS, University of Alberta (Canada); MS, Ph.D., Case Western Reserve University—Professor

**Massoud Miri**, BS, MS, Ph.D., University of Hamburg (Germany)—Associate Professor

**Ali Ogut**, B.Ch.E., Hacettepe University (Turkey); MS, Ph.D., University of Maryland—Associate Professor

**Sannasi Ramanan**, BS, Madras University (India); BE, Indian Institute of Science; M.Tech., Ph.D., Indian Institute of Technology—Associate Professor

**Bruce Smith**, BS, MS, Ph.D., Rochester Institute of Technology—Professor

**Thomas W. Smith**, BS, John Carroll University; Ph.D., University of Michigan—Professor

**David A. Sumberg**, BA, Utica College of Syracuse University; MS, Ph.D., Michigan State University—Associate Professor

**Gerald A. Takacs**, BS, University of Alberta (Canada); Ph.D., University of Wisconsin—Professor

**Jerome Wagner**, BS, Case Institute of Technology; MS, Ph.D., University of Wisconsin—Professor

## **Chester F. Carlson Center for Imaging Science**

**Stefi A. Baum**, BA, Harvard University; Ph.D., University of Maryland—Director; Professor

**Roy S. Berns**, BS, MS, University of California; Ph.D., Rensselaer Polytechnic Institute—Director, Munsell Color Science Laboratory; Richard S. Hunter Professor

**Roger Dube**, BS, Cornell University; Ph.D., Princeton University—Research Professor

**Roger L. Easton Jr.**, BS, Haverford College; MS, University of Maryland; Ph.D., University of Arizona—Professor

**Mark D. Fairchild**, BS, MS, Rochester Institute of Technology; Ph.D., University of Rochester—Professor

**James A. Ferwerda**, BA, MS, Ph.D., Cornell University—Associate Professor

**Donald F. Figer**, BA, Northwestern University; MS, University of Chicago; Ph.D., University of California at Los Angeles—Professor

**Jinwei Gu**, BS, MS, Tsinghua University (China); Ph.D., Columbia University—Assistant Professor

**Richard Hailstone**, BS, Northern Illinois University; MS, Indiana University—Associate Professor

**Maria Helguera**, BS, National Autonomous University of Mexico; MS, University of Rochester; Ph.D., Rochester Institute of Technology—Assistant Professor

**Joseph Hornak**, BS, Utica College of Syracuse University; MS, Purdue University; Ph.D., University of Notre Dame—Professor

**Emmett Ientilucci**, BS, MS, Ph.D., Rochester Institute of Technology—Associate Research Professor

**Joel Kastner**, BS, University of Maryland; MS, Ph.D., University of California—Professor

**John P. Kerekes**, BS, MS, Ph.D., Purdue University—Associate Professor

**Robert L. Kremens**, BS, The Cooper Union; MS, University of Rochester; MS, Ph.D., New York University—Associate Research Professor

**David W. Messinger**, BS, Clarkson University; Ph.D., Rensselaer Polytechnic Institute—Associate Research Professor

**Zoran Ninkov**, BS, University of Western Australia; M.Sc., Monash University (Australia); Ph.D., University of British Columbia (Canada)—Professor

**Jake Noel-Storr**, M.Sc., University of Birmingham (U.K.); MA, M.Phil., Ph.D., Columbia University—Assistant Research Professor

**Jeff Pelz**, BFA, MS, Rochester Institute of Technology; Ph.D., University of Rochester—Professor

**Joe Pow**, BS, MS, University of Rochester; MS, Air Force Institute of Technology—Associate Director

**Navalgund Rao**, BS, MS, Banaras Hindu University (India); Ph.D., University of Minnesota—Professor

**Harvey Rhody**, BS, University of Wisconsin; MSEE, University of Cincinnati; Ph.D., Syracuse University—Professor

**Carl Salvaggio**, BS, MS, Rochester Institute of Technology; Ph.D., State University of New York College of Environmental Science and Forestry—Professor

**John Schott**, BS, Canisius College; MS, Ph.D., Syracuse University—Frederick and Anna B. Wiedman Professor

**Grover Swartzlander**, BS, Drexel University; MS, Purdue University; Ph.D., Johns Hopkins University—Associate Professor

**Jan van Aardt**, B.Sc., University of Stellenbosch (South Africa); MS, Ph.D., Virginia Polytechnic Institute—Associate Professor

**Anthony Vodacek**, BS, University of Wisconsin; MS, Ph.D., Cornell University—Associate Professor

## Distinguished Professorships

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### Richard S. Hunter Professorship in Color Science, Appearance, and Technology

Established: 1983

Donors: Mr. and Mrs. Richard S. Hunter

Purpose: To enable RIT to increase its research and educational efforts in the areas of color science, technology, and appearance science in order to benefit the industry and science of color.

Held by: Roy S. Berns

### Frederick and Anna B. Wiedman Professorship

Established: 1985

Donor: Frederick Wiedman Jr.

Purpose: To establish a permanent memorial to Frederick and Anna B. Wiedman, lifelong residents of Rochester and longtime friends of RIT.

Held by: John R. Schott

### Xerox Professorship in Imaging Science

Established: 1996

Donor: Xerox Corporation

Purpose: Established to expand and enhance the research and teaching activities within the Chester F. Carlson Center for Imaging Science.

Held by: James A. Ferwerda



# Liberal Arts Concentrations

[www.rit.edu/cla/concentrations.php](http://www.rit.edu/cla/concentrations.php)

Students may complete their upper-level liberal arts requirement by completing a minor (refer to the Minors section of this bulletin) or a liberal arts concentration. The core liberal arts requirements remain the same regardless of whether a student elects to complete a minor or concentration.

A liberal arts concentration is a cohesive set of **three** upper-level courses (12 quarter credit hours) approved by the faculty for use in meeting the university's liberal arts general education requirements. Concentrations may be disciplinary or interdisciplinary, and some may require prerequisite course work. A complete list of concentrations, including course requirements, follows.

## African Studies

**Conerly Casey, Concentration Adviser**  
(585) 475-7467, [cccgs@rit.edu](mailto:cccgs@rit.edu)

The African studies concentration provides students with a broad understanding of the African people and their histories, societies, and cultures from pre-colonial times to the post-colonial period and the contemporary neo-liberal era. The concentration allows students to critically analyze the social worlds of Africa and reverberations for the African Diaspora by examining cultures, societies, and histories from multiple perspectives and by analyzing changing and competing interpretations of issues, events, and political issues in African societies.

**Electives—Choose three of the following:**

|          |                                    |
|----------|------------------------------------|
| 0510-486 | Globalizing Africa                 |
| 0510-487 | African Popular Cultures           |
| 0510-460 | Genocide and Post-Conflict Justice |
| 0515-482 | African American Culture           |
| 0524-420 | Introduction to African Studies    |
| 0524-421 | African Slave Trade                |

## American Artistic Experience

**Tina Lent, Concentration Adviser**  
(585) 475-2460, [tnlgsh@rit.edu](mailto:tnlgsh@rit.edu)

This concentration provides students with the opportunity to study the American artistic experience in a variety of arts, including painting, architecture, film, photography, music, theater, and mass media. Each course will present American art within the context of the broader current of American life, including its history, philosophy, social, and cultural traditions.

**Electives—Choose three of the following:**

|          |   |
|----------|---|
| 0505-442 | Music in the United States              |
| 0505-443 | Images of American Life                 |
| 0505-444 | American Painting                       |
| 0505-445 | Issues in American Art                  |
| 0505-446 | American Film of the Studio Era         |
| 0505-447 | American Musical                        |
| 0505-448 | 20th Century American Music             |
| 0505-452 | Special Topics in American Art*         |
| 0505-453 | Theater in the United States            |
| 0505-454 | Orchestra Repertoire and History        |
| 0505-455 | Survey of Jazz                          |
| 0505-457 | Contemporary Drama, Theater, and Media  |
| 0505-463 | Survey of African-American Music        |
| 0505-464 | Blues as Personal and Social Commentary |
| 0505-467 | American Film Since the 1960s           |
| 0505-470 | American Popular Song 1830-1950         |
| 0505-471 | American Popular and Rock Music         |
| 0505-488 | Special Topics in American Theater*     |
| 0505-491 | Traumatic Images                        |
| 0505-500 | African-American Art                    |
| 0505-504 | Memory, Memorials, and Monuments        |
| 0505-505 | Art in the Age of the New Deal          |
| 0505-506 | Museums of Art and Design               |
| 0505-507 | Landscapes Transformed                  |
| 0505-516 | Queer Looks                             |

\* Topics will vary.

## American Politics

**Joseph Fornieri, Concentration Adviser**  
(585) 475-5889, [jrfqsm@rit.edu](mailto:jrfqsm@rit.edu)  
**Sean Sutton, Concentration Adviser**  
(585) 475-4620, [sdsqsm@rit.edu](mailto:sdsqsm@rit.edu)

The value in studying the American political system can scarcely be overemphasized. As Thomas Jefferson maintained, only an educated and enlightened democracy can endure. A democratic society remains valid only to the extent that its citizens are educated and well-informed about their government and issues of public policy. The purpose of this concentration is to give students a sound understanding of the U.S. political system. Courses detail various aspects of the American political system, giving students the tools to participate effectively in the political process.



**Electives—Choose three of the following:**

|          |  |
|----------|--|
| 0508-484 | Environmental Policy                                 |
| 0513-425 | Politics and the Life Sciences                       |
| 0513-426 | Cyberpolitics  |
| 0513-427 | Evolutionary International Relations                 |
| 0513-428 | Evolution and the Law                                |
| 0513-429 | Primate Politics                                     |
| 0513-449 | Special Topics in Political Science                  |
| 0513-450 | State and Local Politics                             |
| 0513-451 | The Congress   |
| 0513-452 | The American Presidency                              |
| 0513-453 | American Foreign Policy                              |
| 0513-454 | Political Parties and Voting                         |
| 0513-455 | Politics and Public Policy                           |
| 0513-456 | The Judicial Process                                 |
| 0513-457 | Constitutional Law                                   |
| 0513-458 | American Political Thought                           |
| 0513-460 | Constitutional Rights and Liberties                  |
| 0513-462 | Abraham Lincoln and American Democracy               |
| 0513-463 | First Amendment, Liberty, and Deliberative Democracy |
| 0513-465 | Modern Constitutionalism, Liberty, and Equality      |
| 0513-466 | Political Leadership                                 |
| 0513-481 | Women in Politics                                    |
| 0513-485 | Politics through Fiction                             |
| 0513-514 | Political Theory                                     |

## Archaeology

**William Middleton, Concentration Adviser**  
**(585) 475-5756, wdmgss@rit.edu**

Archaeology is the study of the human past by means of the physical residues of past human behavior: for example, poetry, stone and metal tools, and the remains of ancient dwelling sites. The archaeologist explains how human society has changed and developed over time using such physical evidence. Archaeology employs techniques from the physical sciences to build a more detailed picture of the human past. Students explore the worlds of the past through hands-on applications of physical science techniques in a diverse range of fields, including chemistry, metallurgy, biology, and material science, applying these disciplines in a novel and challenging context.

**Electives—Choose three of the following:**

|          |                                  |
|----------|----------------------------------|
| 0510-455 | Special Topics                   |
| 0510-485 | Exploring Ancient Technology     |
| 0510-502 | Archaeology and the Human Past   |
| 0510-506 | Great Discoveries in Archaeology |
| 0510-507 | Archaeological Science           |
| 0510-508 | Archaeology of Cities            |
| 0510-509 | Survey of Metallurgy             |
| 0510-511 | Field Methods in Archaeology     |
| 0510-512 | Garbage Archaeology              |

## Art History

**Tina Lent, Concentration Adviser**  
**(585) 475-2460, tnlgsh@rit.edu**

The art history concentration is the study of art history across a broad period of historical time and geographical space. The variety of specialized courses allows students to gain insight into the artistic contributions of Europe, Asia, and the developing world.

The concentration includes several liberal arts courses and some upper-division specialty art history courses. This concentration is offered as an alternative to the American artistic experience concentration, specifically designed for those students who wish to acquire a broader understanding of art and culture outside of the United States.

**Electives—Choose three of the following:**

|          |  |
|----------|--|
| 0505-421 | Introduction to Museums and Collecting               |
| 0505-422 | Art Materials: Panel Printing                        |
| 0505-423 | Art Materials: Photography                           |
| 0505-424 | Legal and Ethical Issues for Collecting Institutions |
| 0505-425 | Display and Exhibition Design                        |
| 0505-436 | Women's Stories and Films                            |
| 0505-437 | The Forensic Investigation of Art                    |
| 0505-438 | Conservation of Cultural Material                    |
| 0505-443 | Images of American Life                              |
| 0505-444 | American Painting                                    |
| 0505-445 | Issues in American Art                               |
| 0505-446 | American Film of the Studio Era                      |
| 0505-452 | Special Topics*                                      |
| 0505-467 | American Film Since the 1960s                        |
| 0505-468 | Art of India and Southeast Asia                      |
| 0505-469 | Art of China, Korea, and Japan                       |
| 0505-480 | Women and the Visual Arts                            |
| 0505-487 | Special Topics: Art of Islam†                        |
| 0505-491 | Traumatic Images                                     |
| 0505-500 | African-American Art                                 |
| 0505-504 | Memory, Memorials, and Monuments                     |
| 0505-505 | Art in the Age of the New Deal                       |
| 0505-506 | Museums of Art and Design                            |
| 0505-507 | Landscape Transformed                                |
| 0505-516 | Queer Looks  |

\* Special Topics (0505-452) may include the following topics: American Architecture, Queer Looks I, Queer Looks II, Harlem Renaissance, Visual Culture, Reading Images, Traumatic Images, and Art of Dying.

† Special Topics: Art of Islam (0505-487) may include the following topics: Persian/Turkish/Mughal Traditions and Arabic Tradition.

## Communication

**Grant Cos, Concentration Adviser**  
**(585) 475-6646, gccgpt@rit.edu**

This concentration provides opportunities for the advanced study of selected areas of communication. Topics include an overview of the fields of persuasion, mass communications, public speaking, and small group communication. Students will understand and apply several modes of communication in academic, professional, and personal situations. Students are encouraged to complete Human Communication (0535-480) before enrolling in other concentration courses. *This concentration is closed to students enrolled in the following degree programs: professional and technical communication, advertising and public relations, and journalism.*

**Electives—Choose three of the following:**

|          |                             |
|----------|-----------------------------|
| 0535-414 | Interpersonal Communication |
| 0535-480 | Human Communication         |
| 0535-481 | Persuasion                  |
| 0535-482 | Mass Communications         |
| 0535-483 | Small Group Communication   |
| 0535-501 | Public Speaking             |
| 0535-520 | Intercultural Communication |

## Criminal Justice

**Laverne McQuiller-Williams, Concentration Adviser**  
(585) 475-2935, [llmgcj@rit.edu](mailto:llmgcj@rit.edu)

A concentration in criminal justice provides students with the appropriate foundation to analyze crime, crime control policy, and the role of the criminal justice system in the maintenance of order in society. Courses focus on the social definition and measurement of crime; the broad understanding of the causes of crime; and the societal response to crime through the police, courts, and corrections. The concentration further introduces students to the body of theory and research necessary to examine the effects and effectiveness of the criminal justice process. *This concentration is closed to students enrolled in the criminal justice degree program.*

### Required Course:

|          |             |
|----------|-------------|
| 0501-400 | Criminology |
|----------|-------------|

### Electives—Choose two of the following:

|          |   |
|----------|---|
| 0501-405 | Major Issues in the Criminal Justice System     |
| 0501-406 | Technology in Criminal Justice                  |
| 0501-415 | Domestic Violence                               |
| 0501-440 | Juvenile Justice                                |
| 0501-441 | Corrections                                     |
| 0501-443 | Law Enforcement in Society                      |
| 0501-444 | Concepts in Criminal Law                        |
| 0501-445 | Minority Groups and the Criminal Justice System |
| 0501-446 | Women and Crime                                 |
| 0501-456 | Courts  |
| 0501-507 | Computer Crime                                  |
| 0501-511 | Alternatives to Incarceration                   |
| 0501-517 | Comparative Criminal Justice Systems            |
| 0501-518 | Crime and Justice in the Community              |
| 0501-522 | Victimless Crime                                |
| 0501-523 | Crime and Violence                              |

## Deaf Studies

**J. Matt Searls, Concentration Adviser**  
(585) 475-5707, [jmsdhd@rit.edu](mailto:jmsdhd@rit.edu)

This concentration provides students who are fluent in American Sign Language (ASL) with the opportunity to study deaf culture from various perspectives.

Prerequisite: Proficiency in ASL is required for American Sign Language Literature (0525-595, 0504/0525-400) and Structure of American Sign Language (0525-496). Therefore, only students with ASL proficiency (not beginning or intermediate level skills) will be able to declare this concentration. Evening students may not declare this concentration.

### Electives—Choose three courses from the following groups:

|  |                                   |
|--|-----------------------------------|
| Choose one of the following linguistics courses: |                                   |
| 0525-385   | Linguistics of ASL                |
| 0525-386   | American Sign Language Literature |
| 0525-391   | American Sign Language II         |
| 0525-596   | Special Topics: DST               |
| Choose two of the following culture courses:     |                                   |
| 0504-545   | Deaf American Literature          |
| 0507-463   | American Deaf History             |
| 0507-473   | European Deaf History             |
| 0507-476   | Diversity in the Deaf Culture     |

|          |   |
|----------|---|
| 0507-477 | Oppression in Lives of Deaf People              |
| 0515-452 | Special Topics: Diversity in the Deaf Community |
| 0515-529 | Deaf Culture in America                         |

## Economics

**Michael Vernarelli, Concentration Adviser**  
(585) 475-2455, [mjvgss@rit.edu](mailto:mjvgss@rit.edu)

**Bharat Bhole, Concentration Adviser**  
(585) 475-7954, [blbgse@rit.edu](mailto:blbgse@rit.edu)

Economics is the study of human behavior in the allocation of scarce resources to production and the distribution of production among the members of society. The study of economics has taken on increasing importance as we realize that so many of the world's problems, including energy, overpopulation, and global pollution, have an economic basis. The purpose of the economics concentration is to apply tools of economic analysis to a variety of study areas. *Note: The economics concentration is closed to students enrolled in the economics degree program.*

### Prerequisite:

|          |                              |
|----------|------------------------------|
| 0511-211 | Principles of Microeconomics |
|----------|------------------------------|

### Electives—Choose three of the following:

|          |  |
|----------|--|
| 0511-402 | Principles of Macroeconomics†                |
| 0511-440 | Urban Economics                              |
| 0511-441 | Economics of Human Resources                 |
| 0511-442 | Contemporary International Economic Problems |
| 0511-443 | Current American Macroeconomics Problems     |
| 0511-444 | Public Finance                               |
| 0511-445 | Survey of Economic Thought                   |
| 0511-448 | Economics of Less Developed Countries        |
| 0511-449 | Comparative Economic Systems                 |
| 0511-450 | Benefit-Cost Analysis                        |
| 0511-452 | Monetary Analysis and Policy                 |
| 0511-453 | Intermediate Microeconomic Theory            |
| 0511-454 | International Trade and Finance              |
| 0511-455 | Intermediate Macroeconomic Theory            |
| 0511-456 | Industrial Organization                      |
| 0511-457 | Applied Econometrics*                        |
| 0511-458 | Economic Forecasting*                        |
| 0511-459 | Managerial Economics                         |
| 0511-460 | Mathematical Methods: Economics*             |
| 0511-461 | Seminar in Applied Economics                 |
| 0511-464 | Game Theory with Economic Applications       |
| 0511-466 | Health Care Economics                        |
| 0511-480 | Economic Role of Women                       |
| 0511-481 | Environmental Economics                      |
| 0511-484 | Natural Resource Economics                   |
| 0511-571 | Honors Seminar in Economics                  |

\* Introductory calculus and statistics are additional prerequisites for these courses.

† It is recommended that students take Principles of Macroeconomics (0511-402) as their first course before beginning the concentration.

## Environmental Studies

**Richard Shearman, Concentration Adviser**  
(585) 475-6604, [rlsfsh@rit.edu](mailto:rlsfsh@rit.edu)

The environmental studies concentration is an examination of the basic environmental problems we face, how environmental resource depletion and energy issues are related, and what kind of

environmental ethics and/or values we have today and have had in the past. The concentration also explores the economic, legislative, and regulatory framework within which most environmental decisions are made. Since most technological areas are associated with significant environmental implications, it is essential that students have an understanding of, and a well-thought-out value orientation about, such environmental consequences.

**Electives—Choose three of the following:**

|          |  |
|----------|--|
| 0507-464 | Environmental Disasters in American History                |
| 0508-443 | Face of the Land   |
| 0508-460 | Environment and Society                                    |
| 0508-463 | Great Lakes I  |
| 0508-464 | Great Lakes II†‡   |
| 0508-482 | Energy and the Environment                                 |
| 0508-483 | Environmental Values                                       |
| 0508-484 | Environmental Policy                                       |
| 0508-487 | Special Topics: Environmental Studies†                     |
| 0508-488 | History of Ecology and Environmentalism                    |
| 0508-489 | History of the Environmental Sciences                      |
| 0508-490 | Biodiversity and Society                                   |
| 0508-491 | Sustainable Communities                                    |
| 0508-500 | Science, Technology, and Society Classics                  |
| 0508-520 | Historical Perspectives on Science and Technology Seminar* |
| 0508-530 | Seminar in Science, Technology, and the Environment††      |
| 0508-540 | Science and Technology Policy Seminar‡                     |
| 0508-570 | Environmental Studies Seminar§                             |
| 0509-453 | Environmental Philosophy                                   |
| 0510-449 | Sustainable Development                                    |
| 0511-481 | Environmental Economics**                                  |
| 0511-484 | Natural Resource Economics**                               |
| 0515-449 | Population and Society§§                                   |
| 0521-451 | Energy Policy  |

\* Prerequisite: any two of the history of science or technology courses approved by the department  
† Topics will vary.  
‡ Prerequisite courses: Science and Technology Policy (0508-441), Environmental Policy (0508-484), or Foundations of Public Policy (0521-400)  
§ Prerequisite: Two environmental studies electives  
\*\* Prerequisite course: Principles of Microeconomics (0511-211)  
†† Prerequisite: Any two science, technology, and society courses  
‡‡ Prerequisite: Great Lakes I (0508-463)  
§§ Prerequisite: Cultural Anthropology (0510-210), Foundations of Sociology (0515-210) or equivalent

## Global Justice and Peace Studies

**Lawrence Torcello, Concentration Adviser**  
(585) 475-2327, [lgtghs@rit.edu](mailto:lgtghs@rit.edu)

The global justice and peace studies concentration examines attempts to effect lasting accord and social justice on the international scale. Courses in philosophy, social sciences, and literature help students to understand concepts of human rights, world poverty, and global solidarity. The goal of the concentration is to elucidate the link between concepts of peace and justice while assessing non-violent means of conflict resolution. *Note: Evening students may not declare this concentration.*

**Electives—Choose three of the following:\***

|          |                                   |
|----------|-----------------------------------|
| 0504-319 | Arts of Expression: To Make Peace |
| 0509-445 | Social and Political Philosophy   |
| 0509-446 | Philosophy of Law                 |
| 0509-447 | Contemporary Moral Problems       |
| 0509-448 | The Philosophy of Peace           |
| 0509-476 | Ethical Theory                    |
| 0510-459 | Cultural Images, War, and Terror  |

|          |                             |
|----------|-----------------------------|
| 0513-453 | American Foreign Policy     |
| 0513-488 | War and the State           |
| 0513-491 | Politics of the Middle East |

\* With approval from the global justice and peace studies adviser, certain Special Topics or Great Thinkers courses may also satisfy the requirements for this concentration.

## Global Studies

**Edward Kannyo, Concentration Adviser**  
(585) 475-4658, [exkgsm@rit.edu](mailto:exkgsm@rit.edu)

The global studies concentration offers courses in economics, history, and political science. While some courses focus on the comparative economic and political systems of the world, others emphasize the development of modern states through studying their social, intellectual, and institutional systems. Finally, other courses examine relations among the states of the world. The purpose of this concentration is to provide students with an opportunity to develop a global perspective to examine the economic, political, historical, and diplomatic aspects of the contemporary world. The concentration further introduces students to the tools to analyze the component parts of the global system, namely the individual countries of which it is comprised. *Note: Evening students may not declare this concentration.*

**Electives—Choose three of the following:**

|          |  |
|----------|--|
| 0507-441 | Modern U.S. Foreign Relations            |
| 0507-446 | Europe since 1945 and the European Union |
| 0507-496 | African History                          |
| 0511-448 | Economics of Lesser-Developed Countries* |
| 0513-453 | American Foreign Policy†                 |
| 0513-461 | Comparative Politics                     |

\* Prerequisite: Principles of Microeconomics (0511-211)  
† Prerequisite: American Politics (0513-211) or Introduction to International Relations (0513-214)

## Globalization

**Christine Kray, Concentration Adviser**  
(585) 475-4686, [cakgss@rit.edu](mailto:cakgss@rit.edu)

Networks, flows of people, capital, goods, institutions, ideas, and images all contribute to globalization. This concentration analyzes the formal and informal connections across and beyond conventional borders and among the world's nations. Courses examine how these global connections have been forged, the various dynamic and unpredictable responses of people in diverse locations to global processes, and the implications of global processes for a shared future.

**Prerequisite—Choose one of the following:**

|          |  |
|----------|--|
| 0515-210 | Foundations of Sociology (or equivalent) |
| 0510-210 | Cultural Anthropology (or equivalent)    |
| 0524-210 | Global Studies (or equivalent)           |

**Electives—Choose three of the following:**

|          |                                   |
|----------|-----------------------------------|
| 0510-440 | Cultures in Globalization         |
| 0510-443 | Immigration to the U.S.           |
| 0510-444 | Global Economy and the Grassroots |
| 0510-445 | Global Cities                     |
| 0510-447 | Anthropology of Mass Media        |
| 0510-449 | Sustainable Development           |
| 0510-451 | Global Sexualities                |
| 0510-459 | Cultural Images of War and Terror |

|          |                                 |
|----------|---------------------------------|
| 0515-453 | Global Exiles of War and Terror |
| 0524-422 | Histories of Globalization      |

## History

**Rebecca Edwards, Concentration Adviser**  
(585) 475-2406, [regsm@rit.edu](mailto:regsm@rit.edu)

This concentration offers courses in three major geographic areas: Europe, America, and the Third World. While some courses focus on the internal development of a people through studying their social, intellectual, and institutional growth, others examine international affairs as reflected in the diplomatic relations between countries. Depending on which three courses are selected, the student may aim to achieve a breadth of understanding of various geographic regions and historical approaches or to acquire depth in a more restricted field of study.

**Electives—Choose three of the following:**

|          |   |
|----------|---|
| 0507-401 | American Women: Colonies to 1848                    |
| 0507-402 | American Women: 1848 to NOW                         |
| 0507-410 | Terrorism, Intelligence, and War                    |
| 0507-411 | Origins of U.S. Foreign Relations                   |
| 0507-412 | Modern Japan in History, Fiction, and Film          |
| 0507-440 | U.S. Social and Intellectual History                |
| 0507-441 | Modern U.S. Foreign Relations                       |
| 0507-442 | Contemporary Middle East                            |
| 0507-443 | European Social and Intellectual History Since 1600 |
| 0507-444 | Strategy and Diplomacy of Europe                    |
| 0507-445 | Modern Latin American History                       |
| 0507-446 | Europe Since 1945 and the European Union            |
| 0507-447 | U.S. History Since 1945                             |
| 0507-448 | History of Russia to 1917                           |
| 0507-449 | History of Russia Since 1917                        |
| 0507-450 | Stalin, Mussolini, Hitler                           |
| 0507-451 | History of Rochester                                |
| 0507-462 | The Civil War and Reconstruction                    |
| 0507-463 | American Deaf History                               |
| 0507-464 | Environmental Disasters in American History         |
| 0507-465 | Survey of African-American History                  |
| 0507-466 | American Slavery, American Freedom                  |
| 0507-467 | American Disability History                         |
| 0507-468 | The United States and Japan                         |
| 0507-469 | Special Topics: History                             |
| 0507-473 | European Deaf History                               |
| 0507-474 | America's National Parks                            |
| 0507-475 | Hands on History                                    |
| 0507-485 | Foundations of Asian Civilizations                  |
| 0507-486 | 20th Century China and Japan                        |
| 0507-487 | Communist China                                     |
| 0507-488 | Modern Germany                                      |
| 0507-489 | Japan in the Modern World                           |
| 0507-490 | History of Mexico                                   |
| 0507-496 | African History                                     |
| 0507-497 | Biography As History                                |

## International Relations

**Edward Kannyo, Concentration Adviser**  
(585) 475-4658, [exkgsm@rit.edu](mailto:exkgsm@rit.edu)  
**Dongryul Kim, Concentration Adviser**  
(585) 475-4194, [dxkgsm@rit.edu](mailto:dxkgsm@rit.edu)

The international relations concentration introduces students to the complexities and shifting trends of international affairs, with an opportunity to study the significance of at least one aspect of the international system. We live in an increasingly interdependent world. Many career tracks will carry graduates into the multicultural arena of international transactions, which know no borders. Many emerging problems require international approaches if they are to be managed in the future.

**Electives—Choose three of the following:**

|          |                                       |
|----------|---------------------------------------|
| 0507-442 | Contemporary Middle East              |
| 0507-444 | Strategy and Diplomacy of Europe      |
| 0507-488 | Modern Germany                        |
| 0513-425 | Politics and the Life Sciences        |
| 0513-426 | Cyberpolitics                         |
| 0513-427 | Evolutionary International Relations  |
| 0513-428 | Evolution and the Law                 |
| 0513-429 | Primate Politics                      |
| 0513-441 | Politics in China                     |
| 0513-443 | Politics of Russia                    |
| 0513-446 | Politics in Developing Countries      |
| 0513-447 | Human Rights/Global Perspectives      |
| 0513-449 | Special Topics in Political Science   |
| 0513-453 | American Foreign Policy               |
| 0513-461 | Comparative Politics                  |
| 0513-467 | Modern Korea                          |
| 0513-484 | Government and Politics of Africa     |
| 0513-486 | Comparative Politics in Latin America |
| 0513-487 | International Law and Organization    |
| 0513-488 | War and the State                     |
| 0513-489 | Terrorism and Political Violence      |
| 0513-490 | International Political Economy       |
| 0513-491 | Politics of the Middle East           |
| 0513-492 | Religion and International Politics   |
| 0513-493 | Global Politics and the Environment   |
| 0513-494 | Comparative Public Policy             |
| 0513-496 | Government and Politics in East Asia  |

## Latino/Latina/Latin American Studies

**Diane Forbes, Concentration Adviser**  
(585) 475-6765, [djfgsl@rit.edu](mailto:djfgsl@rit.edu)

The Latino/Latina/Latin American studies concentration enables students to explore the rich social, historical, and cultural heritage in the western hemisphere that emanates from the Caribbean and Central and South America and manifests itself in the history, sociology, anthropology, politics, languages, and literatures of the Latin American countries and the Latino/Latina populations in the United States. While knowledge of Spanish will significantly deepen the student's cultural understanding, language courses are an option rather than a required component of the concentration. Students may opt to complete the concentration with two elective courses and one language course or three elective courses. *Note: Evening students may not declare this concentration.*

**Electives—Choose up to three of the following:†**

|          |  |
|----------|--|
| 0504-435 | Global Literature: Latin American Literature |
| 0504-447 | Special Topics: Magical Realism              |
| 0504-469 | American Literature: Latino                  |
| 0504-479 | Latino Experience in Literature              |
| 0510-442 | Cultures and Politics in Latin America       |
| 0510-444 | Global Economy and the Grassroots            |



|          |   |
|----------|---|
| 0525-573 | Women in the Hispanic World: Politics of Identity Formation |
| 0525-576 | Trauma and Survival in the First-Person Narrative           |
| 0525-577 | Screening the Hispanic Caribbean                            |
| 0525-579 | Special Topics*   |

\* Special Topics (0525-579) may include the following: The Caribbean and Globalization and Cuban Film: Cultural and National Identity.

† With department approval: CIAS Art History: Latin American Art History I, II, plus one additional credit per course.

One of the following Spanish or Portuguese language courses may be used for this concentration. The student should consult with the concentration adviser for placement at the proper level.

|          |                             |
|----------|-----------------------------|
| 0525-521 | Beginning Portuguese II     |
| 0525-522 | Beginning Portuguese III    |
| 0525-523 | Intermediate Portuguese I   |
| 0525-524 | Intermediate Portuguese II  |
| 0525-525 | Intermediate Portuguese III |
| 0525-526 | Advanced Portuguese I       |
| 0525-527 | Advanced Portuguese II      |
| 0525-528 | Advanced Portuguese III     |
| 0525-561 | Beginning Spanish II        |
| 0525-562 | Beginning Spanish III       |
| 0525-563 | Intermediate Spanish I      |
| 0525-564 | Intermediate Spanish II     |
| 0525-565 | Intermediate Spanish III    |
| 0525-566 | Advanced Spanish I          |
| 0525-567 | Advanced Spanish II         |
| 0525-568 | Advanced Spanish III        |

## Literary and Cultural Studies

**Elena Sommers, Concentration Adviser**  
(585) 475-4417, [ersgla@rit.edu](mailto:ersgla@rit.edu)

A concentration in literary and cultural studies offers a variety of approaches to the study of literary and non-literary texts, including but not limited to imaginative fiction, non-fiction, poetry, visual culture, and new media. Those who choose this concentration will have the opportunity to engage such texts through both traditional and contemporary approaches. Students will develop their critical and analytical abilities as they become versed in the formal, contextual, and historical aspects of specific texts. All of the courses offered by the department of English are writing intensive and offer opportunities for sustained writing and communication practice.

### Prerequisite:

|          |                         |
|----------|-------------------------|
| 0502-227 | Writing (or equivalent) |
|----------|-------------------------|

### Electives—Choose three of the following:

|                |                                     |
|----------------|-------------------------------------|
| 0502-463       | Language and Brain                  |
| 0525-400, 0504 | American Sign Language Literature   |
| 0504-425       | Great Authors                       |
| 0504-435       | Global Literature                   |
| 0504-436       | The Graphic Novel                   |
| 0504-440       | Drama and Theater                   |
| 0504-441       | The Art of Poetry                   |
| 0504-442       | The Short Story                     |
| 0504-443       | The Novel                           |
| 0504-444       | Film as Literature                  |
| 0504-447       | Special Topics                      |
| 0504-448       | Biographical Literature             |
| 0504-454       | Shakespeare: Tragedy and Romance    |
| 0504-455       | Shakespeare: Comedies and Histories |

|          |  |
|----------|--|
| 0504-460 | Modern Poetry                              |
| 0504-462 | Literature and Technology                  |
| 0504-464 | Mythology and Folklore                     |
| 0504-465 | Viking Myth and Saga                       |
| 0504-467 | African American Literature                |
| 0504-469 | American Literature                        |
| 0504-474 | Studies in British Literature              |
| 0504-476 | Immigrant Voices in American Literature    |
| 0504-479 | Latino Experience in Literature            |
| 0504-480 | Women's Studies in Language and Literature |
| 0504-482 | Science Fiction                            |
| 0504-545 | Deaf American Literature                   |

## Material Cultural Studies

**William Middleton, Concentration Adviser**  
(585) 475-5756, [wdmgss@rit.edu](mailto:wdmgss@rit.edu)

A concentration in material cultural studies allows students to study the resources and technologies that convert natural and man-made materials into cultural objects. Archaeological and art conservation science integrate chemistry, engineering, art, and anthropology in order to investigate methods and materials from the past. This concentration includes courses from a broad range of topics with laboratory components such as archeological science, forensic investigation of art, ancient metallurgy, art conservation, and the technology of organic and inorganic materials.

### Electives—Choose three of the following:

|          |                                   |
|----------|-----------------------------------|
| 0533-437 | The Forensic Investigation of Art |
| 0533-438 | Introduction to Art Conservation  |
| 0531-441 | GIS Applications                  |
| 0531-444 | Survey of Metallurgy              |
| 0531-445 | Field Methods in Archaeology      |
| 0531-446 | Native North Americans            |
| 0531-507 | Archaeological Science            |
| 0531-508 | Archaeology of Cities             |

## Minority Relations in the United States

**Kijana Crawford, Concentration Adviser**  
(585) 475-2943, [drcgss@rit.edu](mailto:drcgss@rit.edu)

A concentration in minority relations in the United States offers students a variety of academic perspectives on how groups of people sharing similar characteristics (whether cultural, inherited, or learned) interact with groups sharing different characteristics. The focus of this concentration is on racial and ethnic minorities in the U.S. Courses examine the issues of differential power between groups and analyze the social structures that are used to maintain or alter these power differences. Courses also look at the interpersonal level of response of both majority and minority group members. Finally, the concentration investigates the experience of minority groups in the U.S. *Note: Evening students may not declare this concentration.*

### Required Course:

|          |                          |
|----------|--------------------------|
| 0515-448 | Minority Group Relations |
|----------|--------------------------|

### Electives—Choose two of the following:

|          |  |
|----------|--|
| 0504-447 | Special Topics: Multicultural Literature |
| 0507-496 | African History                          |
| 0515-482 | African-American Culture                 |



|          |                            |
|----------|----------------------------|
| 0515-483 | Hispanic-American Culture  |
| 0535-484 | Rhetoric of Race Relations |

## Modern Language and Culture

This concentration will introduce students to the language, customs, and cultural aspects (history, art, literature) of one particular country or area. Students will choose two consecutive language courses beyond the introductory prerequisite language course, as well as one related liberal arts culture course. The goal of this concentration is to raise students' awareness of the relationship between language and culture and the differences between their own language and culture and those of the country they choose to study.

It is important to note that two out of the three required courses must be taken at RIT. Only one course may be transferred in, if necessary.

Students may not skip or go back to the lower level in the language course sequence. Students with some proficiency in the intended concentration should contact the concentration adviser to take a placement test prior to registration for the first course of the sequence at RIT. These concentrations are closed to native speakers. Evening students may not declare these concentrations.

### Arabic

**Diane Forbes, Concentration Adviser**  
(585) 475-6765, [djfgsl@rit.edu](mailto:djfgsl@rit.edu)

#### Prerequisite:

|          |                                   |
|----------|-----------------------------------|
| 0525-400 | Beginning Arabic I or equivalent. |
|----------|-----------------------------------|

#### Required Courses—Choose two of the following:

|          |                         |
|----------|-------------------------|
| 0525-401 | Beginning Arabic II     |
| 0525-402 | Beginning Arabic III    |
| 0525-403 | Intermediate Arabic I   |
| 0525-404 | Intermediate Arabic II  |
| 0525-405 | Intermediate Arabic III |
| 0525-406 | Advanced Arabic I       |
| 0525-407 | Advanced Arabic II      |
| 0525-408 | Advanced Arabic III     |

#### Electives—Choose one of the following:

|          |   |
|----------|---|
| 0505-487 | Special Topics: Art of Islam: Persian/Turkish/Mughal Traditions |
| 0505-487 | Special Topics: Art of Islam: Arabic Tradition                  |
| 0510-484 | Islamic Culture/Middle East                                     |

### ASL

**Cindy Sanders, Concentration Adviser**  
(585) 475-6714, [casnss@rit.edu](mailto:casnss@rit.edu)

#### Prerequisite:

|          |                                    |
|----------|------------------------------------|
| 0525-390 | Beginning American Sign Language I |
|----------|------------------------------------|

#### Required Courses:

|          |                            |
|----------|----------------------------|
| 0525-391 | American Sign Language II  |
| 0525-392 | American Sign Language III |

#### Electives—Choose one of the following:

|          |                          |
|----------|--------------------------|
| 0504-545 | Deaf American Literature |
|----------|--------------------------|

|          |                                    |
|----------|------------------------------------|
| 0507-463 | American Deaf History              |
| 0507-473 | European Deaf History              |
| 0507-476 | Diversity in the Deaf Culture      |
| 0507-477 | Oppression in Lives of Deaf People |
| 0515-529 | Deaf Culture in America            |
| 0525-385 | Linguistics of ASL                 |
| 0525-386 | American Sign Language Literature  |

\* ASL courses taken through NTID cannot be applied toward this concentration.

### Chinese

**Hiroko Yamashita, Concentration Adviser**  
(585) 475-6074, [hxygsl@rit.edu](mailto:hxygsl@rit.edu)

#### Prerequisite:

|          |                                   |
|----------|-----------------------------------|
| 0525-420 | Beginning Chinese I or equivalent |
|----------|-----------------------------------|

#### Required courses—Choose two of the following:

|          |                          |
|----------|--------------------------|
| 0525-421 | Beginning Chinese II     |
| 0525-422 | Beginning Chinese III    |
| 0525-423 | Intermediate Chinese I   |
| 0525-424 | Intermediate Chinese II  |
| 0525-425 | Intermediate Chinese III |
| 0525-426 | Advanced Chinese I       |
| 0525-427 | Advanced Chinese II      |
| 0525-428 | Advanced Chinese III     |

#### Electives—Choose one of the following:

|          |                                      |
|----------|--------------------------------------|
| 0504-447 | Special Topics: Chinese              |
| 0505-469 | Art of China, Korea, and Japan       |
| 0507-485 | Foundations of Asian Civilizations   |
| 0507-486 | 20th Century China and Japan         |
| 0507-487 | Communist China                      |
| 0513-441 | Politics in China                    |
| 0513-496 | Government and Politics in East Asia |

### French

**Philippe Chavasse, Concentration Adviser**  
(585) 475-3156, [pxcgs@rit.edu](mailto:pxcgs@rit.edu)

#### Prerequisite:

|          |                                  |
|----------|----------------------------------|
| 0525-440 | Beginning French I or equivalent |
|----------|----------------------------------|

#### Required Courses—Choose two of the following:

|          |                                       |
|----------|---------------------------------------|
| 0525-441 | Beginning French II                   |
| 0525-442 | Beginning French III                  |
| 0525-443 | Intermediate French I                 |
| 0525-444 | Intermediate French II                |
| 0525-445 | Intermediate French III               |
| 0525-446 | Advanced French I                     |
| 0525-447 | Advanced French II                    |
| 0525-448 | Advanced French III                   |
| 0525-459 | Special Topics: Modern French Society |

#### Electives—Choose one from the following:

|          |   |
|----------|---|
| 0525-458 | French Films and Hollywood                          |
| 0504-487 | Literature of French Black Africa and the Caribbean |
| 0504-499 | The View from Paris                                 |
| 0510-457 | Divided Europe                                      |
| 0535-520 | Intercultural Communication                         |

German

**Wilma Wierenga, Concentration Adviser**  
**(585) 475-6829, [wwwgsl@rit.edu](mailto:wwwgsl@rit.edu)**

Prerequisite:

|          |                                  |
|----------|----------------------------------|
| 0525-460 | Beginning German I or equivalent |
|----------|----------------------------------|

Required Courses—Choose two of the following:

|          |                         |
|----------|-------------------------|
| 0525-461 | Beginning German II     |
| 0525-462 | Beginning German III    |
| 0525-463 | Intermediate German I   |
| 0525-464 | Intermediate German II  |
| 0525-465 | Intermediate German III |
| 0525-466 | Advanced German I       |
| 0525-467 | Advanced German II      |
| 0525-468 | Advanced German III     |

Electives—Choose one from the following:

|          |  |
|----------|--|
| 0525-477 | Contemporary German Culture*                       |
| 0525-479 | Special Topics: Modern German Culture Through Film |
| 0505-459 | Era of Haydn and Mozart                            |
| 0505-465 | Special Topics: Mozart’s Operas                    |
| 0505-482 | Beethoven  |
| 0505-483 | Bach and the Baroque                               |
| 0505-484 | Romanticism in Music                               |
| 0505-486 | German Theater and Drama                           |
| 0507-488 | Modern Germany                                     |

\* Contemporary German Culture (0525-477) is offered alternating summers in Germany.

Italian

**Elisabetta D’Amanda, Concentration Adviser**  
**(585) 475-6928, [exdgl@rit.edu](mailto:exdgl@rit.edu)**

Prerequisite:

|          |                                   |
|----------|-----------------------------------|
| 0525-500 | Beginning Italian I or equivalent |
|----------|-----------------------------------|

Required Courses—Choose two of the following:

|          |                          |
|----------|--------------------------|
| 0525-501 | Beginning Italian II     |
| 0525-502 | Beginning Italian III    |
| 0525-503 | Intermediate Italian I   |
| 0525-504 | Intermediate Italian II  |
| 0525-505 | Intermediate Italian III |
| 0525-506 | Advanced Italian I       |
| 0525-507 | Advanced Italian II      |
| 0525-508 | Advanced Italian III     |

Electives—Choose one from the following:

|          |   |
|----------|---|
| 0525-519 | Contemporary Italian Culture*                 |
| 0504-435 | Special Topics: Italian Literature†           |
| 0504-435 | Special Topics: Survey of Italian Literature† |

\* Contemporary Italian Culture (0525-519) is offered each summer in Italy  
† Special Topics: Italian Literature (0504-435) and Special Topics: Survey of Italian Literature (0504-435) are offered every other year.

Japanese

**Yukiko Maru Leary, Concentration Adviser**  
**(585) 475-4558, [yxmgl@rit.edu](mailto:yxmgl@rit.edu)**

Prerequisite:

|          |                                    |
|----------|------------------------------------|
| 0525-480 | Beginning Japanese I or equivalent |
|----------|------------------------------------|

Required Courses—Choose two of the following:

|          |                           |
|----------|---------------------------|
| 0525-481 | Beginning Japanese II     |
| 0525-482 | Beginning Japanese III    |
| 0525-483 | Intermediate Japanese I   |
| 0525-484 | Intermediate Japanese II  |
| 0525-485 | Intermediate Japanese III |
| 0525-486 | Advanced Japanese I       |
| 0525-487 | Advanced Japanese II      |
| 0525-488 | Advanced Japanese III     |

Electives—Choose one of the following:

|          |                                      |
|----------|--------------------------------------|
| 0525-495 | Japanese Culture in Print            |
| 0525-496 | Structure of Japanese Language       |
| 0525-497 | Languages in Japanese Society        |
| 0505-469 | Art of China, Korea, and Japan       |
| 0507-468 | The U.S. and Japan                   |
| 0507-485 | Foundations of Asian Civilizations   |
| 0507-486 | 20th Century China and Japan         |
| 0507-489 | Japan in the Modern World            |
| 0513-496 | Government and Politics in East Asia |

Russian

**Diane Forbes, Concentration Adviser**  
**(585) 475-6765, [djfgsl@rit.edu](mailto:djfgsl@rit.edu)**

Prerequisite:

|          |                                    |
|----------|------------------------------------|
| 0525-540 | Beginning Russian I or equivalent. |
|----------|------------------------------------|

Required Courses—Choose two of the following:

|          |                          |
|----------|--------------------------|
| 0525-541 | Beginning Russian II     |
| 0525-542 | Beginning Russian III    |
| 0525-543 | Intermediate Russian I   |
| 0525-544 | Intermediate Russian II  |
| 0525-545 | Intermediate Russian III |
| 0525-546 | Advanced Russian I       |
| 0525-547 | Advanced Russian II      |
| 0525-548 | Advanced Russian III     |

Electives—Choose one of the following:

|          |  |
|----------|--|
| 0504-435 | Great Authors: Tolstoy                 |
| 0504-435 | Great Authors: Dostoyevsky             |
| 0504-485 | Global Literature: Russian Literature  |
| 0505-435 | Russian Art, 10th through 20th Century |
| 0505-452 | Special Topics: Russian Art I          |
| 0505-452 | Special Topics: Russian Art II         |
| 0507-448 | History of Russia to 1917              |
| 0507-449 | History of Russia Since 1917           |
| 0507-450 | Stalin, Mussolini, and Hitler          |
| 0513-443 | Politics of Russia                     |
| 0513-444 | The Cold War and Beyond                |

## Spanish

**Diane Forbes, Concentration Adviser**  
(585) 475-6765, [djfgsl@rit.edu](mailto:djfgsl@rit.edu)

### Prerequisite:

|          |                                    |
|----------|------------------------------------|
| 0525-560 | Beginning Spanish I or equivalent. |
|----------|------------------------------------|

### Required Courses—Choose two of the following:

|          |                          |
|----------|--------------------------|
| 0525-561 | Beginning Spanish II     |
| 0525-562 | Beginning Spanish III    |
| 0525-563 | Intermediate Spanish I   |
| 0525-564 | Intermediate Spanish II  |
| 0525-565 | Intermediate Spanish III |
| 0525-566 | Advanced Spanish I       |
| 0525-567 | Advanced Spanish II      |
| 0525-568 | Advanced Spanish III     |

### Electives—Choose one of the following:†

|          |   |
|----------|---|
| 0525-576 | Trauma and Survival in the First-Person Narrative           |
| 0525-577 | Screening the Hispanic Caribbean                            |
| 0525-578 | Women in the Hispanic World: Politics of Identity Formation |
| 0525-579 | Special Topics*   |
| 0504-435 | Global Literature: Latin American Literature                |
| 0504-447 | Special Topics: Magical Realism                             |
| 0504-479 | The Latino Experience in Literature                         |
| 0510-442 | Cultures and Politics in Latin America                      |
| 0510-444 | Global Economy and the Grassroots                           |

\* Special Topics (0525-579) may include the following: The Caribbean and Globalization and Cuban Film: Cultural and National Identity.

† With department approval: CIAS Art History: Latin American Art History I & II plus one additional credit per course

## Music

**Carl Atkins, Concentration Adviser**  
(585) 475-4439, [cjagsh@rit.edu](mailto:cjagsh@rit.edu)

A concentration in music offers courses in the history, theory, and practice of music. Students with a background in music and/or a genuine desire to know more about the subject will have the opportunity to expand their knowledge of various theoretical and historical aspects as well as participate in performing groups at RIT. *Note: Evening students may not declare this concentration.*

### Electives—Choose three of the following:

|          |                                  |
|----------|----------------------------------|
| 0505-401 | RIT Singers*                     |
| 0505-402 | RIT Orchestra*                   |
| 0505-403 | RIT Concert Band*                |
| 0504-404 | RIT World Music Ensemble*        |
| 0504-405 | RIT Jazz Ensemble*               |
| 0505-420 | Applied Music*                   |
| 0505-442 | Music in the United States       |
| 0505-447 | The American Musical Theater     |
| 0505-448 | 20th Century American Music      |
| 0505-449 | Music Theory I†                  |
| 0505-450 | Music and the Stage              |
| 0505-454 | Orchestra Repertoire and History |
| 0505-455 | Survey of Jazz                   |
| 0505-456 | Topics in Music History          |
| 0505-459 | Era of Haydn and Mozart          |
| 0505-461 | World Music I                    |
| 0505-462 | World Music II                   |
| 0505-463 | Survey of African-American Music |

|          |   |
|----------|---|
| 0505-464 | Blues as Personal and Social Commentary |
| 0505-465 | Special Topics in Music                 |
| 0505-470 | American Popular Song 1830-1950         |
| 0505-471 | American Popular and Rock Music         |
| 0505-482 | Beethoven                               |
| 0505-483 | Bach and the Baroque                    |
| 0505-484 | Romanticism in Music                    |
| 0505-485 | Music Theory II‡                        |

\* Each of these ensemble and applied music courses is one quarter credit hour. Four quarters of participation are required to complete one concentration course.

† Prerequisite: Elementary Music Skills

‡ Prerequisite: Music Theory I (0505-449).

## Native American Science and Technology

**William Middleton, Concentration Adviser**  
(585) 475-5756, [wdmgss@rit.edu](mailto:wdmgss@rit.edu)

The Native American science and technology concentration enhances students' understanding of the unique heritages of Native North Americans and their relationships with other peoples in the United States and Canada. Courses emphasize traditional ways of learning, modern and ancient technologies used by contemporary tribes, histories of relations, and Native American and First Nations science.

### Electives—Choose three of the following:

|          |  |
|----------|--|
| 0510-442 | Cultures in Latin America  |
| 0510-462 | Language and Revitalization                                      |
| 0531-441 | GIS Applications   |
| 0531-442 | Economy of Native America  |
| 0531-443 | Native American Repatriation                                     |
| 0531-445 | Field Methods in Archaeology                                     |
| 0531-446 | Native North Americans   |
| 0531-448 | Native Americans in Film   |
| 0531-449 | Archaeological Science   |
| 0531-450 | Cultural Resource Management and Historic Preservation           |
| 0531-502 | Introduction to Archaeology                                      |
| 0531-599 | Independent Study: Field Experience with a Native American Tribe |

## Philosophy

**Jack Sanders, Concentration Adviser**  
(585) 475-2465, [jtsqsh@rit.edu](mailto:jtsqsh@rit.edu)

The philosophy concentration provides students with an opportunity to study the nature, methods, problems, and achievements of philosophical inquiry. The concentration emphasizes the following goals: the ability to think rationally and critically, an awareness of ethical values, an appreciation of aesthetic values, an awareness of how the past affects the present and future, and an understanding of the relationship between the individual and the social settings with which he or she interacts. *This concentration is closed to students enrolled in the philosophy degree program.*

### Electives—Choose three of the following:

|          |                                  |
|----------|----------------------------------|
| 0509-440 | Philosophy of Religion           |
| 0509-441 | Logic                            |
| 0509-442 | Philosophy of Art/Aesthetics*    |
| 0509-443 | Philosophy of Science‡           |
| 0509-444 | The Great Thinkers**             |
| 0509-445 | Social and Political Philosophy§ |
| 0509-446 | Philosophy of Law                |

|          |                                     |
|----------|-------------------------------------|
| 0509-447 | Contemporary Moral Problems         |
| 0509-448 | Philosophy of Peace                 |
| 0509-449 | Special Topics**                    |
| 0509-450 | Seminar in Philosophy†**            |
| 0509-451 | Professional Ethics                 |
| 0509-452 | Philosophy of Technology            |
| 0509-453 | Environmental Philosophy            |
| 0509-454 | Feminist Theory*                    |
| 0509-455 | Theories of Knowledge               |
| 0509-456 | Ancient Philosophy                  |
| 0509-457 | Modern Philosophy                   |
| 0509-458 | Philosophy of Mind                  |
| 0509-459 | Philosophy of the Social Sciences†† |
| 0509-460 | East Asian Philosophy               |
| 0509-461 | American Philosophy                 |
| 0509-462 | Contemporary Philosophy             |
| 0509-464 | Philosophy of Action                |
| 0509-465 | Critical Theory*                    |
| 0509-466 | Existentialism                      |
| 0509-467 | Medieval Philosophy                 |
| 0509-468 | Metaphysics*                        |
| 0509-469 | 19th Century Philosophy*            |
| 0509-470 | Philosophy and Literary Theory*     |
| 0509-471 | Philosophy of Film*                 |
| 0509-472 | Minds and Machines                  |
| 0509-473 | Technology and Embodiment           |
| 0509-474 | Philosophy of Language*             |
| 0509-475 | Philosophy of Vision/Imaging*       |
| 0509-476 | Ethical Theory                      |
| 0509-571 | Honors Philosophy                   |

\* Prerequisite: One previous philosophy course or permission of the instructor is strongly encouraged.

† Prerequisite: Two prior courses in philosophy or permission of the instructor.

‡ Prerequisite: At least one prior course in either philosophy or one of the natural sciences (physics, chemistry, or biology).

§ Prerequisite: At least one prior course in philosophy, political science, or sociology

\*\* Topics may vary.

†† Prerequisite: At least one prior course in either philosophy or one of the social sciences (psychology, economics, political science, sociology, or anthropology)

## Psychology

**Andrew Herbert, Concentration Adviser**

**(585) 475-4554, amhgss@rit.edu**

**Kirsten Condry, Concentration Adviser**

**(585) 475-4556, kxcgsh@rit.edu**

This concentration provides advanced study in various areas of psychology. Courses enable students to learn more about their own and others' functioning. Students will become well-informed consumers of psychological information and will also learn to apply psychological principles in their own lives. *Note: This concentration is closed to students enrolled in the psychology program.*

### Prerequisite:

|          |  |
|----------|--|
| 0514-210 | Introduction to Psychology or equivalent |
|----------|--|

### Electives—Choose three of the following:

|          |                           |
|----------|---------------------------|
| 0502-463 | Language and Brain        |
| 0514-440 | Childhood and Adolescence |
| 0514-441 | Humanistic Psychology     |
| 0514-442 | Adulthood and Aging       |
| 0514-443 | Cognitive Psychology      |
| 0514-444 | Social Psychology         |
| 0514-445 | Psychology of Perception  |
| 0514-446 | Psychology of Personality |

|          |  |
|----------|--|
| 0514-447 | Abnormal Psychology                      |
| 0514-448 | Industrial and Organizational Psychology |
| 0514-449 | Behavior Modification                    |
| 0514-451 | Psychology of Motivation                 |
| 0514-453 | Death and Dying                          |
| 0514-483 | Social Psychology of Religion            |
| 0514-544 | History and Systems                      |

## Public Policy

**Richard Shearman, Concentration Adviser**

**(585) 475-6604, rlsgh@rit.edu**

This concentration provides students with a clear understanding of public policy, the policy process, and policy analysis. Students have the opportunity to develop perspectives on a variety of contemporary public policy issues, especially those that emerge from scientific and technological advancements. At the heart of the concentration is the Foundations of Public Policy (0521-400) course, where students are introduced to the concept of public policy and the policy making process. The roles of stakeholders and interest groups are discussed in the context of contemporary cases in various policy arenas. Students are also introduced to some of the methodologies associated with policy analysis. Additional courses are offered from the areas of sociology; political science; and science, technology, and society. Policy Analysis I and II (0521-402, 403) are offered especially for students who are considering the MS in public policy or who have an interest in analytical tools.

### Required course:

|          |                              |
|----------|------------------------------|
| 0521-400 | Foundations of Public Policy |
|----------|------------------------------|

### Electives—Choose two of the following:

|          |  |
|----------|--|
| 0508-441 | Science and Technology Policy                        |
| 0508-484 | Environmental Policy                                 |
| 0508-530 | Seminar in Science, Technology, and the Environment* |
| 0508-540 | Science and Technology Policy Seminar*               |
| 0513-455 | Politics and Public Policy*                          |
| 0515-413 | Urban Planning and Policy                            |
| 0515-451 | Transfer Technology and Globalization*               |
| 0521-401 | Values and Public Policy*                            |
| 0521-402 | Policy Analysis I*                                   |
| 0521-403 | Policy Analysis II*                                  |
| 0521-404 | Policy Analysis III*                                 |
| 0521-406 | Introduction to Qualitative Analysis*                |
| 0521-408 | Technological Innovation and Public Policy*          |
| 0521-410 | Information and Communications Policy*               |
| 0521-449 | Special Topics in Public Policy†                     |
| 0521-451 | Energy Policy  |

\* These courses have prerequisites or co-requisites.

† Topics will vary.

## Religious Studies

**Brian Schroeder, Concentration Adviser**

**(585) 475-6346, bxsgla@rit.edu**

Religion plays a major role in human affairs. To understand the nature of society and the individual, it is essential to have some understanding of religion. The religious studies concentration engages students in the study of religion from the perspective of major Western and non-Western traditions through courses in such disciplines as anthropology, history, literature, philosophy, political

science, the fine arts, and sociology. (With approval from the religious studies adviser, certain Special Topics or Great Thinkers courses may also satisfy the requirements for the concentration.)

**Electives—Choose three of the following:**

|          |                                     |
|----------|-------------------------------------|
| 0504-464 | Mythology and Folklore              |
| 0504-467 | African-American Literature         |
| 0504-484 | Literature and Religion*            |
| 0505-468 | Art of India and Southeast Asia     |
| 0505-469 | Art of China, Korea, and Japan      |
| 0505-487 | Art of Islam                        |
| 0507-483 | History of Christianity             |
| 0509-440 | Philosophy of Religion              |
| 0509-460 | East Asian Philosophy               |
| 0509-466 | Existentialism†                     |
| 0509-467 | Medieval Philosophy                 |
| 0509-468 | Metaphysics†                        |
| 0509-469 | 19th Century Philosophy†            |
| 0510-446 | Native North Americans              |
| 0510-483 | Anthropology of Religion            |
| 0510-484 | Islamic Culture and the Middle East |
| 0513-492 | Religion and International Politics |
| 0514-483 | Social Psychology of Religion       |

\* Prerequisite: Writing (0502-227).

† Student must obtain the approval of the religious studies concentration adviser.

## Science and Technology Studies

**Richard Shearman, Concentration Adviser**  
(585) 475-6604, [rlsgsh@rit.edu](mailto:rlsgsh@rit.edu)

The science and technology studies concentration examines some major impacts of science and technology in the contemporary world. Special reference will be given to American concerns. Students gain an overall appreciation of the social nature of science and technology as they have developed in the past, as they exist today, and as they may affect society in the future under various scenarios. Science and technology have become social systems in their own right and have made possible increasing freedom, a fantastic variety of choice, and, paradoxically, the growing interdependence of all segments of world society. A new level of public awareness and concern is crucial to understanding and dealing successfully with these consequences.

**Electives—Choose three of the following:**

|          |  |
|----------|--|
| 0504-462 | Literature and Technology*   |
| 0508-440 | History of Science   |
| 0508-441 | Science and Technology Policy  |
| 0508-442 | History of American Technology                                       |
| 0508-443 | Face of the Land   |
| 0508-444 | Social Consequences of Technology                                    |
| 0508-445 | Biomedical Issues: Science and Technology Studies                    |
| 0508-446 | Makers of Modern Science   |
| 0508-447 | Special Topics: Science and Technology‡                              |
| 0508-449 | History of Women in Science and Engineering                          |
| 0508-450 | History of Chemistry   |
| 0508-451 | Cyborg Theory: (Re)Thinking the Human Experience in the 21st Century |
| 0508-452 | Gender, Science, and Technology                                      |
| 0508-500 | Science, Technology, and Society Classics                            |
| 0508-520 | Historical Perspectives on Science and Technology Seminar**          |
| 0508-530 | Seminar in Science, Technology, and the Environment**                |

|          |  |
|----------|--|
| 0508-540 | Science and Technology Policy Seminar  |
| 0509-443 | Philosophy of Science†                 |
| 0515-451 | Transfer Technology and Globalization§ |
| 0521-451 | Energy Policy                          |

\* Prerequisite: Writing (0502-227) or an equivalent course.

† Prerequisite: At least one prior course in either philosophy or one of the natural sciences.

‡ Topics may vary.

§ Prerequisite: Foundations of Sociology (0515-210) or equivalent.

\*\* Prerequisites: Any two of the history of science or technology courses approved by the department.

## Sociology and Anthropology

**Christine Kray, Concentration Adviser**  
(585) 475-4686, [cakgss@rit.edu](mailto:cakgss@rit.edu)

This concentration examines the dynamism and creative contestation of culture and social norms across the globe, as well as the constraints within which people negotiate meaningful lives. By selecting from courses on a wide range of topics—including gender and sexuality, families and marriage, ethnicity and racism, class and inequality, immigration, health and cultural conceptions of the body, urban life, war and violence, cultural images and mass media, technology and work, social movements, and globalization—students explore how people create and experience their social worlds.

**Prerequisite—Choose one of the following:**

|          |  |
|----------|--|
| 0515-210 | Foundations of Sociology (or equivalent) |
| 0510-210 | Cultural Anthropology (or equivalent)    |

**Electives—Choose three of the following:**

|          |  |
|----------|--|
| 0510-440 | Cultures in Globalization                              |
| 0510-442 | Cultures and Politics in Latin America                 |
| 0510-443 | Immigration to the U.S.                                |
| 0510-444 | Global Economy and the Grassroots                      |
| 0510-445 | Global Cities  |
| 0510-446 | Native North Americans                                 |
| 0510-447 | Anthropology of Mass Media                             |
| 0510-448 | Native Americans in Film                               |
| 0510-449 | Sustainable Development                                |
| 0510-450 | Cultural Resource Management and Historic Preservation |
| 0510-451 | Global Sexualities                                     |
| 0510-452 | Bodies and Culture                                     |
| 0510-454 | Visual Anthropology                                    |
| 0510-457 | Divided Europe   |
| 0510-459 | Cultural Images of War and Terror                      |
| 0510-460 | Genocide and Post-Conflict Justice                     |
| 0510-461 | Native American Repatriation                           |
| 0510-483 | Anthropology of Religion                               |
| 0510-484 | Islamic Culture and the Middle East                    |
| 0510-486 | Globalizing Africa                                     |
| 0510-487 | African Popular Cultures                               |
| 0510-488 | Muslim Youth Cultures                                  |
| 0510-502 | Archaeology and the Human Past                         |
| 0510-506 | Great Discoveries in Archaeology                       |
| 0510-507 | Archaeological Science                                 |
| 0510-508 | The Archaeology of Cities                              |
| 0510-509 | Survey of Metallurgy                                   |
| 0510-511 | Field Methods in Archaeology                           |
| 0510-512 | Garbage Archaeology                                    |
| 0515-406 | Qualitative Methods                                    |
| 0515-413 | Urban Planning and Policy                              |
| 0515-441 | The Changing Family                                    |
| 0515-442 | Urban Experience                                       |



|          |  |
|----------|--|
| 0515-443 | Sociology of Work                        |
| 0515-444 | Social Change                            |
| 0515-446 | Sociology of Health                      |
| 0515-447 | Women, Work, and Culture                 |
| 0515-448 | Minority Group Relations                 |
| 0515-449 | Population and Society                   |
| 0515-451 | Transfer of Technology and Globalization |
| 0515-453 | Global Exiles of War and Terror          |
| 0515-482 | African-American Culture                 |
| 0515-483 | Hispanic-American Culture                |
| 0515-485 | Diversity in the City                    |
| 0515-506 | Social Inequality                        |
| 0515-507 | Complex Organizations                    |
| 0515-509 | Social Policy                            |
| 0515-515 | Social Policy and Aging                  |
| 0515-524 | Applied Sociology                        |
| 0515-529 | Deaf Culture in America                  |
| 0515-569 | Human Sexuality                          |
| 0524-420 | Introduction to African Studies          |
| 0524-421 | African Slave Trade                      |
| 0524-422 | Histories of Globalization               |
| 0526-440 | Quantitative Research                    |
| 0526-441 | GIS Applications in UCS                  |

## Theater Arts

**Peter Ferran, Concentration Adviser**  
**(585) 475-2468, [pwfgsh@rit.edu](mailto:pwfgsh@rit.edu)**

This concentration offers students a focused study of the theatrical and dramatic arts, with courses in dramatic and theatrical literature, history, criticism, and theory. It also serves to offer students a more profound understanding of the theater arts and in a broader sense an introduction to cultural development and the communication of ideas.

**Electives—Choose three of the following:**

|          |   |
|----------|---|
| 0505-450 | Music and the Stage                     |
| 0505-453 | Theater in the United States            |
| 0505-457 | Contemporary Drama, Theater, and Media  |
| 0505-458 | Modern European Theater and Drama       |
| 0505-486 | German Theater and Drama                |
| 0505-488 | Special Topics: Theater Arts            |
| 0505-489 | Theater Production Seminar and Workshop |
| 0505-502 | Shakespeare the Dramatist               |

## Urban Studies

**Jessica Pardee, Concentration Adviser**  
**(585) 475-5244, [jwpgss@rit.edu](mailto:jwpgss@rit.edu)**

Each metropolitan area must address such perennial issues as housing, transportation, education, crime, safety, recreation, and economic development. Each must do so with recognition of its place in the wider regional, national, and global contexts as well as with sensitivity to its own defining features. The concentration helps students identify and analyze such fundamental issues and allows them to explore and assess various ways policy-makers respond to those issues.

**Prerequisite—Choose one of the following:**

|          |  |
|----------|--|
| 0515-210 | Foundations of Sociology (or equivalent) |
| 0510-210 | Cultural Anthropology (or equivalent)    |

**Electives—Choose three of the following:**

|          |   |
|----------|---|
| 0510-443 | Immigration to the U.S.                       |
| 0510-445 | Global Cities                                 |
| 0510-508 | Archaeology of Cities                         |
| 0515-442 | The Urban Experience                          |
| 0515-413 | Urban Planning and Policy                     |
| 0515-485 | Diversity in the City                         |
| 0526-443 | Community and Economic Development: Rochester |

## Women and Gender Studies

**Tina Lent, Concentration Adviser**  
**(585) 475-2460, [tnlgsh@rit.edu](mailto:tnlgsh@rit.edu)**

Women and gender studies offers students a variety of academic perspectives on the role of women in modern western civilization. The courses enable the student to examine the roles, values, and self-perceptions of women in a traditionally male-oriented society; develop a sophisticated, humanistic angle of vision from which to appreciate the many and varied accomplishments of women; and develop a mature sensitivity to the difficulties and frustrations encountered by women. Although the focus of the concentration is on the experiences of women, the concentration does not intend to be a study in separatism. Rather, it offers the possibility for integrating a new, academically disciplined appreciation of women's issues into the student's comprehension of wider problems and issues of humanity. All courses emphasize critical reading, thinking, and analysis. All require at least one substantial written assignment. Students are encouraged to relate the intellectual knowledge gained in each course to insights about their own experience and behavior.

**Electives—Choose three of the following:**

|          |   |
|----------|---|
| 0505-480 | Women and Visual Arts   |
| 0505-491 | Traumatic Images  |
| 0505-516 | Queer Looks   |
| 0510-451 | Global Sexualities  |
| 0522-400 | Foundations of Gender Studies*                                  |
| 0522-401 | American Woman: Colonies to 1848*                               |
| 0522-402 | American Woman: 1848 to Now*                                    |
| 0522-405 | Women and Science   |
| 0522-406 | Feminist Theory*  |
| 0522-407 | Seminar on Sexual Violence                                      |
| 0522-410 | Introduction to Gay, Lesbian, Bisexual, and Transgender Studies |
| 0522-415 | Domestic Violence   |
| 0522-436 | Women's Stories, Women's Films*                                 |
| 0522-439 | Queer Looks I   |
| 0522-446 | Women and Crime*  |
| 0522-447 | Women, Work, and Culture*                                       |
| 0522-449 | History of Women in Science and Engineering                     |
| 0522-450 | Gender, Science, and Technology*                                |
| 0522-451 | Global Sexualities  |
| 0522-452 | Bodies and Culture  |
| 0522-453 | Economic Role of Women  |
| 0522-454 | Hispanic Women in the World                                     |
| 0522-459 | Toni Morrison*  |
| 0522-460 | Special Topic†  |

|          |   |
|----------|---|
| 0522-480 | Women and the Visual Arts*                                  |
| 0522-481 | Women's Studies in Language and Literature*                 |
| 0522-482 | Women in Politics*  |
| 0522-483 | Psychology of Women*  |
| 0522-484 | Auto/Biography  |
| 0525-543 | Women in the Hispanic World: Politics of Identity Formation |

\* These courses may require prerequisites.

† Special Topics (0522-460) may include the following: Traumatic Images, Queer Looks II, Art of Dying, Contemporary Women's History, Prostitution and Vice, and Queering Gender.

## Writing Studies

**Dianna Winslow, Concentration Adviser**

**(585) 475-3962, [dkwgla@rit.edu](mailto:dkwgla@rit.edu)**

This concentration provides opportunities for advanced study in writing and linguistics. Courses provide opportunities for students to study language and develop strategies for effective writing across a variety of contexts. Writing processes and language awareness from academic to public forums receive close attention.

### Prerequisite:

|          |                         |
|----------|-------------------------|
| 0502-227 | Writing (or equivalent) |
|----------|-------------------------|

### Electives—Choose three of the following:

|          |                                   |
|----------|-----------------------------------|
| 0502-443 | Written Argument                  |
| 0502-444 | Technical Writing                 |
| 0502-445 | The Evolving English Language     |
| 0502-449 | Worlds of Writing                 |
| 0502-455 | Writing the Self and Others       |
| 0502-456 | Rhetoric of Science               |
| 0502-457 | Language, Variation, and Identity |
| 0502-459 | Creative Nonfiction               |
| 0502-460 | Science Writing                   |
| 0502-463 | Language and Brain                |
| 0502-560 | Special Topics in Writing         |

# Minors

[www.rit.edu/programs/minors-and-concentrations](http://www.rit.edu/programs/minors-and-concentrations)

Students may complete their upper-level liberal arts requirement by completing a liberal arts minor of their choosing or by completing a liberal arts concentration (refer to the Liberal Arts Concentrations section of this bulletin). The core liberal arts requirements remain the same regardless of whether a student elects to complete a minor or a concentration.

Minors give students an opportunity to explore a secondary field of study. They can complement a student's major, allowing another area of professional expertise, or they can be used to enhance a personal interest. Minors require the completion of **five** upper-level courses (20 quarter credit hours).

## Accounting

**Jerry Curnutt, Minor Adviser**  
(585) 475-4713, [jhcbbu@rit.edu](mailto:jhcbbu@rit.edu)

Accounting is necessary in a wide variety of careers. Students completing an accounting minor will broaden their learning experiences and professional opportunities by having more depth in operational accounting topics.

| Required Courses:  |                                      |
|--|--------------------------------------|
| 0101-301   | Financial Accounting                 |
| 0101-302   | Management Accounting                |
| Electives—Choose three of the following (at least two must be accounting electives): |                                      |
| 0101-345   | Accounting Information Systems       |
| 0101-408   | Financial Reporting and Analysis I   |
| 0101-409   | Financial Reporting and Analysis II  |
| 0101-522   | Personal and Small Business Taxation |
| 0101-523   | Advanced Taxation                    |
| 0101-554   | Seminar in Accounting                |
| 0104-220   | Personal Financial Management        |
| 0104-350   | Corporate Finance                    |
| 0110-319   | Legal Environment of Business        |

## Advertising and Public Relations

**Grant Cos, Minor Adviser**  
(585) 475-6646, [gccgpt@rit.edu](mailto:gccgpt@rit.edu)

The advertising and public relations minor provides a solid background in understanding the creation of persuasive messages in a variety of media. This minor is closed to students enrolled in the following BS programs: professional and technical communication, advertising and public relations, and journalism.

### Required Courses—Choose two of the following:

|          |                              |
|----------|------------------------------|
| 0502-444 | Technical Writing            |
| 0535-416 | Newswriting                  |
| 0535-446 | Writing the Technical Manual |
| 0535-480 | Human Communication          |
| 0535-481 | Persuasion                   |
| 0535-482 | Mass Communications          |
| 0535-483 | Small Group Communication    |
| 0535-580 | International Media          |

### Electives—Choose three of the following:

|          |                                  |
|----------|----------------------------------|
| 0535-421 | Public Relations                 |
| 0535-460 | Copywriting and Visualization    |
| 0535-461 | Principles of Advertising        |
| 0535-463 | Campaign Management and Planning |
| 0535-464 | Public Relations Writing         |

## American History

**Rebecca Edwards, Minor Adviser**  
(585) 475-2406, [rregsm@rit.edu](mailto:rregsm@rit.edu)

The American history minor emphasizes the social, cultural, and political history of the United States.

### Required Courses—Choose five of the following:

|          |  |
|----------|--|
| 0507-401 | History of American Women: Colonies to 1848            |
| 0507-402 | History of American Women: 1848 to Now                 |
| 0507-410 | Terrorism, Intelligence, and War                       |
| 0507-411 | Origins of U.S. Foreign Relations                      |
| 0507-440 | U.S. Social and Intellectual History                   |
| 0507-441 | Modern U.S. Foreign Relations                          |
| 0507-447 | U.S. Since 1945  |
| 0507-451 | History of Rochester                                   |
| 0507-462 | The Civil War and Reconstruction                       |
| 0507-463 | American Deaf History                                  |
| 0507-465 | Survey of African-American History                     |
| 0507-466 | American Slavery, American Freedom                     |
| 0507-467 | American Disability History                            |
| 0507-474 | America's National Parks                               |
| 0507-475 | Hands-on History                                       |
| 0507-492 | Selected Problems in Black History                     |
| 0507-494 | Immigration and Ethnicity                              |
| 0507-495 | The Civil Rights Movement in 20th Century U.S. History |
| 0507-497 | Biography in/as History                                |

## American Politics

**Joseph Fornieri, Minor Adviser**  
(585) 475-5889, [jrfgsm@rit.edu](mailto:jrfgsm@rit.edu)  
**Sean Sutton, Minor Adviser**  
(585) 475-4620, [sdsgsm@rit.edu](mailto:sdsgsm@rit.edu)

A minor in American politics informs students about the structure and function of public institutions and prepares them for effective participation in the American political arena.

**Electives**—Choose five of the following:

|          |  |
|----------|--|
| 0508-484 | Environmental Policy                                 |
| 0513-428 | Evolution and the Law                                |
| 0513-449 | Special Topics in Political Science                  |
| 0513-450 | State and Local Politics                             |
| 0513-451 | The Congress   |
| 0513-452 | The American Presidency                              |
| 0513-453 | American Foreign Policy                              |
| 0513-454 | Political Parties and Voting                         |
| 0513-455 | Politics and Public Policy                           |
| 0513-456 | Judicial Process                                     |
| 0513-457 | Constitutional Law                                   |
| 0513-458 | American Political Thought                           |
| 0513-460 | Constitutional Rights and Liberties                  |
| 0513-461 | Comparative Politics                                 |
| 0513-462 | Abraham Lincoln and American Democracy               |
| 0513-463 | First Amendment, Liberty, and Deliberative Democracy |
| 0513-466 | Political Leadership                                 |
| 0513-481 | Women in Politics                                    |
| 0513-485 | Politics Through Fiction                             |
| 0513-514 | Political Theory                                     |

## Applied Communication

**Grant Cos, Minor Adviser**  
(585) 475-6646, [gccgpt@rit.edu](mailto:gccgpt@rit.edu)

The applied communication minor offers a foundation in the communication skills and theories associated with professional and organizational contexts. This minor is closed to students enrolled in the following BS programs: professional and technical communication, advertising and public relations, and journalism.

**Required Courses**—Choose two of the following:

|          |                              |
|----------|------------------------------|
| 0502-444 | Technical Writing            |
| 0535-416 | News writing                 |
| 0535-446 | Writing the Technical Manual |
| 0535-480 | Human Communication          |
| 0535-481 | Persuasion                   |
| 0535-482 | Mass Communications          |
| 0535-483 | Small Group Communication    |
| 0535-580 | International Media          |

**Electives**—Choose three of the following:

|          |                                   |
|----------|-----------------------------------|
| 0502-444 | Technical Writing                 |
| 0535-411 | Health Communication              |
| 0535-415 | Organizational Communication      |
| 0535-416 | News writing                      |
| 0535-421 | Public Relations                  |
| 0535-422 | Ethics in Technical Communication |
| 0535-426 | Archival Research                 |
| 0535-483 | Small Group Communication         |
| 0535-501 | Public Speaking                   |
| 0535-502 | Speech Writing                    |
| 0535-532 | Professional Writing              |

## Applied Imaging Systems

**Nitin Sampat, Minor Adviser**  
(585) 475-2747, [nitin.sampat@rit.edu](mailto:nitin.sampat@rit.edu)

The minor in applied imaging systems further develops experiences in the business and technology of photographic imaging, primarily as it relates to image output and lab operations. The courses in this minor include investigations of various components found in imaging, the technologies that are used and the practices found in imaging systems that range from the capture of images up through and not limited in output. The topics include but are not limited to digital capture systems and professional practices, output technologies, color management, and imaging workflows.

**Required Courses:**

|          |                                    |
|----------|------------------------------------|
| 2076-411 | Imaging Systems                    |
| 2076-412 | Color Management for Photographers |
| 2076-413 | Imaging Workflows                  |

**Electives**—Choose at least two of the following:

|          |                                  |
|----------|----------------------------------|
| 2061-361 | Web Design Using Photography     |
| 2076-491 | Digital Imaging Processing       |
| 2082-317 | Website Design for Graphic Media |
| 2082-337 | Digital Asset Management         |
| 2082-401 | Digital Print Processes          |
| 2083-368 | Image Retouching and Restoration |

\* Equivalent courses may be substituted in lieu of these courses with the permission of the minor adviser.

## Applied Informatics

**Stephen Zilora, Minor Adviser**  
(585) 475-7643, [sjz@it.rit.edu](mailto:sjz@it.rit.edu)

The minor in applied informatics provides students with the skills needed to extract data from its source; shape, transform, and analyze the data; and present the results in an effective way. Many professional fields are becoming information intensive. As a result, informatics skills are an essential tool. The minor provides basic skills in programming, data access and modeling, HCI, problem solving, and is open for noncomputing majors.

**Prerequisites:**

None

**Required Courses:**

|          |  |
|----------|--|
| 4002-250 | Introduction to Informatics                |
| 4002-217 | Programming for Information Technology I   |
| 4002-218 | Programming for Information Technology II  |
| 4002-360 | Introduction to Database and Data Modeling |

**Electives**—Choose one of the following:

|          |                      |
|----------|----------------------|
| 4002-425 | HCI 1: Human Factors |
| 4002-455 | Needs Assessment     |

## Archaeological Science

**William Middleton, Minor Adviser**  
(585) 475-5756, [wdmgss@rit.edu](mailto:wdmgss@rit.edu)

Archaeological science is the application of techniques from the physical sciences to research problems in archaeology and related disciplines. Over the past six decades archaeological science has provided powerful tools for understanding the past, ranging from absolute dating to bone chemistry. It has become an established sub-field within the discipline of archaeology, which itself has grown during the same period from a discipline largely focused on

cultural history (the use of artifacts to reconstruct regional cultural sequences) and the validation of documentary history to the explanation of the processes of cultural change in the past.

|   |                                    |
|---|------------------------------------|
| <b>Required Course:</b>   |                                    |
| 0510-507  | Archaeological Science             |
| <b>Electives</b> —Choose two courses from each of the following groups: |                                    |
| Disciplinary  |                                    |
| 0510-502  | Archaeology and the Human Past     |
| 0510-506  | Great Discoveries in Archaeology   |
| 0510-508  | Archaeology of Cities              |
| 0510-511  | Field Methods in Archaeology       |
| <b>Applied/Laboratory</b>   |                                    |
| 0505-422  | Art Materials: Photography         |
| 0505-423  | Art Materials: Panel Printing      |
| 0505-438  | Conservation of Cultural Materials |
| 0510-461  | Native American Repatriation       |
| 0510-485  | Exploring Ancient Technology       |
| 0510-509  | Survey of Metallurgy               |
| 0510-512  | Garbage Archaeology                |

## Art History

**Tina Lent, Minor Adviser**  
(585) 475-2460, [tnlgsh@rit.edu](mailto:tnlgsh@rit.edu)

The art history minor combines courses from the College of Liberal Arts and the College of Imaging Arts and Sciences. It provides studio art majors with the opportunity to enhance their knowledge of art history as they refine their own work and prepares them for possible careers in academia, galleries, and museums.

|   |                          |
|---|--------------------------|
| <b>Requirements:</b>  |                          |
| The art history minor is an option available only to students enrolled in BFA programs in the College of Imaging Arts and Sciences. Three courses from each college are required. |                          |
| <b>Prerequisites:</b>   |                          |
| 2039-225  | Art and Civilization I   |
| 2039-226  | Art and Civilization II  |
| 2039-227  | Art and Civilization III |

|  |  |
|--|--|
| <b>College of Liberal Arts</b>                   |  |
| <b>Electives</b> —Choose three of the following: |  |
| 0505-421   | Introduction to Museums and Collecting               |
| 0505-422   | Art Materials: Panel Printing                        |
| 0505-423   | Art Materials: Photography                           |
| 0505-424   | Legal and Ethical Issues for Collecting Institutions |
| 0505-425   | Display and Exhibit Design                           |
| 0505-436   | Women's Stories and Films                            |
| 0505-437   | Forensic Investigation of Art                        |
| 0505-438   | Conservation of Cultural Materials                   |
| 0505-443   | Images of American Life                              |
| 0505-444   | American Painting                                    |
| 0505-445   | Issues in American Art                               |
| 0505-446   | American Film of the Studio Era                      |
| 0505-452   | Special Topics*                                      |
| 0505-467   | American Film Since the 1960s                        |
| 0505-468   | Art of India and Southeast Asia                      |
| 0505-469   | Art of China, Korea, and Japan                       |
| 0505-480   | Women and the Visual Arts                            |
| 0505-487   | Special Topics: Art of Islam†                        |
| 0505-491   | Traumatic Images                                     |
| 0505-500   | African-American Art                                 |
| 0505-504   | Memory/Memorial/Monuments                            |
| 0505-505   | Art in the Age of the New Deal                       |
| 0505-506   | Museums of Art and Design                            |

|          |                       |
|----------|-----------------------|
| 0505-507 | Landscape Transformed |
| 0505-516 | Queer Looks           |

\* Special Topics (0505-452) may include any of the following: American Architecture, Queer Looks I, Queer Looks II, Harlem Renaissance, Visual Culture, Reading Images, Traumatic Images, Art of Dying.  
† Special Topics (0505-487) may include the following: Persian/Turkish/Mughal Traditions or Art of Islam: Arabic Tradition.

|  |  |
|--|--|
| <b>College of Imaging Arts and Science</b>       |  |
| <b>Electives</b> —Choose three of the following: |  |
| 2039-300   | History of Design                                      |
| 2039-306   | Architecture, Interiors, and Furniture History I       |
| 2039-307   | Architecture, Interiors, and Furniture History II      |
| 2039-308   | Architecture, Interiors, and Furniture History III     |
| 2039-310   | History of Crafts                                      |
| 2039-315   | Pre-Columbian Art                                      |
| 2039-330   | Philosophy of Art                                      |
| 2039-335   | 15th Century Art and Architecture in Florence and Rome |
| 2039-340   | Symbols and Symbol Making                              |
| 2039-345   | 16th Century Art and Architecture in Florence and Rome |
| 2039-355   | Latin American Art                                     |
| 2039-360   | 18th and 19th Century Art                              |
| 2039-365   | 20th Century Art (1900-1950)                           |
| 2039-368   | Scandinavian Modernism                                 |
| 2039-375   | 20th Century Art Since 1950                            |
| 2039-376   | Renaissance Painting/Flanders                          |
| 2039-385   | Installation Art                                       |
| 2039-390   | Native American Art and Culture                        |
| 2039-395   | Theory and Criticism of 20th Century Art               |
| 2039-410   | The Art of Art History                                 |
| 2039-415   | Thinking About Making Art                              |
| 2039-425   | Public Art/Public Space                                |
| 2039-430   | Dada and Surrealism                                    |
| 2039-433   | What Is Postmodernism?                                 |
| 2039-435   | Art of the Last Decade                                 |
| 2039-438   | Body in Art  |
| 2039-440   | Conceptual Art   |
| 2039-450   | Pop Art and Pop Culture                                |
| 2039-452   | Art and Activism                                       |
| 2039-459   | Art of Central Italy 1250-1400                         |
| 2039-469   | Baroque Rome   |
| 2039-553   | Special Topics*  |

\* Special Topics (2039-553) may include any of the following: Gothic Art in Europe, Russian Art, Arts and Crafts Movement, Castles and Cathedrals, Global Visual Culture, Streamlining America, The Gothic Revival, Displaying Gender, The Russian Avant Garde 1850-1960, Passion for Porcelain.

## Astronomy

**Andrew Robinson, Minor Adviser**  
(585) 475-2726, [axrsps@rit.edu](mailto:axrsps@rit.edu)

Astronomy is an interdisciplinary minor offered jointly by the department of physics in the College of Science and the Chester F. Carlson Center for Imaging Science. Students will have the opportunity for additional study in astronomy in order to build a secondary area of expertise in support of their program or other areas of interest.

|                         |                        |
|-------------------------|------------------------|
| <b>Prerequisites:</b>   |                        |
| 1017-311                | University Physics I   |
| 1017-312                | University Physics II  |
| 1017-313                | University Physics III |
| 1017-314                | Modern Physics I       |
| <b>Required Course:</b> |                        |
| 1017-301                | University Astronomy*  |



**Electives**—Choose four of the following courses (at least one must come from Group A and at least one from Group B)

| Group A              |  |
|----------------------|--|
| 1017-440             | Stellar Astrophysics   |
| 1017-442             | Galactic Astrophysics  |
| 1017-443             | Extragalactic Astrophysics                                   |
| Group B              |  |
| 1017-445             | Observational Astronomy                                      |
| 1051-446             | Multi-wavelength Astronomical Imaging                        |
| 1051-528             | Design and Fabrication of an Experimental Solid State Camera |
| Remaining Electives: |  |
| 1017-539             | Astrophysics Research†                                       |
|                      | General Elective‡  |

\* Only University Physics I (1017-311) is required as a prerequisite for this course.

† A maximum of 4 credits of Astrophysics Research (1017-539) will count toward the minor.

‡ Courses offered that currently qualify as a general elective include Digital Image Processing I (1051-361), Digital Image Processing II (1051-462), and Detectors (1051-465). Other courses may be offered from time to time that qualify as electives for the astronomy minor. Please contact the minor adviser for further information.

## Business Administration

**Jerry Curnutt, Minor Adviser**  
(585) 475-4713, [jhcbbu@rit.edu](mailto:jhcbbu@rit.edu)

This minor is appropriate for undergraduate students interested in broad exposure to the world of business. Undergraduate students interested in pursuing an MBA degree may use this minor to waive certain MBA foundation courses.

| Required Courses—Choose three of the following: |  |
|---|--|
| 0101-301  | Financial Accounting                   |
| 0102-320  | Organizational Behavior                |
| 0104-220  | Personal Financial Management          |
| or  |  |
| 0104-350  | Corporate Finance                      |
| 0105-363  | Principles of Marketing                |
| 0106-401  | Operations and Supply Chain Management |
| 0110-319  | Legal Environment of Business          |
| 0113-310  | Global Business: An Introduction       |

**Electives**—Choose two electives from different Saunders College of Business discipline areas. The additional courses may come from the above list of required courses.

## Chemical Engineering Systems Analysis

**Steven Weinstein, Minor Adviser**  
(585) 475-4299, [steven.weinstein@rit.edu](mailto:steven.weinstein@rit.edu)

A minor in chemical engineering systems analysis provides students with a sophisticated understanding of the application of scientific knowledge to the solution of a vast array of practical problems in which chemistry plays a critical role. Students are taught the systems methodology that chemical engineers employ to analyze and solve real world problems involving distinct chemical components, chemical reaction, multiple phases, and mass transfer.

**Prerequisites:** There are chemistry and mathematics prerequisites for the minor.

| Chemistry—Choose one of the following*: |  |
|---|--|
| 1011-216/206                            | General and Analytical Chemistry II with Lab |
| 1011-273/277                            | Introduction to Chemical Materials with Lab  |
| 1011-212/206                            | Chemistry Principles II with Lab             |
| 1011-272/276                            | Chemistry of Water and Wastewater with Lab   |

**Mathematics**—Choose one of the following course sequences:

| Sequence 1:  |   |
|--|---|
| 1016-283   | Project-Based Calculus III or equivalent          |
| 1016-306   | Differential Equations                            |
| Sequence 2:  |   |
| 1016-232   | Calculus for Engineering Technology II            |
| 1016-304   | Differential Equations for Technology             |
| Required Courses:  |   |
| 0309-230   | Chemical Process Analysis‡                        |
| 0309-340   | Reaction Engineering I                            |
| 0309-330   | Mass Transfer Operations                          |
| 0309-381   | Chemical Engineering Systems Analysis Paper       |
| Elective Courses†: Choose at least two of the following courses: |   |
| 0304-460   | Contemporary Issues in Energy and the Environment |
| 0304-461   | Contemporary Issues in Bioengineering             |
| 0304-645   | Introduction to Biomaterials                      |
| 0304-710   | Fuel Cell Technology                              |
| 0304-756   | Aerosols in the Respiratory Tract                 |
| 0305-350   | IC Technology                                     |
| 0305-643   | Thin Film Processes                               |
| 0305-666   | Microlithography Materials and Processes          |
| 0303-520   | Engineering Economy                               |
| 0303-792   | Design for the Environment                        |
| 0301-370   | Nano-science Engineering and Technology           |
| 0608-438   | Principles of Treatment and Wastewater            |
| 0630-350   | Solid and Hazard Waste Management                 |
| 0630-352   | Industrial Wastewater Management                  |
| 0630-354   | Air Emissions Management                          |
| 1006-202   | Concepts in Environmental Science                 |
| 1006-203   | Environmental Science Field Studies               |
| 1001-340   | General Ecology                                   |
| 1001-471   | Freshwater Ecology                                |
| 1001-567   | Environmental Microbiology                        |
| 1015-520   | Environmental Chemistry                           |
| 1015-521   | Atmospheric Chemistry                             |
| 1015-522   | Aquatic Toxicology and Chemistry                  |
| 1029-301   | Introduction to Polymer Technology                |

\* Each of the listed courses has a chemistry course prerequisite.

† Other elective courses may be appropriate with minor adviser approval.

‡ The first core course in the minor, Chemical Process Analysis (0309-230), may be taken concurrently with the final course in the calculus sequence (e.g., 1016-232 or 1016-283). The remaining two core courses require Differential Equations (e.g., 1016-304, 1016-306).

## Chemistry

**L. Paul Rosenberg, Department Head**  
(585) 475-6159, [lporsch@rit.edu](mailto:lporsch@rit.edu)  
**Brenda Mastrangelo, Academic Adviser**  
(585) 475-7474 ([bkmsch@rit.edu](mailto:bkmsch@rit.edu))

Students have the opportunity to complete a minor in chemistry in order to build a secondary area of expertise in support of their program or other areas of interest.

| Prerequisites:     |   |
|--------------------|---|
| 1011-215, 216      | General and Analytical Chemistry I, II              |
| 1011-205, 206      | Chemical Principles Laboratory I, II                |
| 1011-217, 227      | General and Analytical Chemistry III and Laboratory |
| Required Courses:  |   |
| 1013-231, 232, 233 | Organic Chemistry I, II, III                        |
| 1013-235, 236, 237 | Organic Chemistry Laboratory I, II, III             |

### Elective Courses:

Students choose a minimum of three courses (12 quarter credit hours) from the list below. These credits must be in courses not required by the student's home program. At least one course must be 400-level or above.

|               |  |
|---------------|--|
| 1008-312, 319 | Analytical Chemistry: Separations and Laboratory |
| 1008-261, 265 | Quantitative Analysis I and Laboratory           |
| 1008-262, 266 | Quantitative Analysis II Laboratory              |
| 1008-311, 318 | Instrumental Analysis and Laboratory             |
| 1009-502      | Biochemistry: Conformation and Dynamics          |
| 1009-503      | Biochemistry: Metabolism                         |
| 1009-504      | Biochemistry: Nucleic Acids                      |
| 1009-505      | Biochemistry: Experimental Techniques            |
| 1014-441, 445 | Chemical Thermodynamics and Laboratory           |
| 1014-442, 446 | Quantum Chemistry and Laboratory                 |
| 1014-443, 447 | Chemical Kinetics and Laboratory                 |
| 1012-562      | Inorganic Chemistry I                            |
| 1012-563      | Inorganic Chemistry II                           |
| 1012-765      | Preparative Organic Chemistry Laboratory         |
| 1008-511, 621 | Advanced Instrumental Analysis and Laboratory    |
| 1029-501      | Organic Chemistry of Polymers                    |
| 1029-502      | Polymer Chemistry: Chains and Solutions          |
| 1029-503      | Polymer Chemistry: Properties of Bulk Materials  |
| 1029-505      | Synthesis of High Polymers Lab                   |

Other chemistry courses at the 300-level or above may be taken as part of the minor with written permission of the department chair.

## Communication and Culture

### Grant Cos, Minor Adviser

(585) 475-6646, gccgppt@rit.edu

The communication and culture minor promotes critical reflection on the requirements of a more democratic culture by giving attention to subjects such as, but not limited to, class, race, ethnicity, identity, gender, public sphere, law, and health care. This minor is closed to students enrolled in the following BS programs: professional and technical communication, advertising and public relations, and journalism.

#### Required Courses—Choose two of the following:

|          |                              |
|----------|------------------------------|
| 0502-444 | Technical Writing            |
| 0535-416 | News writing                 |
| 0535-446 | Writing the Technical Manual |
| 0535-480 | Human Communication          |
| 0535-481 | Persuasion                   |
| 0535-482 | Mass Communications          |
| 0535-483 | Small Group Communication    |
| 0535-580 | International Media          |

#### Electives—Choose three of the following:

|          |                                     |
|----------|-------------------------------------|
| 0535-410 | Computer-Mediated Communication     |
| 0535-411 | Health Communication                |
| 0535-414 | Interpersonal Communication         |
| 0535-420 | Argument and Discourse              |
| 0535-450 | Visual Communication                |
| 0535-465 | The Rhetoric of Political Campaigns |
| 0535-484 | Rhetoric of Race Relations          |
| 0535-490 | Persuasion and Social Change        |
| 0535-520 | Intercultural Communication         |

## Computer Engineering

### Andreas Savakis, Minor Adviser

(585) 475-2987, andreas.savakis@rit.edu

### Roy Melton, Minor Adviser

(585) 475-7698, rwmeec@rit.edu

Computer engineering is an interdisciplinary field that involves the study and application of software, hardware, and systems. This minor exposes students to the fundamentals of computer engineering and provides a foundation for the exploration of specialized subjects in computer engineering upper-level courses and professional electives.

#### Prerequisites:

4003-232 Computer Science II or equivalent

Plus one of the following courses:

|          |                          |
|----------|--------------------------|
| 1016-281 | Project-Based Calculus I |
| 1016-272 | Calculus B               |
| 1016-265 | Discrete Math I          |

#### Required Courses:

|          |                                 |
|----------|---------------------------------|
| 0306-341 | Introduction to Digital Systems |
| 0306-250 | Assembly Language               |
| 0306-550 | Computer Organization           |

#### Electives—Choose two of the following:

|          |  |
|----------|--|
| 0306-351 | Hardware Description Languages             |
| 0306-381 | Applied Programming                        |
| 0306-451 | Digital Signal Processing                  |
| 0306-551 | Computer Architecture                      |
| 0306-553 | Digital Control Systems                    |
| 0306-560 | Interface and Digital Electronics          |
| 0306-561 | Digital Systems Design                     |
| 0306-710 | Network Modeling Design and Simulation     |
| 0306-615 | Wireless Networks                          |
| 0306-620 | Design Automation of Digital Systems       |
| 0306-722 | Advanced Computer Architecture             |
| 0306-624 | High-Performance Architectures             |
| 0306-630 | Introduction to VLSI Design                |
| 0306-631 | Advanced VLSI Design                       |
| 0306-632 | Low-Power Design                           |
| 0306-658 | Fault-Tolerant Systems                     |
| 0306-663 | Embedded and Real-Time Systems             |
| 0306-664 | Modeling of Embedded and Real-Time Systems |
| 0306-672 | Special Topics in Computer Engineering     |
| 0306-675 | Robotics                                   |
| 0306-676 | Robust Control                             |
| 0306-684 | Digital Image Processing Algorithms        |
| 0306-685 | Computer Vision                            |
| 0306-694 | Data and Computer Communications           |

## Computer Science

### Henry A. Etlinger, Minor Adviser

(585) 475-2097, hae@cs.rit.edu

The computer science minor establishes a foundation in basic programming fundamentals with an emphasis on modern programming practices. The minor provides students with an opportunity to expand their programming foundation by delving more deeply into programming or by sampling selected theoretical or applied areas within computer science. The minor adviser will evaluate a student's prior computing background and advise the student regarding initial placement and course prerequisites. A student must complete at least 20 quarter credit hours of approved computer

science courses from the department of computer science. At least 12 quarter credit hours must be courses not required by a student's home department.

**Prerequisites:** None (However, the 4003-241, 242, 243 sequence is a prerequisite to 4003-334, a course that is either a direct or indirect prerequisite for many computer science courses.)

**Electives**—Choose five of the following:

|          |  |
|----------|--|
| 4003-241 | Problem-Based Introduction to Computer Science       |
| 4003-242 | Data Structures for Problem Solving                  |
| 4003-243 | Object-Oriented Programming                          |
| 4003-334 | Computer Science 4                                   |
| 4003-345 | Computer Organization                                |
| 4003-380 | Introduction to Computer Science Theory              |
| 4003-389 | Honors Introduction to Computer Science Theory       |
| 4003-406 | Systems Programming I                                |
| 4003-420 | Data Communications and Networks I                   |
| 4003-440 | Operating Systems I                                  |
| 4003-450 | Programming Language Concepts                        |
| 4003-451 | XML: Architecture, Tools, and Techniques             |
| 4003-455 | Artificial Intelligence                              |
| 4003-457 | Introduction to Computer Vision                      |
| 4003-471 | Privacy and Security                                 |
| 4003-481 | Complexity and Computability                         |
| 4003-482 | Cryptography   |
| 4003-485 | Database Concepts                                    |
| 4003-486 | Database System Implementation                       |
| 4003-506 | Systems Programming 2                                |
| 4003-515 | Analysis of Algorithms                               |
| 4003-520 | Computer Architecture                                |
| 4003-531 | Parallel Computing 1                                 |
| 4003-532 | Parallel Computing 2                                 |
| 4003-541 | Data Communications and Networks 2                   |
| 4003-542 | Data Communications and Networks 3                   |
| 4003-543 | Ad Hoc Networks                                      |
| 4003-544 | Operating Systems 2                                  |
| 4003-552 | Artificial Intelligence for Interactive Environments |
| 4003-553 | Biologically Inspired Intelligence Systems           |
| 4003-558 | Advanced Computer Vision                             |
| 4003-561 | Programming Skills                                   |
| 4003-570 | Computer Graphics 1                                  |
| 4003-571 | Computer Graphics 2                                  |
| 4003-572 | Computer Animation Algorithms and Techniques         |
| 4003-573 | Procedural Shading                                   |
| 4003-580 | Language Processors                                  |
| 4003-590 | Seminar in Computer Science                          |

## Construction Management

**John Morelli, Minor Adviser**

**(585) 475-7213, john.morelli@rit.edu**

The construction management minor offers courses covering building construction, cost estimating, construction project management, and construction safety. Students may choose electives to individualize the curriculum to match their interests.

**Required Courses:**

|          |                                   |
|----------|-----------------------------------|
| 0608-422 | Elements of Building Construction |
| 0608-509 | Construction of Cost Estimating   |
| 0608-560 | Construction Project Management   |
| 0608-544 | Contracts and Specs               |

**Electives**—Choose three of the following:

|          |                        |
|----------|------------------------|
| 0608-500 | Labor Relations        |
| 0608-460 | Construction Equipment |

|          |   |
|----------|---|
| 0608-444 | Mechanical and Electrical Equipment for Buildings |
| 0633-504 | Construction Safety                               |

## Creative Writing

**Linda Reinfeld, Minor Adviser**

**(585) 475-4622, lmrsla@rit.edu**

This minor provides theoretical and historical background and models to assist students as they develop their own creative writing abilities.

|   |                                 |
|---|---------------------------------|
| <b>Prerequisite:</b>                              |                                 |
| 0502-227  | Writing (or equivalent)         |
| <b>Electives</b> — Choose three of the following: |                                 |
| 0502-451  | Creative Writing: Poetry        |
| 0502-452  | Creative Writing: Prose Fiction |
| 0502-453  | Advanced Creative Writing*      |
| 0502-459  | Creative Nonfiction             |
| 0502-461  | Editing the Literary Magazine   |
| Choose two of the following:                      |                                 |
| 0504-441  | Art of Poetry                   |
| 0504-442  | The Short Story                 |
| 0504-443  | The Novel                       |
| 0504-460  | Modern Poetry                   |
| 0504-482  | Science Fiction                 |

\* Students in the creative writing minor have the option to take one of the creative writing courses and then take Advanced Creative Writing Workshop (0502-453) twice in order to complete an extended writing project.

## Criminal Justice

**Laverne McQuiller-Williams, Minor Adviser**

**(585) 475-2935, limgcj@rit.edu**

The minor in criminal justice provides a foundation in the formal process of social control through the criminal justice system, including how behavior is defined as criminal, how crime is measured, and how society responds to crime through law enforcement, courts, and corrections. This minor is closed to students enrolled in the criminal justice program.

|   |   |
|---|---|
| <b>Required Course:</b>                         |   |
| 0501-400  | Criminology                                     |
| <b>Electives</b> —Choose four of the following: |   |
| 0501-405  | Major Issues in the Criminal Justice System*    |
| 0501-406  | Technology in Criminal Justice                  |
| 0501-415  | Domestic Violence                               |
| 0501-440  | Juvenile Justice                                |
| 0501-441  | Corrections                                     |
| 0501-443  | Law Enforcement in Society                      |
| 0501-444  | Concepts in Criminal Law                        |
| 0501-445  | Minority Groups and the Criminal Justice System |
| 0501-446  | Women and Crime                                 |
| 0501-456  | Courts  |
| 0501-507  | Computer Crime                                  |
| 0501-511  | Alternatives to Incarceration                   |
| 0501-517  | Comparative Criminal Justice Systems            |
| 0501-518  | Crime and Justice in the Community              |
| 0501-522  | Victimless Crime                                |
| 0501-523  | Crime and Violence                              |

\* Topics may vary

## Database Design and Development

**Edward Holden, Minor Adviser**

**(585) 475-5361, edward.holden@rit.edu**

Database design and development provides students with the advanced knowledge and skills necessary to design, develop, and manage database systems within a broad range of domains. Data is an important component of any organization and the management and storage of that data is critical. Computing professionals with specialized knowledge of database systems are needed to ensure that data is being stored in an efficient, accessible, yet secure manner that meets the needs of the organization.

### Prerequisites:

*Students should have course work in discrete mathematics and have completed a three-course sequence in programming before beginning courses for this minor.*

### Required Course—Choose one of the following:

|          |  |
|----------|--|
| 4002-360 | Introduction to Database and Data Modeling |
| 4003-385 | Concepts of Data Management                |

### Electives—Complete all four of the following:

|          |  |
|----------|--|
| 4002-461 | Fundamentals of Data Modeling                        |
| 4002-484 | Fundamentals of Database Client/Server Connectivity  |
| 4002-485 | Fundamentals of DBMS Architecture and Implementation |
| 4002-489 | Data Warehousing                                     |

## Deaf Cultural Studies

**J. Matt Searls, Minor Adviser**

**(585) 475-5707, jmsdhd@rit.edu**

The Deaf cultural studies minor offers students the opportunity to engage in a focused program of study in the emerging field of Deaf cultural studies. Students may pursue the minor regardless of their level of proficiency in American Sign Language (ASL), and any ASL or Deaf culture course, except for ASL I, can be applied toward the minor. ASL I, or equivalent skills, is a prerequisite for individuals who are not qualified to enroll in ASL II to begin the sequence. Students must have completed ASL III, be fluent in ASL, and/or have approval of the instructor to enroll in American Sign Language Literature or Linguistics of American Sign Language, both of which are taught in ASL.

### Prerequisite

|          |                                    |
|----------|------------------------------------|
| 0525-390 | Beginning American Sign Language I |
|----------|------------------------------------|

### Required Course—Choose one of the following:

|          |                                       |
|----------|---------------------------------------|
| 0525-391 | American Sign Language II             |
| 0525-385 | Linguistics of American Sign Language |
| 0525-386 | American Sign Language Literature     |

### Electives—Choose four of the following:

|          |                                     |
|----------|-------------------------------------|
| 0525-392 | American Sign Language III          |
| 0504-545 | Deaf American Literature            |
| 0505-479 | Special Topics: Deaf Art and Cinema |
| 0507-463 | American Deaf History               |
| 0507-476 | Diversity in the Deaf Community     |
| 0507-477 | Oppression in Lives of Deaf People  |
| 0515-529 | Deaf Culture in America             |

## Digital Business

**Jerry Curnutt, Minor Adviser**

**(585) 475-4713, jhcbbu@rit.edu**

Digital business represents the impact of new technologies on business practice, products, and services. Today, technologies such as

social computing and mobile devices are dramatically changing the behaviors and characteristics that lead individuals and organizations to success. Students completing a digital business minor will enhance their program of study with a focus on these new technologies and applications in business.

### Required Courses

|          |                         |
|----------|-------------------------|
| 0112-312 | Building a Web Business |
|----------|-------------------------|

### Electives—Choose four of the following:

|          |                                    |
|----------|------------------------------------|
| 0102-415 | Digital Entrepreneurship           |
| 0104-359 | Financing New Ventures             |
| 0102-530 | Managing Innovation and Technology |
| 0105-363 | Principles of Marketing            |
| 0105-440 | Internet Marketing                 |
| 0112-340 | Database Management Systems        |
| 01xx-xxx | Digital Business Seminars          |

## Economics

**Michael Vernarelli, Minor Adviser**

**(585) 475-2455, mjvgss@rit.edu**

**Bharat Bhole, Minor Adviser**

**(585) 475-7954, bharat.bhole@rit.edu**

An economics minor provides a systematic analysis of economic issues through the study of the allocation of scarce resources into production and the distribution of production among the members of society. This minor is closed to students enrolled in the economics program.

### Prerequisite—Choose one of the following:

|          |                              |
|----------|------------------------------|
| 0511-211 | Principles of Microeconomics |
| 0511-325 | Honors Economics             |

### Required Course:

|          |                              |
|----------|------------------------------|
| 0511-402 | Principles of Macroeconomics |
|----------|------------------------------|

### Electives

*Choose three of the following theory and policy courses:*

|          |  |
|----------|--|
| 0511-440 | Urban Economics                              |
| 0511-441 | Economics of Human Resources                 |
| 0511-442 | Contemporary International Economic Problems |
| 0511-443 | Current American Macroeconomic Problems      |
| 0511-444 | Public Finance                               |
| 0511-445 | Survey of Economic Thought*                  |
| 0511-448 | Economics of Less Developed Countries*       |
| 0511-449 | Comparative Economic Systems*                |
| 0511-450 | Benefit-Cost Analysis                        |
| 0511-452 | Monetary Analysis and Policy*                |
| 0511-453 | Intermediate Microeconomic Theory            |
| 0511-454 | International Trade and Finance*             |
| 0511-455 | Intermediate Macroeconomic Theory*           |
| 0511-456 | Industrial Organization                      |
| 0511-459 | Managerial Economics                         |
| 0511-461 | Seminar in Applied Economics                 |
| 0511-466 | Health Care Economics                        |
| 0511-467 | Economics of Native America                  |
| 0511-480 | Economic Role of Women                       |
| 0511-481 | Environmental Economics                      |
| 0511-484 | Natural Resource Economics                   |
| 0511-571 | Honors Seminar in Economics                  |

*Choose one of the following quantitative courses:*

|          |  |
|----------|--|
| 0511-457 | Applied Econometrics†                  |
| 0511-458 | Economic Forecasting‡                  |
| 0511-460 | Mathematical Methods: Economics§       |
| 0511-464 | Game Theory with Economic Applications |

\* Prerequisite: Principles of Macroeconomics (0511-402)

† Prerequisites: Calculus for Management Science (1016-226) and Data Analysis I (1016-319)

‡ Prerequisites: Principles of Macroeconomics (0511-402), Calculus for Management Science (1016-226), and Data Analysis I (1016-319)

§ Prerequisite: Calculus for Management Science (1016-226)

## Electrical Engineering

**Sohail Dianat, Minor Adviser**

**(585) 475-6740, sadeee@rit.edu**

A minor in electrical engineering exposes students to the fundamentals of electrical engineering and provides a foundation to explore specialized material in electrical engineering professional electives or graduate courses.

|   |  |
|---|--|
| <b>Prerequisites:</b>   |  |
| 1016-283  | Calculus III                             |
| 1017-313  | University Physics III                   |
| <i>Additional prerequisites, depending on choice of electrical engineering elective courses, may include:</i> |  |
| 0301-344  | Matlab and C for Electrical Engineers    |
| 1016-328  | Engineering Mathematics                  |
| 1016-345  | Probability and Statistics for Engineers |
| 1016-420  | Complex Variables                        |
| 1016-351  | Probability and Statistics               |
| <b>Required Courses:</b>  |  |
| 0301-381  | Circuits I                               |
| 0301-382  | Circuits II                              |
| <b>Electives</b> —Choose three of the following:  |  |
| 0301-240  | Digital Systems                          |
| 0301-365  | Microcomputer Systems                    |
| 0301-347  | Computer Architecture                    |
| 0301-453  | Linear Systems I                         |
| 0301-473  | EM Fields I                              |
| 0301-474  | EM Fields II                             |
| 0301-481  | Electronics I                            |
| 0301-482  | Electronics II                           |
| 0301-514  | Control Systems                          |
| 0301-531  | Mechatronics                             |
| 0301-534  | Communications                           |
| 0301-545  | Digital Electronics                      |
| 0301-554  | Linear Systems II                        |

Note: All 600-level electrical engineering courses must meet prerequisites.

## Engineering Management

**Robin Borkholder, Minor Adviser**

**(585) 475-2990, rrbeie@rit.edu**

The minor in engineering management integrates technological and managerial expertise while focusing on the management of the engineering and technological enterprise. Engineering management is concerned with understanding the technology involved in an engineering project and the management process through which the technology is applied. This minor supports the dual role of the engineering manager as both a technologist and a manager. The student gains a background in areas commonly needed in this role, such as engineering management, engineering economics, and accounting, in addition to industrial engineering expertise.

|                       |  |
|-----------------------|--|
| <b>Prerequisites:</b> |  |
| 1016-314              | Engineering Statistics (or equivalent) |
| 1016-318              | Boundary Value Problems and Matrices   |
| <b>or</b>             |  |
| 1016-328              | Engineering Math                       |

|   |   |
|---|---|
| <b>or</b>                                       |   |
| 1016-331  | Matrix Algebra (or equivalent)              |
| <b>Required Courses:</b>                        |   |
| 0303-520/620                                    | Engineering Economy                         |
| 0303-481  | Engineering Management                      |
| 0101-494  | Cost Accounting for Technical Organizations |
| <b>Electives*</b> —Choose two of the following: |   |
| 0303-401  | Operations Research                         |
| 0303-402  | Production Control                          |
| 0303-422  | Systems and Facilities Planning             |
| 0303-503  | Systems Simulation                          |
| 0303-510  | Applied Statistical Quality Control         |
| 0303-626  | Contemporary Production Systems             |
| 0303-703  | Supply Chain Management                     |
| 0303-704  | Logistics Management                        |
| 0303-734  | Systems Safety Engineering                  |
| 0303-758  | Design of Experiments                       |
| 0303-765  | Databases for Information Systems           |
| 0303-766  | Manufacturing Systems                       |
| 0303-770  | Design of Experiments                       |
| 0303-784  | Systems Project Management                  |

\* Other elective courses may be appropriate with minor adviser approval.

## Entrepreneurship

**Jerry Curnutt, Minor Adviser**

**(585) 475-4713, jhcbbu@rit.edu**

The entrepreneurship minor allows students to learn business skills that can be applied to any professional field. Students will gain insight into the customer requirements and financial implications involved in taking a product or service from idea to implementation.

|   |  |
|---|--|
| <b>Required Course:</b>   |  |
| 0102-490  | Entrepreneurship   |
| <i>Choose one of the following entrepreneurial experiences:</i> |  |
| 0102-545  | Applied Entrepreneurship and Commercialization             |
| 0102-547  | Field Experience in Business Consulting                    |
| <i>Other approved field experience:</i>                         |  |
|   | Kate Gleason College of Engineering Senior Design Capstone |
|   | RIT Student Incubator                                      |
|   | Faculty-approved field experiences                         |
| <b>Electives</b> —Choose three of the following:                |  |
| 0101-301  | Financial Accounting                                       |
| 0101-302  | Management Accounting                                      |
| 0101-494  | Cost Accounting in Technical Organizations                 |
| 0102-250  | World of Business  |
| 0102-415  | Digital Entrepreneurship                                   |
| 0102-530  | Managing Innovation and Technology                         |
| 0104-359  | Financing New Ventures                                     |
| 0105-363  | Principles of Marketing                                    |
| 0105-440  | Internet Marketing   |
| 0609-410  | Patents and Trade Secrets                                  |
| 0610-517  | Product Ideation and Concept Solution                      |
| 0610-518  | Development and Design of New Products                     |
| 0610-519  | Product Realization  |
| 2035-410  | Consumer Product Design II                                 |
| 2035-506  | Design Collaboration                                       |
| 2035-512  | Advanced Product Design                                    |
| 2035-527  | Package Design   |
| 4002-455  | Technology Transfer  |
| 4002-460  | Needs Assessment   |



## Environmental Modeling

**Karl Korfmacher, Minor Adviser**  
(585) 475-5554, [kfksc@rit.edu](mailto:kfksc@rit.edu)

The environmental modeling minor introduces students to the process of spatial modeling as part of a toolset for investigating environmental issues and to provide opportunities to apply these skills through advanced course work. The required core courses are designed to give students a solid foundation of environmental issues and concepts. Central to this minor are the development of geographic information systems (GIS) and remote sensing techniques, problem-solving skills, and an understanding of the multiple stakeholder perspectives often involved with environmental issues. Students interested in pursuing employment or an advanced degree with an environmental focus will find this minor beneficial.

### Required Courses:

|          |                                    |
|----------|------------------------------------|
| 0508-460 | Environment and Society            |
| 1006-202 | Concepts of Environmental Science  |
| 1006-203 | Environmental Science Field Skills |

### Electives—Choose two of the following:

|          |  |
|----------|--|
| 1006-350 | Application of Geographic Information Systems    |
| 1006-450 | Raster Application of GIS                        |
| 1006-750 | Ecological and Environmental Applications of GIS |
| 1051-420 | Environmental Applications of Remote Sensing     |

## Environmental Science

**Karl Korfmacher, Minor Adviser**  
(585) 475-5554, [kfksc@rit.edu](mailto:kfksc@rit.edu)

The environmental science minor introduces students to the interdisciplinary nature of environmental issues and concepts and provides them with opportunities to further investigate many of these issues through advanced course work. Central to this minor are the development of field, analytical, and problem-solving skills and an understanding of the multiple stakeholder perspectives often involved with environmental issues. Students interested in becoming “citizen scientists” or pursuing employment or an advanced degree with an environmental focus will find this minor beneficial.

### Prerequisites:

|          |  |
|----------|--|
| 1001-251 | Introduction to Biology I*             |
| 1001-252 | Introduction to Biology II*            |
| 1001-253 | Introduction to Biology III*           |
| 1011-215 | General and Analytical Chemistry I†    |
| 1011-205 | Chemistry Principles I Lab†            |
| 1011-216 | General and Analytical Chemistry II†   |
| 1011-206 | Chemistry Principles II Lab†           |
| 1011-202 | Fundamentals of Organic Chemistry†     |
| 1011-207 | Introduction to Organic Chemistry Lab† |

### Required Courses:

|          |                                    |
|----------|------------------------------------|
| 0508-460 | Environment and Society            |
| 1006-202 | Concepts of Environmental Science  |
| 1006-203 | Environmental Science Field Skills |

### Electives—Choose two of the following:

|          |                                       |
|----------|---------------------------------------|
| 1001-340 | General Ecology                       |
| 1001-375 | Galapagos: Evolution and Biogeography |
| 1001-420 | Plant Ecology                         |
| 1001-471 | Freshwater Ecology                    |
| 1001-475 | Conservation Biology                  |
| 1015-520 | Environmental Chemistry               |

\* Required for advanced biology courses

† Required for advanced chemistry courses

## Environmental Studies

**Richard Shearman, Minor Adviser**  
(585) 475-6604, [rlsgsh@rit.edu](mailto:rlsgsh@rit.edu)

This minor provides students with opportunities for the in-depth analysis of global and regional environmental issues, their causes, and their potential solutions. The minor features an emphasis on sustainability and holistic thinking. In particular, a required 500-level seminar will serve as a capstone experience, helping students to integrate knowledge from several disciplinary perspectives, including socio-cultural, historical, political, economic, ethical, scientific, and/or technological factors. Having completed the minor, students will possess a high level of environmental literacy, an important component of many professional fields within the sciences, engineering, law, journalism, and public affairs.

### Required Course—Choose one of the following†:

|          |   |
|----------|---|
| 0508-570 | Environmental Studies Seminar                       |
| 0508-530 | Seminar in Science, Technology, and the Environment |

### Electives—Choose four of the following:

|          |   |
|----------|---|
| 0507-464 | Environmental Disasters in American History         |
| 0508-443 | Face of the Land                                    |
| 0508-460 | Environment and Society                             |
| 0508-463 | Great Lakes I                                       |
| 0508-464 | Great Lakes II*                                     |
| 0508-482 | Energy and the Environment                          |
| 0508-483 | Environmental Values                                |
| 0508-484 | Environmental Policy                                |
| 0508-487 | Special Topics: Environmental Studies               |
| 0508-488 | History of Ecology and Environmentalism             |
| 0508-489 | History of the Environmental Sciences               |
| 0508-490 | Biodiversity and Society                            |
| 0508-491 | Sustainable Communities                             |
| 0508-500 | Science, Technology, and Society Classics           |
| 0508-520 | Historical Perspectives on Science and Technology** |
| 0508-540 | Science and Technology Policy Seminar††             |
| 0509-453 | Environmental Philosophy                            |
| 0510-449 | Sustainable Development                             |
| 0511-481 | Environmental Economics‡                            |
| 0511-484 | Natural Resource Economics‡                         |
| 0515-449 | Population and Society§                             |
| 0521-451 | Energy Policy                                       |

\* Great Lakes I (0508-463) is a prerequisite for this course.

† These courses can be taken only if the student has already taken at least two courses from the electives list. Typically these courses would be the last courses taken in the minor sequence.

‡ Principles of Microeconomics (0511-211) is a prerequisite for these courses.

§ Cultural Anthropology (0510-210), Foundations of Sociology (0515-210), or an equivalent is a prerequisite for this course.

\*\* Prerequisite: any two of the History of Science or Technology courses approved by the department.

†† Prerequisite: 0508-441, 0508-484, or 0521-400

## European History

**Rebecca Edwards, Minor Adviser**  
(585) 475-2406, [rregsm@rit.edu](mailto:rregsm@rit.edu)

The European history minor emphasizes salient characteristics of Western civilization from the French Revolution to the contemporary era.

### Required Courses—Choose five of the following:

|          |   |
|----------|---|
| 0507-443 | European Social and Intellectual History Since 1600 |
| 0507-444 | Strategy and Diplomacy: Europe                      |
| 0507-446 | Europe Since 1945 and the European Union            |
| 0507-448 | History of Russia to 1917                           |

|          |                               |
|----------|-------------------------------|
| 0507-449 | History of Russia Since 1917  |
| 0507-450 | Stalin, Mussolini, and Hitler |
| 0507-473 | European Deaf History         |
| 0507-488 | Modern Germany                |

## Exercise Science

**William Brewer, Minor Adviser**  
(585) 475-2476, [wsbscl@rit.edu](mailto:wsbscl@rit.edu)

The exercise science minor includes foundation sequences in anatomy and physiology upon which the basic principles of exercise physiology, fitness assessment, and the preparation of fitness programs are built. The minor prepares students to sit for professional certification examinations for work in the fitness industry, provides understanding of sports physiology for those interested in sports equipment design and technology, and complements and enhances personal fitness.

|  |   |
|--|---|
| <b>Prerequisites:</b>                          |   |
| 1001-201                                       | General Biology I                             |
| 1001-202                                       | General Biology II                            |
| 1001-203                                       | General Biology III                           |
| <b>or</b>                                      |   |
| 1001-251                                       | Introduction to Biology I                     |
| 1001-252                                       | Introduction to Biology II                    |
| 1001-253                                       | Introduction to Biology III                   |
| <b>Required Courses:</b>                       |   |
| 1026-350                                       | Anatomy and Physiology I                      |
| 1026-360                                       | Anatomy and Physiology II                     |
| 1026-305                                       | Sports Physiology and Life Fitness            |
| 1026-306                                       | Fitness Prescription and Programming          |
| <b>Electives</b> —Choose one of the following: |   |
| 1026-307                                       | Exercise Prescription for Special Populations |
| 0620-300                                       | Sports Nutrition                              |

## Finance

**Jerry Curnutt, Minor Adviser**  
(585) 475-4713, [jhcbbu@rit.edu](mailto:jhcbbu@rit.edu)

The finance minor helps students create value in any type of business organization. The minor will broaden a student's learning experiences and professional opportunities by focusing on corporate finance and investment topics in more depth.

|  |   |
|--|---|
| <b>Required Courses:</b>                         |   |
| 0101-301   | Financial Accounting                      |
| 0104-350   | Corporate Finance                         |
| <b>Electives</b> —Choose three of the following: |   |
| 0104-220   | Personal Financial Management             |
| 0104-359   | Financing New Ventures                    |
| 0104-361   | Financial Institutions and Markets        |
| 0104-452   | Managing Corporate Assets and Liabilities |
| 0104-453   | Intermediate Investments                  |
| 0104-460   | Financial Analysis and Modeling           |
| 0104-504   | Finance in a Global Environment           |
| 0104-505   | Advanced Corporate Financial Planning     |
| 0104-520   | Introduction to Options and Futures       |
| 0104-554   | Seminar in Finance                        |

## Game Design

**Andrew Phelps, Minor Adviser**  
(585) 475-6758, [andy@mail.rit.edu](mailto:andy@mail.rit.edu)

Game design allows students to explore the construction and design decisions faced by professionals in the games industry, and invites them to take a critical view of current games and their underlying principles. Students will create their own works at a level that is sophisticated enough to explore design.

|  |   |
|--|---|
| <b>Required Courses:</b>                       |   |
| 4080-346                                       | 2D Animation for Interactive Media              |
| 4080-230                                       | Introduction to Programming for New Media       |
| 4080-231                                       | Programming II for New Media                    |
| 4080-380                                       | Fundamentals of Game Design and Development I   |
| <b>Electives</b> —Choose one of the following: |   |
| 4080-381                                       | Fundamentals of Game Design and Development II  |
| 4080-434                                       | Programming for Digital Media                   |
| 4080-347                                       | 3D Modeling and Animation for Interactive Media |

## Game Design and Development

**Andrew Phelps, Minor Adviser**  
(585) 475-6758, [andy@mail.rit.edu](mailto:andy@mail.rit.edu)

The game design and development minor allows students to explore the construction and design decisions faced by professionals in the gaming industry, and invites them to take a critical view of current games and their underlying principles.

|                          |   |
|--------------------------|---|
| <b>Required Courses:</b> |   |
| 4080-330                 | Interactive Digital Media   |
| 4080-380                 | Fundamentals of Game Design and Development I                     |
| 4080-381                 | Fundamentals of Game Design and Development II                    |
| 4080-387                 | Data Structures and Algorithms for Game Design and Development I  |
| 4080-487                 | Data Structures and Algorithms for Game Design and Development II |

## Historical Perspectives on Science and Technology

**Christine Keiner, Minor Adviser**  
(585) 475-5104, [cmkgsh@rit.edu](mailto:cmkgsh@rit.edu)

This minor exposes students to a rigorous analysis of the history of science and technology and emphasizes history as a distinctive way of thinking. Students augment their degree program with a series of courses analyzing the historical development, impact, and significance of science and technology. Having completed the minor, students entering such professional fields as science, engineering, law, journalism, and public affairs will be well-prepared to deal with cross-disciplinary, historical questions involving the social, cultural, and environmental contexts of modern science and technology.

|   |   |
|---|---|
| <b>Required Course*</b> —Choose one of the following: |   |
| 0508-520  | Historical Perspectives on Science and Technology Seminar |
| 0508-530  | Seminar in Science, Technology and the Environment        |
| <b>Electives</b> —Choose four of the following:       |   |
| 0508-440  | History of Science  |
| 0508-442  | History of American Technology                            |
| 0508-446  | Makers of Modern Science                                  |
| 0508-449  | History of Women in Science and Engineering               |

|          |   |
|----------|---|
| 0508-450 | History of Chemistry                    |
| 0508-488 | History of Ecology and Environmentalism |
| 0508-489 | History of Environmental Sciences       |

\* Please check course prerequisites.

## Human Resource Management

**Jon Horne, Minor Adviser**

**(585) 475-5848, [jjharm@rit.edu](mailto:jjharm@rit.edu)**

**Carol Whitlock, Minor Adviser**

**(585) 475-2353, [cbwism@rit.edu](mailto:cbwism@rit.edu)**

The human resource management minor provides students with the ability to market themselves as knowledgeable human resource managers in preparation for future leadership or management roles. The curriculum covers human resource management, international human resource management, understanding corporate culture, development of a learning organization, compensation and benefits, training design and delivery, employment law, and interview techniques.

### Required Courses:

Choose one of the following:

|          |                                    |
|----------|------------------------------------|
| 0619-480 | Human Resource Management          |
| 0113-400 | Managing in the Global Environment |
| 0626-427 | Employment/Labor Law               |

Choose one of the following:

|          |                           |
|----------|---------------------------|
| 0697-442 | The Learning Organization |
| 0102-320 | Organizational Behavior   |

**Electives**—Choose two of the following:

|          |   |
|----------|---|
| 0626-554 | International Human Resource Management |
| 0626-234 | Interview Techniques                    |
| 0626-390 | Compensation and Benefits               |
| 0626-428 | Training Design and Delivery            |
| 0681-410 | Introduction to Project Management      |
| 0697-431 | Understanding Corporate Culture         |

## Imaging Science

**Carl Salvaggio, Minor Adviser**

**(585) 475-6380, [salvaggio@cits.rit.edu](mailto:salvaggio@cits.rit.edu)**

Students have the opportunity for additional study in imaging science in order to build a secondary area of expertise in support of their program or other areas of interest.

### Prerequisites:

|          |   |
|----------|---|
| 1017-311 | University Physics I                        |
| 1017-312 | University Physics II                       |
| 1017-313 | University Physics III                      |
| 1017-314 | Modern Physics (if taking 1051-313)         |
| 1016-281 | Project-Based Calculus I                    |
| 1016-282 | Project-Based Calculus II                   |
| 1016-283 | Project-Based Calculus III                  |
| 4002-208 | Introduction to Programming (or equivalent) |

### Required Courses:

*Non-imaging science component (up to 8 credits)*

|          |                        |
|----------|------------------------|
| 1016-314 | Engineering Statistics |
| 1016-331 | Linear Algebra I       |
| 1016-351 | Probability            |
| 1016-352 | Applied Statistics     |
| 1016-432 | Linear Algebra II      |

*Imaging science component (at least 12 credits)*

|          |                                 |
|----------|---------------------------------|
| 1051-300 | Introduction to Imaging Systems |
|----------|---------------------------------|

|          |  |
|----------|--|
| 1051-303 | Geometrical Optics                     |
| 1017-455 | Physical Optics                        |
| 1051-313 | Interactions Between Light and Matter  |
| 1051-320 | Linear Mathematics for Imaging         |
| 1051-350 | Vision and Psychophysics               |
| 1051-370 | Radiometry                             |
| 1051-402 | Color Science                          |
| 1051-361 | Digital Image Processing I             |
| 1051-462 | Digital Image Processing II            |
| 1051-463 | Digital Image Processing III           |
| 1051-465 | Detectors                              |
| 1051-528 | Design and Fabrication of a CCD Camera |
| 1051-730 | Magnetic Resonance Imaging             |

## Industrial Engineering

**Robin Borkholder, Minor Adviser**

**(585) 475-2990, [rrbeie@rit.edu](mailto:rrbeie@rit.edu)**

A minor in industrial engineering focuses on the design, improvement, and installation of integrated systems of people, material, equipment, and energy—utilizing skills in statistics, ergonomics, operations research, and manufacturing. This minor provides students with a background in areas commonly needed in this field.

### Prerequisites:

|          |  |
|----------|--|
| 1016-314 | Engineering Statistics (or equivalent) |
| 1016-318 | Boundary Value Problems and Matrices   |

**or**

|          |                  |
|----------|------------------|
| 1016-328 | Engineering Math |
|----------|------------------|

**or**

|          |                                |
|----------|--------------------------------|
| 1016-331 | Matrix Algebra (or equivalent) |
|----------|--------------------------------|

**Required Courses**—Select at least three of the following:

|               |                                     |
|---------------|-------------------------------------|
| 0303-401      | Operations Research                 |
| 0303-402      | Production Control                  |
| 0303-415      | Ergonomics                          |
| 0303-422      | Systems and Facilities Planning     |
| 0303-503      | Simulation                          |
| 0303-510      | Applied Statistical Quality Control |
| 0303-520, 620 | Engineering Economy                 |

**Electives\***—Choose two of the following:

|          |   |
|----------|---|
| 0303-481 | Engineering Management                      |
| 0303-516 | Human Factors                               |
| 0303-526 | Design and Analysis of Production Systems   |
| 0303-630 | Advanced Systems Integration                |
| 0303-703 | Supply Chain Management                     |
| 0303-704 | Logistics Management                        |
| 0303-711 | Advanced Simulation Techniques              |
| 0303-727 | Advanced Manufacturing Engineering          |
| 0303-731 | Advanced Topics in Ergonomics/Human Factors |
| 0303-732 | Biomechanics                                |
| 0303-734 | Systems Safety Engineering                  |
| 0303-765 | Databases for Information Systems           |
| 0303-766 | Manufacturing Systems                       |
| 0303-770 | Design of Experiments                       |

\* Other elective courses may be appropriate with minor adviser approval.

## Industrial Environmental Management

**John Morelli, Minor Adviser**

**(585) 475-7213, [john.morelli@rit.edu](mailto:john.morelli@rit.edu)**

The industrial environmental management minor broadens the learning experiences and professional opportunities of students

in technical and business disciplines who have an interest in the management of wastewater, hazardous materials, and solids. Air emission management also is covered.

|  |  |
|--|--|
| <b>Prerequisites:</b>                          |  |
| 1011-211                                       | Chemical Principles I                  |
| 1011-205                                       | Chemical Principles I Lab              |
| <b>Required Courses:</b>                       |  |
| 0630-201                                       | Principles of Environmental Management |
| 0630-352                                       | Industrial Wastewater Management       |
| 0630-350                                       | Solid and Hazardous Waste Management   |
| 0630-354                                       | Air Emissions Management               |
| <b>Electives</b> —Choose one of the following: |  |
| 0630-480                                       | Environmental Regulatory Law           |
| 0630-505                                       | Resource Reduction                     |
| 0630-515                                       | Corporate Environmental Management     |

## International Business

**Jerry Curnutt, Minor Adviser**  
(585) 475-4713, [jhcbbu@rit.edu](mailto:jhcbbu@rit.edu)

Students minoring in international business benefit from learning the global view of worldwide markets and the role of business in these markets.

|   |                                    |
|---|------------------------------------|
| <b>Required Course:</b>                         |                                    |
| 0113-310  | Global Business: An Introduction   |
| <b>Electives</b> —Choose four of the following: |                                    |
| 0104-504  | Finance in a Global Environment    |
| 0105-363  | Principles of Marketing            |
| 0113-400  | Managing in the Global Environment |
| 0113-430  | Global Business: Special Issues    |
| 0113-450  | Marketing in a Global Environment  |
| 0113-500  | Strategy in the Global Environment |

## International Relations

**Edward Kannyo, Minor Adviser**  
(585) 475-4658, [exkgsm@rit.edu](mailto:exkgsm@rit.edu)  
**Dongryul Kim, Minor Adviser**  
(585) 475-4194, [dxkgsm@rit.edu](mailto:dxkgsm@rit.edu)

The international relations minor exposes students to the fundamental concepts and approaches of international relations. Issues of conflict, cooperation, continuity, and change are explained through a variety of subjects and cases.

|                       |   |
|-----------------------|---|
| <b>Prerequisite*:</b> |   |
| 0513-214              | Introduction to International Relations |

\* The prerequisite may be waived if student elects to take Comparative Politics (0513-461) as one of the five courses of the minor.

|   |                                      |
|---|--------------------------------------|
| <b>Electives</b> —Choose five of the following: |                                      |
| 0507-442  | Contemporary Middle East             |
| 0507-444  | Strategy and Diplomacy: Europe       |
| 0507-488  | Modern Germany                       |
| 0513-427  | Evolutionary International Relations |
| 0513-441  | Politics in China                    |
| 0513-443  | Politics of Russia                   |
| 0513-446  | Politics in Developing Countries     |
| 0513-447  | Human Rights and Global Perspectives |
| 0513-449  | Special Topics in Political Science  |
| 0513-453  | American Foreign Policy              |
| 0513-461  | Comparative Politics                 |
| 0513-484  | Government and Politics of Africa    |

|          |                                       |
|----------|---------------------------------------|
| 0513-486 | Comparative Politics in Latin America |
| 0513-487 | International Law and Organization    |
| 0513-488 | War and the State                     |
| 0513-489 | Terrorism and Political Violence      |
| 0513-490 | International Political Economy       |
| 0513-491 | Politics of the Middle East           |
| 0513-492 | Religion and International Politics   |
| 0513-493 | Global Politics and the Environment   |
| 0513-494 | Comparative Public Policy             |
| 0513-496 | Government and Politics in East Asia  |

## Journalism

**Grant Cos, Minor Adviser**  
(585) 475-6646, [gccgpt@rit.edu](mailto:gccgpt@rit.edu)

The journalism minor provides students with a foundation in the professional study and practice of journalism. It provides a broad perspective that includes an introduction to U.S. forms of mediated communication; historical, legal, and ethical issues of specific concern to journalism; and learning and practice in writing in a journalistic style. This minor is closed to students enrolled in the journalism program.

|   |                             |
|---|-----------------------------|
| <b>Required course:</b>                         |                             |
| 0535-482  | Mass Communications         |
| <b>Electives</b> —Choose four of the following: |                             |
| 0535-405  | Information Gathering       |
| 0535-416  | News writing                |
| 0535-417  | News writing II             |
| 0535-470  | Law and Ethics of the Press |
| 0535-472  | News Editing                |
| 0535-475  | eJournalism                 |
| 0535-532  | Professional Writing        |

## Legal Studies

**Joseph Fornieri, Minor Adviser**  
(585) 475-5889, [jrfqsm@rit.edu](mailto:jrfqsm@rit.edu)  
**Laverne McQuiller-Williams, Minor Adviser**  
(585) 475-2935, [llmgcj@rit.edu](mailto:llmgcj@rit.edu)

The minor in legal studies is for students interested in the study of law and legal institutions and in the relationship of law to other aspects of society and culture. The law extends throughout contemporary political, social, and economic systems, playing an important role in shaping the conduct of life for both individuals and institutions. It is important for students to understand the forces that shape law, the ways laws have been used and understood by a variety of people in differing historical circumstances, and the consequences of law for contemporary life. Political, sociological, historical, and philosophical approaches to legal phenomena are included in the course of study. Recognizing the critical role that law plays in societies, the minor in legal studies is designed to guide students to courses that will deepen and expand their understanding of law as practiced, especially its influence on social and economic institutions.

|  |                          |
|--|--------------------------|
| <b>Required Course:</b>                                      |                          |
| 0513-464   | Law and Society          |
| <b>Electives</b> —Choose two courses from each group         |                          |
| <i>Group A: Theoretical and Historical Approaches to Law</i> |                          |
| 0501-444   | Concepts in Criminal Law |

|   |  |
|---|--|
| 0501-522                                      | Victimless Crime                                       |
| 0507-446                                      | American Slavery, American Freedom                     |
| 0507-467                                      | Disabilities in American History                       |
| 0507-495                                      | The Civil Rights Movement in 20th Century U.S. History |
| 0509-446                                      | Philosophy of Law                                      |
| 0513-457                                      | Constitutional Law                                     |
| 0513-463                                      | First Amendment, Liberty, and Deliberative Democracy   |
| 0513-514                                      | Political Theory                                       |
| 0515-509                                      | Social Policy  |
| 0535-448                                      | Rhetoric of Free Speech                                |
| <i>Group B: Operations and Impacts of Law</i> |  |
| 0501-402                                      | Crime, Justice, and Social Diversity                   |
| 0501-405                                      | Major Issues in the Criminal Justice System*           |
| 0501-409                                      | Legal Rights of the Offender                           |
| 0501-456                                      | Courts   |
| 0501-506                                      | Evidence   |
| 0501-527                                      | Seminar in Law   |
| 0508-484                                      | Environmental Policy                                   |
| 0513-447                                      | Human Rights and Global Perspectives                   |
| 0513-456                                      | Judicial Process                                       |
| 0513-460                                      | Constitutional Rights and Liberties                    |
| 0513-465                                      | Modern Constitutionalism, Equality, and Liberty        |
| 0513-487                                      | International Law and Organizations                    |

\* Major Issues (0501-405) may include any of the following topics: Fundamentals of Legal Research I, Cyberlaw, Issues in Criminal Prosecution, or Federal Crime and Justice.

## Literary and Cultural Studies

**Elena Sommers, Minor Adviser**  
**(585) 475-4417, ersgla@rit.edu**

The English department offers both traditional and contemporary approaches to the study of literary and nonliterary texts including, but not limited to, imaginative fiction, nonfiction, poetry, visual culture, and new media. This minor allows students to pursue a course of study specifically tailored to individual interests and needs. Those who select this minor will work closely with a faculty adviser to design a five- to six-course grouping based on interests in particular authors, themes, histories, genres, geographies, media, and/or interpretive and analytical methodologies. All of the courses are writing intensive and offer opportunities for sustained writing and communication practice.

### Prerequisites:

0504-227 Writing (or equivalent)

### Electives—Choose one of the following:

0504-440 Drama/Theater  
0504-441 The Art of Poetry  
0504-442 The Short Story  
0504-443 The Novel

### Electives—Choose four of the following:

0504-425 Great Authors  
0504-435 Global Literature  
0504-436 The Graphic Novel  
0504-444 Film as Literature  
0504-447 Special Topics  
0504-448 Biographical Literature  
0504-460 Modern Poetry  
0504-462 Literature and Technology  
0504-464 Mythology and Folklore  
0504-465 Viking Myth and Saga  
0504-469 American Literature  
0504-476 Immigrant Voices in American Literature

|          |  |
|----------|--|
| 0504-479 | The Latino Experience in Literature        |
| 0504-480 | Women's Studies in Language and Literature |
| 0504-482 | Science Fiction                            |
| 0504-545 | Deaf American Literature                   |

## Management

**Jerry Curnutt, Minor Adviser**  
**(585) 475-4713, jhcbbu@rit.edu**

The management minor provides a solid introduction to the world of general business management.

### Required Course:

0102-320 Organizational Behavior

### Electives—Choose four of the following:

0102-250 The World of Business\*  
0102-415 Digital Entrepreneurship  
0102-438 Business Ethics  
0102-455 Human Resources Management  
0102-460 Leadership in Organizations  
0102-490 Entrepreneurship  
0102-530 Managing Innovation and Technology  
0102-547 Field Experience in Business Consulting  
0102-554 Seminar in Management  
0113-400 Managing in the Global Environment

\* If selected, this course must be taken as one of the first two courses of the minor.

## Management Information Systems

**Jerry Curnutt, Minor Adviser**  
**(585) 475-4713, jhcbbu@rit.edu**

The management information systems minor is designed for students who wish to learn about computer-based information systems and how they are used in today's businesses. The minor enhances the career options of students in any major and increases their capacity to analyze, design, and manage business processes related to their major.

### Required Course:

0112-370 Systems Analysis and Design

### Electives—Choose four MIS courses (0112-300 or above)

## Marketing

**Jerry Curnutt, Minor Adviser**  
**(585) 475-4713, jhcbbu@rit.edu**

Marketing, sales, and customer-oriented aspects of the marketing minor will broaden the student's learning experiences and professional opportunities by creating a second focus in marketing.

### Required Course:

0105-363 Principles of Marketing

### Electives—Choose four of the following:

0105-440 Internet Marketing  
0105-505 Buyer Behavior  
0105-550 Marketing Management  
0105-551 Marketing Metrics and Research  
0105-559 Professional Selling  
0105-560 Advertising and Promotion Management  
0113-450 Marketing in the Global Environment



## Mass Media Communication

**Grant Cos, Minor Adviser**

**(585) 475-6646, gccgppt@rit.edu**

The mass media communication minor provides an overview of the history, development, economics, and regulation of the mass media in the U.S. This minor is closed to students enrolled in the following BS programs: professional and technical communication, advertising and public relations, and journalism.

**Required Courses**—Choose two of the following:

|          |                              |
|----------|------------------------------|
| 0502-444 | Technical Writing            |
| 0535-416 | Newsriting                   |
| 0535-446 | Writing the Technical Manual |
| 0535-480 | Human Communication          |
| 0535-481 | Persuasion                   |
| 0535-482 | Mass Communications          |
| 0535-483 | Small Group Communication    |
| 0535-580 | International Media          |

**Electives**—Choose three of the following:

|          |                                    |
|----------|------------------------------------|
| 0535-416 | Newsriting                         |
| 0535-421 | Public Relations                   |
| 0535-450 | Visual Communication               |
| 0535-452 | Uses and Effects of Mass Media     |
| 0535-470 | Law and Ethics of the Press        |
| 0535-471 | History of Journalism              |
| 0535-482 | Mass Communications                |
| 0535-534 | Communication and Documentary Film |
| 0535-550 | Film and Society                   |

## Mathematics

**James Halavin, Minor Adviser**

**(585) 475-5140, jjhsma@rit.edu**

The mathematics minor provides an opportunity for students to deepen their technical background and gain further appreciation for modern mathematical sciences.

**Prerequisites:**

|          |  |
|----------|--|
| 1016-281 | Project-Based Calculus I                   |
| 1016-282 | Project-Based Calculus II                  |
| 1016-283 | Project-Based Calculus III (or equivalent) |

Plus at least one of the following:

|          |                        |
|----------|------------------------|
| 1016-305 | Multivariable Calculus |
| 1016-265 | Discrete Mathematics I |

**Required Courses:**

To receive a minor in mathematics, students complete five courses from the list below with a minimum GPA of 2.0. At least three of these courses must be different from courses that are required by the student's home program, and at least one of the five courses must be from Group II. All required courses must be taken in the School of Mathematical Sciences.

Choose five of the following, with at least one from Group II:

**Group I**

|          |                                      |
|----------|--------------------------------------|
| 1016-306 | Differential Equations               |
| 1016-318 | Matrices and Boundary Value Problems |
| 1016-328 | Engineering Mathematics              |
| 1016-331 | Linear Algebra I                     |
| 1016-351 | Probability                          |
| 1016-365 | Combinatorial Mathematics            |
| 1016-366 | Discrete Mathematics II              |
| 1016-407 | Dynamical Systems                    |
| 1016-410 | Vector Calculus                      |
| 1016-420 | Complex Variables                    |

|          |                            |
|----------|----------------------------|
| 1016-451 | Mathematical Statistics I  |
| 1016-452 | Mathematical Statistics II |
| 1016-461 | Mathematical Modeling      |
| 1016-465 | Linear Optimization        |
| 1016-466 | Advanced Optimization      |
| 1016-565 | Game Theory                |
| 1016-5xx | Choices through advising   |

**Group II**

|          |                          |
|----------|--------------------------|
| 1016-411 | Real Variables I         |
| 1016-412 | Real Variables II        |
| 1016-432 | Linear Algebra II        |
| 1016-467 | Graph Theory             |
| 1016-485 | Number Theory            |
| 1016-511 | Numerical Analysis       |
| 1016-512 | Numerical Linear Algebra |
| 1016-531 | Abstract Algebra I       |
| 1016-532 | Abstract Algebra II      |

## Mechanical Engineering

**Alan Nye, Minor Adviser**

**(585) 475-6121, ahneme@rit.edu**

Mechanical engineering is perhaps the most comprehensive of the engineering disciplines. The mechanical engineer's interests encompass the design of automotive systems, aerospace systems, bioengineering devices, and energy-related technologies. A minor in mechanical engineering exposes students to the core foundations of the discipline and is intended to help nonmajors explore high-technology careers and communicate effectively with engineers on project teams.

**Prerequisites:**

|          |                           |
|----------|---------------------------|
| 1016-282 | Project-Based Calculus II |
|----------|---------------------------|

**or**

|          |                       |
|----------|-----------------------|
| 1016-273 | Calculus C            |
| 1017-312 | University Physics II |

**Required Courses:**

|          |                        |
|----------|------------------------|
| 0304-336 | Statics                |
| 0304-347 | Mechanics of Materials |
| 0304-413 | Thermodynamics         |
| 0304-415 | Fluid Mechanics        |

**Electives**—Choose one of the following, or any 600-level mechanical engineering technical elective (must meet prerequisites):

|          |                            |
|----------|----------------------------|
| 0304-344 | Materials Science          |
| 0304-359 | Dynamics                   |
| 0304-437 | Design of Machine Elements |
| 0304-514 | Heat Transfer              |

## Medical Informatics

**Nicolas Thireos, Minor Adviser**

**(585) 475-6511, natvkm@rit.edu**

The field of health information technology, or medical informatics, is beginning a period of rapid growth fueled by the federal government's vision for universal adoption of electronic health records. As a result, a large number of jobs will be created in this field over the next decade. The availability of health data in electronic form will serve as the foundation for new and innovative IT applications. This minor will provide students with the opportunity to enhance and combine their knowledge of computing with knowledge of the medical field.

| Required Courses: |   |
|-------------------|---|
| 4006-345          | Medical Informatics Seminar                 |
| 1026-301          | Medical Terminology                         |
| 4006-240          | Introduction to Medical Informatics         |
| 4006-310          | Developing Medical Applications*            |
| 4002-360          | Introduction to Database and Data Modeling* |
| 4006-410          | The Electronic Health Record†               |

\* A two-course programming sequence is a required prerequisite to these courses.

† Prerequisite: Introduction to Medical Informatics (4006-240).

## Microelectronics and Nanofabrication

**Michael Jackson, Minor Adviser**  
(585) 475-2828, [majemc@rit.edu](mailto:majemc@rit.edu)

This minor is designed to provide basic knowledge of microelectronics and nanofabrication to non-microelectronic engineering students from math and statistics, science, and other engineering disciplines. It is intended for students interested in career opportunities in microelectronics and nanotechnology that may involve working in the semiconductor industry. This program also prepares students to pursue graduate studies in microelectronics, microsystems engineering, novel semiconductor applications, and nanotechnology.

| Prerequisites:                          |  |
|---|--|
| 1016-281, 282                           | Calculus I, II                                 |
| 1017-311                                | University Physics I                           |
| 1011-208                                | College Chemistry                              |
| Required Courses:                       |  |
| 0305-221                                | Introduction to Micro/Nanolithography          |
| 0305-350                                | IC Technology                                  |
| 0305-643                                | Thin Film Processes                            |
| Electives—Choose two of the following:† |  |
| 0305-564, 574                           | Microlithography Systems, Lab*                 |
| 0305-632                                | Silicon Process Integration                    |
| 0305-650                                | CMOS Processing                                |
| 0305-666, 676                           | Microlithography, Materials and Processes, Lab |
| 0305-704                                | Semiconductor Process and Device Modeling      |
| 0305-707                                | Nanoscale CMOS and Beyond*                     |
| 0305-731                                | Microelectronics Manufacturing I               |
| 0305-732                                | Microelectronics Manufacturing II              |
| 0305-830                                | Metrology for Yield and Failure Analysis       |
| 0305-870                                | Microelectromechanical Systems                 |

\* These electives are suitable for students with appropriate prerequisites from their major program.

† See minor adviser for additional elective options.

## Military Studies and Leadership

**Lt. Col. Mark A. Avery, Minor Adviser**  
(585) 475-5198, [maaaair@rit.edu](mailto:maaaair@rit.edu)

**Lt. Col. Lynn Lubiak, Minor Adviser**  
(585) 475-5545, [lalarm@rit.edu](mailto:lalarm@rit.edu)

The minor in military studies and leadership provides students with the opportunity to learn about military officer training and its mission to develop leaders for tomorrow's armed forces. Courses promote leadership and management that can be employed in any career field, along with courses analyzing the military's role in national security affairs and foreign policy.

| Required Courses:  |  |
|--|--|
| Group 1—Choose any combination from Group 1 to earn a minimum of 3 credit hours. |  |
| 0650-210   | The Air Force Today I                                |
| 0650-211   | The Air Force Today II                               |
| 0650-212   | The Air Force Today III                              |
| 0640-201   | Introduction to Military Science (2)                 |
| 0640-202   | Introduction to Military Leadership (2)              |
| 0640-203   | Introduction to Tactical Leadership (2)              |
| Group 2—Choose any combination from Group 2 to earn a minimum of 3 credit hours. |  |
| 0519-201   | History of Airpower I                                |
| 0519-202   | History of Airpower II                               |
| 0519-203   | History of Airpower III                              |
| 0640-301   | Military Geography (2)                               |
| 0640-302   | Psychology and Leadership (2)                        |
| 0640-303   | The Military and American Society (2)                |
| Group 3—Choose any combination from Group 3 to earn a minimum of 8 credit hours. |  |
| 0102-310   | Air Force Management and Leadership I                |
| 0102-311   | Air Force Management and Leadership II               |
| 0640-401   | Military Tactics (3)                                 |
| 0640-402   | Military Communications (3)                          |
| 0640-403   | Military Operations (3)                              |
| Group 4—Choose any combination from Group 4 to earn a minimum of 3 credit hours. |  |
| 0513-401   | National Security Forces I                           |
| 0640-501   | Army Training System (3)                             |
| 0640-502   | Military Administration and Logistics Management (3) |
| 0640-503   | Military Ethics (3)                                  |
| Electives—Choose any of the above courses to earn a minimum of 3 credit hours.   |  |

## Modern Language

This minor provides two full years of modern language instruction to prepare students for living and working within an intercultural society both at home and abroad. Students may choose a modern language minor in Arabic, Chinese, French, German, Italian, Japanese, Russian, or Spanish. Students must take five consecutive language courses beyond the introductory prerequisite language course.

Students with some proficiency in the language must take the placement test in order to determine the appropriate level course.

### Arabic

**Diane Forbes, Minor Adviser**  
(585) 475-6765, [djfgsl@rit.edu](mailto:djfgsl@rit.edu)

| Prerequisite:                                  |                         |
|--|-------------------------|
| 0525-400                                       | Beginning Arabic I      |
| Required Courses—Choose five of the following: |                         |
| 0525-401                                       | Beginning Arabic II     |
| 0525-402                                       | Beginning Arabic III    |
| 0525-403                                       | Intermediate Arabic I   |
| 0525-404                                       | Intermediate Arabic II  |
| 0525-405                                       | Intermediate Arabic III |
| 0525-406                                       | Advanced Arabic I       |
| 0525-407                                       | Advanced Arabic II      |
| 0525-408                                       | Advanced Arabic III     |

## Chinese

**Hiroko Yamashita, Minor Adviser**  
**(585) 475-6074, hxysgl@rit.edu**

| Prerequisite:                                  |                          |
|--|--------------------------|
| 0525-420                                       | Beginning Chinese I      |
| Required Courses—Choose five of the following: |                          |
| 0525-421                                       | Beginning Chinese II     |
| 0525-422                                       | Beginning Chinese III    |
| 0525-423                                       | Intermediate Chinese I   |
| 0525-424                                       | Intermediate Chinese II  |
| 0525-425                                       | Intermediate Chinese III |
| 0525-426                                       | Advanced Chinese I       |
| 0525-427                                       | Advanced Chinese II      |
| 0525-428                                       | Advanced Chinese III     |

## French

**Philippe Chavasse, Minor Adviser**  
**(585) 475-3158, pxcgsl@rit.edu**

| Prerequisite:                                  |                         |
|--|-------------------------|
| 0525-440                                       | Beginning French I      |
| Required Courses—Choose five of the following: |                         |
| 0525-441                                       | Beginning French II     |
| 0525-442                                       | Beginning French III    |
| 0525-443                                       | Intermediate French I   |
| 0525-444                                       | Intermediate French II  |
| 0525-445                                       | Intermediate French III |
| 0525-446                                       | Advanced French I       |
| 0525-447                                       | Advanced French II      |
| 0525-448                                       | Advanced French III     |

## German

**Wilma Wierenga, Minor Adviser**  
**(585) 475-6829, wvngsl@rit.edu**

| Prerequisite:                                  |                         |
|--|-------------------------|
| 0525-460                                       | Beginning German I      |
| Required Courses—Choose five of the following: |                         |
| 0525-461                                       | Beginning German II     |
| 0525-462                                       | Beginning German III    |
| 0525-463                                       | Intermediate German I   |
| 0525-464                                       | Intermediate German II  |
| 0525-465                                       | Intermediate German III |
| 0525-466                                       | Advanced German I       |
| 0525-467                                       | Advanced German II      |
| 0525-468                                       | Advanced German III     |

## Italian

**Elisabetta D'Amanda, Minor Adviser**  
**(585) 475-6522, exdgla@rit.edu**

| Prerequisite:                                  |                          |
|--|--------------------------|
| 0525-500                                       | Beginning Italian I      |
| Required Courses—Choose five of the following: |                          |
| 0525-501                                       | Beginning Italian II     |
| 0525-502                                       | Beginning Italian III    |
| 0525-503                                       | Intermediate Italian I   |
| 0525-504                                       | Intermediate Italian II  |
| 0525-505                                       | Intermediate Italian III |
| 0525-506                                       | Advanced Italian I       |
| 0525-507                                       | Advanced Italian II      |
| 0525-508                                       | Advanced Italian III     |

## Japanese

**Yukiko Maru Leary, Minor Adviser**  
**(585) 475-4558, yxmngsl@rit.edu**

| Prerequisite:                                  |                           |
|--|---------------------------|
| 0525-480                                       | Beginning Japanese I      |
| Required Courses—Choose five of the following: |                           |
| 0525-481                                       | Beginning Japanese II     |
| 0525-482                                       | Beginning Japanese III    |
| 0525-483                                       | Intermediate Japanese I   |
| 0525-484                                       | Intermediate Japanese II  |
| 0525-485                                       | Intermediate Japanese III |
| 0525-486                                       | Advanced Japanese I       |
| 0525-487                                       | Advanced Japanese II      |
| 0525-488                                       | Advanced Japanese III     |

## Russian

**Diane Forbes, Minor Adviser**  
**(585) 475-6765, djfgsl@rit.edu**

All students beginning the study of Russian must see the minor adviser for placement screening. This concentration is not open to native speakers of Russian.

| Prerequisite:                                  |                          |
|--|--------------------------|
| 0525-540                                       | Beginning Russian I      |
| Required Courses—Choose five of the following: |                          |
| 0525-541                                       | Beginning Russian II     |
| 0525-542                                       | Beginning Russian III    |
| 0525-543                                       | Intermediate Russian I   |
| 0525-544                                       | Intermediate Russian II  |
| 0525-545                                       | Intermediate Russian III |
| 0525-546                                       | Advanced Russian I       |
| 0525-547                                       | Advanced Russian II      |
| 0525-548                                       | Advanced Russian III     |

## Spanish

**Diane Forbes, Minor Adviser**  
**(585) 475-6765, djfgsl@rit.edu**

Students with some proficiency must see the minor adviser for placement screening. This concentration is not open to fluent native speakers of Spanish.

| Prerequisite:                                  |                          |
|--|--------------------------|
| 0525-560                                       | Beginning Spanish I      |
| Required Courses—Choose five of the following: |                          |
| 0525-561                                       | Beginning Spanish II     |
| 0525-562                                       | Beginning Spanish III    |
| 0525-563                                       | Intermediate Spanish I   |
| 0525-564                                       | Intermediate Spanish II  |
| 0525-565                                       | Intermediate Spanish III |
| 0525-566                                       | Advanced Spanish I       |
| 0525-567                                       | Advanced Spanish II      |
| 0525-568                                       | Advanced Spanish III     |

## Modern Language and Culture

The modern language and culture minor consists of five courses: three language courses beyond Beginning Level I and two culture courses. The minor provides beginning and some intermediate level study of a modern language and appropriate courses in the culture of the nations where that language is most often used. The goal of this minor is to introduce students to the language, customs, and cultural aspects (e.g., history, art, literature, politics, anthropology, and music) of one particular country or area. Students will become aware of the relationship between language and culture and of the differences between their own language and culture and those of the country they choose to study.

### Arabic

**Diane Forbes, Minor Adviser**  
(585) 475-6765, [djfgsl@rit.edu](mailto:djfgsl@rit.edu)

Students with some proficiency must see the minor adviser and take the placement test to determine the appropriate level course. This minor is not open to fluent native speakers of Arabic.

|  |   |
|--|---|
| <b>Prerequisite:</b>   |   |
| 0525-400   | Beginning Arabic I                              |
| <b>Required Courses</b> —A sequence of three from the following: |   |
| 0525-401   | Beginning Arabic II                             |
| 0525-402   | Beginning Arabic III                            |
| 0525-403   | Intermediate Arabic I                           |
| 0525-404   | Intermediate Arabic II                          |
| 0525-405   | Intermediate Arabic III                         |
| 0525-406   | Advanced Arabic I                               |
| 0525-407   | Advanced Arabic II                              |
| 0525-408   | Advanced Arabic III                             |
| <b>Electives</b> —Choose two of the following culture courses:   |   |
| 0505-487   | Art of Islam: The Arabic Tradition              |
| 0505-487   | Art of Islam: Persian/Turkish/Mughal Traditions |
| 0507-442   | Contemporary Middle East                        |
| 0510-484   | Islamic Culture/Middle East                     |

### Chinese

**Hiroko Yamashita, Minor Adviser**  
(585) 475-6074, [hxygsl@rit.edu](mailto:hxygsl@rit.edu)

|  |                                      |
|--|--------------------------------------|
| <b>Prerequisite:</b>   |                                      |
| 0525-420   | Beginning Chinese I                  |
| <b>Required Courses</b> —A sequence of three from the following: |                                      |
| 0525-421   | Beginning Chinese II                 |
| 0525-422   | Beginning Chinese III                |
| 0525-423   | Intermediate Chinese I               |
| 0525-424   | Intermediate Chinese II              |
| 0525-425   | Intermediate Chinese III             |
| 0525-426   | Advanced Chinese I                   |
| 0525-427   | Advanced Chinese II                  |
| 0525-428   | Advanced Chinese III                 |
| <b>Electives</b> —Choose two of the following culture courses:   |                                      |
| 0525-439   | Special Topics: Chinese              |
| 0505-469   | Art of China, Korea, and Japan       |
| 0507-485   | Foundations of Asian Civilization    |
| 0507-486   | 20th Century China and Japan         |
| 0507-487   | Communist China                      |
| 0513-441   | Politics in China                    |
| 0513-496   | Government and Politics in East Asia |

### German

**Wilma Wierenga, Minor Adviser**  
(585) 475-6829, [wwgsl@rit.edu](mailto:wwgsl@rit.edu)

|  |  |
|--|--|
| <b>Prerequisite:</b>   |  |
| 0525-460   | Beginning German I                                 |
| <b>Required Courses</b> —A sequence of three from the following: |  |
| 0525-461   | Beginning German II                                |
| 0525-462   | Beginning German III                               |
| 0525-463   | Intermediate German I                              |
| 0525-464   | Intermediate German II                             |
| 0525-465   | Intermediate German III                            |
| 0525-466   | Advanced German I                                  |
| 0525-467   | Advanced German II                                 |
| 0525-468   | Advanced German III                                |
| <b>Electives</b> —Choose two of the following culture courses:   |  |
| 0525-477   | Contemporary German Culture*                       |
| 0525-479   | Special Topics: Modern German Culture Through Film |
| 0505-459   | Era of Haydn and Mozart                            |
| 0505-465   | Special Topics: Mozart's Operas                    |
| 0505-482   | Beethoven  |
| 0505-483   | Bach and the Baroque                               |
| 0505-484   | Romanticism in Music                               |
| 0505-486   | German Theater and Drama                           |
| 0507-488   | Modern Germany                                     |

\* Contemporary German Culture (0525-477) is offered alternating summers in Marburg, Germany.

### Italian

**Elisabetta D'Amanda, Minor Adviser**  
(585) 475-6522, [exdgla@rit.edu](mailto:exdgla@rit.edu)

|  |  |
|--|--|
| <b>Prerequisite:</b>   |  |
| 0525-500   | Beginning Italian I                                    |
| <b>Required Courses</b> —A sequence of three from the following: |  |
| 0525-501   | Beginning Italian II                                   |
| 0525-502   | Beginning Italian III                                  |
| 0525-503   | Intermediate Italian I                                 |
| 0525-504   | Intermediate Italian II                                |
| 0525-505   | Intermediate Italian III                               |
| 0525-506   | Advanced Italian I                                     |
| 0525-507   | Advanced Italian II                                    |
| 0525-508   | Advanced Italian III                                   |
| <b>Electives</b> —Choose two of the following culture courses:   |  |
| 0525-519   | Contemporary Italian Culture*                          |
| 0505-433   | 15th Century Art and Architecture of Florence and Rome |
| 0504-434   | 16th Century Art and Architecture of Florence and Rome |

\* Contemporary Italian Culture (0525-519) is offered each summer in Italy.

### Japanese

**Yukiko Maru Leary, Minor Adviser**  
(585) 475-4558, [yxmngsl@rit.edu](mailto:yxmngsl@rit.edu)

|  |                          |
|--|--------------------------|
| <b>Prerequisite:</b>   |                          |
| 0525-480   | Beginning Japanese I     |
| <b>Required Courses</b> —A sequence of three from the following: |                          |
| 0525-481   | Beginning Japanese II    |
| 0525-482   | Beginning Japanese III   |
| 0525-483   | Intermediate Japanese I  |
| 0525-484   | Intermediate Japanese II |

|  |                                      |
|--|--------------------------------------|
| 0525-485   | Intermediate Japanese III            |
| 0525-486   | Advanced Japanese I                  |
| 0525-487   | Advanced Japanese II                 |
| 0525-488   | Advanced Japanese III                |
| <b>Electives</b> —Choose two of the following culture courses: |                                      |
| 0525-495   | Japanese Culture in Print            |
| 0525-496   | Structures of Japanese Language      |
| 0525-497   | Languages in Japanese Society        |
| 0505-469   | Art of China, Korea, and Japan       |
| 0507-468   | The U.S. and Japan                   |
| 0507-485   | Foundations of Asian Civilization    |
| 0507-486   | 20th Century China and Japan         |
| 0507-489   | Japan in the Modern World            |
| 0513-496   | Government and Politics in East Asia |

## Russian

**Diane Forbes, Minor Adviser**  
**(585) 475-6765, djfgsl@rit.edu**

Students with some proficiency must see the minor adviser and take the placement test to determine the appropriate level course. This minor is not open to fluent native speakers of Russian.

|  |  |
|--|--|
| <b>Prerequisite:</b>   |  |
| 0525-540   | Beginning Russian I                        |
| <b>Required Courses</b> —A sequence of three from the following: |  |
| 0525-541   | Beginning Russian II                       |
| 0525-542   | Beginning Russian III                      |
| 0525-543   | Intermediate Russian I                     |
| 0525-544   | Intermediate Russian II                    |
| 0525-545   | Intermediate Russian III                   |
| 0525-546   | Advanced Russian I                         |
| 0525-547   | Advanced Russian II                        |
| 0525-548   | Advanced Russian III                       |
| <b>Electives</b> —Choose two of the following culture courses:   |  |
| 0504-485   | Global Literature: Tolstoy                 |
| 0505-435   | Russian Art—10th through 20th Centuries    |
| 0507-448   | History of Russia to 1917                  |
| 0507-449   | History of Russia Since 1917               |
| 0507-450   | Stalin, Mussolini, and Hitler              |
| 0513-443   | Politics of Russia                         |
| 0513-444   | International Studies: Cold War and Beyond |

## Spanish

**Diane Forbes, Minor Adviser**  
**(585) 475-6765, djfgsl@rit.edu**

Students with some proficiency must see the minor adviser and take the placement test to determine the appropriate level course. This minor is not open to fluent native speakers of Spanish.

|  |   |
|--|---|
| <b>Prerequisite:</b>   |   |
| 0525-560   | Beginning Spanish I                           |
| <b>Required Courses</b> —A sequence of three from the following: |   |
| 0525-561   | Beginning Spanish II                          |
| 0525-562   | Beginning Spanish III                         |
| 0525-563   | Intermediate Spanish I                        |
| 0525-564   | Intermediate Spanish II                       |
| 0525-565   | Intermediate Spanish III                      |
| 0525-566   | Advanced Spanish I                            |
| 0525-567   | Advanced Spanish II                           |
| 0525-568   | Advanced Spanish III                          |
| <b>Electives</b> —Choose two of the following culture courses:†  |   |
| 0525-576   | Trauma and Survival in First-Person Narrative |

|          |   |
|----------|---|
| 0525-577 | Screening the Hispanic Caribbean                            |
| 0525-578 | Women in the Hispanic World: Politics of Identity Formation |
| 0525-579 | Special Topics*   |
| 0507-445 | Modern Latin America  |
| 0507-453 | U.S. - Latin American Diplomatic History                    |
| 0507-490 | History of Mexico   |
| 0510-442 | Cultures and Politics in Latin America                      |
| 0510-444 | Global Economy and the Grassroots                           |
| 0513-486 | Latin American Politics                                     |

\* Special Topics (0525-579) may include the following: The Caribbean and Globalization, Cuban Film: Cultural and National Identity, Screening Hispanic Culture.

† With department approval: CIAS Art History: Latin American Art History I, II, plus one additional credit per course.

## Modern World History

**Rebecca Edwards, Minor Adviser**  
**(585) 475-2406, rregsm@rit.edu**

This minor provides a comparative perspective in modern world history.

**Required Courses**—Choose five of the following, with at least one from each of the three groups:

|   |  |
|---|--|
| <b>Modern Europe</b>                          |  |
| 0507-443                                      | European Social and Intellectual History Since 1600    |
| 0507-444                                      | Strategy and Diplomacy: Europe                         |
| 0507-446                                      | Europe Since 1945 and the European Union               |
| 0507-448                                      | History of Russia to 1917                              |
| 0507-449                                      | History of Russia Since 1917                           |
| 0507-450                                      | Stalin, Mussolini, and Hitler                          |
| 0507-473                                      | European Deaf History                                  |
| 0507-488                                      | Modern Germany   |
| <b>Modern Africa, Asia, and Latin America</b> |  |
| 0507-412                                      | Modern Japan in History, Fiction, and Film             |
| 0507-442                                      | Contemporary Middle East                               |
| 0507-445                                      | Modern Latin America                                   |
| 0507-468                                      | The United States and Japan                            |
| 0507-485                                      | Foundations of Asian Civilization                      |
| 0507-486                                      | 20th Century China and Japan                           |
| 0507-487                                      | Communist China  |
| 0507-489                                      | Japan in the Modern World                              |
| 0507-490                                      | History of Mexico                                      |
| 0507-496                                      | Survey of African History                              |
| <b>Modern America</b>                         |  |
| 0507-402                                      | History of American Women: 1848 to Now                 |
| 0507-410                                      | Terrorism, Intelligence, and War                       |
| 0507-411                                      | Origins of U.S. Foreign Relations                      |
| 0507-440                                      | U.S. Social and Intellectual History                   |
| 0507-447                                      | U.S. History Since 1945                                |
| 0507-462                                      | The Civil War and Reconstruction                       |
| 0507-463                                      | American Deaf History                                  |
| 0507-464                                      | Environmental Disasters in American History            |
| 0507-465                                      | Survey of African-American History                     |
| 0507-466                                      | American Slavery, American Freedom                     |
| 0507-467                                      | American Disability History                            |
| 0507-474                                      | America's National Parks                               |
| 0507-475                                      | Hands-on History                                       |
| 0507-495                                      | The Civil Rights Movement in 20th Century U.S. History |



## Music and Technology

**Carl Atkins, Minor Adviser**  
(585) 475-4439, [cjagsh@rit.edu](mailto:cjagsh@rit.edu)

The music and technology minor includes courses in music performance, music theory, music history, contemporary and historical instrument technology, acoustics, and audio engineering. The minor provides students who do not possess sufficient instrumental or vocal performance skills with an avenue to integrate their technological interests with music.

| Required Courses:                            |  |
|--|--|
| 0505-449                                     | Music Theory I                           |
| 0614-250                                     | Fundamentals of Audio Engineering        |
| Elective—Choose one of the following:        |  |
| 0614-325                                     | Introduction to Digital Audio Production |
| 0614-345                                     | Intermediate Digital Audio Production    |
| 0618-206                                     | Computers and Their Applications         |
| 4002-206                                     | Web Foundations                          |
| 4002-527                                     | Digital Audio and Computer               |
| Electives—Choose two of the following:       |  |
| 0505-442                                     | Music in the United States               |
| 0505-447                                     | The American Musical Theater             |
| 0505-448                                     | 20th Century American Music              |
| 0505-450                                     | Music and the Stage                      |
| 0505-454                                     | Orchestra Repertoire and History         |
| 0505-455                                     | Survey of Jazz                           |
| 0505-459                                     | Era of Haydn and Mozart                  |
| 0505-461                                     | World Music I                            |
| 0505-462                                     | World Music II                           |
| 0505-463                                     | Survey of African-American Music         |
| 0505-464                                     | Blues as Personal and Social Commentary  |
| 0505-465                                     | Special Topics: Mozart's Opera           |
| 0505-466                                     | Sounds of Protest                        |
| 0505-471                                     | American Popular and Rock Music          |
| 0505-482                                     | Beethoven                                |
| 0505-483                                     | Bach and the Baroque                     |
| 0505-484                                     | Romanticism in Music                     |
| 0505-485                                     | Music Theory II                          |
| Electives—Music Performance (1 credit each): |  |
| 0505-401                                     | RIT Singers                              |
| 0505-402                                     | RIT Orchestra                            |
| 0505-403                                     | RIT Concert Band                         |
| 0505-404                                     | RIT Jazz Ensembles                       |
| 0505-405                                     | RIT World Music Ensemble                 |
| 0505-420                                     | Applied Music                            |

\* A maximum of 4 credits of ensemble and/or applied study is applicable toward the minor.

## Music Performance

**Carl Atkins, Minor Adviser**  
(585) 475-4439, [cjagsm@rit.edu](mailto:cjagsm@rit.edu)

The music performance minor combines courses in music theory, history, and world music with practical application through ensemble participation and applied music study. This combination of the academic and practical strives to offer students a more profound understanding of the art of music and, in a broader sense, an introduction to cultural development and the communication of ideas. A total of 20 quarter credit hours, selected from the following areas of study, is required for the minor.

| Required Course:   |   |
|--|---|
| 0505-499   | Music Theory I                          |
| Required Ensembles and Applied Music*—Four credits must come from participation in one of these ensembles. Up to an additional four ensemble or applied music credits may be counted toward the minor: |   |
| 0505-401   | RIT Singers                             |
| 0505-402   | RIT Orchestra                           |
| 0505-403   | RIT Concert Band                        |
| 0505-404   | RIT World Music Ensemble                |
| 0505-405   | RIT Jazz Ensemble                       |
| 0505-420   | Applied Music                           |
| Music History Elective—Choose at least one of the music history courses listed below. Up to an additional 8 credits of these courses may be counted toward the minor:                                  |   |
| 0505-442   | Music in the United States              |
| 0505-447   | The American Musical Theater            |
| 0505-448   | 20th Century American Music             |
| 0505-450   | Music and the Stage                     |
| 0505-454   | Orchestra Repertoire and History        |
| 0505-455   | Survey of Jazz                          |
| 0505-456   | Topics in Music History                 |
| 0505-459   | Era of Haydn and Mozart                 |
| 0505-463   | Survey of African-American Music        |
| 0505-464   | Blues as Personal and Social Commentary |
| 0505-465   | Special Topics: Mozart's Opera          |
| 0505-470   | American Popular Song                   |
| 0505-471   | American Popular and Rock Music         |
| 0505-482   | Beethoven                               |
| 0505-483   | Bach and the Baroque                    |
| 0505-484   | Romanticism in Music                    |
| Music Theory and World Music Electives—Up to 8 credits may be counted toward the minor:  |   |
| 0505-461   | World Music I                           |
| 0505-462   | World Music II                          |
| 0505-485   | Music Theory II                         |

\* Each of the required ensemble classes is one credit hour only. Four quarters of participation are required to complete one upper-level course equivalent.

## Networking and System Administration

**Sylvia Perez-Hardy, Minor Adviser**  
(585) 475-7941, [sylvia.perez-hardy@rit.edu](mailto:sylvia.perez-hardy@rit.edu)

The minor in networking and system administration is structured for students in other computing or technology disciplines and features a sequence of courses that provides a firm foundation in networking and/or systems administration. Computer networks and the systems attached to these networks have become ubiquitous. Therefore, knowledge of how computer networks operate, their administration, and the administration of the systems attached to them can be of value to every computing professional since their work will be impacted in some way by computer networks and computer systems.

| Prerequisites—Choose one of the following: |                                       |
|--|---------------------------------------|
| 4050-302                                   | Scripting in Perl                     |
| 4050-402                                   | OS Scripting                          |
| Required Courses:                          |                                       |
| 4050-351                                   | Network Fundamentals                  |
| 4050-421                                   | System Administration I               |
| 4050-515                                   | Introduction to Routing and Switching |
| Elective—Choose one of the following:      |                                       |
| 4050-413                                   | Applications of Wireless Networks     |
| 4050-516                                   | Network Services                      |

## Optical Sciences

**Zoran Ninkov, Minor Adviser**

**(585) 475-7195, [ninkov@cis.rit.edu](mailto:ninkov@cis.rit.edu)**

**Michael Kotlarchyk, Minor Adviser**

**(585) 475-6115, [mnksp@rit.edu](mailto:mnksp@rit.edu)**

This minor provides students with the opportunity for additional study in optical sciences in order to build a secondary area of expertise in support of their major program. For example, the minor can be an important complement to studies in electrical and microelectronic engineering, the biological sciences, physics, chemistry, mathematics, technical photography, and various programs in the applied science and technology area. The department of physics and the Chester F. Carlson Center for Imaging Science jointly offer the minor.

Optical science techniques are used in a variety of consumer products (e.g., digital cameras, CD players), communication technologies (optical fibers), medical imaging (infrared imaging), and the sciences (surveillance, remote sensing, and astronomical systems). There are many opportunities in industry and government laboratories for people with recognized expertise in optical science. To obtain a minor in optical sciences students must complete three core courses and two elective courses.

**Core Courses**—Students must complete one course in each of three fundamental areas of optical science:

**Optical Principles**—Choose one of the following:

|          |  |
|----------|--|
| 1051-303 | Geometrical Optics                     |
| 1017-455 | Physical Optics                        |
| 0305-525 | Optics for Microelectronic Engineering |
| 1017-320 | Principles of Optics                   |

**Sources of Electromagnetic Radiation**—Choose one of the following:

|          |                  |
|----------|------------------|
| 1017-556 | Laser Physics    |
| 0609-511 | Laser Technology |
| 1051-370 | Radiometry       |

**Detectors**—Choose one of the following:

|          |  |
|----------|--|
| 1051-465 | Detectors                                      |
| 1051-528 | Design and Fabrication of a Solid State Camera |

**Electives**—Choose two of the following to provide specialization in any of the fundamental areas listed in the core\*:

|          |   |
|----------|---|
| 1017-455 | Physical Optics   |
| 1017-314 | Modern Physics I (or 1051-313 Interactions Between Light and Matter, or 1014-442 Quantum Chemistry) |
| 1051-528 | Design and Fabrication of a Solid State Camera†   |
| 1017-412 | Electricity and Magnetism II (or 0301-474 Electromagnetic Fields II)                                |
| 1017-555 | Optical Physics II  |
| 1017-511 | Experimental Optics (or 1008-311 Analytical Chemistry: Instrumental Analysis)                       |
| 0305-564 | Microlithography Systems (and 0305-574 Microlithography Systems Lab)                                |
| 0301-625 | Modern Photonic Devices and Systems (or 0609-554 Electronic Optical Devices)                        |
| 0301-674 | Fiber Optics: Theory and Coupling (or 0614-520 Fiber Optic Telecommunications Technology)           |

\* Substitution of courses for both the required and elective selections is possible with the approval of the optical science minor adviser. Students considering this minor are strongly advised to discuss their plan of study with the minor adviser.

† Design and Fabrication of a Solid State Camera (1051-528) may be used as an elective if it has not been previously used as a core course.

## Packaging Science

**Daniel Goodwin, Minor Adviser**

**(585) 475-5557, [dlgipk@rit.edu](mailto:dlgipk@rit.edu)**

Students from outside the packaging science program, particularly those in engineering technology programs, multidisciplinary studies, management, marketing, international business, engineering programs, and School of Print Media programs could all benefit from the packaging science minor. It offers courses covering every aspect of packaging, including development/design, testing, marketing, and production. Related legal, economic, and environmental concerns are also addressed.

**Required Courses**:\*

|   |                                   |
|---|-----------------------------------|
| 0607-502  | Packaging Materials               |
| 0607-503  | Packaging Container Systems       |
| 0607-504  | Concept to Consumer               |
| <b>Electives</b> —Choose two of the following:† |                                   |
| 0607-431  | Packaging Production Systems      |
| 0607-462  | Packaging Regulations             |
| 0607-485  | Principles of Shock and Vibration |
| 0607-520  | Packaging Management              |
| 0607-524  | Packaging Economics               |
| 0607-530  | Packaging and the Environment     |
| 0607-531  | Packaging Process Control         |
| 0607-536  | Medical Products Packaging        |
| 0607-555  | Export Packaging                  |
| 0607-568  | Food Preservation and Packaging   |
| 0607-570  | Point-of-Purchase Display         |

\* These are courses developed for non-packaging majors and also are used as bridge courses for the packaging graduate program. A student who completes these courses may take the upper-level packaging electives within the packaging science program.

† These are upper-level elective courses in the packaging science program.

## Philosophy

**Jack Sanders, Minor Adviser**

**(585) 475-2465, [jtsqsh@rit.edu](mailto:jtsqsh@rit.edu)**

The philosophy minor provides basic competency in a variety of areas of philosophical inquiry and in developing the critical skills central to philosophical analysis. Students should achieve an articulate understanding of many of the great philosophers, major philosophical issues, and methods of philosophical inquiry that shape our most fundamental forms of critical reflection upon human life and conduct. As a result, students will develop understanding and skills that directly enhance their future personal and professional lives. *This minor is closed to students enrolled in the philosophy program.*

**Electives**—Choose five of the following:\*

|          |                                  |
|----------|----------------------------------|
| 0509-440 | Philosophy of Religion           |
| 0509-441 | Logic                            |
| 0509-442 | Philosophy of Art/Aesthetics†    |
| 0509-443 | Philosophy of Science**          |
| 0509-444 | The Great Thinkers†              |
| 0509-445 | Social and Political Philosophy§ |
| 0509-446 | Philosophy of Law                |
| 0509-447 | Contemporary Moral Problems      |
| 0509-448 | Philosophy of Peace              |
| 0509-449 | Special Topics†                  |
| 0509-450 | Seminar in Philosophy*†          |
| 0509-451 | Professional Ethics              |
| 0509-452 | Philosophy of Technology         |
| 0509-453 | Environmental Philosophy         |

|          |                                     |
|----------|-------------------------------------|
| 0509-454 | Feminist Theory‡                    |
| 0509-455 | Theories of Knowledge               |
| 0509-456 | Ancient Philosophy                  |
| 0509-457 | Modern Philosophy                   |
| 0509-458 | Philosophy of Mind                  |
| 0509-459 | Philosophy of the Social Sciences†† |
| 0509-460 | East Asian Philosophy               |
| 0509-461 | American Philosophy                 |
| 0509-462 | Contemporary Philosophy             |
| 0509-464 | Philosophy of Action                |
| 0509-465 | Critical Theory‡                    |
| 0509-466 | Existentialism                      |
| 0509-467 | Medieval Philosophy                 |
| 0509-468 | Metaphysics‡                        |
| 0509-469 | 19th Century Philosophy‡            |
| 0509-470 | Philosophy and Literary Theory‡     |
| 0509-471 | Philosophy of Film‡                 |
| 0509-472 | Minds and Machines                  |
| 0509-473 | Technology and Embodiment           |
| 0509-474 | Philosophy of Language‡             |
| 0509-475 | Philosophy of Vision/Imaging‡       |
| 0509-476 | Ethical Theory                      |

\* Prerequisite: Two prior courses in philosophy or permission of the instructor. Students who have taken at least two courses are encouraged to take a Seminar in Philosophy (0509-450), usually offered more than once each year.

† Topics will vary.

‡ Prerequisite: One previous philosophy course or permission of the instructor is strongly encouraged.

§ Prerequisite: At least one prior course in philosophy, political science, or sociology

\*\* Prerequisite: At least one prior course in either philosophy or one of the natural sciences (physics, chemistry, or biology)

†† Prerequisite: At least one prior course in either philosophy or one of the social sciences (psychology, economics, political science, sociology, or anthropology)

## Physics

**James R. Kern, Minor Adviser**

**(585) 475-5135, [jrksp@rit.edu](mailto:jrksp@rit.edu)**

Students have the opportunity for additional study in physics in order to build a secondary area of expertise in support of their program or other areas of interest.

|  |                                       |
|--|---------------------------------------|
| <b>Prerequisites:</b>  |                                       |
| 1017-311   | University Physics I                  |
| 1017-312   | University Physics II                 |
| 1017-313   | University Physics III                |
| <b>Required Courses:</b>   |                                       |
| 1017-314   | Modern Physics I                      |
| 1017-318   | Vibrations and Waves                  |
| <b>Electives</b> —Choose three of the following (at least one must come from Group A and at least one from Group B): |                                       |
| <b>Group A</b>   |                                       |
| 1017-321   | Introduction to Laboratory Techniques |
| 1017-374, 378  | Experiments in Modern Physics I, II*  |
| 1017-431   | Electronic Measurements               |
| <b>Group B</b>   |                                       |
| 1017-315   | Modern Physics II                     |
| 1017-401   | Intermediate Mechanics I              |
| 1017-411   | Electricity and Magnetism I           |
| 1017-415   | Thermal Physics                       |
| 1017-455   | Physical Optics                       |
| 1017-440   | Stellar Astrophysics                  |
| 1017-480   | Mathematical Methods in Physics I     |
| 1017-522   | Quantum Mechanics I                   |

Note: Other courses may be considered on an individual basis. See the minor adviser.

\* Experiments in Modern Physics I, II (1017-374, 378) are each 2 quarter credit hours and count as one course combined.

## Political Science

**Paul Ferber, Minor Adviser**

**(585) 475-2938, [phfgss@rit.edu](mailto:phfgss@rit.edu)**

**John Murley, Minor Adviser**

**(585) 475-2064, [jamgcj@rit.edu](mailto:jamgcj@rit.edu)**

The political science minor emphasizes the interdependence of domestic politics and international relations in the present age of globalization. The minor brings together components of American politics, international relations, and comparative politics to provide students with both national and global perspectives on politics. Perhaps most important, the political science minor seeks to help students make sense of the increasingly complicated political environment that confronts them in their role as citizens.

Students select five courses from the following groups. Three courses may come from one group and two from another.

|                                |  |
|--------------------------------|--|
| <b>International Relations</b> |  |
| 0507-442                       | Contemporary Middle East                             |
| 0507-444                       | Strategy and Diplomacy: Europe                       |
| 0507-488                       | Modern Germany                                       |
| 0513-425                       | Politics and the Life Sciences                       |
| 0513-426                       | Cyberpolitics  |
| 0513-429                       | Primate Politics                                     |
| 0513-441                       | Politics in China                                    |
| 0513-443                       | Politics of Russia                                   |
| 0513-446                       | Politics in Developing Countries                     |
| 0513-447                       | Human Rights/Global Perspective                      |
| 0513-449                       | Special Topics in Political Science                  |
| 0513-453                       | American Foreign Policy                              |
| 0513-461                       | Comparative Politics                                 |
| 0513-484                       | Government and Politics of Africa                    |
| 0513-486                       | Comparative Politics in Latin America                |
| 0513-487                       | International Law and Organizations                  |
| 0513-488                       | War and the State                                    |
| 0513-489                       | Terrorism and Political Violence                     |
| 0513-490                       | International Political Economy                      |
| 0513-491                       | Politics of the Middle East                          |
| 0513-492                       | Religion and International Politics                  |
| 0513-493                       | Global Politics and the Environment                  |
| 0513-494                       | Comparative Public Policy                            |
| 0513-496                       | Government and Politics in East Asia                 |
| <b>American Politics</b>       |  |
| 0508-484                       | Environmental Policy                                 |
| 0513-449                       | Special Topics in Political Science                  |
| 0513-450                       | State and Local Politics                             |
| 0513-451                       | The Congress   |
| 0513-452                       | The American Presidency                              |
| 0513-453                       | American Foreign Policy                              |
| 0513-454                       | Political Parties and Voting                         |
| 0513-455                       | Politics and Public Policy                           |
| 0513-456                       | Judicial Process                                     |
| 0513-457                       | Constitutional Law                                   |
| 0513-458                       | American Political Thought                           |
| 0513-460                       | Constitutional Rights and Liberties                  |
| 0513-462                       | Abraham Lincoln and American Democracy               |
| 0513-463                       | First Amendment, Liberty, and Deliberative Democracy |
| 0513-465                       | Modern Constitutionalism, Liberty, and Equality      |
| 0513-466                       | Political Leadership                                 |
| 0513-481                       | Women in Politics                                    |
| 0513-485                       | Politics Through Fiction                             |
| 0513-514                       | Political Theory                                     |

## Print Media

**Barbara Birkett, Minor Adviser**  
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The print media minor introduces publishing to undergraduate students outside of the School of Print Media. Students may specialize in advertising and media strategy, contemporary publishing, digital imaging and pre-media, or print production. They also may elect to take courses across these areas. Students from the creative disciplines can learn about designing and distributing content in the world of integrated communications, which includes electronic as well as print formats. Business students may opt for learning about the role of advertising in the publishing media, or students from the sciences may choose to gain insight into the processes and materials of print production. Please note: Undergraduate students already enrolled in the School of Print Media are not eligible to take this minor.

### Required Course:

|          |                        |
|----------|------------------------|
| 2082-371 | Principles of Printing |
|----------|------------------------|

**Electives**—Students may choose courses from the following groupings. They may select one area of specialization, or they may choose from all areas to customize the minor. A minimum of 20 credits must be completed, including Principles of Printing. Students should check prerequisites for each course listed in the online Course Description catalog.

### Advertising and Media Strategy

|          |                                     |
|----------|-------------------------------------|
| 2082-367 | Media Industry Analysis             |
| 2083-201 | New Media Perspectives              |
| 2083-323 | Multimedia Strategies               |
| 2082-313 | Media Distribution and Transmission |
| 2083-402 | Media Law                           |
| 2083-416 | Media Business Basics               |

### Contemporary Publishing

|          |                                     |
|----------|-------------------------------------|
| 2083-216 | Digital Foundations                 |
| 2083-217 | Typography and Page Design          |
| 2082-337 | Digital Asset Management            |
| 2083-412 | Digital News Systems Management     |
| 2082-313 | Media Distribution and Transmission |
| 2083-402 | Media Law                           |
| 2083-317 | News Production Management          |

### Content Management

|          |                          |
|----------|--------------------------|
| 2083-216 | Digital Foundations      |
| 2082-337 | Digital Asset Management |
| 2082-417 | Database Publishing      |
| 2083-402 | Media Law                |

### Digital Imaging and Pre-media

|          |                            |
|----------|----------------------------|
| 2081-454 | Print Finishing Management |
| 2083-216 | Digital Foundations        |
| 2083-217 | Typography and Page Design |
| 2083-206 | Imaging for New Media      |
| 2082-407 | Color Management Systems   |
| 2081-409 | Image Processing Workflow  |
| 2082-337 | Digital Asset Management   |
| 2083-402 | Media Law                  |

### Print Production

|          |   |
|----------|---|
| 2082-401 | Digital Print Process                   |
| 2081-367 | Lithographic Process                    |
| 2081-364 | Flexographic Process                    |
| 2081-386 | Gravure Process                         |
| 2081-454 | Print Finishing Management              |
| 2081-458 | Ink Chemistry and Formulation           |
| 2082-387 | Substrates for Printing                 |
| 2082-407 | Color Management Systems                |
| 2082-413 | Operations Management for Graphic Media |

## Psychology

**Nick Difonzo, Minor Adviser**  
(585) 475-2907, [nxdgss@rit.edu](mailto:nxdgss@rit.edu)  
**Brian Barry, Minor Adviser**  
(585) 475-2401, [bpbgss@rit.edu](mailto:bpbgss@rit.edu)

This minor provides a solid knowledge base of psychological terms, concepts, methods, theories, and issues.

### Prerequisite:

|          |                            |
|----------|----------------------------|
| 0514-210 | Introduction to Psychology |
|----------|----------------------------|

### Required Course:

|          |                  |
|----------|------------------|
| 0514-402 | Research Methods |
|----------|------------------|

### Electives—Choose four of the following:

|          |                                      |
|----------|--------------------------------------|
| 0514-440 | Childhood and Adolescence            |
| 0514-441 | Humanistic Psychology                |
| 0514-442 | Adulthood and Aging                  |
| 0514-443 | Cognitive Psychology                 |
| 0514-444 | Social Psychology                    |
| 0514-445 | Psychology of Perception             |
| 0514-446 | Psychology of Personality            |
| 0514-447 | Abnormal Psychology                  |
| 0514-448 | Industrial/Organizational Psychology |
| 0514-449 | Behavior Modification                |
| 0514-451 | Psychology of Motivation             |
| 0514-453 | Death and Dying                      |
| 0514-483 | Social Psychology of Religion        |
| 0514-544 | History and Systems                  |

## Public Policy

**Richard Shearman, Minor Adviser**  
(585) 475-6604, [rlsgsh@rit.edu](mailto:rlsgsh@rit.edu)

The purpose of this minor is to provide students with a foundation in the field of public policy and allow them to make connections between public policy and other fields of study. Students are allowed to select one of two tracks within the minor. The first track, policy issues, develops a broad perspective on public policy and its relationship to other fields. The second track, policy analysis, highlights the analytical tools used by the policy analyst to evaluate and understand policy formulation and impacts. Both tracks explore contemporary public policy issues, especially those connected to the science and technology fields. This minor underscores the role of public policy on science and technology-based problems. Through the minor, students obtain a deeper understanding of what public policy is and how it is integrated within a number of specific contexts.

**Prerequisites:** Check individual course descriptions for specific prerequisites.

### Policy Issues Track

#### Required Courses:

|          |                              |
|----------|------------------------------|
| 0521-400 | Foundations of Public Policy |
|----------|------------------------------|

Plus one of the following:

|          |  |
|----------|--|
| 0521-460 | Capstone: Public Policy Minor*                       |
| 0508-530 | Seminar in Science, Technology, and the Environment* |

#### Electives—Choose three of the following:

|          |  |
|----------|--|
| 0508-441 | Science and Technology Policy          |
| 0508-484 | Environmental Policy                   |
| 0508-540 | Science and Technology Policy Seminar† |
| 0513-455 | Politics and Public Policy*            |
| 0515-413 | Urban Planning and Policy              |
| 0515-451 | Technology Transfer and Globalization* |



|  |   |
|--|---|
| 0521-401   | Values and Public Policy*                   |
| 0521-406   | Introduction to Qualitative Analysis*       |
| 0521-408   | Technological Innovation and Public Policy* |
| 0521-410   | Information and Communication Policy*       |
| 0521-449   | Special Topics in Public Policy†            |
| 0521-451   | Energy Policy                               |
| <b>Policy Analysis Track</b>                           |   |
| <b>Required Courses:</b>                               |   |
| 0521-400   | Foundations of Public Policy                |
| 0521-402   | Policy Analysis I*                          |
| 0521-403   | Policy Analysis II*                         |
| 0521-404   | Policy Analysis III*                        |
| <b>Electives</b> —Choose one of the following courses: |   |
| 0508-441   | Science and Technology Policy               |
| 0508-484   | Environmental Policy                        |
| 0508-540   | Science and Technology Policy Seminar‡      |
| 0515-413   | Urban Planning and Policy                   |
| 0521-401   | Values and Public Policy                    |
| 0521-406   | Introduction to Qualitative Analysis*       |
| 0521-408   | Technological Innovation and Public Policy* |
| 0521-410   | Information and Communication Policy*       |
| 0521-449   | Special Topics in Public Policy†            |
| 0521-451   | Energy Policy                               |

\* Students should check the prerequisites or co-requisites for these courses.

† Topics may vary.

‡ Prerequisite: Science and Technology Policy (0508-441), Environmental Policy (0508-484), or Foundations of Public Policy (0521-400).

## Science Writing

**Lisa Hermesen, Minor Adviser**  
(585) 475-4553, [lmhgsl@rit.edu](mailto:lmhgsl@rit.edu)

The science writing minor gives students a basic grounding in the practice and theory of writing about science for a popular audience. In the three required courses, students gain practice in writing about science for lay readers as well as for scientists interested in the wider social ramifications of science. They also examine the rhetorical elements of a wide range of science writings. Students can then choose from a group of courses that deal with the history, ethics, cultural debates, and literary representation of science and technology. The minor complements a number of degree programs in the colleges of Science, Engineering, and Applied Science and Technology, as well as a number of other programs across the university.

|  |  |
|--|--|
| <b>Prerequisite:</b>                           |  |
| 0502-227                                       | Writing Seminar (or equivalent)                                |
| <b>Required Courses:</b>                       |  |
| 0502-456                                       | Rhetoric of Science  |
| 0502-460                                       | Science Writing  |
| 0502-462                                       | Advanced Science Writing                                       |
| <b>Electives</b> —Choose two of the following: |  |
| 0502-449                                       | Worlds of Writing  |
| 0502-459                                       | Creative Nonfiction  |
| 0502-560                                       | Special Topics: Language and Brain                             |
| 0502-560                                       | Special Topics: Introduction to Writing Science and Technology |
| 0504-448                                       | Biographical Literature: Lives of Scientists                   |
| 0504-462                                       | Literature and Technology                                      |
| 0504-482                                       | Science Fiction  |

## Science, Technology, and Public Policy

**Franz Foltz, Minor Adviser**  
(585) 475-5368, [fafgsh@rit.edu](mailto:fafgsh@rit.edu)

This minor provides both breadth and depth in the field of science and technology policy by allowing students to make connections between public policy and other scientific and technical fields. Students will explore contemporary science and technology policy issues and will build a foundation for understanding the policy process. Through the minor, students obtain a deeper understanding of what science and technology policy is and how it is integrated within a number of specific contexts. This minor is closed to students enrolled in the public policy degree program or already taking a minor in science, technology, and environmental studies or public policy.

|   |  |
|---|--|
| <b>Required Course</b> —Choose one of the following:          |  |
| 0508-540  | Science and Technology Policy Seminar                |
| 0508-530  | Seminar in Science, Technology, and the Environment† |
| <i>Plus, at least one of the following 400-level courses:</i> |  |
| 0508-441  | Science and Technology Policy                        |
| 0521-400  | Foundations of Public Policy                         |
| <b>Electives</b> —Choose three of the following:*             |  |
| 0508-444  | Social Consequences of Technology                    |
| 0508-445  | Biomedical Issues: Science and Technology            |
| 0508-447  | Special Topics in Science and Technology Studies     |
| 0508-482  | Energy and the Environment                           |
| 0508-484  | Environmental Policy                                 |
| 0508-487  | Special Topics in Environmental Studies              |
| 0521-408  | Technological Innovation and Public Policy†          |
| 0521-410  | Information and Communication Policy†                |
| 0521-449  | Special Topics in Public Policy                      |
| 0521-451  | Energy Policy  |

\* If only one of the required 400-level courses is taken, select three electives from the following list; if two of the required 400-level courses are taken, select two electives from the electives list.

† Students should check the prerequisites for these courses.

## Science, Technology, and Society

**Deborah Blizzard, Minor Adviser**  
(585) 475-4697, [dlbgsh@rit.edu](mailto:dlbgsh@rit.edu)

This minor integrates the studies of human society and science and technology in their social content and context. The minor bridges the humanities and social sciences to provide better understanding of the ways in which science, technology, and society are mutually interacting forces in our world. Students will learn how to analyze the social institutions, the built environment, and their role in creating them. This minor will enhance a student's ability to contribute to the development of science and technology in ways that are historically, culturally, and ethically informed.

|   |  |
|---|--|
| <b>Required Course:</b>                         |  |
| 0508-530  | Seminar in Science, Technology, and the Environment* |
| <b>Electives</b> —Choose four of the following: |  |
| 0504-462  | Literature and Technology*                           |
| 0508-440  | History of Science                                   |
| 0508-441  | Science and Technology Policy                        |
| 0508-442  | History of American Technology                       |
| 0508-443  | Face of the Land                                     |
| 0508-444  | Social Consequences of Technology                    |
| 0508-445  | Biomedical Issues: Science and Technology            |
| 0508-447  | Special Topics: Science and Technology               |



|          |  |
|----------|--|
| 0508-451 | Cyborg Theory: (Re)Thinking the Human Experience in the 21st Century |
| 0508-452 | Gender, Science, and Technology                                      |
| 0508-460 | Environment and Society  |
| 0508-483 | Environmental Values   |
| 0508-490 | Biodiversity and Society   |
| 0508-500 | Science, Technology, and Society Classics                            |
| 0515-451 | Transfer Technology and Globalization*                               |

\* Students should check the prerequisites for these courses.

## Service Management

**Carol Whitlock, Minor Adviser**  
(585) 475-2353, [cbwism@rit.edu](mailto:cbwism@rit.edu)

**Jayne Downes, Minor Adviser**  
(585) 475-5575, [jmdism@rit.edu](mailto:jmdism@rit.edu)

Delivering exceptional customer service experience is an important strategic component of all business enterprises in the U.S. and global economies. Managing customer services includes knowing your customers and their preferences (customer relations management databases); identifying quality service standards; using technologies to deliver timely, customized service experiences; monitoring service quality; identifying gaps in service; and leading employees to meet and exceed customer expectations. A minor in service management will give students a solid background in these principles.

### Required Courses:

|          |  |
|----------|--|
| 0619-322 | Service Management in a Global Economy   |
| 0619-320 | Global Standards in the Service Industry |
| 0619-410 | Assessing Service Quality                |
| 0619-426 | Technology in Service Systems            |
| 0619-470 | Leadership in Service Cultures           |

## Sociology and Anthropology

**Christine Kray, Minor Adviser**  
(585) 475-4686, [cakgss@rit.edu](mailto:cakgss@rit.edu)

The minor in sociology and anthropology examines the changing interrelations among work, technology, and culture in different nations across the globe. With the globalization of the workforce, trade, and production, social interactions have become increasingly marked by differences in gender, class, racial, and ethnic identities. Courses analyze the global and local worlds of work, how social relations are shaped by technology and culture, and how global trends are transforming our lives.

### Prerequisite—Choose one of the following:

|          |                          |
|----------|--------------------------|
| 0510-210 | Cultural Anthropology    |
| 0515-210 | Foundations of Sociology |

### Electives—Choose five of the following:

|          |  |
|----------|--|
| 0510-440 | Cultures in Globalization                              |
| 0510-442 | Culture and Politics in Latin America                  |
| 0510-443 | Immigration to the U.S.                                |
| 0510-444 | Global Economy and the Grassroots                      |
| 0510-445 | Global Cities  |
| 0510-446 | Native North Americans                                 |
| 0510-447 | Anthropology of Mass Media                             |
| 0510-448 | Native Americans in Film                               |
| 0510-449 | Sustainable Development                                |
| 0510-450 | Cultural Resource Management and Historic Preservation |

|          |  |
|----------|--|
| 0510-451 | Global Sexualities                       |
| 0510-452 | Bodies and Culture                       |
| 0510-454 | Visual Anthropology                      |
| 0510-457 | Divided Europe                           |
| 0510-459 | Cultural Images of War and Terror        |
| 0510-460 | Genocide and Post-Conflict Justice       |
| 0510-461 | Native American Repatriation             |
| 0510-486 | Globalizing Africa                       |
| 0510-487 | African Popular Cultures                 |
| 0510-502 | Archaeology and the Human Past           |
| 0510-506 | Great Discoveries in Archaeology         |
| 0510-507 | Archaeological Science                   |
| 0510-508 | The Archaeology of Cities                |
| 0515-441 | The Changing Family                      |
| 0515-442 | The Urban Experience                     |
| 0515-443 | Sociology of Work                        |
| 0515-444 | Social Change                            |
| 0515-446 | Sociology of Health                      |
| 0515-447 | Women, Work, and Culture                 |
| 0515-449 | Population and Society                   |
| 0515-451 | Transfer of Technology and Globalization |
| 0515-453 | Global Exiles of War and Terror          |
| 0515-485 | Diversity in the City                    |
| 0515-506 | Social Inequality                        |

## Software Engineering

**James Vallino, Minor Adviser**  
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The software engineering minor provides students with an opportunity to gain a deeper understanding of software engineering in the context of their respective fields of study. Depending on their choice of courses, students enhance their academic experience by gaining a deeper understanding of processes with which professionals build software today as well as current techniques for designing and building professional quality software.

### Prerequisites—Choose one of the following:

|          |                                |
|----------|--------------------------------|
| 4003-243 | Object-Oriented Programming    |
| 4003-263 | Computer Science for Transfers |

### Required Courses:

|          |                                    |
|----------|------------------------------------|
| 4010-361 | Software Engineering               |
| 4010-362 | Engineering of Software Subsystems |
| 4010-456 | Software Engineering Process       |

**Elective Courses**—Students take two additional 4-credit elective courses from the list of undergraduate software engineering offerings. At least 12 of the credits taken toward this minor must not be required by the student's home program.

## Statistics

**James Halavin, Minor Adviser**  
(585) 475-5140, [jjhsma@rit.edu](mailto:jjhsma@rit.edu)

The statistics minor provides an opportunity for students to deepen their technical background and gain further appreciation for modern mathematical sciences and the use of statistics as an analytical tool.

### Prerequisites:

|          |  |
|----------|--|
| 1016-281 | Project-Based Calculus I                   |
| 1016-282 | Project-Based Calculus II                  |
| 1016-283 | Project-Based Calculus III (or equivalent) |

**Required Courses:**

To receive a minor in statistics, students must complete five courses from the list below and maintain a minimum GPA of 2.0. At least three of these courses must not be required by the student's home program. All required courses must be taken in the School of Mathematical Sciences. Students may elect to take either 1016-352 or 1016-314 as part of the minor, but not both. Students may elect to take either 1016-345 or 1016-351 as part of the minor, but not both.

|          |  |
|----------|--|
| 1016-314 | Engineering Statistics I                 |
| 1016-345 | Probability and Statistics for Engineers |
| 1016-351 | Probability                              |
| 1016-352 | Applied Statistics                       |
| 1016-354 | Introduction to Regression Analysis      |
| 1016-355 | Design of Experiments                    |
| 1016-358 | Statistical Quality Control              |
| 1016-415 | Statistical Analysis for Bioinformatics  |
| 1016-451 | Mathematical Statistics I                |
| 1016-452 | Mathematical Statistics II               |
| 1016-454 | Non-parametric Statistics                |
| 1016-457 | Research Sampling Techniques             |
| 1016-5xx | Choices through advising                 |

## Structural Design

**John Morelli, Minor Adviser**

**(585) 475-7213, john.morelli@rit.edu**

The minor focuses on structural design and the analysis of steel, concrete, and wood. The minor also explores building codes as they relate to design.

Students from outside the civil engineering technology program with majors in mechanical engineering technology or mechanical engineering would benefit from the minor. The minor is not limited to students in these fields of study, but there are some technical prerequisite courses.

**Prerequisites:**

|          |                         |
|----------|-------------------------|
| 0610-302 | Introduction to Statics |
| 0610-303 | Strength of Materials   |

**Required Courses:**

|          |                                |
|----------|--------------------------------|
| 0608-404 | Applied Mechanics of Materials |
| 0608-490 | Structural Analysis            |
| 0608-304 | Structural Loads and Systems   |

**Electives**—Choose three of the following:

|          |                                  |
|----------|----------------------------------|
| 0608-470 | Timber Design                    |
| 0608-497 | Structural Steel Design          |
| 0608-305 | Structural Computer Applications |
| 0608-496 | Reinforced Concrete Design       |

## Sustainable Product Development

**Andres Carrano, Minor Adviser**

**(585) 475-6062, andres.carrano@rit.edu**

**Brian Thorn, Minor Adviser**

**(585) 475-6166, bkteie@rit.edu**

This multidisciplinary minor is aimed at students interested in exploring issues associated with developing and delivering sustainable product systems. Courses in the minor enhance the understanding of the three dimensions of sustainability (economic, ethical, environmental), develop awareness of the need for more sustainable approaches to product development, and explore strategies for developing and delivering sustainable product systems.

**Prerequisite:**

|          |   |
|----------|---|
| 1016-226 | Math at the level of 1016-226 or higher |
|----------|---|

**Required Courses:**

|               |   |
|---------------|---|
| 0303-520, 620 | Engineering Economy                               |
| 0617-436      | Engineering Economics (or equivalent)             |
| 0303-691, 790 | Fundamentals of Sustainable Product Design        |
| 0303-791      | Introduction to Life Cycle Assessment and Costing |

**Electives**—Choose two of the following (one must be a social context course):

| Social Context Electives |   |
|--------------------------|---|
| 0508-211                 | Science, Technology, and Values         |
| 0508-212                 | Introduction to Environmental Studies   |
| 0508-441                 | Science and Technology Policy           |
| 0508-443                 | Face of the Land                        |
| 0508-444                 | Social Consequences of Technology       |
| 0508-460                 | Environment and Society                 |
| 0508-463                 | Great Lakes I                           |
| 0508-464                 | Great Lakes II                          |
| 0508-482                 | Energy and the Environment              |
| 0508-483                 | Environmental Values                    |
| 0508-484                 | Environmental Policy                    |
| 0508-490                 | Biodiversity and Society                |
| 0521-408                 | Technology Innovation and Public Policy |
| 0521-451                 | Energy Policy                           |

**Technical and Engineering Electives**

|          |   |
|----------|---|
| 0303-792 | Design for the Environment                        |
| 0304-460 | Contemporary Issues in Energy and the Environment |
| 0304-710 | Fuel Cell Technology                              |

**Civil Engineering Technology and Environmental Management Electives**

|          |  |
|----------|--|
| 0630-465 | Product Stewardship  |
| 0630-521 | Environment, Health, and Safety for Engineering Technology |
| 0630-350 | Survey of Solid and Hazardous Waste Management             |
| 0630-352 | Survey of Industrial Wastewater Management                 |
| 0630-354 | Survey of Air Emissions Management                         |

## Telecommunications

**Warren Koontz, Minor Adviser**

**(585) 475-5706, wlkmet@rit.edu**

A telecommunications minor is available for undergraduate students who have the appropriate math experience. This minor consists of three required courses and two technical electives for a total of 20 quarter credit hours.

**Required Courses:**

|               |                                     |
|---------------|-------------------------------------|
| 0614-271      | Telecommunications Fundamentals     |
| 0614-465, 466 | Voice Communications Technology Lab |

**or**

|          |                              |
|----------|------------------------------|
| 0614-464 | Voice Communications Systems |
| 0614-477 | Networking Technologies      |

**Electives**—Choose two of the following:

|          |   |
|----------|---|
| 0614-475 | Switching Technologies                    |
| 0614-480 | Telecommunications Policy                 |
| 0614-483 | Telecommunications Transmission Systems   |
| 0614-561 | Network Engineering                       |
| 0614-562 | Network Engineering Lab                   |
| 0614-574 | Network Planning and Design               |
| 0614-520 | Fiber Optic Telecommunications Technology |

Note: Students who have prior knowledge/experience but who may not have completed the required prerequisites may take a specific course with the approval of the instructor.

## Theater Arts

**Peter Ferran, Minor Adviser**

**(585) 475-2468, pwfqsh@rit.edu**

The theater arts minor offers students a focused study of the theatrical and dramatic arts, combining courses in dramatic and theatrical history, criticism, and theory with concrete practice through direct production involvement. Students will consult with the fine arts faculty to select courses for the theater arts minor. NOTE: No course taken to satisfy the requirements of this minor may be counted toward any other minor, nor may any course taken to satisfy the requirements of another minor be counted toward the theater arts minor.

| Required Course:   |   |
|--|---|
| 0505-489   | Theater Production Seminar and Workshop   |
| Theater and the Times  |   |
| Electives—Choose no fewer than two, no more than four, of the following courses: |   |
| 0505-450   | Music and the Stage                       |
| 0505-453   | Theater in the United States              |
| 0505-457   | Contemporary Drama, Theater, and Media    |
| 0505-458   | Modern European Theater and Drama         |
| 0505-486   | German Theater and Drama                  |
| 0505-502   | Shakespeare the Dramatist                 |
| Choose no more than two of the following courses:                                |   |
| 0504-440   | Drama and Theater                         |
| 0505-446   | American Film of the Studio Era           |
| 0505-447   | American Musical Theater                  |
| 0505-467   | American Film Since the Sixties           |
| 0505-488   | Special Topics: Drama and Theater-Related |

## Urban Studies

**Christine Kray, Minor Adviser**

**(585) 475-4686, cakgss@rit.edu**

This minor focuses on the interplay between urban issues and urban policy. Every metropolitan area must address such perennial issues as housing, transportation, education, crime, safety, recreation, and economic development. Each community must do so with an understanding of its unique social mix and neighborhood relations, and with recognition of its place in wider regional, national, and global networks. Students identify and analyze central issues and social problems of urbanization and explore and assess various ways decision-makers respond to these issues.

| Prerequisite—Choose one of the following:   |   |
|---|---|
| 0515-210  | Foundations of Sociology                  |
| 0510-210  | Cultural Anthropology                     |
| Required course:  |   |
| 0515-442  | The Urban Experience                      |
| Electives—Choose four of the following (at least one course must be from urban policy and one from urban issues.) |   |
| Urban Policy  |   |
| 0508-491  | Sustainable Communities I                 |
| 0511-440  | Urban Economics                           |
| 0515-413  | Urban Planning and Policy                 |
| 0526-441  | GIS Applications in UC Studies            |
| 0526-443  | Community Economic Development: Rochester |
| Urban Issues  |   |
| 0510-443  | Immigration to the U.S.                   |
| 0510-445  | Global Cities                             |

|          |   |
|----------|---|
| 0515-485 | Diversity in the City                         |
| 0501-405 | Major Issues: Crime/Justice in the Community* |

\* Major Issues: Crime/Justice in the Community (0501-405) offers a number of sections. Students in this minor may enroll only in section 02 (Crime/Justice in the Community).

## Water Resources

**Scott Wolcott, Minor Adviser**

**(585) 475-6647, sbwite@rit.edu**

The water resources minor broadens the learning experiences and professional opportunities of students in technical disciplines who have an interest in engineering technology. Students choose from a variety of courses to expand their knowledge of water treatment, wastewater treatment, hydrology, and the environment.

| Prerequisites:   |  |
|--|--|
| 0610-302   | Introduction to Statics                      |
|  | College-level chemistry                      |
| Required Course:   |  |
| 0608-420, 421  | Hydraulics and Lab                           |
| Electives—choose four additional courses, including one from each of the two groups: |  |
| 0508-484   | Environmental Policy                         |
| Hydrology and Hydraulics Group   |  |
| 0608-480   | Groundwater Hydraulics                       |
| 0608-482   | Stormwater Management                        |
| 0608-485   | Hydraulic Structures                         |
| Water and Wastewater Group   |  |
| 0608-432   | Water and Wastewater Transportation          |
| 0608-438   | Principles of Water and Wastewater Treatment |
| 0608-510   | Design of Water Treatment Facilities         |
| 0608-520   | Design of Wastewater Treatment Facilities    |

## Web Design and Development

**Ronald P. Vullo, Minor Adviser**

**(585) 475- 7281, rpvvks@rit.edu**

The minor in Web design and development is for non-computing majors and students outside the computing field who wish to learn more than just the basics of Web usage. The minor features courses in Web media and communication technologies. Students will learn how to design and build Web pages and create and manipulate digital images and video for Web use.

| Required Courses: |                           |
|-------------------|---------------------------|
| 4002-206          | Web Foundations           |
| 4002-306          | Digital Image Creation    |
| 4080-310          | Digital Video for the Web |
| 4002-406          | Rapid Online Presence     |
| 4002-535          | Network-Based Multimedia  |

## Web Development

**Daniel Bogaard, Minor Adviser**

**(585) 475-5231, dsbics@rit.edu**

This minor provides students with a firm foundation in Web development. The Web has become a global, essential, and ubiquitous information delivery medium. The minor explores Web development, starting with simple sites and moving through dynamic client-side and server-side creation. Students will create their own Web 2.0, AJAX-driven compound document application.

|   |  |
|---|--|
| <b>Prerequisites:</b>   |  |
| <i>Students should have completed course work in multimedia, discrete mathematics, and a two-course programming sequence prior to beginning course work for this minor.</i> |  |
| <b>Required Courses:</b>  |  |
| 4002-360  | Introduction to Database and Data Modeling |
| 4002-409  | Website Design and Implementation          |
| 4002-536  | Web Client-Side Programming                |
| 4002-539  | Web Server-Side Programming                |
| 4002-546  | Web Client-Server Programming              |

## Women and Gender Studies

**Tina Lent, Minor Adviser**  
**(585) 475-2460, tnlgsh@rit.edu**

The women and gender studies minor provides a critical framework to explore the significance of gender (along with race, sexuality, and class) in the construction of knowledge within academic disciplines and in the shaping of women's and men's lives. Courses engage a critical pedagogy focused on the recovery of women's contributions in a variety of fields, on women's and men's roles in society across cultures, and especially on critical questions about gender neutrality in the shaping of culture.

|   |   |
|---|---|
| <b>Required Course:</b>                         |   |
| 0522-400  | Foundations of Women and Gender Studies                         |
| <b>Electives</b> —Choose four of the following: |   |
| 0505-491  | Traumatic Images  |
| 0505-516  | Queer Looks   |
| 0505-480  | Women/Gender/Art  |
| 0522-401  | American Women: Colonial Era to 1848                            |
| 0522-402  | American Women: 1848 to Now                                     |
| 0522-405  | Women and Science   |
| 0522-406  | Feminist Theory   |
| 0522-407  | Seminar on Sexual Violence                                      |
| 0522-410  | Introduction to Gay, Lesbian, Bisexual, and Transgender Studies |
| 0522-415  | Domestic Violence   |
| 0522-436  | Women's Stories, Women's Films                                  |
| 0522-439  | Queer Looks I   |
| 0522-446  | Women and Crime   |
| 0522-447  | Women, Work, and Culture  |
| 0522-449  | History of Women in Science and Engineering                     |
| 0522-450  | Gender, Science, and Technology                                 |
| 0522-451  | Global Sexualities  |
| 0522-452  | Bodies and Culture  |
| 0522-453  | Economic Role of Women  |
| 0522-454  | Hispanic Women in the World                                     |
| 0522-459  | Toni Morrison   |
| 0522-460  | Special Topics*   |
| 0522-480  | Women/Gender/Art  |
| 0522-481  | Women's Studies in Language and Literature                      |
| 0522-482  | Women in Politics   |
| 0522-483  | Psychology of Gender  |
| 0522-484  | Auto/Biography  |
| 0522-492  | Native American Women's Experience                              |
| 0525-543  | Women in the Hispanic World: Politics of Identity Formation     |

|  |                                     |
|--|-------------------------------------|
| <b>Electives</b> —Students may choose three of the above and one of the following: |                                     |
| 0504-455   | Shakespeare: Comedies and Histories |
| 0504-467   | Black Writers Today                 |
| 0505-446   | American Film in the Studio Era     |

\* Special Topics (0522-460) may include the following: Traumatic Images, Queer Looks II, Art of Dying, Contemporary Women's History, Prostitution and Vice, and Queering Gender.

## Writing Studies

**Dianna Winslow, Minor Adviser**  
**(585) 475-6928, dkwgla@rit.edu**

The writing studies minor offers students the opportunity to develop and practice writing skills in a variety of contexts; the competencies needed to be effective, confident, and versatile when facing writing challenges in the workplace; and an understanding of the theoretical and historical foundations underlying written communication and linguistics. The minor accommodates students with a wide variety of writing interests, disciplinary majors, and professional goals.

|  |                                  |
|--|----------------------------------|
| <b>Prerequisite:</b>   |                                  |
| 0502-227   | Writing (or equivalent)          |
| <b>Electives</b> —Students must choose five different courses. |                                  |
| <i>Choose one course from the following:</i>                   |                                  |
| 0502-443   | Written Argument                 |
| 0502-456   | Rhetoric of Science              |
| <i>Choose one course from the following:</i>                   |                                  |
| 0502-445   | The Evolving English Language    |
| 0502-457   | Language, Dialects, and Identity |
| <i>Choose three courses from the following:</i>                |                                  |
| 0502-443   | Written Argument                 |
| 0502-444   | Technical Writing                |
| 0502-445   | The Evolving English Language    |
| 0502-449   | Worlds of Writing                |
| 0502-455   | Writing the Self and Others      |
| 0502-456   | Rhetoric of Science              |
| 0502-457   | Language, Dialects, and Identity |
| 0502-459   | Creative Nonfiction              |
| 0502-460   | Science Writing                  |
| 0502-560   | Special Topics: Writing          |

# Academic Enrichment

## Accelerated dual degree options

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RIT offers the following dual degree programs in which a student can earn a BS degree and an MS or ME degree in less time that it takes to do each program separately.

### **College of Applied Science and Technology**

BS in Computer Engineering Technology/MS in Computer Science  
BS/MS in Electrical Mechanical Systems Integration  
BS in Environmental Technology/MS in Environmental Health and Safety Management  
BS/MS in Manufacturing Systems Integration  
BS/MS in Mechanical Systems Integration  
BS in Safety Technology/MS in Environmental Health and Safety Management  
BS/MS in Telecommunications Engineering Technology

### **B. Thomas Golisano College of Computing and Information Sciences**

BS in Medical Informatics/MS in Computer Science

### **Kate Gleason College of Engineering**

BS/MS in Applied and Mathematical Statistics  
BS/MS in Applied Statistics  
BS/MS in Computer Engineering  
BS/MS in Electrical Engineering  
BS in Electrical Engineering/MS in Computer Science  
BS in Electrical Engineering/MS in Materials Science and Engineering  
BS/ME in Industrial Engineering  
BS/MS in Industrial Engineering  
BS in Industrial Engineering/MS in Applied and Mathematical Statistics  
BS in Industrial Engineering/ME in Engineering Management  
BS in Industrial Engineering/ME in Systems Engineering  
BS/ME in Mechanical Engineering  
BS/MS in Mechanical Engineering  
BS in Mechanical Engineering/MS in Public Policy  
BS in Microelectronic Engineering/MS in Material Science

### **College of Health Sciences and Technology**

BS/MS in Physician Assistant

### **College of Imaging Arts and Sciences**

BS in Print Media/MBA

### **College of Liberal Arts**

BS in Public Policy/MS in Science, Technology, and Public Policy

### **College of Science**

BS/MS in Applied Mathematics  
BS in Applied Statistics/MS in Applied Mathematics  
BS in Biochemistry/MS in Chemistry  
BS/MS in Bioinformatics  
BS/MS in Chemistry  
BS in Chemistry/MS in Materials Science and Engineering  
BS in Computational Mathematics/MS in Applied Mathematics  
BS in Computational Mathematics/MS in Computer Science  
BS/MS in Environmental Science  
BS in Physics/MS in Materials Science and Engineering  
BS in Polymer Chemistry/MS in Chemistry

## Cooperative Education and Career Services

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[www.rit.edu/emcs/oce/\(585\)475-2301](http://www.rit.edu/emcs/oce/(585)475-2301)

The Office of Cooperative Education and Career Services offers a wide range of programs and services to support the career development and employment needs of all RIT students. The office offers one-on-one advising as well as job search seminars and presentations. It also provides online access to employment opportunities. Working relationships with thousands of employing organizations can help graduate students develop their individual job search plans. Graduate students are encouraged to meet with their assigned program coordinator in the Office of Cooperative Education and Career Services early to begin their career planning. Information is available through the office website at [www.rit.edu/co-op/careers](http://www.rit.edu/co-op/careers), or by visiting the office on the first floor of the Bausch & Lomb Center. Individual appointments may be made by calling (585) 475-2301.

## Double majors

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RIT encourages students to enhance their degree programs by enrolling in a double major. A double major is any combination of majors from RIT's more than 200 academic programs. Students can combine any number of programs to create a double major that best meets their academic and professional goals. Some guidelines apply to the creation of a double major:

- Double majors are available only to matriculated baccalaureate students.



- Both degree programs must be of the same type (i.e., both BS degrees or both BFA degrees).
- Both majors in a double major degree must be in existing approved degree programs.
- Students must meet the entrance criteria for both programs.
- A double major degree requires the approval of the heads of both degree programs, who will take into consideration issues such as potential scheduling conflicts.
- A double major degree must satisfy the graduation and accreditation requirements for both degree programs.
- The double major will be the same type as the two component majors. It is possible to use a single requirement to meet the needs of both majors; double counting is allowed as long as the department heads of both degree programs approve it.
- In cases where the two majors do not have 28 unique and non-overlapping credit hours, students must take enough additional course credits in either or both majors to meet the 28-credit minimum.
- Curriculum requirements for the double major will be developed by the appropriate personnel of the two degree programs and approved by the department heads of both degree programs.
- Department heads approving the double major are responsible for forwarding the *Undergraduate Double Major Authorization Form* to the vice president for Academic Affairs, who will validate that all criteria for the double majors have been met.

## Experiential learning

[www.rit.edu/co-op/careers](http://www.rit.edu/co-op/careers)

(585) 475-2301 (voice), (585) 475-6905 (TTY)

At RIT, students earn an outstanding education. But to prepare them for the challenges they will face on the job, RIT offers experiential education that helps make course work and projects more relevant to industry.

Experiential education may include:

- joining a team solving business problems through industry-sponsored, class-based projects.
- working with a faculty member on an externally funded research project.
- study or work abroad.
- gaining valuable work experience through internships and cooperative education—paid work assignments with corporations and organizations around the U.S. and abroad.

## Fellowships

<http://fellowships.rit.edu>

(585) 475-4466

All students and alumni with excellent academic records can apply for a competitive fellowship or scholarship. These outside awards fund undergraduate and graduate study in the U.S. or abroad. Some of the prestigious fellowships that students and alumni can apply for include the Fulbright Fellowship, the NSEP Boren Fellowship, Freeman Asia, Rhodes, Gilman, and many more. The Fellowships office assists in identifying the best program for each individual applicant and provides guidance throughout the application and selection processes.

## Honors program

<http://honors.rit.edu>

(585) 475-511

The RIT Honors Program provides a supportive and encouraging environment for students with intellectual curiosity and academic distinction. Students benefit by working closely with faculty, and by sharing academic experiences with other honors students, both in and out of the classroom.

The Honors Program centers on three basic ideals of leadership, scholarship, and citizenship, and is designed for students who:

- seek to challenge themselves in exemplary learning experiences such as undergraduate research projects, honors seminars, and study abroad;
- wish to extend and share their knowledge through participation in professional associations and conferences; and
- aspire to join other outstanding students and faculty in a wide range of special activities throughout the year, including field trips, social events, and community service projects.

Honors activities and courses are designed to enhance the professional dimension of the student's collegiate experience. Major components of the Honors Program include professional opportunities within the student's home college, enhanced general education courses, and complementary learning experiences. Special features include:

- An Honors curriculum: Special courses, seminars, projects, and advising are offered in the student's home college and in general education honors courses within the College of Liberal Arts and the College of Science.
- Research and experiential learning: The Honors Program provides opportunities to work with faculty on applied and interdisciplinary research projects.
- Honors advising: Each college has designated an experienced faculty or staff member to serve as its Honors advocate. The advocate will work with students one-on-one, advising them as they develop plans for professional and experiential learning opportunities such as research placements, co-ops, internships, and study abroad.
- Study abroad: Honors students are encouraged to pursue study abroad to add an international perspective to their education. Honors students work with the director of the Study Abroad program for guidance on how to include such experiences in their academic career.
- Honors residence: Students may choose to live in honors housing in the residence halls. This option increases interaction with other honors students outside the classroom.

**Requirements:** Students in the Honors Program are required to enroll in honors courses and to fulfill approximately half of their liberal arts requirements with honors courses. Students are expected to participate in co-curricular activities within their college. Honors students are also required to complete complementary learning experiences each year. All students who wish to continue in the program are reviewed annually by the Honors Committee. Program continuation is subject to maintaining grade-point average and other requirements.

**Admission:** Applicants who submit RIT's Application for Undergraduate Admission (or the Common Application) by February 1 may be invited to the Honors Program if their high school grades, rank, and test scores place them among the top 5 percent of the

applicants to the university. This typically requires outstanding grades and SAT or ACT scores, and a class rank of 95 percent or higher. Late entry into the Honors Program is also possible after a student's second or fifth quarter at RIT.

**Scholarship availability:** All students enrolled in the RIT Honors Program receive significant academic (merit) scholarships from RIT.

## Independent study

An independent study project is a program of study, research work, or creative work executed under a specific set of rules without classroom-type assistance from an instructor, but under the guidance and direction of an instructor, which would earn for the student a predetermined number of credits. Students have a limited opportunity to obtain credit for independent study and to use that credit to meet degree requirements. Generally, independent study projects represent work that is different from, or an extension of, existing course offerings. The rules governing independent study projects can be found in section D3.O of the RIT Policies and Procedures Manual.

## Online learning

<http://rit.edu/online>

**(585) 475-2229 (V/TTY)**

RIT offers numerous degree and certificate programs in an online format, most of which can be earned without ever coming to campus. Including graduate and undergraduate courses, RIT offers hundreds of courses online annually. Each year, nearly 5,000 students enroll in an online learning course. Students are encouraged to select and apply to their chosen academic program, but in some cases may enroll in courses prior to matriculation into a program.

Online learning offers students the flexibility to learn on their own time, when and where it best meets their needs. All online courses are taught using Internet and Web-based technologies. Students must have Internet access, a computer, DVD player and monitor, and a telephone to participate in courses. Not all courses use the same technologies. Some take advantage of toll-free phone conferences or Web conferences, while others use text-based chat or CD-ROMs. Some have Web-based simulations and some require additional software to complete course requirements. All courses use asynchronous Internet/Web-based tools for the fundamental class structure.

Online students have full access to customer and technical support through a toll-free phone number and e-mail. Online learners also have full access to the library and library services. Other online services include registration, orientation, access to student records and course material ordering. Registration also can be accomplished through touchtone phone and fax. Annual offerings can be found at <http://infocenter.rit.edu>. Officially registered students receive an e-mail about three weeks before the quarter begins welcoming them to online learning at RIT and directing them to RIT's course management system, myCourses. From there, they can access the Online Learning Student Community to read and complete the Quarterly Startup. As part of the Quarterly Startup self-guided tutorial, students may review course information, order course materials online for mail delivery, and review any proctored examination requirements.

All courses offered online meet the same rigorous objectives set for traditional classroom experiences. Faculty members who teach online courses often teach the same class in a traditional format.

However, just as each professor establishes the learning outcomes for a traditional course, his or her individual choices will be present in the online classroom. Most classes establish either a weekly schedule for learning activities or a project-based learning approach, where deliverables are due after certain learning outcomes are accomplished. These may include team-based projects, required asynchronous discussion, or computer programs. Most classes also include various readings either from textbooks or electronic reserves. Students interact online with other students to exchange ideas and collaborate much as they would face-to-face.

Online learning serves students throughout the United States and in nearly 40 countries. Students living near the RIT campus in Rochester, N.Y., may choose to take both online and traditional courses as a way of increasing flexibility and remaining on target to complete a degree.

## Rochester Area College course work agreement

RIT is a member of the Rochester Area College (RAC) consortium. These colleges have instituted a cooperative program that provides undergraduate students the opportunity to register at a member college without additional tuition charges.

The following Rochester area institutions of higher education are consortium members:

- Alfred University
- Colgate Rochester Crozer Divinity School
- Empire State College
- Finger Lakes Community College
- Genesee Community College
- Hobart & William Smith Colleges
- Keuka College
- Monroe Community College
- Nazareth College of Rochester
- Roberts Wesleyan College
- Rochester Institute of Technology
- St. Bernard's Institute
- St. John Fisher College
- State University College at Alfred
- State University College at Brockport
- State University College at Geneseo
- University of Rochester

Students must meet the following criteria in order to enroll as an intercollegiate student:

1. The requested course is not available at the home school.
2. The student is a full-time (12 credit hours or more) matriculated undergraduate student at his or her home school throughout the duration of the requested course.
3. The course is applicable to the student's undergraduate degree program.
4. Registration for the course is on a space-available basis.
5. If the requested course causes the student to assume a course overload, the additional charges will be based on the current rates of the home school during the semester or quarter in which the registration takes place.
6. Students enrolled at area colleges may register for two courses at RIT.

7. The program is not available in the summer.

Additional criteria are outlined on the intercollegiate registration form available at the Registrar's Office.

## Study abroad

<http://studyabroad.rit.edu>

(585) 475-4466

To prepare students for success in our global society, RIT offers a range of study abroad opportunities. Living and studying in a foreign country goes beyond the traditional classroom setting and can provide an invaluable experience when it comes to immersing oneself in a foreign culture, experiencing a different educational environment, and gaining interpersonal and foreign language skills that could be of interest to future employers.

RIT has three global campuses located in Dubai, Croatia, and Kosovo in which students can study abroad for a quarter. Programs led by RIT faculty are in most cases are offered in the summer, although a few are offered during the quarter. Many programs—including programs in Marburg, Germany; Genoa, Italy; and a program at RIT's campus in Dubrovnik, Croatia—offer courses with credits that can be applied toward a student's liberal arts requirements. Other RIT-sponsored programs are offered in biomedical science and health care in Dubrovnik, Croatia; design in Dessau, Germany; photography in Dubrovnik, Croatia; and film in Paris, France, to name a few.

Through affiliation agreements with other institutions, such as Arcadia University, Syracuse University, and the Siena School for Liberal Arts in Italy (including programs for deaf/hard of hearing students and interpreting majors), RIT also provides students with the opportunity to enroll in study abroad programs in many locations around the world while receiving RIT credit and financial aid. A wide selection of program choices and geographical locations allows students from every academic discipline to meet their study abroad needs and goals, ranging from intensive foreign language/cultural immersion programs to taking classes in their major.

Program locations include, but are not limited to, the United Kingdom, Ireland, Italy, France, Denmark, Germany, Spain, Hungary, Greece, Costa Rica, the Turks and Caicos Islands, Ghana, Czech Republic, Hong Kong, Singapore, Australia, China, and New Zealand. In addition, our program selections and geographical regions continue to grow. Recently added programs can be found in Turkey, Portugal, Bhutan, Botswana, Belgium, Sweden, Senegal, Taiwan, Thailand, Russia, Japan, and India.

## Undergraduate research

[www.rit.edu/research/](http://www.rit.edu/research/)

Research is about solving problems, and RIT recognizes that many careers require strong research skills. RIT provides a wide variety of undergraduate research opportunities—from working on research projects sponsored by business, industry, a government agency, or RIT; to an original research project in collaboration with a faculty member; to facilitating applied scientific, engineering, or market research in a corporate or industrial setting, or as part of the RIT co-op or internship programs; plus a host of other options.

A number of RIT programs offer exciting opportunities for students to engage in undergraduate research. Examples of these opportunities include:

- *The Simone Center for Innovation and Entrepreneurship*: Promoting entrepreneurial endeavors, the center offers students applied experiences, such as for-credit opportunities to consult on pre-seed and start-up ventures; a business plan competition; conferences; a minor in entrepreneurship; and courses in innovation, strategic growth, and business creativity.
- *Center for Student Innovation*: An RIT center in which multidisciplinary student teams collaborate with faculty and staff in the conception, development, and implementation of innovative solutions to problems.
- *Biological Sciences Research Scholars Program*: A substantial hands-on experience where students execute their own high-quality research projects under the guidance of faculty mentors. Students gain valuable research experience, write papers discussing their work, present their findings, and participate in discussion and lecture series.
- *Chemistry Research Scholars Program*: Intended for students to engage in serious undergraduate research in chemistry, the program features a significant research experience for students to design and execute their own research under the direction of a faculty mentor. Participants take part in discussions and lectures, earn opportunities to travel to conferences, and present their findings.
- *Economics Undergraduate Research*: The Economics Department encourages its undergraduate students to undertake both independent and collaborative research projects. Some projects, co-authored by RIT Economics undergraduate students and faculty, are published in peer-reviewed economics research journals.
- *Undergraduate Research and Mentoring for Deaf Students in Biology*: Designed to increase the number of deaf and hard-of-hearing students performing undergraduate research in biology, the research and mentoring program features a two-year research project, seminars, and prep work that strengthens students' candidacy for graduate programs in biology.
- *Open Publishing Lab*: Based in the School of Print Media, the lab offers a place for students and faculty to collaborate on creating the next generation of publishing platforms.
- *National Science Foundation – Research Experience for Undergraduates (REU)* programs currently under way include Imaging in the Physical Sciences led by Dr. Stefi Baum, director and professor, Chester F. Carlson Center for Imaging Science; and External Graph Theory and Dynamical Systems led by Dr. Darren Narayan, professor in the School of Mathematical Science and director of Undergraduate Research.

As a culmination of the undergraduate research experience, each year RIT hosts the Undergraduate Research Symposium in August that honors RIT student research achievements. This event includes more than 100 presentations from across campus by undergraduate students who have conducted research with faculty members during the previous year.

# Academic Policies and Procedures

RIT's educational mission is to prepare men and women for living and working in a democratic and technological society by offering curricula that meet those needs within an educational community that supports and encourages individual achievement in an atmosphere of pluralism and diversity. Moreover, RIT sets high standards that challenge students to develop values that will enhance their lives professionally and enable them to contribute constructively to society.

## Academic advising

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Academic advising is an integral part of a student's education at RIT. Advising is provided through the student's home department. Please consult the individual college sections of this bulletin for specific information.

## Confidentiality of student records

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In accordance with the Family Education Rights and Privacy Act of 1974 (commonly known as the Buckley Amendment), RIT students have the right to inspect, review, and challenge the accuracy of their official educational records. Students are also accorded the right to receive a formal hearing if dissatisfied with responses to questions regarding the content of the record.

RIT policy ensures that only proper use is made of such records. Therefore, with the exception of copies made for internal use (those provided to faculty and staff who have a legitimate need to know their contents), in most cases no copy of a student's academic record (transcript) or other nonpublic information from student records will be released to anyone without the student's written authorization. The determination of those who have a "legitimate need to know" (e.g., academic advisers, government officials with lawful subpoenas, etc.) will be made by the person responsible for the maintenance of the record. This determination will be made carefully, in order to respect the student whose record is involved. If an employer, for example, requests a transcript, he or she will have to obtain a written request from the student or former student.

The **Buckley Amendment** allows RIT to declare certain pieces of information as "directory" and therefore releasable without the specific permission of a student. Such "directory information" could include a student's name, date and place of birth, major field of study, participation records in official RIT activities and sports, weight and height of a member of an athletic team, dates of attendance at RIT, and degrees and awards received. Students may make written

request of the Office of the Registrar that such directory information not be released. Because requests for nondisclosure will be honored by RIT for only one year, requests to withhold such information must be submitted to the Office of the Registrar annually.

Copies of the full act and RIT's written policies relating to compliance with the law are on file in the Office of the Registrar. Also available is information regarding a student's right to file a complaint with the U.S. Department of Education concerning the alleged failure of RIT to comply with the requirements for this act.

## Transcripts

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A student's official academic record is maintained by the RIT Office of the Registrar and is normally reflected through a transcript. All requests for transcripts must be in writing and should include the student's full name (or name used while at RIT), student identification number, dates of attendance, and signature to assure proper identification of the record requested. Transcripts are usually prepared and available within one week after the request is received.

Under no circumstances will a partial transcript be issued, nor will a transcript be issued to a student who is indebted to RIT. Transcripts issued directly to a student will be stamped with the following: "This official transcript issued directly to the student." Transcripts from high schools and universities that have been received in support of admission applications and/or transfer credit evaluation will not be reissued by RIT.

## Transfer credit

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Transfer credit at the undergraduate level will usually be granted for those courses completed with a grade of C or better in other regionally accredited colleges or universities and specific armed services course work that parallels courses in the program (including options, if any) for which the student is applying or is currently registered. However, if the program (or option) that the student finally chooses to pursue does not include any or all of the courses evaluated, they will not be credited toward requirements for a degree. RIT students who wish to take courses at other accredited institutions and receive transfer credit toward their RIT degree need to secure the prior written approval of the adviser(s) of the RIT college(s) concerned in order to assure appropriateness of the course content and course level for those courses.

Deaf and hard-of-hearing students may transfer into an NTID program, or they may qualify for transfer directly into a program



in another RIT college with NTID sponsorship. The transfer credit of deaf students accepted to NTID’s Summer Vestibule Program will be evaluated in the fall when they are accepted into a specific program.

**Credit by exam:** RIT grants credit for satisfactory scores on examinations covering objectives and contents parallel to the RIT courses for which students seek credit. Usually these are Advanced Placement (AP), International Baccalaureate (IB), College-Level Examination Program (CLEP), New York state proficiency examinations, or RIT-prepared examinations.

**Advanced placement:** Many students earn advanced standing through Advanced Placement (AP) examinations. **The minimum required score and the manner in which credits are applied depend upon a student’s exam score and choice of academic program.** No credit is awarded for scores of 1 or 2 on AP exams. Advanced Placement credits may be applied in fulfillment of general education, program requirements, and/or minor requirements. Students may need to complete additional course work in order to fulfill all specific program requirements. Students should consult with their adviser for additional details. The policy covering the awarding of credit for Advanced Placement examinations is reviewed annually and may be subject to change.

**International baccalaureate:** Many students earn advanced standing through International Baccalaureate (IB) examinations. **The minimum required score and the manner in which credits are applied depend upon a student’s exam score and choice of academic program.** International Baccalaureate credits may be applied in fulfillment of general education, program requirements, and/or minor requirements. Students may need to complete additional course work in order to fulfill all specific program requirements. Students should consult with their adviser for additional details. The policy covering the awarding of credit for International Baccalaureate examinations is reviewed annually and may be subject to change.

**College Level Examination Program:** The College Level Examination Program (CLEP) is a nationwide system of credit by examination offered by the College Board. Any person entering college, presently attending college, or out of college may take CLEP examinations and seek credit by submitting the test results to RIT for evaluation. Credit recommendations for CLEP vary depending on the subject and examination results. CLEP examinations are offered through the RIT Counseling Center.

### The grading system

RIT uses a single-letter grading system. All grades are determined and issued by the faculty in accordance with the RIT Institute Policies and Procedures Manual and the particular standards of the attempted courses. Individual instructors have an obligation to carefully describe the standards and grading practices of each course. The accepted RIT letter grades are as follows:

- |                        |                  |
|------------------------|------------------|
| A Excellent            | I Incomplete*    |
| B Good                 | R Registered†    |
| C Satisfactory         | S Satisfactory†  |
| D Minimum Passing      | W Withdrawn      |
| E Conditional Failure* | X Credit by Exam |
| F Failure              | Z Audit          |

\* E and I grades are considered temporary and will revert to a grade F unless changed by the faculty within a prescribed period of time.

† R and S grades are restricted to specific types of courses.

For more specific descriptions and procedures concerning the above, see Section D5.0, Institute Policies and Procedures Manual, available in the Office of Student Affairs or on reserve at Wallace Library. The manual is available online at [www.rit.edu/academicaffairs/Manual/](http://www.rit.edu/academicaffairs/Manual/).

### Course registration

To be officially registered at RIT, a student must be academically eligible, have been properly enrolled in a course, and have made the appropriate financial commitment. The registration process is uncomplicated and can be accomplished in a variety of ways. Typically, students start selecting courses six to eight weeks before the academic term begins and can register online, in person at their home department or the Registrar’s office, or via fax, or mail. The registration period ends on the seventh day of the term, including weekends. These first seven days of the quarter are typically known as the Add/Drop period. Specific dates and procedures can be found in the annual Registration Guide. RIT reserves the right to alter any of its courses at any time.

Students at RIT are free to choose their own courses and course loads. Colleges offering the courses are equally free to restrict enrollment to particular groups of students (for example, students in specific year groups or students who have already satisfied course prerequisites). Most courses also are restricted in class size. Students are strongly encouraged to seek out academic advice and plan their academic careers carefully.

Failure to make appropriate financial commitment, satisfy New York state health immunization requirements, or fulfill course prerequisites can result in the loss of courses for which a student has registered and/or prohibition of future registrations.

### Auditing courses

Courses that are taken on an audit basis will not count toward a student’s residency requirement. They may not be used to repeat a course taken previously and do not satisfy degree requirements. Permission to audit a course is granted only by the college offering that course. Any changes in registration between credit and audit must be completed prior to the end of the add/drop period.

### Withdrawal from courses

A student may withdraw from a course up to the end of the eighth week of the quarter. A grade of W will be assigned and the course retained on the student’s permanent academic record. Under exceptional situations, a dean may approve a course withdrawal following the eighth week. For policies pertaining to withdrawal from the university and tuition refund please refer to the Expenses and Financial Aid section of this bulletin.

### Dean’s List eligibility

Matriculated students who earn at least 12 credit hours in an academic term, have a quarterly grade-point average of 3.40 or better, have not been placed on probation due to a low cumulative grade-point average, and do not have any grades of I, D, E, or F in that term are eligible for selection to the Dean’s List of their college.



Students who are pursuing their degree on a part-time basis are assessed for Dean's List consideration based upon course work over a three-quarter period. Criteria for part-time students are essentially the same as those for full-time students. However, at least 18 credit hours must be earned during the three-quarter period, and each student must have accumulated at least 24 credit hours in his or her RIT career.

## Academic probation and suspension

All matriculated students at RIT are expected to meet or exceed certain minimal academic standards. Failure to do so will result in being placed on academic probation or suspension. All such actions are taken by college deans at the end of each quarter; once the action is made, it may be changed or revoked only by a dean. The RIT educational policy governing probation and suspension is specific (see the RIT Institute Policies and Procedures, Section D5.0). Three grade-point averages (GPAs) are calculated and used in probation/suspension decisions:

Program Quarterly GPA = grade average of all courses taken in a term that are applicable to a student's degree requirements.

Principal Field of Study GPA = grade average of all courses a student has taken within his or her specialized field (usually from the student's home college).

University Cumulative GPA = grade average of all course work taken as either an undergraduate or graduate student at RIT.

### Academic probation

A student will be placed on probation if his or her program quarterly grade-point average falls below 2.0\* (a C average) or if his or her grade-point average in the principal field of study (based upon at least 20 credit hours attempted in the principal field at RIT) falls below 2.0.\* To be removed from probation, the student must raise both averages to at least a 2.0.

### Academic suspension

- Any student who is on probation, as given above, and who is not removed from probation in the two succeeding periods of study in which credit is earned will be suspended.
- Any student who has been placed on probation after having been removed from probation and whose program cumulative grade-point average is below 2.0\* will be suspended. Any student who has been placed on probation after having been removed from probation and whose program cumulative grade-point average is 2.0\* or above will be granted one quarter to be removed from probation before suspension.
- Any student whose program quarterly grade-point average falls below 1.00 will be suspended.
- Students who have been readmitted to the original program after having been suspended and then go on probation will be suspended.

Suspended students generally must wait at least one year before reapplying for admission into an RIT degree program. While suspended, a student may not enroll in any RIT course work, unless the suspension is waived by an academic dean. Then he or she may be limited to taking courses on a nonmatriculated basis.

\*The physician assistant program requires a 2.8 grade-point average.

## Class attendance

Students are expected to fulfill the attendance requirements of their individual classes. Absences, for whatever reason, do not relieve students from responsibility for the normal requirements of the course. In particular, it is the student's responsibility to make individual arrangements prior to missing class. Attendance at class meetings on Saturdays or at times other than those regularly scheduled may be required.

## Student retention

RIT's graduation rate for freshmen seeking bachelor's degrees is 66%. Additionally, 88% percent of first-time, full-time freshmen register for their second year (source: IPEDS 2010 Enrollment and Graduation Rate Surveys).

# Student Services

## Academic Support Center

[www.rit.edu/asc](http://www.rit.edu/asc)  
(585) 475-6682

The Academic Support Center provides academic assistance to students, faculty, and staff. The center offers drop-in services for mathematics/physics and writing support for all levels of students, from freshmen to graduates. In addition to skill development, the center offers workshops that teach students how to improve their study techniques and make the most of their individual learning abilities. Individualized appointments are available as well as assessment of learning challenges. Academic Support Center services are free to RIT students (structured monitoring services are fee-based).

**Academic Assessment Program:** The goal of the Academic Assessment Program is to help students determine why their academic performance is not what they, or others, would like it to be. The variety of factors that may interfere with academic performance includes learning style, content background, study habits and approaches, unclear choice of major, and/or disabilities. The AAP uses interviews, surveys, screening instruments, and diagnostic testing to explore potential sources of difficulty.

The AAP is designed to help students identify the source of academic problems and assist them in overcoming these obstacles by referring them to resources both on and off campus.

**Institute Testing Services:** Institute Testing Services is dedicated to providing design, implementation, and administration of group testing programs for ASC students, RIT students, and community groups. The department is responsible for RIT's role as a National Testing Center and supervises the administration of the Graduate Record Examination (GRE) Subject Exams, Scholastic Achievement Test (SAT), Law School Admission Test (LSAT), National Certified Counselors (NCC) certification examination, and DANTES examination. Institute Testing Services also serves as a paper and pencil proctoring site for distance learners.

**Structured Monitoring Program:** This program is committed to helping individuals recognize and access their natural learning abilities and offers academic coaching designed for students who anticipate difficulties navigating the complexities of the academic environment. Structured Monitoring recognizes that each student is unique and responds to this by offering three levels of check-ins: weekly, biweekly, or daily. Students may select their level of participation on a quarterly basis. This is a fee-based service.

**Mathematics services:** The center's math program supports students' progress in learning mathematics. Tutors are located in the Bates Study Center in Gosnell Hall. This is a drop-in tutoring center staffed with peer tutors and ASC faculty. Tutors can help students with math and physics homework, lecture notes, textbook reading, practice quizzes, and practice tests. Math review packets cover topics in algebra, trigonometry, and calculus. Students encountering difficulties in their math courses may schedule an appointment with an ASC math instructor for a math assessment. Individualized math is a non-credit, self-paced math review course offered to students who have completed a math assessment. Students follow a unique program of study based on their math background and future math needs.

**Reading services:** ASC reading services provides reading strategies for students who are having difficulty deciphering their textbooks. Services provided include standardized reading testing and evaluation, informal reading assessment, textbook strategies, ways to improve vocabulary, and information about speedreading. For more information, contact the Academic Support Center.

**Supplemental instruction:** Supplemental Instruction offers a series of weekly study sessions open to all students enrolled in **supported sections** of historically difficult courses. During SI, students meet to compare notes, discuss important concepts, and develop study strategies. These voluntary study sessions are planned and facilitated by an undergraduate student leader who has recently completed the course. To view a list of SI-supported course sections or to learn more about how to become an SI leader, please visit [si.rit.edu](http://si.rit.edu).

**Study skills:** The ASC Study Skills area offers students the opportunity to meet with faculty who will assist in the development of study strategies to promote academic success. Individual instruction, coaching, and evaluation are available. Students will find a series of one-hour workshops offered each quarter that includes topics such as time management, listening and notetaking, text reading and marking, test taking, and test preparation. Student groups may request workshops and presentations from study skills faculty. Additionally, students will find materials on the ASC website.

**Tutor training:** A comprehensive and up-to-date website lists all available tutorial services on the RIT campus. In addition, tutor training workshops are offered for peer tutors who have been hired in any of RIT's learning centers or academic departments. The tutor training program does not offer content training. For more information visit [www.rit.edu/tutoring](http://www.rit.edu/tutoring).

**Writing Center:** The Writing Center provides individualized instruction designed to improve students' ability to complete college writing assignments. Writing instructors work with students at every stage of the writing process. Instruction can be provided to develop students' editing and proofreading skills. This is a drop-in center with no appointments necessary.

**Study centers:** Bates Study Center (1200 Gosnell) provides support in mathematics and physics. ASC Writing Center (1180 SAU) provides instruction on becoming a more effective writer. Sol Study Center (1016 Sol Heumann Hall) provides support in mathematics/physics and writing during weekday evening hours. Global Village Study Center (Study Abroad conference room) provides support in mathematics and physics during weekday evening hours.

## Cooperative Education and Career Services

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[www.rit.edu/co-op/careers](http://www.rit.edu/co-op/careers)

(585) 475-2301 (voice), (585) 475-6905 (TTY)

The Office of Cooperative Education and Career Services supports the university's career focus by providing effective, high-quality services to all students and alumni.

Among the many experiential education opportunities offered, the university is best known for its cooperative education program. Initiated in 1912, the program is one of the oldest and largest in the world. Nearly 2,000 employing organizations across the country and around the world participate annually, hiring more than 3,500 students. Co-op significantly enriches students' education, providing them with the opportunity to integrate the practical experience gained through co-op with classroom and lab study.

Key student services include the following:

**Individual advisement:** Coordinators support specific academic units and are available to meet on a one-to-one basis with students and alumni on career development and employment. These sessions are critical in developing individual job search plans and addressing questions and issues that arise during the job search process. Coordinators are available by appointment or on a walk-in basis.

Deaf and hard-of-hearing bachelor's-level students may work with the staff of the NTID Center on Employment in addition to coordinators in the Co-op and Career Services office.

**Workshops/information sessions:** The office prepares co-op and graduating students for their job search through courses, workshops, and orientations. Topics include resume writing, cover letter writing, effective job search strategies, interviewing techniques, professional dress and etiquette, on-the-job success, and more.

**Career and employment resources:** The office and its website are both resources for informational material and useful employment and career development services. In addition, students have access to CareerSearch and Vault Career Insider Guides, two online subscription databases.

**Job postings/interview opportunities:** The office works hard to maintain and expand working relationships with employers in order to develop employment opportunities for all students and alumni. Through career fairs, on-campus employer interviewing programs, and specific job postings, students have access to job openings through the office website, where they can store their resumes, search a database of employment opportunities, and apply to positions online.

**Work abroad program:** The office is constantly establishing partnerships to assist students in obtaining meaningful work experiences overseas—many of those experiences for co-op credit. Students last year worked abroad in more than 35 countries.

**Graduate school advising:** Information and personalized advising on selecting and applying to graduate schools is available through the office, with dedicated services and staff to assist in the process.

**Mentor program:** The Career Mentoring Program is a joint initiative of the offices of Cooperative Education and Career Services and Alumni Relations. Through the program, alumni and friends volunteer to mentor current students in the areas of career exploration and information.

**Ongoing communication:** The office communicates regularly with students through e-newsletters, list-serves, e-mails, and a customized student website portal.

## Counseling Center

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[www.rit.edu/counseling](http://www.rit.edu/counseling)

(585) 475-2261

University life can be one of excitement and self-discovery. At the same time, it can generate academic, emotional, personal, social, and even financial concerns. At times these concerns can make it difficult to succeed or function while at school.

Counseling is an excellent way to address such issues, to learn more about yourself and others, and to develop new life skills.

The center's staff of professional counselors and psychologists is committed to supporting your academic and personal success. Counselors work with students whose concerns range from the everyday challenges of university life to more disruptive psychological issues. All services provided by the center are free to eligible students. Counselors fluent in American Sign Language are available for deaf and hard-of-hearing students.

Common concerns shared by students include:

- Academic performance
- Choice of major or careers
- Anxiety or stress
- Depression
- Feeling overwhelmed
- Self-esteem
- Family, friend, and partner relationships
- Eating and body image concerns
- Loss of an important relationship
- Illness or death of a loved one
- Out-of-control feelings
- Sexual orientation
- Sexual assault and violence
- Race, ethnicity, nationality, or other cultural identity
- Gender identity
- Suicidal feelings

**Location:** The Counseling Center is located in the August Center, immediately above the Student Health Service.

**Hours:**

Monday – Friday: 8:30 a.m. – 4:30 p.m.

Wednesday evenings – by appointment only

**Mental health emergencies:** If the emergency is life threatening, call 911 or go to the nearest emergency room. For emergencies

during business hours (8:30 a.m. – 4:30 p.m.), call (585) 475-2261 or come to the center and identify the situation as an emergency. If you or someone else is in physical danger, call Public Safety at (585) 475-3333. Do not use e-mail in an emergency situation. For after-hours emergencies, contact Public Safety or Life Line (585) 275-5151, a confidential Rochester hotline.

**Career exploration counseling:** Counselors can assist students in making thorough appraisals of their interests, abilities, and personality traits so they can use this information in developing educational and vocational plans. Aptitude, interest, and personality tests may be used in this assessment process.

**Career exploration resources:** Located in the reception area of the center, career exploration resources include occupational information on a variety of careers, as well as vocational and educational reference books. The center and its resources are available on a walk-in basis.

**Confidentiality:** All counseling services are confidential. The center will not release information about students without their written permission except where required by law, as required to protect a student or others from physical danger, or upon court order (an extremely rare occurrence).

**Making an initial appointment:** Scheduling an intake appointment is easy. Simply call (585) 475-2261 or stop by the center. During the initial visit, which lasts approximately 90 minutes, students will be asked to complete a confidential questionnaire and to briefly speak with an intake counselor about their immediate concerns.

Upon reviewing the student's intake information, a counselor will briefly explain options that may be appropriate. These might include scheduling a follow-up appointment with a counselor, getting the student into a support or therapy group, or referring the student to another RIT office for services.

If the intake counselor recommends counseling at the center, students will be assigned a counselor and scheduled for a subsequent appointment. On occasion, students are referred to community resources for specialized or continued counseling. In such instances, the center will assist them in locating a suitable resource.

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## Disability Services

[www.rit.edu/dso](http://www.rit.edu/dso)  
(585) 475-2023

RIT is committed to providing students with disabilities equal access to programs, services, and physical facilities, and to fostering an environment where all community members are welcomed, valued, and respected.

Students who would like to request accommodation due to a disability should submit a "Request for Accommodations" form and appropriate documentation of the disability to the Disability Services Office. The request form can be found online at [www.rit.edu/dso](http://www.rit.edu/dso) or requested from Disability Services at (585) 475-2023.

The director will review a student's request for accommodation and supporting documentation and recommend appropriate and reasonable accommodations as needed.

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## Diversity at RIT

[www.diversity.rit.edu](http://www.diversity.rit.edu)  
(585) 475-6546

The Office for Diversity and Inclusion serves as a vital resource to develop and implement campus-wide initiatives and programs to promote diversity and inclusive excellence to students, faculty, and staff. Through various programs and special projects, the office continues to foster relationships between RIT and the greater Rochester community. The office is committed to the development of diversity education and monitors the areas that target diverse populations across the university.

**Multicultural Center for Academic Success** [www.rit.edu/mcas](http://www.rit.edu/mcas)  
(585) 475-4704

The Multicultural Center for Academic Success serves all students regardless of their ethnic background. Its mission is to aid in the retention and graduation of African American, Latin American, and Native American students. MCAS offers programs that focus on academic excellence, mentoring, community development, leadership, and professional success. MCAS also offers a variety of professional development events, cultural heritage months, celebrations of diversity, and partnerships with student clubs and organizations to help students connect with the RIT community and establish a positive sense of campus life that celebrates RIT's cultural diversity.

**McNair Scholars Program** [www.rit.edu/mcnair](http://www.rit.edu/mcnair)  
(585) 475-7611

The Ronald E. McNair Post-baccalaureate Achievement Program serves a diverse group of talented second- and third-year students who are interested in pursuing post-baccalaureate education. The program provides enriching scholastic experience that prepares eligible scholars for graduate education, with an emphasis on doctoral studies. This preparation includes research experience, the presentation of research at local and regional symposiums, and graduate school seminars and workshops.

**Future Stewards Program** [www.rit.edu/futurestewards](http://www.rit.edu/futurestewards)  
(585) 475-4982

The Future Stewards Program was established to increase the success rate and number of Native scholars (Native American, Alaska Native, and First Nations) in science, technology, engineering, and math disciplines, along with other areas of need in Indian society. The program partners with students and Tribal nations, organizations, and corporations to create opportunities for Native scholars to develop professionally, personally, and culturally. The program is dedicated to helping Native scholars succeed by recruiting, retaining, and returning scholars to the Tribal community upon graduation.

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## English Language Center

[www.rit.edu/studentaffairs/elc/](http://www.rit.edu/studentaffairs/elc/)  
(585) 475-6684 (voice/TTY)

The English Language Center offers both full- and part-time study of English to non-native speakers. Class offerings include conversation, grammar, writing, vocabulary, reading, pronunciation, presentation skills, business communication, and TOEFL preparation.

**Full-time program:** The intensive English language program consists of 20 hours of class instruction each week at beginning, intermediate, and advanced levels. There is also a learning lab where students may work on specific language skills and obtain extra



assistance with their writing. There is a fee for English language services. This intensive study program meets the immigration requirements for the Certificate of Eligibility I-20 for F-1 student status.

Before a course of study can be selected, students are tested to determine their levels of English proficiency and diagnose their specific language needs.

**Part-time program and individualized instruction:** In addition to the full-time program, students may register for one or more English language courses. The center also offers private English classes tailored to individual needs. Pronunciation and conversation, as well as grammar, writing, reading, and vocabulary, may be studied in this manner. There is a fee for instruction.

**Foreign language instruction:** The center offers a fee-based program in which international students give lessons in their native languages. A trained language instructor supervises all student instructors. In addition to language, the international student can give lessons on the culture and customs of his or her country. Some of the languages offered have included Chinese, Japanese, Spanish, Portuguese, Hindi, Tagalog, Korean, French, and German. For more information about learning a new language or teaching your native language, call the English Language Center.

## ETC Production Services

<http://www.rit.edu/academicaaffairs/etc/>  
(585) 475-7703

ETC Production Services provides non-classroom production and event support. Individual services include:

**Video production services:** A full range of digital standard or high-definition video services, including recording guest speakers in auditoriums, creating public relations marketing videos, producing RIT's SportsZone and SportsZone Live shows, videotaping in television studios, and editing in state-of-the-art digital post-production facilities as well as 2D and 3D animation. Finished projects can be captioned and delivered in a variety of formats, including DVD, CD, Blu-ray, podcast, Web or videotape.

**Web/IT services:** Multimedia and Web production services include website design and development, website updates, online registration systems, multimedia presentations, database development, and video streaming.

**Event support services:** Production and management of large and small venue video and multimedia productions, media projection, location shooting, multi-camera support, live video streaming, and real-time captioning.

**Photography services:** A range of digital photographic services in studio or on location, creating visual resources for slide presentations, class documentation, portfolios, websites, and publications.

## Financial Aid and Scholarships

[www.rit.edu/emcs/financialaid/](http://www.rit.edu/emcs/financialaid/)

The Office of Financial Aid and Scholarships assists students and their families in identifying sources of financial aid to help meet the cost of a quality education. Currently, more than 12,000 undergraduate and graduate students receive over \$200 million in financial assistance from federal, state, and institutional resources in the form of scholarships, grants, loans, and part-time employment. For more information on financial aid, scholarships, grants, and loans, please see the Financial Aid and Scholarships section of this bulletin.

## First-Year Enrichment

[www.rit.edu/studentaffairs/fye/](http://www.rit.edu/studentaffairs/fye/)  
(585) 475-7033

The First-Year Enrichment program addresses the transitional needs and concerns of students as they begin their college experience. Students complete two required courses, Discovery (1720-050, 051) and Pathways (1720-052, 053), and have access to coaches who provide additional guidance and support. The courses are interactive and specifically designed to enhance the personal, academic, and professional success of first-year students and to facilitate academic and social integration into college. These courses intentionally engage students in small-group learning experiences with topics including problem solving, ethical decision making, personal and social responsibility, as well as academic fundamentals such as working in teams, managing projects, and presenting information. Course instructors serve as coaches who partner with students to provide assistance with transitional issues, establishing academic and personal goals, encouraging involvement in campus activities, and fostering connections with students' peers and their academic program.

**Course descriptions:** First-year transfer students who have successfully completed the equivalent of two full-time quarters (24 quarter credits) at an accredited institution of higher education and students who are at least 20 years of age may request exemption from the first-year requirement from the director of the enrichment program.

**Discovery 1720-050, 051:** This course focuses on topics such as independent thinking, ethical decision-making, personal and social responsibility, and utilizing campus resources. It also explores academic fundamentals such as time management and study skills. The course meets one time per week in the fall quarter. For first-year transfer students, a limited number of winter or spring sections are offered. Credit 1 (F)

**Pathways 1720-052, 053:** This course focuses on working in teams, project management, and the presentation of information. Course sections utilize one of three themes: leadership, innovation and creativity, or service. Students work on team projects with students from multiple majors and colleges. The course meets one time per week in either winter or spring quarter. Credit 1 (W, S)

## Graduate Enrollment Services

[www.rit.edu/grad](http://www.rit.edu/grad)  
(585) 475-2229

The Office of Graduate Enrollment Services provides central information and counseling services for students interested in enrolling in graduate degree programs offered through RIT's various schools and colleges. Contact the office for assistance in selecting an academic program, exploring financial aid opportunities, registering for classes, or receiving information about any aspect of graduate study at RIT. Staff members are available from 8:30 a.m. to 6 p.m., Monday through Thursday, and from 8:30 a.m. to 4:30 p.m. on Friday. You may also refer to the current online Graduate Bulletin.



## Higher Education Opportunity Program

[www.rit.edu/studentaffairs/heop/](http://www.rit.edu/studentaffairs/heop/)  
(585) 475-2506 (voice/TTY)

The Arthur O. Eve Higher Education Opportunity Program (HEOP) is a New York state- and RIT-funded program that provides eligible students with financial aid and academic support. A need-based access program, HEOP is committed to the recruitment and academic success of students with strong academic potential and personal initiative who would otherwise be excluded from higher education due to circumstances of academic and economic disadvantage.

To qualify, students must meet RIT academic criteria and financial guidelines set by the New York State Education Department. In addition to meeting economic criteria, applicants must have graduated from high school or the equivalent, be a New York state resident, never have attended college previously, and not be admissible through regular RIT admissions.

Transfer students may be eligible if they have initially attended college through an HEOP, EOP, SEEK or College Discovery program in New York state. Transfer students must apply to, and be accepted by, the HEOP office, the academic department they are applying to, and the Admissions office. HEOP transfers are accepted on a space-available basis. Please contact the office to ascertain availability prior to applying.

Students accepted as freshmen must attend and pass a four-week summer preparatory program prior to fall quarter entrance. During the summer program, students live on campus and attend classes designed to facilitate their entry into RIT. Further services for HEOP students include broad-based tutoring and comprehensive counseling services. In addition, office staff act as campus resources and advocates.

## Information and Technology Services

[www.rit.edu/its/](http://www.rit.edu/its/)  
(585) 475-4357

Computing and network services at RIT are provided by Information and Technology Services (ITS).

**Wireless, Google Apps at RIT, and more:** The campus-wide network includes high-speed wireless capabilities in all buildings on campus (except for the Riverknoll apartments and the RIT Inn & Conference Center). All RIT students are provided access to Google Apps at RIT. Included in the Google Apps at RIT suite is RIT Gmail, the home for student e-mail accounts at RIT.

A campus-wide online portal is available at <http://my.rit.edu>. Users can customize their own site on the portal with personal Web links in addition to enjoying such standard features as access to student government and RIT sporting events, University News, and the Student Information System, where individual student course information and grades are posted.

ITS, in conjunction with the Educational Technology Center, manages numerous computer labs and smart classrooms containing Windows and Macintosh workstations and printers. Most of these facilities are available to students for general computing use and to faculty for reserved class work. Lab assistants help people use the hardware and software available in the labs.

**RIT computer accounts:** Computer accounts are issued to students, faculty, and staff so that they can perform activities supporting educational goals and internal RIT functions. New incoming students

will receive instructions for setting up their computer account upon payment of their tuition deposit. This allows new students to use their accounts, get familiar with RIT online systems, and feel more a part of the RIT community before they arrive on campus.

**Computer security and safeguards:** RIT's Code of Conduct for Computer and Network Use guides campus-wide use of all computers and networks. This document, found online at [www.rit.edu/computerconduct](http://www.rit.edu/computerconduct), outlines RIT's official policy related to ethical use of computing and network resources. ITS put into place multiple safeguards to protect RIT's network environment and the integrity of individual user accounts. Additionally, ITS provides all students, faculty, and staff with anti-virus software free of charge.

**Computer-based training:** ITS, along with the Center for Professional Development, provides computer-based training modules that cover a wide variety of topics. Students, faculty, and staff can access numerous online courses in the areas of technology, e-business, and business/interpersonal skills. For more information on computer-based training, visit [www.rit.edu/eLearningZone](http://www.rit.edu/eLearningZone).

**Student employment information:** ITS employs more than 250 students and is one of the largest student employers at RIT. Student employment opportunities are available at the ITS HelpDesk, in Desktop Support, at colleges through Distributed Support Services, and within Technical Support and Administrative Support services. More specific information about job opportunities within ITS is available at [www.rit.edu/its/about/student\\_employment](http://www.rit.edu/its/about/student_employment). Additional information about student employment opportunities can be found at the Student Employment Office site at [www.rit.edu/seo](http://www.rit.edu/seo).

**Residential Networking (Resnet):** Residential Networking provides computer support to students living in residential housing at RIT. The Resnet team can assist students with connecting their computers to the RIT network, accessing campus computing resources, and troubleshooting computer software and hardware. Contact Resnet at (585) 475-2600 (voice), (585) 475-4927 (TTY), or [resnet@rit.edu](mailto:resnet@rit.edu), or visit <http://resnet.rit.edu>.

**Contacting the HelpDesk:** The ITS HelpDesk is located in room 1113 of Gannett Hall. Contact HelpDesk staff via telephone/TTY, e-mail, or the Internet:

(585) 475-HELP (4357)

(585) 475-2810 (TTY)

E-mail: [helpdesk@rit.edu](mailto:helpdesk@rit.edu)

Online: [www.rit.edu/its/help](http://www.rit.edu/its/help)

### Service hours

*Fall, winter, and spring quarter hours:*

Monday-Thursday: 7:30 a.m. to 9 p.m.

Friday: 7:30 a.m. to 5 p.m.

Saturday-Sunday: Noon to 5 p.m.

*Summer quarter, holidays, and quarter breaks:*

Monday-Friday: 7:30 a.m. to 5 p.m.

Saturday-Sunday: Closed

## International Student Services

<http://www.rit.edu/studentaffairs/iss/>  
(585) 475-6943 (voice/TTY)

International Student Services is the primary resource for more than 1,600 hearing and deaf international students from 100 countries, as well as for members of the campus community seeking cross-cultural information. The office provides assistance with immigration regulations and travel documents, helps international

students adjust to academic and cultural expectations in the United States, and provides cross-cultural programming for international students and the campus at large. The staff works closely with Global Union, international student clubs, and International House (the special-interest house in the residence halls for both international and American students). Off-campus programs are regularly coordinated with the Rochester International Council.

## Leadership Institute and Community Service Center

[www.rit.edu/lead](http://www.rit.edu/lead)  
(585) 475-6974

The Leadership Institute and Community Service Center provides a variety of experiences for students to engage in and learn about leadership and community service. Some examples of our opportunities include: a weekend leadership adventure with ropes course, a leadership certificate program, four different leadership courses, a corporate and an RIT leadership conference, a public speaking series, an alternative spring-break program, participation in the American Heart Walk and Hillside's Special Santa drive, and volunteer connections with more than 260 agencies in the Rochester area. For more information on leadership and community service opportunities, call or contact us via the Web.

## Libraries

[library.rit.edu](http://library.rit.edu)

The RIT Libraries includes the Wallace Library, the Cary Collection, the RIT Archive Collections, and the RIT museum. In addition, the Lawson Center, home to the RIT Cary Graphic Arts Press and the RIT Press, can be found within the Wallace Library.

Wallace Library is a high technology, multimedia resource center. It offers hundreds of databases and thousands of electronic books and journals, as well as traditional printed resources. Online resources can be accessed onsite, or around the clock from any location. Online course reading assignments and laptops are among the many other resources available in the Wallace Library.

If the library does not have what you need, it can be ordered through Information Delivery Services (IDS). Millions of additional books are available via ConnectNY, a service that provides access to the collections of 14 academic libraries in New York state. The Rochester Regional Library Council's Access program allows patrons to obtain a library card that offers access to other area libraries, including the University of Rochester and the state university colleges at Geneseo and Brockport.

Each college has a subject expert in the library to help with research. These subject experts are available seven days a week for individual assistance, while in-depth assistance is also available by appointment. You can connect with the subject experts by phone, e-mail or instant messaging. The Scholarly Publishing Studio provides one-stop service for advice and assistance in preparing research, articles, books, and other documents for publication.

Quiet study spaces for individuals and groups are available throughout the Wallace Library. Students can reserve group study rooms online. Java Wally's café is also a favorite spot for relaxing, studying, or meeting in an informal setting.

The Cary Library is a unique collection of more than 14,000 volumes of rare books illustrating fine printing and other materials

detailing the history of printing, book design and illustration, papermaking, and other aspects of the graphic arts. The RIT Archive Collections acquires, organizes, preserves and displays materials from the university's past. It is the primary resource for studying the history of the university.

Wallace Library is open more than 100 hours a week, with extended hours before and during finals.

## Margaret's House

[www.rit.edu/studentaffairs/margarethouse](http://www.rit.edu/studentaffairs/margarethouse)  
(585) 475-5176 (voice/TTY)

**Childcare programs:** Margaret's House is a state-licensed childcare center offering full-day quality care and education for children 8 weeks to 8 years of age. It includes a district-approved full-day kindergarten as well as after-school, vacation, and summer programs. The center is open to children of RIT students, faculty, and staff and to members of the greater Rochester community. Margaret's House is located on campus and is open year-round. Call for information and registration material.

- Infant and toddler programs: 8 weeks to 36 months
- Preschool programs: 3- and 4-year-olds
- Full-day kindergarten/after-school programs: 5- to 8-year-olds
- Lil' Kids on Campus summer program for children entering grades 1 through 4

## New Student Orientation

[www.rit.edu/studentaffairs/orientation/](http://www.rit.edu/studentaffairs/orientation/)  
(585) 475-7995 (voice/TTY)

RIT provides all entering students with programs designed to prepare them for a successful transition and adjustment to college life and further acquaint them and their families with the RIT community. Our programs provide the opportunity to:

- meet the faculty and dean of the student's college,
- address the academic and social issues involved in beginning college or transferring from one college to another,
- attend academic planning sessions,
- learn about student services,
- understand the family's role in promoting student achievement and success,
- learn about financing a college education, and
- participate in community and social activities.

Our fall orientation programs are offered prior to the start of classes. The first-year student program lasts five days, and attendance is required. Transfer students participate in a series of programs designed to meet their unique needs. Brief mini-orientations are offered at the start of the winter and spring quarters.

## NTID Resources

[www.ntid.rit.edu/students/resources/academic](http://www.ntid.rit.edu/students/resources/academic)

The National Technical Institute for the Deaf offers an array of educational and service activities for deaf and hard-of-hearing students. These activities and services include career and mental health counseling, student-life programming, and communication skills development in the form of speech-language instruction, speechreading, and listening/audiological services, as well as a state-of-the-art learning center.

## NTID Learning Consortium

[www.ntid.rit.edu/nlc](http://www.ntid.rit.edu/nlc)

The NTID Learning Consortium is a partnership among RIT and NTID academic departments and educational programs. The goal is to support student success in the college curriculum. A primary resource of the Learning Consortium is the NTID Learning Center (NLC).

The NLC represents a creative combination of human, physical, and technological resources through which partnerships can be realized. Resources include:

- regular tutorial support from faculty and advanced students directly tied to discipline-specific curricula and classroom activities. Tutoring is offered in a range of disciplines, including English, math, and technical program majors. Tutorial support for students is available on a walk-in, scheduled, or assigned basis, either individually or in small groups;
- educational workshops (tied either to credit-bearing courses or independent experiences) addressing skills, knowledge, and attitudes important for success in college and beyond;
- computers supporting tutorial activities and course assignments as well as independent student work; and
- designated areas for individual and small-group tutoring and studying.

The NLC also sponsors the Sprint Relay Experimental Distance Learning/Access Demonstration Lab. The Sprint Relay Lab is an RIT-wide resource for experimenting with innovative technologies in support of remote learners. Key features of the lab include:

- focusing on both instructional activities and access strategies for deaf and hard-of-hearing learners participating in remote educational experiences;
- evaluating alternative technologies in the context of varied educational objectives, access goals, and student and teacher preferences;
- serving as a beta testing site where instructional and access technologies in support of remote learning can be developed, refined, and exported for use throughout RIT;
- providing a forum for information exchange; exploration of new instructional and access strategies; and training among teachers, students, access service providers, instructional designers and technologists, and researchers; and
- sponsoring vendor-display/consumer-testing for new products related to instructional and access technologies.

The lab includes PC workstations and wireless Mac Book laptops; an IdeaBoard with networked capabilities; a central projector/display system; a matrix router enabling versatile distribution of information to computer monitors and wall-mounted displays throughout the room; and two built-in videoconferencing systems.

## NTID Self-Instruction Lab

[www.ntid.rit.edu/aslie/sil.php](http://www.ntid.rit.edu/aslie/sil.php)

The Self-Instruction Lab supports American Sign Language and spoken language skill development. The lab serves students, faculty, and staff as well as the greater Rochester community.

Improving and maintaining communication and language skills requires drill and practice. The lab offers resources for practicing both expressive and receptive communication skills within a self-instruction format. These resources include materials related to American Sign Language, speechreading skills, listening skills, Spanish, cultural and creative studies, and English. Many of the

lab's materials are designed to supplement classroom instruction but may also be used for independent practice and study.

Workstations are equipped so that learners can use instructional video resources, computer programs, and audio resources. The lab also offers two private video production rooms where learners can record themselves individually or interacting with another person using split-screen technology. There are also flex cams and a digital video workstation available for making video recordings.

## Communication studies and services

[www.ntid.rit.edu/css](http://www.ntid.rit.edu/css)

NTID strongly encourages all students to expand their communication skills to communicate with diverse audiences in educational, civic, and professional settings. Communication studies focuses on the effective expression of ideas independent of the language (ASL or English) that the student chooses to use. The communication studies and services department, the department of American Sign Language and interpreting education, and the department of cultural and creative studies provide intensive support and instruction for the development of communication competencies needed to enhance students' professional and personal success. The faculty and staff of the communication studies program conduct assessments and provide course work, workshops, and individualized instruction. They also work in collaboration with faculty and staff across the university.

**Speech and language services:** Faculty and staff who work in speech and language services provide learning activities that focus on the development of a full range of communication competencies. These activities include individual speech-language assessment and instruction, speech-language lab activities that support technical vocabulary/communication and second-language learning, and individualized use of multimedia and computerized visual feedback systems. Through these activities, students can work on conversational interactions, job-related communication skills, technical and formal presentations, and job interviews.

These services are open to all RIT students and are available through individual appointments with faculty or staff or on a walk-in basis through the Spoken Language Learning and Practice Lab. This lab has individual workstations for pronunciation practice, computers for speech and language practice and visual feedback, and stations for digital recording and playback. The faculty and staff in the department are certified by the American Speech-Language-Hearing Association.

**Audiology services:** The audiology faculty/staff offer a variety of services and information related to hearing aids, cochlear implants, communication strategies, telecommunications, assistive technologies, auditory training, speechreading, and job interviewing. Hearing and hearing-aid evaluations are available through the Hearing Aid Shop (Johnson Hall, room 3130). Evaluations are provided by audiologists certified by the American Speech-Language-Hearing Association and licensed through the State of New York. Faculty/staff are available daily in the Hearing Aid Shop to discuss issues related to hearing loss, tinnitus, cochlear implants, and other areas. FM systems can be loaned to students for the academic year at no cost.

Students can go to the Hearing Aid Shop to purchase hearing aid accessories, including batteries, earhooks, and earmolds, and for hearing aid or cochlear implant repairs, as well as other services. In addition, students can schedule appointments for audiology and cochlear implant clinics with faculty/staff as well as with consultant ophthalmologists and optologists in the Eye and Ear Clinic. Services are available to all students, and most are provided at no cost.

## **NTID Counseling and Academic Advising Services**

[www.ntid.rit.edu/counselingdept](http://www.ntid.rit.edu/counselingdept)  
(585) 475-6468 (voice)

NTID Counseling and Academic Advising Services is committed to helping students realize their full potential for a successful college experience. In pursuit of this goal, each NTID-sponsored student is assigned a professionally trained counselor who provides a full complement of counseling, advising, assessment, advocacy, and referral services. Counselors are trained in career development theory and techniques. Some hold individual certifications from the National Board for Certified Counselors. All counselors follow the guidelines for ethical standards set forth by the American Counseling Association. Counselors assist with student orientation, educational and career planning, adjustment to college life, study-skill development, access and referral to on-campus and community resources, and a wide range of personal and interpersonal concerns.

## **NTID Mental Health Services**

(585) 475-2261/6897 (TTY)  
(585) 475-3333 (after hours)

The Counseling Center provides confidential mental health counseling to all hearing, deaf, and hard-of-hearing students requesting assistance. Members of the center work closely with RIT's Student Health Center, the Center for Residence Life, the NTID Counseling and Academic Advising Services department, Public Safety, and related campus units. Some of the counselors at the center are fluent in sign language.

Some concerns that students may need help resolving include medication referral and management, depression, anxiety, family conflicts, intimate relationships, and sexual and personal identity matters. Workshops, discussion groups, and group counseling on topics such as stress management, eating disorders, managing emotions, and improving relationships also are offered.

A 24-hour emergency crisis intervention service for students experiencing mental or emotional trauma is provided in conjunction with other relevant campus units.

## **NTID Student Life Team**

(866) 761-3896 (VP/VRS)

The Student Life Team is committed to providing quality co-curricular programs designed to help students enhance their quality of life, sense of relevancy to their studies, and overall satisfaction with and success in college. Through collaboration with other units within NTID and RIT, creative program strategies, and commitment to utilizing student paraprofessionals, the Student Life Team emphasizes cultural diversity, minority student support, leadership development, deaf culture and ASL, and contemporary social issues.

## **NTID Wellness, Intercollegiate Athletics, and Intramural Support**

[www.rit.edu/studentaffairs/ciar/](http://www.rit.edu/studentaffairs/ciar/)  
(585) 475-6104

NTID provides services that maximize access and success for deaf and hard-of-hearing students engaged in health/wellness seminar discipline courses and other programs offered by the Center for Intercollegiate Athletics and Recreation. Support services ensure that education, consultation, communication and resource

opportunities are available to deaf and hard-of-hearing students taking courses, engaging in programs, or participating in athletics. Mentoring is available. Leadership and other workshops are provided for deaf athletes throughout the year. Liaison services and educational programs are provided to the center's faculty and staff, athletic teams, and student employees.

## **NTID Summer Vestibule Program**

[www.ntid.rit.edu/svp](http://www.ntid.rit.edu/svp)

The Summer Vestibule Program is NTID's required orientation program for new deaf and hard-of-hearing students that assists and prepares them for complex tasks; i.e., career awareness, decision making, adjustment to college life, and assessment of academic skills and competencies. During the program, students learn about the programs offered at NTID and the other RIT colleges, while faculty and staff members evaluate students' skills, abilities, and motivation. Through this process, students gain information that assists in the selection or confirmation of an appropriate program and the design of their individual academic plans.

Acceptance into the program does not automatically guarantee admission to the program the student selects. The final decision on acceptance into a program of study for the fall quarter is the responsibility of each academic department. Admission to a program depends on successfully completing the program, having requisite skills to begin the program, and availability of space in that program.

During the program, students participate in various activities, including orientation to college services and academic expectations, career sampling, career planning, and placement assessment in mathematics and English. Recreational and social activities also are part of the program.

## **NTID Support Service Orientation Workshops**

The NTID Support Service orientation workshops are designed for deaf and hard-of-hearing students who have been accepted into an RIT bachelor's degree program. These workshops provide students with information on how to use the various NTID educational access and support services available to them, acquaint them with RIT's campus and services, and allow them to meet other new students as well as their department's chairperson and faculty members, who will assist them with fall quarter class registration and support services throughout the year.

## **Parking and Transportation Services**

<http://facilities.rit.edu/pats>  
(585) 475-2074

To maintain order and safety, the Parking and Transportation Services department maintains parking policies that require all vehicles operated on campus by students, faculty, and staff to be registered within 10 days of arrival on campus. Students are not required to own the vehicle to register it, however, the address used to register the vehicle must be the same address where students reside while attending classes or working at RIT.

Transportation services are provided free of charge for all RIT housing residents, Park Point residents, and The Province residents via a shuttle service, which makes regularly scheduled stops to and from the academic areas on campus, housing areas, and other pertinent campus locations.



The Parking and Transportation Services office is located in Grace Watson Hall and is open Monday through Friday from 8 a.m. until 5 p.m. during the academic year. Summer hours may vary.

**Bus and shuttle services:** Transportation Services operates a van service for those with impaired mobility. The service runs Monday through Friday, 7 a.m. to 6 p.m., during fall, winter, and spring quarters. The transportation division also provides vans for use by student groups, clubs, and organizations.

**Parking permits and vehicle registration:** All vehicles operated on campus must be registered with the parking office annually. Vehicle registration decals must be properly displayed on each vehicle. Fines are imposed for those in violation of RIT parking and traffic regulations. We encourage everyone to become fully familiar with RIT parking policies and procedures, including online registration.

**Handicap parking permits:** RIT honors ADA-approved handicap parking permits from every state. Handicap parking permits can be obtained at local municipalities. Resident students can apply for a New York state permit at the Town of Henrietta. The RIT parking office does issue a one-week temporary handicap permit.

## Part-time Enrollment Services

[www.rit.edu/parttime](http://www.rit.edu/parttime)  
(585) 475-2229

The Office of Part-time Enrollment Services provides central information and counseling services for students interested in enrolling in part-time and online studies offered through RIT's various schools and colleges. Contact the office if you need assistance with selecting an academic program, exploring financial aid opportunities, registering for classes, or receiving information about any aspect of part-time study at RIT.

Staff members are available from 8:30 a.m. to 6 p.m., Monday through Thursday, and from 8:30 a.m. to 4:30 p.m. on Friday.

## Public Safety

<http://finweb.rit.edu/publicsafety/>  
(585) 475-2853  
(585) 475-333 (Emergency Line)

The Public Safety Department is open 24-hours-a-day and is located in Grace Watson Hall. To report an emergency call (585) 475-3333 or instant message staff at IM:ritpublicsafety. The department encourages the RIT community to take responsibility for their safety by staying informed of these services and reporting suspicious activity. Although each individual is ultimately responsible for their own personal safety, learning and practicing basic safety precautions can enhance one's well being.

The department provides the following services:

**Blue light call boxes:** Campus courtesy call boxes, identified by a blue light, are located across campus. These call boxes provide a direct line to Public Safety 24-hours-a-day. The location of the call is automatically recorded at the Public Safety Communications Center, making it possible for hard-of-hearing individuals to also use the call boxes. The call boxes may be used to request an escort, assist a motorist, report suspicious individuals or activity, or request access to a locked building or room.

**Mobile escort service:** Public Safety strongly encourages students to use the mobile escort service. The service is available to anyone, seven-days-a-week, on a timed schedule between 11 p.m. and 3 a.m. Call the Public Safety Department at (585) 475-2853 (IM: ritpublicsafety) or use one of the blue light courtesy call boxes located across campus.

**Lost and found:** All items lost and found on campus are stored by the Public Safety Department. To report an item lost, please visit <https://finweb.rit.edu/publicsafety/safety/lostitems.html> to submit information related to lost property. Public Safety will contact you if the item is found on campus.

**Emergency notification:** If a family member needs to make an emergency notification to a student, he or she should contact Public Safety at (585) 475-2853 or (585) 475-6654 (TTY). Public safety will locate the student and relay the message.

**Presentation programs:** Throughout the year, public safety hosts a variety of prevention awareness programs and services on various topics including crime prevention, personal safety, and alcohol awareness. Quarterly newsletters are distributed via e-mail to all students to bolster safety awareness on campus.

**Annual Safety and Security Report:** Public safety's security report is available online and offers a description of security practices and information on reported occurrences of crime. Access the report at: <http://finweb.rit.edu/publicsafety/ritsaftey2010.pdf>

**Confidential tip line:** The goal in providing this service is to obtain information that is unattainable through conventional methods and to alert public safety to endangering behavior that might go otherwise unreported. Individuals who utilize the tip line are encouraged to leave their names and contact information; however, they will not be contacted. <http://finweb.rit.edu/publicsafety/forms/tipline/>

The Advisory Committee on Public Safety will provide, upon request, all campus crime statistics as reported to the Department of Education. RIT crime statistics can be found at the Department of Education website (<http://ope.ed.gov/security/>) or by contacting the Public Safety Department. A hard copy of reported crime statistics required to be ascertained under Title 20 of the U. S. Code Section 1092(f) will be mailed to you within 10 days of the request.

**Sexual assault information hotline:** Confidential counseling services are available to anyone in need by calling (585) 546-2777 (voice/TTY).

**Emergency Preparedness:** RIT's emergency responses are based on a national model that is very flexible and can be applied to any scenario. RIT regularly communicates, prepares, and practices emergency management with public safety personnel and campus managers from various departments. If necessary, we will provide updated information through broadcast email, mass notification system (RIT ALERT), voicemail, and the university's website at <http://www.rit.edu/>.

## Religious Life

[www.rit.edu/studentaffairs/religion/](http://www.rit.edu/studentaffairs/religion/)  
(585) 475-2135

The Center for Religious Life is unique in the RIT community. Recognizing the balance of mind and spirit, the chaplain staff, housed in the Schmitt Interfaith Center, provide worship and observances within diverse religious and cultural traditions. Non-denominational Christian, Southern Baptist, Catholic, Muslim,



Jewish, Hindu, Lutheran, and Orthodox Christian are among the many communities serving campus needs and interests. Several religious clubs, including InterVarsity Christian Fellowship and Campus Crusade for Christ, also gather each week on campus. In a time of intellectual and spiritual growth, the center establishes an affirming environment for students, faculty, and staff to explore and discuss values informed by religious beliefs.

#### **The Kilian J. and Caroline F. Schmitt Interfaith Center**

The Interfaith Center, a gift of Kilian and Caroline Schmitt and other generous donors, is located on the east side of the Student Alumni Union. It is a focal point for the diverse religious traditions within the university, housing two chapels, meeting rooms, and offices for the campus ministry staff.

### **The RITreat**

The RITreat is an area in the Student Alumni Union dedicated to students. The following resources can be found in the RITreat:

- Club and organization space
- Computers/word processors/fax machine
- Ombuds Office
- Student Government Office, also housing an attorney two mornings a week
- Mail folders for clubs and organizations
- Off-campus and Apartment Student Association
- Study tables/lounge area
- Center for Campus Life
- The RIT Leadership and Community Service Center

### **Student Financial Services**

<http://finweb.rit.edu/sfs/>  
(585) 475-6186

Student Financial Services offers a variety of financial services for students, including billing, payment options, and loan repayment. The University has an electronic billing (eServices) program for students; eBills have replaced paper bill statements. Each quarter, all RIT students are sent an e-mail notification to their University e-mail account stating that their eBill is available. Students have the option of selecting three additional e-mail addresses to allow for a parent, guardian, sponsor or other authorized user to receive eBill notifications. This facilitates online, real-time account inquiry and electronic payment.

### **Student Health Center**

[www.rit.edu/studentaffairs/studenthealth/](http://www.rit.edu/studentaffairs/studenthealth/)  
(585) 475-2255 (v), (585) 475-5515 (tty)

The Student Health Center provides primary medical care on an outpatient basis. The staff includes physicians, nurse practitioners, physician assistants, registered nurses, health educators, an alcohol/drug counselor, and an interpreter for the deaf. Services are available by appointment. Health education programs also are provided.

The Student Health Center is located along the walkway linking the academic and residence hall areas of the campus. Students are seen Monday through Thursday, 8:30 a.m. to 6:30 p.m., and Friday, 8:30 a.m. to 4:30 p.m., by appointment. Emergencies are seen as need requires. Hours are subject to change and are posted.

The university requires students to maintain health insurance coverage—which they may purchase either on their own or through RIT—as long as they are enrolled at the university.

The quarterly student health fee is mandatory for all full-time undergraduate students. All other students may pay either the quarterly fee or a fee for service. Some laboratory work ordered through the Student Health Center is not covered by this fee; there is an additional charge for this service. Prescription medicines may be purchased from local pharmacies or, for some specific prescriptions, from the Student Health Center. The health fee does not include prescription medications.

Questions about the Student Health Center should be directed to the office. Questions regarding health insurance available through RIT should be directed to University Health Plans at (800) 437-6448.

#### **RIT ambulance**

(585) 475-3333 (voice) or (585) 475-6654 (TTY)

RIT ambulance is a New York state certified volunteer ambulance service that serves the campus community, including its adjoining apartment complexes. The organization, an auxiliary of the Student Health Center, is governed by RIT students and staff and is staffed by emergency medical technicians. Ambulance service is available 24 hours a day, seven days a week. If, for some reason, RIT ambulance is not available, there may be a charge for services provided by another corps.

#### **Health records**

Medical records are confidential. Information will not be released without the written consent of the student. Exceptions to this rule are made only when required by the public health laws of New York state or a court-ordered subpoena or in a life-threatening situation.

#### **New York state and RIT immunization requirements**

New York state public law requires that all students enrolled for more than 4 quarter credit hours in a term and born after January 1, 1957, must provide proof of having received the appropriate immunizations against measles, rubella, and mumps or of having immunity to each disease validated by laboratory results from blood titers. Immunization requirements include two measles vaccinations, at least one month apart, after the first birthday; and one vaccination each against mumps and rubella after the first birthday. RIT requires that these immunizations be given in two doses of combined MMR vaccine at least 30 days apart. New York State requires students to sign the meningitis awareness form. RIT requires all students age 26 and under to be immunized against meningitis. Failure to comply with the New York state immunization law may lead to exclusion from classes and the RIT community until compliance is obtained.

Other immunization requirements include Hepatitis B, TD booster, and PPD (for students from high-risk areas). Additional information concerning these requirements, the necessary documentation, and where documentation must be sent is included with the Admissions Office acceptance packet and also available on the center's website.

## TRiO Student Support Services

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[www.rit.edu/studentaffairs/triosss](http://www.rit.edu/studentaffairs/triosss)  
(585) 475-2833

TRiO Student Support Services (SSS) is a federally funded program, through the Department of Education, that provides the academic and personal support that assists qualified students to maintain good academic standing and complete their degree. Students in the TRiO SSS program must be U.S. citizens or international students with a green card, full-time undergraduate students, and meet at least one of these qualifications: financial need, a documented disability, or first-generation college student status, and have an academic need.

TRiO SSS provides the following services:

- One-on-one peer content tutoring
- Individual assessment and mentoring in math
- Professional tutoring in writing and liberal arts courses
- Assistance with the financial aid process and scholarship

searches

- Financial literacy
- Assistance with the graduate school process
- Assistance with course selection and advisement

Students can enter the program at any time during their college career and are assigned a support specialist until they graduate. Support specialists assist students with setting goals and successfully navigating through their college experience.

## Veteran Enrollment Services

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[www.rit.edu/emcs/ptgrad/veterans.php3](http://www.rit.edu/emcs/ptgrad/veterans.php3)  
(585) 475-6641

If you have questions regarding VA Benefits, NYS War Veteran Scholarships, TA, or the RIT Active Duty Service Member Scholarship, contact RIT's Veteran Enrollment Services.

All RIT courses and programs are approved for the education of members of the U.S. Armed Forces, veterans, and eligible dependents under the Veterans Readjustment Benefits Act, the Rehabilitation Act, and the War Orphans Act.

To receive information or apply for benefits, contact us through our Web page, call, or live chat. Eligible students must submit an application for the VA Certificate of Eligibility. This application can be submitted online through the VA's website. All VA educational benefits paid to RIT students are the responsibility of the VA Regional Office in Buffalo, N.Y. We can send most enrollment information well in advance of the beginning of the starting quarter, thus eliminating long delays in payments. Applications for all benefits are available online, at local VA offices, or on campus in the Office of Veteran Enrollment Services. To ensure a smooth transition and successful academic program completion, start your benefits paperwork early.

## The Center For Women and Gender

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[www.rit.edu/studentaffairs/womenscenter/](http://www.rit.edu/studentaffairs/womenscenter/)  
(585) 475-7464

The Center for Women and Gender is committed to promoting a campus community that is safe, equitable, and respectful of all members. The center fosters an educational environment in which all community members can be personally, academically, and professionally successful without regard to gender, racial/ethnic origins, sexual orientation, gender identity, socio-economic status, or spiritual beliefs.

The center provides programs and services that address relationship and sexuality issues, pregnancy, body image issues, harassment and discrimination, assertiveness, and sexual assault. Services and programs serve women, men, deaf, hearing, and the LGBT communities.

# The RIT Community

## Residence Life

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[www.rit.edu/reslife](http://www.rit.edu/reslife)

The Center for Residence Life serves the needs of approximately 7,100 students in residence halls, Greek houses, Global Village, special-interest houses, lifestyle floors, the RIT Inn and Conference Center, University Commons Suites, and apartments. The center helps create a supportive living environment that enhances individual development and promotes a strong sense of campus community.

RIT recognizes the significance of the on-campus living experience and its effect on students' academic and social development. To ensure a positive experience, the residence halls offer a comprehensive campus living experience.

The center staff plans events on each floor of the residence halls as well as larger scale events in each quad area. Social activities at the beginning of the year are designed to help students meet one another, make friends, become familiar with campus resources, and generally ease their transition to college life. Programs are continually offered throughout the year on a variety of topics, including diversity awareness, time management, study skills, personal safety, wellness, decision making, and roommate agreements.

## Housing

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Serving nearly 7,000 students, RIT's residence halls, the RIT Inn and Conference Center, and campus apartments offer many living options to meet the diverse needs, interests, and backgrounds of our students. They may choose from a variety of living arrangements, including residence hall floor assignments such as same gender, coeducational, wellness, alcohol/substance free, intensified study, over 21 years of age, or mainstream (hearing/deaf students living on the same floor). Living options in Greek fraternities and sororities or special-interest houses also are available. Internet and campus data network access is available in all residence hall rooms.

RIT also houses students in nearly 1,000 individual townhouse and apartment units. Apartment housing is available to students in five RIT apartment complexes.

Approximately 400 upperclass students are housed at the university-operated RIT Inn and Conference Center, near the campus. Residents of the RIT Inn enjoy many of the perks of a first-rate hotel, including indoor and outdoor swimming pools and a fitness center.

## Residence halls

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The RIT community begins in the 13 campus residence halls, where more than 3,400 first-year and returning students reside each year. It is in these halls where engineering students live side-by-side with art students, international students mix with students from other cultures, and hearing and deaf students experience each others' cultures. The residence halls are a diverse and exciting living experience.

Lifestyle floors, Learning Communities, and special-interest houses provide additional options for a more personalized living environment. Special-interest houses are designed for students to share mutual interests. Seven houses offer a specific academic focus and provide a way to tailor activities to a common group. The seven special-interest houses are self-governing organizations with a resident adviser living on the floor: Art House, Computer Science House, Engineering House, House of General Science, International House, Photo House, and Unity House.

## Apartments

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RIT's apartment complexes offer a more independent living experience while extending the advantages of living on campus. Apartments include one-, two-, and four-bedroom units, and townhouses have two or three bedrooms.

Although the majority of apartment residents are undergraduates, each complex features a mixture of graduate and undergraduate, single and married students. Each complex offers the privacy of a small community, with individual mail and newspaper delivery. Apartment residents enjoy other community benefits such as basketball and volleyball courts, barbecues, and picnic areas.

## RIT Inn and Conference Center

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A living experience for upperclass students, the Inn and Conference Center features a hotel-like setting. Each room includes high-speed Internet access. The inn features indoor and outdoor pools, a sauna, a whirlpool, a fitness center, and a business center. Café dining and a gourmet coffee shop are also located on the premises.

## The Residence Hall Association

Representing all residential students and serving as a liaison between the student body and the administration, the RHA develops the policies and procedures that benefit the resident population. RHA also provides students with a variety of services, facilities, programs, and equipment, including RITchie's, a free game room managed by the association that features a relaxing lounge with video games (X-Box, Playstation 2, and Gamecube); pool, air hockey, and foosball tables; and a variety of board games.

## The Housing Connection

A service of RIT Housing Operations, the Housing Connection is designed to meet the general housing needs of the RIT community. It offers the only on-campus clearinghouse for apartment residents in need of additional roommates, providing a continually updated listing of available roommates and their specific interests.

## Off-Campus and Apartment Student Association

[www.rit.edu/studentaffairs/ocasa/](http://www.rit.edu/studentaffairs/ocasa/)  
(585) 475-6680 (voice/TTY)

The Off-Campus and Apartment Student Association (OCASA) is the representative student government for all RIT students who do not reside in a residence hall. Formed in 1978, OCASA is composed of both commuter students and students who live in the RIT-operated apartment complexes or in off-campus apartments. OCASA provides input from off-campus students to the RIT administration.

The OCASA main office, located in the Student Alumni Union RITreat, offers complimentary services that include an area with PCs and Macintosh computers, a copier, fax machine, and various office supplies. Also available are a microwave; refrigerator; and free coffee, tea, and hot chocolate. A daily newspaper and a variety of magazines are on hand.

## Intercollegiate Athletics and Recreation

<http://www.rit.edu/ciar>

The Center for Intercollegiate Athletics and Recreation oversees the athletics, recreation, intramurals, and wellness programs.

### Athletics

The Intercollegiate Athletics program consists of one NCAA Division I team (men's ice hockey) and 23 Division III teams. Athletics are conducted in accordance with the National Collegiate Athletic Association (NCAA) Division III rules and the Atlantic Hockey Association. The athletics program serves approximately 650 student athletes with 24 men's and women's varsity sports.

RIT Athletics supports its student athletes in their academic endeavors as well. They achieve an impressive overall grade point average that exceeds that of the general student population.

Sports offered through the Intercollegiate Athletics program promote development of leadership skills and values as well as campus spirit and provide visibility for the university.

## Recreation

All registered students are provided with the benefit of automatic access to the recreation facilities. Students who are registered only for a wellness class will be provided with access if the class is needed to fulfill a graduation requirement. Access is granted upon review by the Student Life Center (SLC) main office. During the summer, free access is granted to students registered for the previous spring and the upcoming fall quarters. Students must contact the SLC main office to activate their summer membership. Incoming freshmen receive access on the first day of Freshman Orientation.

## Facilities

**Clark Gymnasium:** Located across from the Campus Center, the Clark complex includes the main gymnasium, auxiliary gymnasium, wrestling room, varsity weight room, athletic training room, and equipment room.

**Hale-Andrews Student Life Center (SLC):** The SLC is located midway between the dormitories and the Student Alumni Union. It is an 88,000-square-foot complex that features five multipurpose courts (basketball, volleyball, badminton), seven racquetball courts (three equipped for wallyball), two dance studios/fitness rooms, a mini-gym (basketball, volleyball, and multi-purpose court), elevated 200-meter jogging track, equipment cage (for loan-out and towel service), spinning room, boxing/kick-bag room, locker rooms with saunas, classrooms, CPR room, and an equipment rental office for overnight loan-out.

**Gordon Field House and Activities Center:** Directly attached to the SLC, this 160,000-square-foot facility includes a multi-purpose arena, 200-meter jogging track, four indoor tennis courts, a multi-level fitness center, and an aquatics center with an eight-lane competitive pool with moveable bulkhead, diving area, recreational pool, and hot tub.

**Tennis courts:** There are nine outdoor lighted tennis courts.

**Turf field:** This field is an outdoor multi-purpose venue for athletics, wellness, recreation, and major campus events.

**Varsity game field/track complex:** This facility is used for varsity soccer, lacrosse, and track meets and features a 400-meter track that is open for daily use.

**Other outdoor facilities:** Other fields include varsity baseball, varsity softball, varsity practice fields, club sports field, Greek lawn area, Rose Bowl, Grace Watson fields, nature trails, jogging trails, and archery range.

**Red Barn:** Red Barn houses the interactive adventures program, which includes an array of adventure-based wellness activity classes, teambuilding programs, and the Red Barn climbing gym, which consists of a 32-foot top-roping wall and extensive bouldering areas.

**Frank Ritter Ice Arena:** A venue for ice hockey, figure skating classes, and recreational skating, the Ritter Arena serves as the home of the men's and women's ice hockey teams as well as the Genesee Figure Skating Club. Public skating and learn-to-skate programs are also held here.

## Intramurals

Intramurals offer a wide range of activities for students, faculty, and staff. The tournament league is designed for those who want to play in a more competitive, elimination-playoff-type format. There is also a recreational league, in which league champions are based on win-loss record and there are no playoffs. Tournament and recreational play is separated into three divisions, including a co-ed division. Each co-ed team must have specific numbers of men and women on the playing field, depending on the sport.

The following sports are offered: indoor soccer, three-on-three basketball, five-on-five basketball (winter and spring), volleyball, ultimate Frisbee (fall and spring), dodgeball, flag football (fall), softball (fall and spring), tennis (fall and spring), table tennis, racquetball, and badminton.

## Wellness

The wellness instructional program is offered to students, faculty, staff, and alumni (with current SLC memberships). More than 200 courses are offered each quarter in the following categories: health and wellness seminars, dance, fitness, life support and safety, lifetime recreation and leisure, interactive adventures, martial arts, and ROTC.

## Campus social events

The RIT campus is a melting pot of activity and fun for all students. During the course of the year clubs and organizations host more than 700 student events. In addition, major social events are a part of the campus culture and can be found on the RIT calendar at all times of the year. RIT sponsors a variety of events beginning with the Week of Welcome during New Student Orientation and ending with Senior Night for graduating seniors.

Between these bookend events, RIT sponsors the Brick City Festival, which also encompasses Parents and Alumni Weekend, and Spring Fest, with its traditional carnival. Major concerts are held four to five times a year. Past concerts have featured Kanye West, Ludacris, Lupe Fiasco, and Taking Back Sunday. RIT also has hosted comedians such as Wayne Brady, David Spade, Dane Cook, Carlos Mencia, and Jon Stewart. The Cultural Spotlight Series and the Performing Artists' Series feature cultural events with a variety of performers. Past series have included performances and artists such as Maya Angelou, Edward James Olmos, Rochester Classic Jazz Band, Yo Soy Latina, Aventura, the Rochester Philharmonic Orchestra, Richard Smallwood and Vision, Byron Cage, and Kurt Carr and the Kurt Carr Singers.

Numerous speakers, including Magic Johnson, Colin Powell, Robert Redford, Rudolph Giuliani, and former presidents Gerald Ford, Jimmy Carter, and Bill Clinton have spoken at campus events. The RIT Players hold quarterly theater productions. Week-end evenings feature a number of activities, such as the Thursday Night Cinema Series and Friday Night in the RITZ. Other events are held annually, including the RHA Vegas Night, RIT Greek Week, and the CAB Winter Concert. Every other year, the College of Liberal Arts sponsors a musical theater production and NTID hosts the RIT/Gallaudet Weekend.

## Student Government

<http://sg.rit.edu/>

(585) 475-2204 (voice/TTY)

Student Government, the representative body for students, works with the university's administration, faculty, and staff to communicate the needs and desires of the student body and the decisions of the administration to RIT students. It provides a variety of services to student organizations and recognizes approximately 160 clubs and eight other major organizations. It actively engages in the university's open governance system where it serves as the voice of students.

All full-time and part-time undergraduate and full-time graduate students become members of the Student Government when they pay the student activities fee.

## Student Government clubs

<http://campuslife.rit.edu/clubs>

(585) 475-4483 (voice/TTY)

For more information about the following clubs, please contact the Clubs Office at (585) 475-4483 (voice/TTY), visit our website at <http://campuslife.rit.edu/main/clubs/index>, or stop by the office in the RITreat. Look for the quarterly Club Day in the Student Alumni Union. The following is a list of recognized clubs. More are added throughout the academic year. For the most up-to-date information, visit the website.

### Career Related

AIGA (Graphic Arts)  
ASCE (Civil Engineers)  
Aero-Design Club  
American Marketing Association  
Animal Advocacy Group  
Audio FX  
Biomedical Photo Student Association  
Ceramics Guild  
Chem Club  
Electric Bike Club  
Emerging Black Artists  
Engineers for a Sustainable World  
Financial Management Association  
Forensic Science Club  
Game Developers Club  
Gamma Epsilon Tau  
Glass Guild  
Graduate Management Association  
Hospitality Association  
IDEA (Interior Design)  
IIE (Industrial Engineers)  
ITSO (Information Technology)  
International Business Group  
Jewelry and Metals Association  
Life Science Club  
MESA (Microelectronic Engineering)  
MISST (Management of Information Systems)  
MacRIT  
Malaysian Student Association  
Materials Research Society-RIT Chapter



National Press Photographers Association  
National Society of Black Engineers  
New Media Fusion  
PUB  
Physician Assistant Student Association  
Pi RIT  
Premedical Student Association  
Psychology Club  
SHPE (Hispanic Engineers)  
SPARSA (Security Practices)  
SSWO (Social Work)  
Society of Manufacturing Engineers  
Society of Plastics Engineers  
Student Dietetic Association  
Society of African American Business Students  
Student Interpreting Association  
TPSA (Technical Photographer)  
Ultrasound Student Association  
Women in Technology

### **Ethnic**

Asian Culture Society  
Asian Deaf Club  
Caribbean Deaf Club  
Caribbean Student Association  
Chinese Student Scholar Association  
DISA (Deaf International)  
Ebony Club  
Hispanic Deaf Club  
Kazakh Group of Bolashakers  
Korean Student Association  
LASA (Latin American)  
OASIS (Indian Student Alliance)  
Organization of African Students  
Piazza Italiana  
Taiwanese Student Association  
Vietnamese Student Association

### **Hobby and special interest**

Alpha Phi Omega  
Amateur Radio Club  
Anime Club  
Ballroom Dance Club  
Break Dancing Club  
College Democrats  
College Republicans  
Comedy Troupe  
Country Line Dancing Club  
Creative Outlet  
Dance Team  
Dead Saints Society  
Debate Society  
Doves  
Electronic Gaming Society  
Empty Sky Go Club  
FACES (Feminist Group)  
FIRST  
Formula SAE Racing Team  
Graduate Photography Association  
Habitat for Humanity

Hooks and Needles  
Human Powered Vehicle Team  
International Socialist Organization  
Invisible Children–RIT Chapter  
Juggling Club  
Linux Users Group  
Masquers Drama Club  
Metalworks  
Micro-Air Vehicle Club  
Mini-Baja Club  
Model Railroad Club  
Offroaders  
Outing Club  
Patent Club  
RIsTep  
RIT Gay Alliance  
RIT Greenvehicle Team  
RIT Players  
RITveg  
RWAG (Wargamers)  
Rally Enthusiast Club  
Robotics Club  
Rotaract  
SEAL (Environmental Action)  
Signatures Magazine  
Social Action Group  
Spectrum  
Students for Cambodian Schools  
Students in Free Enterprise  
Swing Dance Club  
Table Tennis Club  
Wood Club

### **Music related**

Gospel Ensemble  
Jazz Messengers  
Pep Band  
Student Music Association

### **Religious**

Agape Christian Fellowship  
BASIC (Christian Fellowship)  
Campus Crusade for Christ  
Hillel/Jewish Student Union  
Hindu Students Council  
InterVarsity Christian Fellowship  
Korean Christian Fellowship  
Muslim Student Association  
WOLK

### **Sports**

Alpine Ski and Snowboard  
Badminton Club of RIT  
Bowling Club  
Equestrian Club  
Fencing Club  
Field Hockey Club  
Golf Club  
Gymnastics Club  
Horizontal Ultimate Frisbee

Kendo Club  
Lacrosse  
Paintball Club  
Pool Club  
Roller Hockey  
Running Club  
Sailing Club  
Soccer Club  
Tae Kwon Do Club  
Tennis Club of RIT  
Triathlon Club  
Volleyball  
Water Polo  
Weightlifting Club

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## Student professional associations

Students also can become involved with departmental and professional associations. This includes groups such as Alpha Chi Sigma (chemistry), Gamma Epsilon Tau (printing), Pi Tau Sigma (mechanical engineering), Beta Alpha Psi (accounting), and Tau Beta Pi (engineering).

A number of national technical associations have student affiliate chapters on campus. These societies play an important part in campus life by bringing together students who have common interests in special subjects. Students should ask their academic departments about organizations for their academic interests.

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## Reporter magazine

*Reporter*, RIT's weekly news magazine, is the nation's only full-color weekly college magazine. With a circulation of 6,000, *Reporter* delivers 32 pages of on- and off-campus news, features, entertainment, and sports coverage to the RIT community every Friday. The magazine is completely student-run and staffed, and all editorial, photographic, business, design, and production work is done entirely on campus with the help of the printing application lab's Heidelberg press. A winner of numerous state and national awards, *Reporter* is highly regarded as one of the nation's most innovative college publications and respected for its high-quality writing, photography, illustration, and design. *Reporter* takes pride in its memberships in the Associated Collegiate Press and the American Civil Liberties Union. Students of all educational backgrounds, majors, experience levels, and skills are encouraged to join.

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## College Activities Board

<http://cab.rit.edu>  
(585) 475-2509 (voice/TTY)

The College Activities Board (CAB) is a student-run organization responsible for providing a balanced program of social and recreational events for the campus community. CAB presents concerts, festivals, movies, and off-campus trips each quarter. For information on CAB programs, stop by the office in the Student Alumni Union or contact us via phone or Internet.

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## Global Union

[www.rit.edu/sg/globalunion](http://www.rit.edu/sg/globalunion)  
(585) 475-2567

The diversity of RIT's global student body warrants an organization that encourages interaction among different ethnic groups. The Global Union promotes communication, cooperation, and mutual support among all students. It intends to unify all its affiliated organizations and encourage pluralism and understanding. The Global Union provides a platform for expression for campus international and minority communities. It is RIT's multicultural student organization.

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## Greek Council

<http://campuslife.rit.edu/main/fratsorlife/index>  
(585) 475-7123 (TTY)

The RIT Greek Council is the governing body that represents all members of recognized social fraternal organizations. The council represents the College Panhellenic Association, the Interfraternity Council, the National Pan-Hellenic Council, and GAMMA (Greeks Advocating the Mature Management of Alcohol). Greek Council is responsible for regulating standards and practices that affect the entire fraternal community. It oversees the recognition procedure for special-interest groups that have the intention of becoming a fraternity or sorority. There are also many programs that Greek Council sponsors throughout the year: Greek Weekend, Adopt-a-Highway, Tree of Angels, leadership conferences, social programs, national education speakers, Greek intramural league, and much more.

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## WITR Radio

<http://witr.rit.edu/>

WITR is an FM radio station operated by RIT students and licensed by the Federal Communications Commission as a noncommercial, educational station. It is licensed to be on the air 24 hours a day with a power of 910 watts, which covers the Rochester area.

Students make up the staff, working in four major departments: engineering, news and public affairs, programming, and promotions. WITR Radio has been operating for more than 30 years with two major goals: to provide programming to RIT and the surrounding community and to provide a noncommercial training ground for participating staff.

Participation in WITR can be an educational and enriching experience. It offers students practical experience in broadcasting, engineering, and management. WITR disc jockeys gain the qualifications and experience to work at any radio station. Some former and current members now work full or part time at several commercial radio stations, while other members have attained positions with recording studios or are active representatives of record companies such as A&M, MCA, Sony, Mercury, and Polydor.

WITR promotes RIT events and public-service activities, including both on- and off-air participation in many events. It is a major source of local music in the Rochester community. WITR is the primary broadcast source of RIT sports and campus events such as the president's annual address.

## NTID Campus Life

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### NTID Student Congress

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[nsc.rit.edu/about.php](http://nsc.rit.edu/about.php)

The NTID Student Congress is an organization comprised of deaf and hard-of-hearing students who represent and provide programs for members of their community. The organization helps interested students communicate their needs, ideas, and concerns about campus life to faculty members, administrators, and other student organizations within RIT; provides opportunities for developing leadership skills; and encourages student activities and integration by providing deaf and hard-of-hearing students with opportunities to interact with their peers socially, academically, athletically, and culturally. Students interested in getting involved may stop in at the NTID Student Congress office in the CSD Student Development Center.

### NTID Performing Arts

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[www.rit.edu/NTID/pa](http://www.rit.edu/NTID/pa)

**RIT/NTID Dance Company:** The RIT/NTID Dance Company is a unique ensemble of deaf, hard-of-hearing, and hearing students that enriches the educational life of its dancers by providing challenging and rewarding choreographic and performance opportunities. Membership in the company is open to the entire RIT community (dancers as well as nondancers, from every level of ability and experience) at an annual audition in the fall quarter.

The RIT/NTID Dance Company has presented a diverse repertoire consisting of full-length ballets and student and faculty choreography in modern dance, jazz, and a variety of ethnic-based dance. The company also has had guest choreographers and performers, including Garth Fagan, Sahomi Tachibana, Tim Draper, Michael Thomas, Sean McLeod, Carolyn Dorfman, Thomas Warfield, Hong Kong-based choreographer Andy Wong, deaf choreographer Christopher Smith, the Nrityagram Dance Ensemble of India, and Jim Donovan, lead drummer for Rusted Root. For information, contact Thomas Warfield, director of dance, at (585) 475-6252 (voice/TTY) or [tfwnvc@rit.edu](mailto:tfwnvc@rit.edu).

**Panara Theatre:** Students and faculty produce major plays and performances featuring deaf and hearing actors, dancers, and technical staff. Call the box office at (585) 475-6254 (voice/TTY). For more information, please visit [www.rit.edu/ntid/theater](http://www.rit.edu/ntid/theater).

**Lab Theater:** Lab Theater features experimental, new, or unusual productions. New directors and student writers also use the space for developing their skills. For information, call (585) 475-6250 (voice/TTY).

**NTID performing arts course offerings:** For information regarding acting, mime, technical theater, lighting, play creating, script translation, or dance classes, call NTID's Performing Arts Program, (585) 475-6250 (voice/TTY).

**Literary Series:** A joint activity of the RIT Creative Arts Committee, the College of Liberal Arts, and various other campus organizations, the Literary Series brings both well-known and developing writers to campus. Students who wish to participate should call (585) 475-2475 (voice/TTY).

**Visiting Artists and Critics Series:** Sponsored by the College of Imaging Arts and Sciences, the Creative Arts Program, and the Student Affairs Office, this series features many of the country's

leading artists and critics who deal with the issues of technology in art today. For more information, call (585) 475-2646 (voice/TTY).

### Student Music Association

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[www.rit.edu/cla/finearts/music/](http://www.rit.edu/cla/finearts/music/)

**RIT Singers:** The university-sponsored vocal ensemble, RIT Singers, is composed of 80 to 90 members and is open to students, faculty, and staff. New members are welcome during the first three weeks of each quarter. The ensemble performs classical and popular music and gives one or two concerts each quarter. The RIT Singers also participates in the Western New York Intercollegiate Choral Festival. One credit hour is awarded for participation in the group. For more information, call (585) 475-6087, or e-mail Edward Schell at [etsgsh@rit.edu](mailto:etsgsh@rit.edu).

**Men's A Cappella Ensembles:** Selected through auditions, these are ensembles of eight to 12 singers chosen from the RIT Singers. The current groups are Eight-Beat Measure, Brick City Singers, and Surround Sound. Rehearsals for both on- and off-campus appearances are adjusted to fit ensemble members' schedules. For more information, call (585) 475-6087.

**Women's A Cappella Ensemble:** Selected through auditions, the current group, Encore, is an ensemble of eight to 12 singers chosen from the RIT Singers. Rehearsals for both on- and off-campus appearances are adjusted to fit ensemble members' schedules. For more information, call (585) 475-6087.

**Gospel Ensemble:** This group of approximately 25 members has developed a repertoire of black spirituals, modern gospel songs, interdenominational anthems, and hymns. The group performs three times a year, during Brick City Festival, their annual Gospel Fest in February, and their annual anniversary concert. During the past few years they have opened for such renowned performers as Richard Smallwood, Vision, and Byron Cage. They perform twice a month for the gospel worship service in the Interfaith Center. For more information, call Campus Life, (585) 475-4483 (voice/TTY).

**RIT Orchestra:** The RIT Orchestra is open to all RIT students, faculty, staff, and musicians from the surrounding area. The repertoire includes masterworks from the Baroque to the 20th century. Past performances have included pops concerts and chamber music performances. One credit hour is awarded for participation in the group. For more information, call (585) 475-2014, or e-mail Michael Ruhling at [mergsl@rit.edu](mailto:mergsl@rit.edu).

**RIT Jazz Ensemble:** Instrumentalists with a background in jazz will want to check out the RIT Jazz Ensemble. Open to all RIT students, the Jazz Ensemble welcomes those who play the following instruments: saxophone, trumpet, trombone, bass guitar, guitar, piano, and drums. Performing a repertoire of varying styles, the ensemble presents quarterly concerts and performs for campus activities and academic functions. The ensemble rehearses at least once a week, on Tuesday evenings in the SAU music room, 7-10 p.m. One credit hour is awarded for participation in the ensemble. For more information, call (585) 475-5366, or e-mail Jonathan Kruger at [jhkgs@rit.edu](mailto:jhkgs@rit.edu).

**RIT Concert Band:** The Concert Band is open to all RIT students who play traditional band instruments. Performing repertoire of varying styles, the ensemble presents quarterly concerts and performs for campus activities and academic functions. The ensemble rehearses at least once a week, on Wednesday evenings in the SAU

music room, 7-9 p.m. One credit hour is awarded for participation in the band. For more information, call (585) 475-5366 or e-mail Jonathan Kruger at [jhkgsl@rit.edu](mailto:jhkgsl@rit.edu).

**RIT World Music Ensemble:** The World Music Ensemble is open to all RIT students, faculty, and staff. Repertoire focuses on various non-Western music traditions. The ensemble regularly performs on its extensive collection of handmade African drums. One credit hour is awarded for participation in the ensemble. For more information, call (585) 475-4439 or e-mail Carl Atkins at [cjagsh@rit.edu](mailto:cjagsh@rit.edu).

## Facilities

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### Academic

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Conveniently located five miles from the Greater Rochester International Airport and the New York State Thruway (Interstate 90), the RIT campus is situated in the suburb of Henrietta, only a few minutes from downtown Rochester.

Students, faculty, and staff moved from RIT's original downtown Rochester location to its 1,300-acre suburban campus in 1968. Since then, the campus landscape has undergone significant growth and renewal, including new academic buildings, student apartments and Greek housing, walkways, plantings, and lighting. A 160,000-square-foot field house was completed in 2004. The 73-foot-high steel and bronze sculpture "The Sentinel," by Albert Paley, and a Japanese garden add further interest to a campus that continues to evolve.

In 2009, RIT opened the Center for Student Innovation, a 10,000-square-foot space that serves as a multi-purpose hub where teams of students from all corners of the university can develop and showcase innovative and entrepreneurial projects. Also new on campus is Global Village, a residential and commercial space featuring housing, a courtyard, a convenience shop, restaurants, a bank, a printing and postage center, and a fitness center.

Excellent facilities add to the quality of academic life. RIT is a leader in academic computing, and students work with state-of-the-art computer equipment regardless of their major. Central computer systems can be accessed via a high-speed data network connecting our library, academic facilities, residence hall rooms, and on-campus apartments. *The Princeton Review* has ranked RIT among the most connected campuses in the country. RIT is also among a select group of institutions with access to the Internet 2 research network.

Students also have access to a laser optics laboratory, an observatory, an animal care facility, more than 100 color and black-and-white photography darkrooms, electronic prepress and publishing equipment, ceramic kilns, glass furnaces, a blacksmithing area, a student-operated restaurant, computer graphics and robotic labs, and some of the most up-to-date microelectronic, telecommunications, and computer engineering facilities in the United States.

### Park Point

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Park Point, a 60-acre residential, retail, and commercial complex featuring a variety of shopping, dining, and housing is located on the northeast corner of campus. The complex features:

- 90,000 square feet of retail space, with more than 25 stores;
- a variety of housing, with occupancy for up to 800 residents;
- a number of theme restaurants;

- Barnes & Noble@RIT, RIT's campus bookstore, which also features a Starbucks location; and
- galleries highlighting arts and crafts by students and faculty.

## Global Village

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Global Village is a new retail marketplace and housing complex that bears a resemblance to the street-side cafés of Europe. Residential housing features furnished suites, single, and double rooms, community kitchens, free wireless access, free standard cable, free laundry services, and lounges and study rooms.

In addition to housing options, Global Village features:

- *Salsarita's Fresh Mex Cantina*, offering healthy, fresh Mexican favorites
- *Global Grille*, with a menu of rotating international cuisines and recipes from around the world
- *Sushi Station*, offering a variety of fresh-made sushi
- *Global Village Market*, including a vast assortment of ethnic spices, foods, and products from around the world, as well as commonly purchased American items. Hispanic, Asian, Indian, Middle Eastern, Kosher, and Halal foods are among the selections available.
- Heated outdoor seating, a small stage area for concerts and student programming, and a fire pit
- *Better Me Wellness Center*, a state-of-the-art fitness facility featuring a variety of workout equipment and spaces for fitness and wellness classes
- *HUB Print Center and Post Office* services include digital printers; postal services; wide-format printing, mounting, laminating, and coil binding; and a retail section will offer school supplies such as pads, pencils, pens, notebooks, and printer paper for purchase

## Student Alumni Union

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The Student Alumni Union is designed specifically to service events sponsored by and for the entire campus community. The staff is available to assist and advise various individuals and groups in planning and coordinating their activities. The SAU information desk is located in the main foyer.

The three-level facility is the center of co-curricular activities and features the 500-seat Ingle Auditorium; a complete game room with billiards, foosball, and electronic games; music practice room; a unisex hairstyling and tanning salon; candy counter; a Ben & Jerry's ice cream shop; two separate dining areas (the main cafeteria and the Ritz Sports Zone); meeting rooms; and lounges.

## Food service venues

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The food service establishments on campus provide a large array of dining choices.

## Restaurants and dining halls

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**Brick City Café:** Features full breakfast and lunch entrée menus, as well as an extensive salad bar, subs, wraps, full deli, grill items, display cooking, rotating specialty vendors, fresh soups, desserts, snacks, and a coffee station.

**The Café and Market at the Crossroads:** Features a market-style food court, convenience store, Starbucks coffee, and café smoothie bar. Specialty items include subs, made-to-order salads, grill items,



made-to-order pasta bar, Jump Asian cuisine, pizzas, calzones, and the Crossbar, featuring rotating international cuisines.

**The Commons:** Featuring subs, Hettie's Grill, Stone Oven Pizza & Pasta Cucina, made-to-order salads, soups, pasta, and lunch and dinner entrees in a cozy environment with a fireplace. Online delivery orders also available via The Commons' website.

**Global Grille at Global Village:** Cook-to-order international cuisines prepared on a Mongolian grill using fresh ingredients. Freshly made sushi is also available.

**Gracie's Dining Hall:** All-you-care-to-eat fare for students, faculty, staff, and guests. Specialty items include Mongo's Grill, offering fresh cook-to-order ingredients, Just Veggie bar, Bonichi Brothers Pizza, Ancho Grill, fresh soups, freshly baked desserts, waffle bar, grill items, and salad bar.

**Petals at the RIT Inn and Conference Center:** Bistro-style dining offering breakfast, lunch, and dinner menus. Snacks, grab-and-go offerings, and coffee station are also available.

**RITZ Sports Zone:** Sports restaurant with big-screen HDTVs open for lunch, dinner, and special sporting events. Menu includes flat bread pizzas, wraps, quesadillas, Ancho Grill, panini sandwiches, soups, salads, grill items, subs, rotating international vendors, and desserts. The RITZ also features a bar (21 years old and over only) and game room complete with pool tables and arcade games.

**Salsarita's at Global Village:** Freshly prepared, made-to-order tacos, burritos, quesadillas, Mexican pizzas, nachos, and salads with fresh ingredients and a variety of salsas and sides.

## Markets and Convenience Stores

**The Café and Market at the Crossroads:** The convenience store carries a selection of grocery items including fruits, snacks, dry goods, international foods, refrigerated and frozen foods, dairy products, beverages, school supplies, and various other common food items.

**The Corner Store:** Open until 2 a.m. offering a wide range of snacks, beverages, dairy products, dry goods, refrigerated and frozen items, fruits and vegetables, coffee station, DVDs, and gifts. Special-delivery gift and food baskets/packages for birthdays, celebrations, and holidays also available via The Corner Store's website.

**Global Village Market:** International foods and spices, ready-to-eat ethnic meals, refrigerated and frozen items, fresh fruits and vegetables, cheeses, local, sustainable products, breads, dry goods, snacks, beverages, and coffee station.

**Sol's Underground:** A large variety of health and beauty products, vitamins and supplements, fresh flowers, housewares, school supplies, greeting cards, gifts and balloons, grocery items, snacks, and international and gourmet packaged food. Sol's Underground also offers flatbread pizzas, quesadillas, paninis, fresh soups, and wraps, as well as Freshens frozen treats.

## Express Dining

**Artesano Bakery & Café:** On-campus bakery offering the best in gourmet tortes, pastries, desserts, organic rolls, breads, bagels, muffins, and scones. Artisan breads, rolls, and baguettes can be purchased par-baked to take home and served deliciously warm. Also features Peets coffee and tea products, including frozen blended drinks, cappuccinos, café lattes, café mochas, and hot chocolate. Freshly made sandwiches and salads are also available.

**Beanz:** Offers freshly baked gourmet pastries and desserts, bagels, muffins, cookies, fruit, paninis, soups, sandwiches, and salads. Also features Finger Lakes roasted coffee, cappuccinos, espresso, and teas, as well as Sicilian sodas and Freshens Smoothies.

**Ben & Jerry's:** Ice cream, sundaes, cakes, cookies, real fruit smoothies, and shakes. Catering services also available.

**Bytes on the Run:** Convenient grab-and-go meals, including freshly made soups and salads, sandwiches, wraps, fresh-baked pizzas, snacks, and beverages.

**Ctrl Alt Deli:** Design your own sandwich from a selection of wraps, breads, meats, cheeses, veggies, and sauces. Other popular items include chili bread bowls, sizzling cheese sandwiches, traditional flatbread pizzas, quesadillas, hearty soups, baked goods, and cut fresh fruit and salads. Grab-and-go items also available.

**The College Grind:** Offers a variety of Starbucks' brewed coffee and tea beverages, panini sandwiches, salads, freshly baked goods, cold drinks, and Freshens Smoothies.

**Gordie's:** Gordie's offers premium fresh and healthy grab-and-go meals, snacks, and drinks and is conveniently located on the Quarter Mile in the Gordon Field House – ideal for grabbing a quick meal on your way to work, class, or before and/or after your workout.

## Campus stores

**Barnes & Noble @ RIT**—The official college bookstore, Barnes & Noble @RIT is located at Park Point. The 40,000-square-foot store features educational textbooks for all of RIT's courses, 60,000 titles, and RIT-related merchandise. The store offers wireless access, a Starbucks Café, and regular shuttle service to and from campus.

**Digital Den**—Located in the Student Alumni Union, the Digital Den offers a wide array of merchandise, including computer equipment, hardware and software, iPods, and photography equipment and accessories. The store is staffed with knowledgeable personnel who can offer guidance on equipment and purchases.

## Student conduct

### Expectations for community behavior

- RIT is a learning community where time, energy, and resources are directed toward learning and personal development.
- Members of the community live and work together to foster their own learning as well as the learning of others, both in and outside the classroom.
- Within the community, members hold themselves and each other to high standards of personal integrity and responsibility.
- Individual members continually strive to exceed their personal best in academic performance and the development of interpersonal and professional skills and attributes.
- As a member of the community, each person continually conducts himself/herself in a manner that reflects thoughtful, civil, sober, and considerate behavior.
- As a member of the community, each person respects the dignity of all people and acts to protect and safeguard the well-being and property of others.
- As a member of the community, each individual contributes to the continued advancement and support of the community,



personally challenging behavior that is contrary to the welfare of others.

- Members of the community create a campus culture that values diversity and discourages bigotry while striving to learn from individual differences.

## RIT honor code

Integrity and strong moral character are valued and expected within and outside of the RIT community. Members of the campus community, including students, trustees, faculty, staff, and administrators, have adopted an honor code to:

- demonstrate civility, respect, decency, and sensitivity toward our fellow RIT community members, recognizing that all individuals at this university are part of the larger RIT family and as such are entitled to support and respect.
- conduct ourselves with the highest standards of moral and ethical behavior. Such behavior includes taking responsibility for our own personal choices, decisions, and academic and professional work.
- affirm through the daily demonstration of these ideals that RIT is a university devoted to the pursuit of knowledge and a free exchange of ideas in an open and respectful climate.

## Summary of conduct policies

The following broad areas of conduct for students, although not all-inclusive, indicate, in general terms, the standards of student conduct that are important to the educational mission of RIT and the quality of campus life. The RIT conduct code and disciplinary processes are printed in their entirety in The Student Rights and Responsibilities Handbook. All policies and procedures relating to student and organization conduct are printed in this document and should be reviewed by all RIT students.

**Human rights and dignity:** Students are expected to follow RIT's policy prohibiting discrimination and harassment. All students should practice high regard for the rights and dignity of other people, preventing all types of discrimination. RIT attempts to resolve conflicts between individuals and groups with differing backgrounds and views through discussion and clarification of values and attitudes. Students should not physically or verbally abuse any person on RIT premises or at RIT-sponsored or supervised events.

**Computer use:** Students are expected to follow RIT's code of conduct for computer and network use. A variety of computing resources are available at RIT, ranging from application-specific microcomputers to central multiuser systems. Computer abuse is expensive and can have far-reaching consequences. Students should not intentionally disrupt the educational process through deletion of another's course assignment, dampen the creative process through theft of intellectual property, violate an individual's privacy or institutional confidentiality or infringe on copyright.

**Off-campus conduct:** The conduct of RIT students off campus will be held to the same standards and policies as on campus. Any off-campus action that interferes with the completion of the educational mission of RIT or any member of the RIT community is subject to disciplinary action.

**Academic honesty:** Students are expected to follow RIT's policy on academic dishonesty. Students should not engage, or allow

others to engage, in any form of academic dishonesty. These acts include, but are not limited to, plagiarism in any form or using information and materials not authorized by the instructor during an examination. Dishonesty also includes furnishing false information to RIT and forgery. Alteration or use of RIT documents or instruments of identification with intent to defraud are prohibited.

**Disruption of RIT activities:** Students should refrain from unreasonable disruption or obstruction of teaching, research, administration, organizational activities, disciplinary proceedings, or any other RIT activities.

**Parking and traffic:** All drivers on campus should follow RIT's parking and traffic regulations. New York state motor vehicle and traffic laws are in effect on campus. RIT may enact supplemental parking and traffic regulations for RIT-owned properties. The regulations are intended to promote order and ease of movement of pedestrians and motorists and to safeguard people and property.

**Regard for property:** Students are expected to exercise appropriate care for RIT property and the property of others. Theft, damage, or unauthorized possession of either RIT property or the property of a member of the academic community on RIT premises is subject to disciplinary action.

Library materials and laboratory facilities are of utmost importance to the completion of RIT's academic mission. Consequently, students should show considerable care in the handling of these items.

**RIT officials:** Students must furnish proof of enrollment through a valid student identification card upon request from RIT officials. Students should comply with the directions or instructions of RIT officials acting in performance of their duties.

**Safety:** Safety is an issue all students should care about deeply—not only the safety of themselves, but the safety of others. Students should behave sensibly to protect the welfare of others and minimize hazardous situations. Safety is of critical importance at all places on the campus, but particularly important in the apartments and residence halls, where the carelessness of one individual can affect the lives of hundreds. Willful violations of safety, such as causing false fire alarms, will result in immediate disciplinary action according to judicial procedures.

**Sexual harassment/misconduct:** RIT acknowledges that an individual student's sexual attitudes and values are a matter of choice. Nonetheless, responsible sexual behaviors must take into account the dignity, privacy, and rights of others. RIT's policy prohibiting discrimination and harassment and the RIT sexual assault policy should be observed at all times. Moreover, no individual should be subjected to exploitative actions.

**Study environment:** Students need a campus environment that is conducive to studying, especially in facilities designed primarily for study. Individuals should respect the rights of others to study and should be understanding of different study habits.

**Student-sponsored events:** In the planning and scheduling of events, students should consider the safety and overall welfare of members of the academic community. Students should not knowingly conduct events that might inhibit the completion of the academic mission of the university or any member thereof.

## Student alcohol and drug policy

RIT is a learning community. The best environment for learning occurs when the community promotes and supports healthy and responsible behavior among its members. Students ultimately are responsible for their behavior and must assume full consequences for it. This includes the responsible and legal use of alcohol. The goal of RIT's student alcohol and drug policy is to promote individual responsibility and advance the goals and expectations stated in the previous section, "Expectations for Community Behavior."

This policy applies to all student members of the RIT community and their guests. It also applies to all student activities on the RIT campus and to all RIT-sponsored events where students are present. Faculty, staff, and their guests are governed by a separate policy.

RIT students are subject to federal, state, and local laws regarding alcohol and drug use. Serious civil and criminal legal liabilities can result from possessing, using, serving, selling, or unlawfully manufacturing drugs/alcohol. RIT will not protect individuals or groups from law enforcement by legal authorities with respect to drugs and alcohol use or abuse.

Individuals or organizations who hold private parties or sponsor private events where alcohol is served or consumed assume full personal responsibility and liability for compliance with the law and conduct related to the consumption of alcohol by attendees, participants, and guests. Officers of organizations that sponsor parties or events, or other hosts or people whose apartment, residence hall room, or office is the site where drinking occurs, will be held responsible for complying with the provisions of this policy.

## Provisions governing the possession and use of alcohol

- Alcohol may not be illegally used, possessed, manufactured, or exchanged on RIT-owned or -operated property or at RIT-sponsored events. No alcohol may be sold or exchanged for money on RIT property or at RIT-sponsored events without a New York state liquor license. The RITskeller is a licensed premise and is permitted to serve alcohol to individuals who are at least 21 years of age.
- The consumption or possession of alcoholic beverages is prohibited in all RIT residence halls (including Greek houses and house basements), regardless of age or circumstances.
- The consumption or possession of alcoholic beverages is permitted in RIT-operated apartments only by those residents of the apartment who are at least 21 years of age. Alcohol possession and consumption is not permitted in common or public areas within apartment complexes. Parties in apartments are to be limited to invited guests of a number that is defined by building occupancy codes and can be accommodated without disturbing the community. These numbers may be found in the RIT apartment contract for a particular facility or obtained from apartment management.
- Guests at all privately sponsored parties where alcohol is to be served must be invited by direct personal invitation only. General "come all" posters, flyers, or mass electronic invitations will not be permitted for events designated as private parties. Only the RITskeller or an institutionally designated space can be used for a communitywide event where alcohol is to be served to students or student groups.

- Public Safety and other RIT officials have the right to terminate events and take appropriate action if they determine that it is probable that university policy and/or New York state law is being violated at any gathering on the RIT campus, in RIT-operated facilities, or at campus-sponsored functions.
- Bulk containers of beer (kegs or beer balls) are prohibited in all RIT-operated apartments. Such containers are permitted only in institutionally designated party areas where alcohol can be served for parties or special events, or in areas that are covered by a New York state liquor license.
- Open containers of alcohol are not permitted outdoors on the RIT campus without prior authorization. Authorization will be given in situations where alcohol is to be served in conjunction with an officially sponsored RIT student event. The authorization process for use of alcohol in these situations is coordinated through the Center for Campus Life in the Student Alumni Union. (See "Registration Procedures for Events Where Alcohol Is Served/Consumed on the RIT Campus" for specifics.)
- All student events and parties where alcohol is served, possessed, or consumed must abide by all existing university policies and procedures regarding the use, possession, sale, and distribution of alcohol, and may be restricted further by existing municipal and state ordinances. Prior to planning any activity or event where alcohol is to be served, individuals/groups should consult the Center for Campus Life, located in the Student Alumni Union, regarding the provisions and restrictions governing alcohol use at RIT activities and events.
- Student-sponsored parties/events where alcohol is served may be held in designated areas on the RIT campus. (Private parties held in RIT-operated apartments are covered in item No. 3.) Alcoholic beverages can be served at these student-sponsored parties and events on campus only by RIT Food Service or by an approved third-party vendor. Registration and authorization for such events can be obtained through the Center for Campus Life. The center coordinates the procedures for securing authorization from the State Liquor Board to sell/serve alcohol; this process takes a minimum of 10 business days.
- Behavior that is dangerous to oneself or others and/or disturbs the learning and/or living environment in RIT-operated facilities or at any RIT-sponsored activity/event is strictly prohibited. Such behavior will result in Public Safety intervention and campus judicial action.
- Serving, selling, or providing alcohol to those under 21 years of age or possession of alcohol by someone under 21 years of age is prohibited by both New York state law and RIT regulations. Any person who exhibits behavior that suggests excessive drinking has occurred cannot be served or permitted continued access to alcohol. Individuals who serve such individuals alcoholic beverages will face Public Safety intervention, campus judicial action, and possible civil and criminal prosecution.
- Use of false or altered identification or other misrepresentation of one's age in order to possess or consume alcohol is explicitly forbidden.
- In order to avoid the dangerous and possibly fatal effects of alcohol poisoning, an individual who has "passed out" or shows other signs of serious effects from alcohol consumption should immediately be brought to the attention of Public Safety, RIT Ambulance, the Residence Life staff, or some other person able to assist or get assistance. Seeking such help is encouraged by RIT.

- Students violating the RIT Student Alcohol and Drug Policy will be subject to the campus judicial process published in the Student Rights and Responsibilities Handbook, as well as the judicial actions and sanctions described in this policy. All guests or visitors to the campus also must comply with the provisions of this policy or risk removal from the campus and possible future restriction from campus property.

### Sanctions regarding violations of RIT student alcohol policy

If a student or student organization violates the RIT alcohol policy, the following judicial outcomes should be anticipated:

| BEHAVIOR   | CONSEQUENCES   |
|--|--|
| Possession of alcohol <ul style="list-style-type: none"> <li>• In residence halls and Greek houses regardless of age</li> <li>• Under 21 years of age</li> <li>• Possession of bulk alcohol</li> </ul> | First offense: Disciplinary probation<br>Second offense: Deferred disciplinary suspension/deferred removal from housing and possible referral for a chemical dependency screening<br>Third offense: Disciplinary suspension or removal from housing, with appropriate conditions             |
| Behavior that suggests the excessive consumption of alcohol  | First offense: Probable deferred disciplinary suspension/deferred removal from housing; possible referral to alternative educational sanction program or a chemical dependency screening<br>Second offense: Disciplinary suspension and/or removal from housing, with appropriate conditions |
| Serious policy violations (including serving alcohol to minors, hazing events involving alcohol, or dangerous behavior as a result of alcohol)   | First offense: Probable disciplinary suspension and/or removal from housing, with appropriate conditions   |
| DWI on campus  | First offense: Referral to local law enforcement agency and disciplinary suspension  |
| Student organizational violations related to alcohol   | First offense: Educational/community related sanctions; possible disciplinary suspension of organization and/or removal of recognition   |

These guidelines are examples of responses that will most likely result when there have been violations of the RIT alcohol policy. Each incident is handled individually. The prior judicial background of the student(s) involved and the impact of the incident on the student and the RIT community are considered when decisions are rendered. In some cases, even with first offenses, the impact of an incident may call for a more serious response. A sanction of deferred suspension or higher will require the dependent student to notify his or her parents or legal guardians about the decision and have the parents/legal guardians contact the Center for Student Conduct and Conflict Management Services for verification.

Registration procedures for student-sponsored events where alcohol is served/consumed on the RIT campus

The following procedures do not apply to private parties held in RIT-operated apartments.

- Student-sponsored events where alcoholic beverages are to be served require that an event registration form be initiated and approved. This process takes a minimum of 10 business days prior to the event. Such events can be arranged on a space-available basis. Inquiries regarding the availability of space/rooms for events where alcohol is permitted can be obtained at the Center for Campus Life.
- Alcohol can be provided, possessed, or consumed by students only in institutionally designated spaces on the RIT campus. RIT Food Service or an approved third-party vendor must dispense all alcohol at these parties/events. Arrangements for private parties where alcoholic beverages are served can be made through

the Center for Campus Life. Only individuals who are at least 21 years of age may register an event where alcoholic beverages are to be served.

- Public Safety will determine the security staffing levels for each event where alcoholic beverages are to be served. The required number of officers must be present for the duration of the event. The costs of these officers will be billed directly to the sponsoring/host organization. Public Safety will discuss requirements for security with the sponsoring individuals or groups prior to the event.
- The guests at all privately sponsored parties where alcoholic beverages are to be served must be invited by direct personal invitation only. General “come all” posters, flyers, or mass electronic invitations will not be permitted for events designated as private parties. Only the RITskeller or an institutionally designated space can be used for a communitywide event where alcoholic beverages are to be served to students or student groups.
- When alcoholic beverages are served at student-sponsored parties/events, nonalcoholic beverages and food also must be served. Guidelines may be obtained at the Center for Campus Life.
- Individuals/officers of the student organization sponsoring the event will be held responsible for the behavior of guests. An officer of the organization must be present for the duration of the event. The organization officer is also responsible for assuring that only individuals who are at least 21 years of age are consuming alcohol during the party/event.
- Student organizers of a party/event should ensure that appropriate transportation is available for individuals who have been consuming alcohol during the party. They should ensure that individuals who have been drinking do not drive while intoxicated.

### Provisions governing the possession and use of illegal drugs

- RIT explicitly prohibits the use, possession, sale, manufacture, or trafficking of illegal drugs on RIT-owned or -operated property, or at RIT-sponsored events.
- In order to avoid the dangerous and possibly fatal effects of drug overdose, an individual who has “passed out” or shows other signs of serious effects from drug use should immediately be brought to the attention of Public Safety, RIT Ambulance, the Residence Life staff, or some other person able to assist or to get assistance. Seeking such help is encouraged by RIT.
- Students violating the RIT student alcohol and drug policy will be subject to the campus judicial process, published in the Student Rights and Responsibilities Handbook, and the judicial actions and sanctions described in this policy. RIT students will be held responsible for the behavior of their guests. All guests or visitors to the campus also must comply with the provisions of this policy or risk removal from the campus and possible future restriction from campus property.

# Sanctions Regarding Violations of RIT Student Drug Policy

If a student or student organization violates the RIT drug policy, the following judicial outcomes should be anticipated:

| BEHAVIOR                                | CONSEQUENCES   |
|---|--|
| Use/possession of illegal drugs         | First Offense: Deferred disciplinary suspension; deferred removal or removal from RIT housing; possible referral for a chemical dependency screening and alternative education program<br>Second Offense: Disciplinary suspension or dismissal; drug treatment while on suspension from the university |
| Selling or trafficking of illegal drugs | Disciplinary suspension, dismissal or expulsion; referral to local law enforcement agencies  |

These guidelines are examples of responses that will most likely result when there have been violations of the RIT drug policy. Each incident is handled individually. The prior judicial background of the student(s) involved and the impact of the incident on the student and the RIT community are considered when decisions are rendered. In some cases, even though it may be a first offense, the impact of an incident may call for a more serious response. A sanction of deferred suspension or higher will require the dependent student to notify his/her parents or legal guardians about the decision and have the parents or legal guardians contact the Center for Student Conduct and Conflict Management Services for verification.

## RIT process for student misconduct

RIT has established well-defined processes for handling student misconduct cases while protecting the civil and academic rights of all members of the RIT community. Student conduct and appeals processes are administered through the Center for Student Conduct and Conflict Management Services. Sanctions imposed upon those found responsible for violating the RIT conduct code may range from a written warning to restitution to disciplinary suspension, dismissal, and expulsion from the university. Students suspended from RIT may not enroll in any course until such time as the suspension is waived by the Center for Student Conduct and Conflict Management Services.

## RIT Conflict Management Services

Students involved in a dispute may utilize RIT Conflict Management Services. Mediation is a process by which students, organizations, faculty, or staff voluntarily meet with trained mediators to discuss ways in which problems or differences can be resolved.



# Undergraduate Admission

[www.rit.edu/admission](http://www.rit.edu/admission)

## Freshman admission

Students applying for freshman admission for the fall quarter (September) may apply through an **Early Decision Plan** or **Regular Decision Plan**. The Early Decision Plan is designed for those who consider RIT their first-choice college and wish to receive an early notification regarding admission. Early Decision requires that candidates file their applications and all supporting documents by December 1 in order to receive admission notification by January 15.

Freshmen who choose not to apply for Early Decision are considered under our Regular Decision Plan. Regular Decision applicants who have provided all required application materials by February 1 will receive admission notification by March 15. Applications received after February 1 will be reviewed on a space-available basis, with notification letters mailed four to six weeks after the application is completed.

All applications for winter, spring, or summer quarter entry are reviewed as they are received, and notification letters are mailed four to six weeks after all application credentials are received. Some programs are limited to fall entry only.

## Transfer admission

Applications for transfer admission are reviewed as they are received, and notification letters are mailed four to six weeks after the application is completed. A transfer credit evaluation is completed as part of the application process. Transfer credit is granted by the academic departments for course work that is related to students' intended programs, if it is completed at a regionally accredited college or university. Usually a grade of C or better is required for transfer credit to be awarded.

There is no limit on the number of credit hours that can be awarded. However, a recipient of a two-year degree from an accredited university cannot receive more than 90 credits for that degree. A matriculated undergraduate student's year level is determined by the number of credit hours the student has earned, according to the scale below.

| YEAR LEVEL | 1- 4-YEAR PROGRAMS | 5-YEAR PROGRAMS |
|------------|--------------------|-----------------|
| 1          | 0-39               | 0-39            |
| 2          | 40-83              | 40-83           |
| 3          | 84-127             | 84-113          |
| 4          | 128-above          | 114-143         |
| 5          |                    | 144-above       |

*Specific instructions for completing the application process are contained in the application packet (also online). Be sure to read the instructions carefully before applying.*

Factors considered in the admissions decision include, but are not limited to, past high school/college performance (particularly in required academic subjects), admission test scores, competitiveness of high school or previous college, and related experiences (work, military, etc.). Recommendations from those familiar with your academic performance and interviews with admissions counselors often are influential.

If you are accepted for admission, a \$300 nonrefundable enrollment deposit reserves a place in your class and is credited to your first-quarter costs at RIT. The due date for this deposit is indicated with each offer of admission.

## International applicants

International students whose native language is not English must submit results of the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) examination along with the requirements listed below. International applicants applying for fall quarter (September) admission should have all educational records and admission materials on file by March 1. Applications are reviewed on a "rolling" basis, with admissions notification four to six weeks after all materials are received by RIT.

## Application requirements

In order to complete the application process, you need to submit the following:

1. A fully completed application for admission (includes any required supplemental forms);
2. A nonrefundable \$50 application fee;
3. An official high school transcript for all freshman applicants and transfer students with fewer than 30 semester hours or 45 quarter hours completed at the time of application;
4. Official American College Test (ACT) or Scholastic Reasoning Test (SAT-I) results for all freshman applicants;
5. Official transcripts of all completed college course work and a list of any courses in progress (and not on the transcript) or courses to be completed before enrolling at RIT; and
6. A portfolio of original artwork as part of the application process for students applying for admission to academic programs offered by RIT's School of Art, School of Design, and School for American Crafts. Please review the portfolio guidelines available at [admissions.rit.edu/applyonline.php3](http://admissions.rit.edu/applyonline.php3) before submitting your portfolio.

**Early admission:** Students who complete the prescribed number and distribution of high school units in three years, with the exception of fourth-year English/history, may seek admission under an Early Admission Program. Please contact the Undergraduate Admissions Office for details.



**Placement testing for admitted students:** Many programs at RIT depend on a solid foundation in mathematics. In an effort to enable students to succeed in their college mathematics courses, the School of Mathematical Sciences has developed a Mathematics Placement Exam. This exam is taken by all entering students whose programs require a calculus sequence. It assesses students' mastery of some of the fundamental mathematical concepts they have seen in their high school mathematics courses. Students without a calculus sequence who are not sure about the appropriate mathematics course with which to begin their studies at RIT may contact the department of mathematics and statistics at (585) 475-5780 to arrange for a special mathematics diagnostic test.

The Liberal Arts Qualifying Exam (LAQE) is a placement test for which students are asked to write an essay on an assigned topic. The purpose of the exam is to determine whether students should be registered for the required Writing Seminar course, or must first take the Basic Writing course. **The LAQE is a placement test required of all first-year students who do not meet one of the following criteria: a score of 560 or higher on the verbal section of the SAT, a score of 23 or higher on the English portion of the ACT, or a score of 6 or higher on the SAT essay exam.**

**New York State immunization requirement:** New York State Public Law 2165 requires that all matriculated students enrolled for more than 6 quarter credit hours in a term and born after January 1, 1957, must provide RIT's Student Health Center with proof that they have received the appropriate immunizations against measles, rubella, and mumps. Immunization requirements include two measles vaccinations, at least one month apart, with a live virus (after January 1, 1968, and after the first birthday) and one vaccination each against mumps and rubella (after January 1, 1969, and after the first birthday). Additional information concerning the necessary documentation and where it must be sent is included with the Admissions Office acceptance packet or available from the Student Health Center office.

**Admissions services and campus visits:** Selecting the appropriate college is a difficult decision, and visiting a campus often helps students form more accurate impressions. We encourage campus visits and personal admission interviews because they allow students to see our outstanding facilities firsthand and get answers to questions they may have while examining personal, academic, and career goals.

Experienced admissions counselors are available to provide information and assist students with exploring academic options. Students may choose to participate in Admissions Open House programs or arrange personal interviews and campus tours. These options are not required for admission. An appointment for an admissions interview and campus tour may be scheduled by contacting the Undergraduate Admissions Office via our website, [admissions.rit.edu](http://admissions.rit.edu), or calling (585) 475-6631. Office hours are Monday through Friday, 8:30 a.m. to 4:30 p.m. EST.

Deaf and hard-of-hearing students who wish to enter NTID or another RIT college may contact the NTID Office of Admissions by sending an e-mail to [www.ntid.rit.edu](http://www.ntid.rit.edu) or calling (585) 475-6700 (voice/TTY). Office hours are Monday through Friday, 8:30 a.m. to 4:30 p.m. EST.

**Part-time enrollment services:** The Office of Part-time Enrollment Services provides central information and counseling services to students interested in enrolling in part-time undergraduate studies offered through RIT's various schools and colleges. Contact the office if assistance is needed in selecting an academic program, exploring financial aid opportunities, registering for classes, or receiving information about any aspect of part-time study at RIT.

Staff members are available to assist you from 8:30 a.m. to 6 p.m., Monday through Thursday, and from 8:30 a.m. to 4:30 p.m. on Friday. We invite you to visit our website at [www.rit.edu/parttime](http://www.rit.edu/parttime), call (585) 475-2229 for information, or visit our office on the lower level of the Bausch & Lomb Center on campus.

**Applying to NTID**

In addition to the six application requirements listed above for admission to RIT, deaf and hard-of-hearing students applying for admission to programs offered at the National Technical Institute for the Deaf (NTID) or to any other college of RIT must submit the Audiological Record Form or submit an audiogram without the form. All audiograms must be unaided and have been completed within three years of the application date. This form is required in order to qualify for educational access and support services as well as NTID's federally supported tuition rate. Eligibility for NTID access and support services, which is agreed upon by RIT and the United States Department of Education, includes this criteria:

**Hearing loss**—An audiogram is required. Students must demonstrate a significant hearing loss and demonstrate the ability to benefit from the models used at RIT/NTID designated specifically to provide access to academic programs for deaf and hard-of-hearing students.

The NTID Office of Admissions adheres to the same application deadlines and notification dates for early and regular decision as outlined in the freshman admission text in this section.

Deaf and hard-of-hearing students may enter into an NTID program, or they may qualify for entry directly into a program in another RIT college with NTID sponsorship. The transfer credit of deaf students accepted to NTID's Summer Vestibule Program will be evaluated in the fall when they are accepted into a specific program.

**Freshman Admission Guidelines**

| COLLEGE OF APPLIED AND SCIENCE AND TECHNOLOGY  |   |
|--|---|
| Academic Programs  | High School Preparation Required <sup>1</sup>   |
| <b>Engineering Technology:</b><br>Civil, Computer, Electrical, Electrical/<br>Mechanical, Manufacturing, Mechanical,<br>and Telecommunications Engineering<br>Technology programs; Undeclared<br>Option <sup>2</sup> | Algebra, geometry, trigonometry, and<br>two years of science (including physics<br>or chemistry) required; pre-calculus and<br>technology courses desirable                       |
| <b>Environmental Sustainability, Health<br/>and Safety</b>   | Three years of mathematics (including<br>trigonometry) and two years of science<br>(including physics or chemistry)   |
| <b>School of International Hospitality<br/>and Service Innovation:</b><br>International Hospitality and Service<br>Management  | College preparatory program, including<br>algebra, geometry, and two years of<br>science  |
| <b>Packaging Science</b>   | Algebra, geometry, trigonometry, and<br>two years of science required   |
| E. PHILIP SAUNDERS COLLEGE OF BUSINESS   |   |
| Academic Programs  | High School Preparation Required <sup>1</sup>   |
| Accounting, Finance, International<br>Business, Management, Management<br>Information Systems, Marketing, New<br>Media Marketing, Undeclared Business<br>Option <sup>2</sup>   | College preparatory program including<br>algebra, geometry, and two years of<br>science; trigonometry or precalculus,<br>and courses emphasizing writing skills<br>also desirable |
| B. THOMAS GOLISANO COLLEGE OF COMPUTING AND INFORMATION SCIENCES   |   |
| Academic Programs  | High School Preparation Required <sup>1</sup>   |
| Applied Networking and System<br>Administration, Information Security<br>and Forensics   | Algebra, geometry, and two years of<br>science required; physics, chemistry,<br>computing, precalculus, and technology<br>courses recommended                                     |

|  |  |
|--|--|
| Computer Science   | Algebra, geometry, trigonometry, and two years of science (including physics or chemistry) required; precalculus recommended |
| Information Technology, New Media Interactive Development, Game Design and Development | Algebra, geometry, and two years of science required; trigonometry/pre-calculus and technology courses desirable             |
| Medical Informatics  | Algebra, geometry, trigonometry, biology, and chemistry required   |
| Software Engineering   | Algebra, geometry, trigonometry, and two years of science (including physics or chemistry) required; precalculus recommended |
| Computing Exploration, Informatics Exploration <sup>2</sup>                            | Algebra, geometry, trigonometry, and two years of science (including physics or chemistry) required; precalculus recommended |

#### KATE GLEASON COLLEGE OF ENGINEERING

| Academic Programs   | High School Preparation Required <sup>1</sup>   |
|---|---|
| Biomedical, Chemical, Computer, Computer/Software, Electrical, Electrical/Biomedical, Electrical/Computer, Electrical/Robotics, Industrial, Industrial/Ergonomics, Industrial/Information Systems, Industrial/Lean Six Sigma, Industrial/Manufacturing, Industrial/Six Sigma, Mechanical, Mechanical/Aerospace, Mechanical/Automotive, Mechanical/Bioengineering, Mechanical/Energy and Environment, and Microelectronic Engineering programs; Engineering Exploration Program <sup>2</sup> | Four years of mathematics required (algebra, geometry, trigonometry, and precalculus); physics and chemistry required for all programs, biology also required for biomedical and electrical/biomedical engineering option |

#### COLLEGE OF HEALTH SCIENCES AND TECHNOLOGY

| Academic Programs  | High School Preparation Required <sup>1</sup>   |
|--|---|
| Biomedical Sciences, Diagnostic Medical Sonography (Ultrasound), Physician Assistant | Algebra, geometry, trigonometry, and biology required for all programs; chemistry or physics required for Ultrasound program, and chemistry required for Biomedical Sciences and Physician Assistant programs; precalculus recommended. |
| Nutrition Management   | College preparatory program, including algebra, geometry, and two years of science; chemistry required  |
| General Science Exploration <sup>2</sup> , Premedical Studies                        | Algebra, geometry, trigonometry, and two years of science required; physics, chemistry, and precalculus recommended   |

#### COLLEGE OF IMAGING ARTS AND SCIENCES

| Academic Programs   | High School Preparation Required <sup>1</sup>   |
|---|---|
| <b>School of Art:</b> Fine Arts Studio, Illustration, Medical Illustration, Undeclared Art Option <sup>2</sup><br><b>School of Design:</b> 3D Digital Graphics, Graphic Design, Industrial Design, Interior Design, New Media Design and Imaging, Undeclared Design Option <sup>2</sup><br><b>School for American Crafts:</b> Ceramics/Ceramic Sculpture, Glass, Metalcrafts and Jewelry, Woodworking/Furniture Design, Undeclared Crafts Option <sup>2</sup> | Studio art experience, in addition to a balanced academic program with courses in English, social studies, mathematics, and science, is required. Mechanical drawing also is desirable for Industrial or Interior Design applicants. Medical Illustration program requires two years of science (biology preferred). A portfolio of original artwork is required for all programs, with drawing skills being most important. Craft students should also show examples of work in their area of interest, if possible. |
| <b>School of Film and Animation:</b> Film and Animation, Motion Picture Science (formerly Digital Cinema)   | College preparatory program, including two years of mathematics and two years of science. Motion Picture Science requires trigonometry and chemistry or physics; precalculus is recommended.  |

|  |   |
|--|---|
| <b>School of Photographic Arts and Sciences:</b> Biomedical Photographic Communications, Imaging and Photographic Technology, Professional Photographic Illustration/Advertising Photography Option, Professional Photographic Illustration/Fine Art Photography Option, Professional Photographic Illustration/Photojournalism Option, Visual Media | College preparatory program, including two years of mathematics and two years of science; biology required for Biomedical Photographic Communications |
| <b>School of Print Media:</b> Media Arts and Technology (formerly New Media Publishing)  | Algebra, geometry, trigonometry, and two years of science (physics or chemistry required)   |

#### COLLEGE OF LIBERAL ARTS

| Academic Programs  | High School Preparation Required <sup>1</sup>  |
|--|--|
| Advertising and Public Relations, Criminal Justice, Economics, International Studies, Journalism, Museum Studies, Philosophy, Political Science, Professional and Technical Communication, Psychology, Public Policy, Urban and Community Studies, Liberal Arts Exploration <sup>2</sup> | College preparatory program, including algebra, geometry, and two years of science required; trigonometry also required for Public Policy. |

#### CENTER FOR MULTIDISCIPLINARY STUDIES

| Academic Programs                        | High School Preparation Required <sup>1</sup>                        |
|--|--|
| Applied Arts and Science (transfer only) | Freshmen should apply to the University Studies Program <sup>3</sup> |

#### NATIONAL TECHNICAL INSTITUTE FOR THE DEAF

| Academic Programs   | High School Preparation Required <sup>1</sup>  |
|---|--|
| Accounting Technology, Administrative Support Technology, Applied Computer Technology, Applied Liberal Arts, Applied Mechanical Technology, Arts and Imaging Studies, ASL-English Interpretation, Business, Business Technology, Computer-Aided Drafting Technology, Computer-Integrated Machining Technology, Hospitality and Service Management, Laboratory Science Technology, Pre-baccalaureate Studies | General college preparatory courses in science, mathematics, and English; see program descriptions for specific requirements or contact NTID Office of Admissions, (585) 475-6700 (voice/TTY), toll free in the U.S. and Canada at (866) 644-6843 (voice/TTY), or by videophone at (585) 743-1366. |

#### COLLEGE OF SCIENCE

| Academic Programs  | High School Preparation Required <sup>1</sup>   |
|--|---|
| <b>School of Biological and Medical Sciences:</b> Bioinformatics, Biology, Molecular Bioscience and Biotechnology (formerly Biotechnology), Molecular Bioscience and Biotechnology – Bioinformatics Option | Algebra, geometry, trigonometry, biology, and chemistry required; precalculus recommended                           |
| Environmental Science  | Algebra, geometry, trigonometry, biology, and chemistry required; precalculus recommended                           |
| <b>School of Mathematical Sciences:</b> Applied Mathematics, Applied Statistics, Computational Mathematics   | Algebra, geometry, trigonometry, and two years of science required; precalculus recommended                         |
| <b>Department of Chemistry:</b> Biochemistry, Chemistry  | Algebra, geometry, trigonometry, and chemistry required; physics and precalculus recommended                        |
| <b>Department of Physics:</b> Physics  | Algebra, geometry, trigonometry, physics or chemistry required; precalculus recommended                             |
| <b>Center for Imaging Science:</b> Imaging Science   | Algebra, geometry, trigonometry, and chemistry or physics required; precalculus recommended                         |
| General Science Exploration <sup>2</sup> , Premedical Studies  | Algebra, geometry, trigonometry, and two years of science required; physics, chemistry, and precalculus recommended |

<sup>1</sup> Students attending high schools in New York state should note that algebra, geometry, and trigonometry are the equivalent of Mathematics Course I, II and III.

<sup>2</sup> A one-year program for students wishing to explore alternatives before selecting a specific degree program within this RIT college or school.

<sup>3</sup> A one-year program for students who are undecided on a major and wish to explore program options in one or more of RIT's colleges.

## Transfer Admission Guidelines

| COLLEGE OF APPLIED SCIENCE AND TECHNOLOGY   |                    |  |  |   |
|---|--------------------|--|--|---|
| Program at RIT  | Co-op <sup>1</sup> | Entry Term   | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| <b>School of Engineering Technology:</b><br>Civil Engineering Technology  | 1                  | Fall preferred   | Civil, Construction, Environmental, Architectural, Transportation or Surveying Technology; Engineering Science                 | Courses in mathematics, science, and engineering technology   |
| Computer Engineering Technology   | 1                  | Fall preferred   | Computer Technology, Electrical or Electronic Technology, or Computer Science  | Courses in computer science, math, science, and engineering technology  |
| Electrical Engineering Technology   | 1                  | Fall preferred   | Electrical Technology, Electronic Technology, Engineering Science  | Courses in mathematics, science, and engineering technology   |
| Electrical/Mechanical Engineering Technology  | 1                  | Fall preferred   | Electrical or Mechanical Technology, Electronic Technology, Engineering Science  | Courses in mathematics, science, and engineering technology   |
| Manufacturing Engineering Technology  | 1                  | Fall preferred   | Manufacturing, Mechanical, Drafting and Design, Robotics, or Electromechanical Technology; Engineering Science                 | Courses in mathematics, science, and engineering technology   |
| Mechanical Engineering Technology   | 1                  | Fall preferred   | Mechanical, Design and Drafting, Air Conditioning, or Electromechanical Technology; Engineering Science                        | Courses in mathematics, science, and technology   |
| Telecommunications Engineering Technology   | 1                  | Fall preferred   | Telecommunications, Electrical or Electronic Technology; Engineering Science   | Courses in mathematics, science, and technology   |
| <b>Environmental Sustainability, Health and Safety</b>  | 1                  | Any quarter  | Biology, Chemistry, or Environmental Sciences; Business or Public Administration; Liberal Arts with math/science               | Math through Calculus I, micro- and macroeconomics, introductory courses in biology, chemistry, and physics   |
| <b>School of International Hospitality and Service Innovation:</b> International Hospitality and Service Management   | 1                  | Any quarter  | Foodservice Management, Hotel/Resort Management, Travel/Tourism Management, Agriculture, Technology, Business, or Liberal Arts | Courses in business and economics, a foreign language, math, science, and liberal arts  |
| <b>Packaging Science:</b> Management Option, Printing Option, Technical Option  | 1                  | Any quarter  | Business Administration, Marketing, Management, Graphic Arts, Engineering Science, Liberal Arts with math/science              | Courses in business, mathematics, science, the liberal arts, and statistics or computer science   |
| E. PHILIP SAUNDERS COLLEGE OF BUSINESS  |                    |  |  |   |
| Program at RIT  | Co-op <sup>1</sup> | Entry Term   | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| Accounting  | 1                  | Any quarter  | Accounting or AS degree in Business Administration   | Courses in economics, accounting, the liberal arts, science, and mathematics  |
| Finance, International Business, Management, Marketing, New Media Marketing   | 1                  | Any quarter  | Business Administration or Liberal Arts  | Courses in economics, the liberal arts, science, and mathematics  |
| Management Information Systems  | 1                  | Any quarter  | Data Processing/Management Information Systems, or AS in Business Administration   | Courses in the liberal arts, math, science, economics, and computer science   |
| B. THOMAS GOLISANO COLLEGE OF COMPUTING AND INFORMATION SCIENCES  |                    |  |  |   |
| Program at RIT  | Co-op <sup>1</sup> | Entry Term   | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| <b>Computer Science</b><br><b>Software Engineering</b>  | 1                  | Fall preferred   | Computer Science, Engineering Science  | Courses in computer science, calculus, the liberal arts, and calculus-based physics, chemistry, or biology  |
| <b>School of Informatics:</b> Applied Networking and System Administration, Information Security and Forensics, Information Technology, Medical Informatics<br><b>School of Interactive Games and Media:</b> Game Design and Development, New Media Interactive Development | 1                  | Any quarter (fall preferred for New Media/Interactive Development) | Computer Applications, Computer Science, Information Technology  | Courses in programming, computer applications, calculus, lab sciences, and the liberal arts   |
| KATE GLEASON COLLEGE OF ENGINEERING   |                    |  |  |   |
| Program at RIT  | Co-op <sup>1</sup> | Entry Term   | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| Biomedical Engineering, Chemical Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, Microelectronic Engineering   | 1                  | Fall preferred   | Engineering Science (plus computer science electives for computer engineering applicants)                                      | Pre-engineering courses such as calculus, calculus-based physics, chemistry, and the liberal arts; computer science courses for Computer Engineering applicants |

| COLLEGE OF HEALTH SCIENCES AND TECHNOLOGY  |                    |                 |  |   |
|--|--------------------|-----------------|--|---|
| Program at RIT   | Co-op <sup>1</sup> | Entry Term      | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| Biomedical Sciences  | 2                  | Fall preferred  | Liberal Arts with science option; Allied Health; Radiologic Technology   | Courses in the liberal arts, sciences, and math   |
| Diagnostic Medical Sonography (Ultrasound)   | 3                  | Fall preferred  | Liberal Arts with science option; Allied Health; Radiologic Technology   | Courses in the liberal arts, sciences, and math   |
| Nutrition Management   | 1                  | Any quarter     | Dietetics or Nutrition, Foodservice Management, or Liberal Arts  | Courses in the liberal arts, sciences, and math   |
| Physician Assistant  | 3                  | Fall only       | Liberal Arts with science option; Allied Health areas  | Courses in the liberal arts, sciences, and math   |
| COLLEGE OF IMAGING ARTS AND SCIENCES   |                    |                 |  |   |
| Program at RIT   | Co-op <sup>1</sup> | Entry Term      | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| <b>School of Art:</b> Fine Arts Studio, Illustration, Medical Illustration<br><b>School of Design:</b> 3D Digital Graphics, Graphic Design, Industrial Design, Interior Design, New Media Design and Imaging | 4                  | Fall preferred  | Related programs or studio art experience in desired disciplines   | Courses in studio art, art history, and the liberal arts; portfolio of original artwork required                |
| Transfer Adjustment: All art and design programs   |                    | Summer only     |  | Summer courses can lead to third-year status  |
| <b>School for American Crafts:</b> Ceramics/ Ceramic Sculpture, Glass, Metalcrafts and Jewelry, Woodworking/Furniture Design   | 4                  | Fall preferred  | Transfer as a third-year student is uncommon as comparable programs are not generally available at other colleges. | Courses in art history, studio art, and the liberal arts; portfolio of original artwork required                |
| <b>School of Film and Animation:</b> Film and Animation  | 2                  | Fall only       | No common program available  | Courses in the liberal arts; science; design; drawing; and film, video, or animation                            |
| Motion Picture Science (formerly Digital Cinema)   | 2                  | Fall only       | No common program available  | Courses in calculus or higher mathematics, college chemistry, calculus-based physics, and the liberal arts      |
| <b>School of Photographic Arts and Sciences:</b> Biomedical Photographic Communications  | 3                  | Fall preferred  | No common program available  | Courses in biology, photography, and the liberal arts; portfolio required for photo credit                      |
| Imaging and Photographic Technology  | 1                  | Fall preferred  | No common program available  | Courses in college physics, mathematics, photography, and the liberal arts; portfolio required for photo credit |
| Professional Photographic Illustration: Advertising Photography Option, Fine Art Photography Option, Photojournalism Option; Visual Media  | 4                  | Fall preferred  | Applied Photography  | Courses in the liberal arts, photography, design, and art history; portfolio required for photo transfer credit |
| Transfer adjustment: Available in all photography programs   |                    | Summer only     | Transfer adjustment leading to second- or third-year status in most programs                                       |   |
| <b>School of Print Media:</b> Media Arts and Technology (formerly New Media Publishing)  | 1                  | No summer entry | Transfer from associate degree programs considered on an individual basis  | Courses in the liberal arts, college math, physics and chemistry, and business                                  |
| COLLEGE OF LIBERAL ARTS  |                    |                 |  |   |
| Program at RIT   | Co-op <sup>1</sup> | Entry Term      | Appropriate Associate Degree Program for Transfer  | Transfer Course Recommendations Without Associate Degree  |
| Advertising and Public Relations   | 1                  | Any quarter     | Liberal Arts, Business, Communication, Advertising, Public Relations   | The liberal arts, business, communication, advertising, and public relations                                    |
| Criminal Justice   | 2 or 3             | Any quarter     | Criminal Justice, Human Services, or Liberal Arts  | Courses in criminal justice or related areas, the liberal arts, math, and science                               |
| Economics  | 2                  | Any quarter     | Business Administration or Liberal Arts  | Courses in business, the liberal arts, math, science, and computer science                                      |
| International Studies  | 2                  | Any quarter     | Liberal Arts with social sciences, science, languages  | Courses in the liberal arts, social sciences, sciences, and languages   |
| Journalism   | 1                  | Any quarter     | Liberal Arts with social sciences  | Courses in the liberal arts, social sciences, sciences, and languages   |
| Museum Studies   | 4                  | Any quarter     | Fine Arts, liberal Arts, Business/Marketing  | Courses in the liberal arts, art history, studio arts, photography, business, and chemistry                     |

|  |        |             |   |   |
|--|--------|-------------|---|---|
| Philosophy                               | 4      | Any quarter | Liberal Arts  | Courses in the liberal arts, math, science, philosophy, and ethics  |
| Political Science                        | 4      | Any quarter | Liberal Arts with social sciences, sciences, or languages                                       | Courses in the liberal arts, science, foreign language, and history |
| Professional and Technical Communication | 1      | Any quarter | Liberal Arts with emphasis in communication and a technical field such as business, photography | Courses in the liberal arts, math, science, and computer science    |
| Psychology                               | 1 or 3 | Any quarter | Liberal Arts with science or social sciences  | Courses in the liberal arts, sciences, and social sciences          |
| Public Policy                            | 1      | Any quarter | Liberal Arts, Environmental Studies, Economics, Government, Science                             | Courses in the liberal arts, sciences, and social sciences          |
| Urban and Community Studies              | 1 or 3 | Any quarter | Liberal Arts, Environmental Studies, Economics, Government, Science                             | Courses in the liberal arts, sciences, and social sciences          |

#### CENTER FOR MULTIDISCIPLINARY STUDIES

| Program at RIT           | Co-op <sup>1</sup> | Entry Term  | Appropriate Associate Degree Program for Transfer                       | Transfer Course Recommendations Without Associate Degree |
|--------------------------|--------------------|-------------|---|--|
| Applied Arts and Science | 2                  | Any quarter | Transfer from associate degree programs considered on individual basis. | Courses in the liberal arts, sciences, and math          |

#### NATIONAL TECHNICAL INSTITUTE FOR THE DEAF

| Program at RIT  |  |  | Appropriate Associate Degree Program for Transfer   | Transfer Course Recommendations Without Associate Degree |
|---|--|--|---|--|
| Accounting Technology, Administrative Support Technology, Applied Computer Technology, Applied Liberal Arts, Applied Mechanical Technology, Arts and Imaging Studies, ASL-English Interpretation, Business, Business Technology, Computer-Aided Drafting Technology, Computer-Integrated Machining Technology, Hospitality and Service Management, Laboratory Science Technology, Pre-baccalaureate Studies |  |  | Transfer requirements vary by program. Please contact NTID Office of Admissions (585) 475-6700 (voice/TTY), toll free in the U.S. and Canada at (866) 644-6843 (voice/TTY), or by videophone at (585) 743-1366. | Transfer requirements vary by program.                   |

#### COLLEGE OF SCIENCE

| Program at RIT  | Co-op <sup>1</sup> | Entry Term     | Appropriate Associate Degree Program for Transfer                                     | Transfer Course Recommendations Without Associate Degree   |
|---|--------------------|----------------|---|--|
| <b>School of Biological and Medical Sciences:</b><br>Bioinformatics   | 1                  | Fall preferred | Biotechnology or Liberal Arts with biology  | Courses in the liberal arts, sciences, and math  |
| Biology   | 2                  | Fall preferred | Biology or Liberal Arts with biology option   | Courses in the liberal arts, sciences, or math   |
| Environmental Science   | 2                  | Fall preferred | Biology, Chemistry, Environmental Science, Liberal Arts with science option           | Courses in the liberal arts, sciences, and math  |
| Molecular Bioscience and Biotechnology (formerly Biotechnology), Molecular Bioscience and Biotechnology – Bioinformatics Option | 2                  | Fall preferred | Biotechnology or Liberal Arts with biology  | Courses in the liberal arts, sciences, and math  |
| <b>School of Mathematical Sciences:</b><br>Applied Mathematics, Applied Statistics, Computational Mathematics                   | 2                  | Any quarter    | Liberal Arts with math/science option, Computer Science, Engineering Science, Science | Courses in math, computer science, and the liberal arts  |
| <b>Department of Chemistry:</b><br>Biochemistry, Chemistry  | 2                  | Any quarter    | Liberal Arts with chemistry option; Chemical Technology, Laboratory Technology        | Courses in the liberal arts, chemistry, math, and physics  |
| <b>Department of Physics:</b> Physics   | 2                  | Fall preferred | Liberal Arts with math/science option   | Courses in the liberal arts, physics, math, and chemistry  |
| <b>Center for Imaging Science:</b> Imaging Science  | 2                  | Fall preferred | Liberal Arts with math/science option   | Courses in calculus or higher mathematics, college chemistry, calculus-based physics, and the liberal arts |

<sup>1</sup> Cooperative Education: 1-required, 2-optional, 3-internship or practicum required, 4-no specific requirement



# University Costs

The following information is provided to assist students and their families in understanding the full range of student financial aid and scholarship programs available to undergraduates, as well as the costs, payment procedures, and refund policies associated with student enrollment at RIT.

## Costs and payment procedures

Charges for tuition, fees, and room and board are computed on a quarterly basis. University billing statements may be paid by cash, check, or electronic check (e-check). The university does not accept credit card payments for tuition, fees, and room and board that appear on the student billing statement. However, we have an arrangement for a third-party vendor to accept MasterCard and Discover Card when payment is made online. The vendor does charge a service fee for each credit card transaction.

Billing-related payments by check may be mailed to: Rochester Institute of Technology, Student Financial Services, P.O. Box 92878-200, Rochester, N.Y. 14692-8978. Payment also may be made in person at the Student Financial Services Office on the first floor of George Eastman Hall. Credit card and e-check payments may be made at <http://ipay.rit.edu/>.

Due dates are clearly designated on the billing statement and our website. Failure to pay the amount due or arrange an optional payment plan by the due date will result in a late payment fee for students without a valid deferral.

Due dates for the 2011-2012 school year are as follows:

Fall Quarter—August 17, 2011

Winter Quarter—November 21, 2011

Spring Quarter—February 29, 2012

Summer Quarter—May 24, 2012

## Tuition assessment policies

1. Matriculated day college students are charged the day rate for ALL courses taken, including evening division courses and courses taken while on co-op.
2. Students on co-op will not be charged tuition for those quarters unless they also are enrolled in classes.
3. Nonmatriculated students are charged for the type of course taken (evening rate for evening division courses; day rate for day courses, graduate rate for graduate courses).
4. Students taking courses during summer quarter should refer to the Summer Quarter Bulletin for policies and procedures.

## FEE SCHEDULE 2011–12 (MATRICULATED DAY COLLEGE STUDENTS EXCEPT NTID)\*

| Tuition   | Per Quarter   | Per Year—<br>Three Quarters |
|---|---------------|-----------------------------|
| <b>Full-time Undergraduate (12–20 Cr. Hrs.)</b>                     | \$10,528      | \$31,584                    |
| <b>Part-time Undergraduate (Less than 12 Cr. Hrs.)</b>              | \$714/Cr. Hr. |                             |
| <b>Student Activities Fee</b> (Mandatory Charge)                    |               |                             |
| Full-time Undergraduate   | \$76          | \$228                       |
| Part-time Undergraduate   | \$38          | \$114                       |
| <b>Student Health Fee</b> (Mandatory Charge)                        |               |                             |
| Full-time Undergraduate   | \$75          | \$225                       |
| <b>Residence Hall Room Charges \$</b>                               |               |                             |
| Double Occupancy  | \$2,032       | \$6,096                     |
| Single Occupancy  | \$2,337       | \$7,011                     |
| <b>Board/Meal Plans **</b>  |               |                             |
| Ultra-Meal Plan (continuous entry to Grace Watson) + 5 meal options | \$1,613       | \$4,839                     |
| 14 Meals (Includes \$97 debit/qtr.) + 5 meal options                | \$1,439       | \$4,317                     |
| 12 Meals (Includes \$249 debit/qtr.) + 5 meal options               | \$1,439       | \$4,317                     |
| All Debit (upperclassmen only)                                      | \$1,439       | \$4,317                     |
| <b>Matriculated Evening Division students</b>                       |               |                             |
| Undergraduate Tuition   | \$482/Cr. Hr. |                             |

\*See the National Technical Institute for the Deaf section of this bulletin for NTID cost information.

\$ Additional single-occupancy rates are available, depending on square footage of rooms.

\*\*Additional meal plans also are available, providing for different meal and debit account amounts. Information can be obtained from RIT Food Service upon request.

## Other fees

In addition to the fees specified below, certain groups of students may incur other fees, as follows:

**Orientation fee:** \$80 (one-time charge for new transfer students)

**Orientation fee:** \$200 (one-time charge for new freshman students)

**Quarterly photo/print facilities fee:** \$96 charged to all full-time photo and print media students; \$45 per quarter charged to all part-time photography and print media students

Some courses require additional charges to cover laboratory, studio, or supply fees. Consult the registrar's quarterly schedule for those courses with additional fees.

**Costs for books and supplies:** These costs vary with the program followed and, to some extent, the electives chosen. In programs with minimal expenses (e.g., liberal arts, business, hospital-ity), books and supplies will average \$1,925 or more annually. In the arts and crafts, costs may range from \$900 to \$1,100, and in photographic illustration, a realistic allowance is \$2,000 a year in addition to cameras and related supplies.

**Student accident and sickness insurance:** All registered students are required to maintain medical insurance while attending RIT. Insurance coverage can be through RIT, a family member's policy, or a personal policy.

A student accident and sickness insurance plan is available through RIT. There is a separate charge for this insurance. The plan provides coverage, within limits specified in the policy, for sickness and injury, outpatient services, emergency care, and prescriptions.

**Enrollment in this plan is voluntary for all students except registered international undergraduate students (full- and part-time) on A, B, E, F, G, I, J, K, O, Q, R, and V visas. These students will be enrolled automatically in the basic accident and sickness policy on a semiannual basis.**

There is no need to waive coverage if it is not desired. Students who want to enroll in this plan may enroll online or by mail. An open enrollment period is available at the beginning of each academic quarter. Payment can be made by check, money order, or credit card, or the premium can be added to the student's account.

**The open enrollment period ends 30 days after the start of the academic quarter in which the student first registers at RIT.**

For plan and enrollment information, visit the university health plans website at [www.universityhealthplans.com](http://www.universityhealthplans.com), or call (800) 437-6448. Students are not required to obtain the RIT student accident and sickness insurance plan to receive services at the RIT Student Health Center.

### Vocational rehabilitation

Students receiving vocational rehabilitation (VR) support for fees and tuition must file authorization with RIT before registration. If authorization has not been received before registration, students must either obtain from their VR counselors a letter of commitment stating the dollar amount that is authorized and present it to Student Financial Services or be prepared to pay for the charges in question. If authorization is received after a student has paid the charges, he or she will receive a refund.

1. Students must pay all charges not authorized for payment by VR before the quarterly due date.

2. VR counselors should specify each charge they are covering on their authorization forms.

3. Clarification of VR authorization/billing procedures should be addressed to:

Rochester Institute of Technology  
NTID/VR Billing  
Student Financial Services  
25 Lomb Memorial Drive  
Rochester, NY 14623-5603

NTID students receiving monthly Social Security benefits can make arrangements to pay at the Student Financial Services Office. Students need to sign a promissory note quarterly. For additional information, call (585) 475-6186.

### Financial standing

Students, former students, and graduates are in good financial standing when their account is paid in full through the Student Financial Services Office. A late payment fee will be charged to all student accounts that become past due. This includes, but is not limited to, deferred payment accounts that become past due. Those whose account is not paid in full will not receive transcripts, diplomas, or other forms of recognition or recommendation from the university.

**The university reserves the right to change its prices and pricing policies without prior notice.**

### Electronic billing procedures

The university has an electronic billing (eBill) program for students. Each quarter, all RIT students receive an e-mail notification on their official university e-mail account stating that their eBill is available. Students have the option of selecting three additional e-mail addresses to allow for a parent, guardian, sponsor, or other authorized user to receive eBill notifications.

### Refund policies

The acceptable reasons for withdrawal with full refund during the quarter are:

1. Active military service: A student called to active military service during the first eight weeks of the term may receive a full tuition refund. If called after the eighth week, he or she may elect to complete the course by making special arrangements with both the instructor and department, or may withdraw and receive a full tuition refund. If he or she withdraws, the course must be repeated at a later date.

2. Academic reasons: Students sometimes register before grades for the previous quarter are available. If they later find they are subject to academic suspension or have failed prerequisites, they will be given a full refund upon withdrawal.

3. Part-time students: If part-time students drop a course during the official drop/add period (first six days of classes in any quarter), they may contact the Student Financial Services Office for a full refund for the course dropped.

A full-time student must officially withdraw from all courses or take a leave of absence in order to be eligible for a partial tuition refund. Students must complete a leave of absence or withdrawal form, which can be initiated with their academic department. A partial refund will be made during a quarter if withdrawal/leave of absence is necessitated for one of the following reasons:

1. Illness, certified by the attending physician, causing excessive absence from classes

2. Withdrawal for academic or disciplinary reasons, at the request of RIT, during a quarter

3. Transfer by employer, making class attendance impossible
4. Withdrawal for academic, disciplinary, or personal reasons at the request of the student, approved by the student's adviser or department representative and the Student Financial Services Office

### **Partial refund schedule for tuition**

Partial refunds will be made according to the following withdrawal schedule and percentage of tuition reduction:

1. During official drop/add period (first six days of classes)—100 percent tuition reduction
2. From the end of the official drop/add period through the end of the second week of classes—70 percent tuition reduction
3. During the third week of classes—60 percent tuition reduction
4. During the fourth week of classes—50 percent tuition reduction
5. During the fifth week of classes—25 percent tuition reduction
6. Sixth and subsequent weeks—no tuition reduction

Please note that nonattendance does not constitute an official withdrawal.

A student is not officially withdrawn until he or she receives a copy of the withdrawal form. The date on which a withdrawal form is properly completed will be the date of official withdrawal used to determine the refundable amount.

If the student drops his or her course load from full-time (12 or more credits) to part-time (less than 12 credits) status during the official drop/add period, he or she may contact the Student Financial Services Office for a refund based on the difference between the full-time tuition charge and the total per-credit charge for the part-time course load.

No refund will be made for classes dropped after the official drop/add period unless the student is officially withdrawing from the university.

Advance deposits are not refundable.

If institutional charges are reduced due to withdrawals, financial aid programs are reimbursed before a cash refund is issued to the student. The student also is responsible for any unpaid balance at the time of withdrawal. Aid programs are reimbursed in the following sequence: Federal Direct Unsubsidized Loan, Federal Direct Subsidized Loan, Graduate PLUS Loan, Parent PLUS Loan, Federal Pell Grants, Federal SEOG, other federal grants, state aid, institutional aid. If a credit balance still remains, the student is then issued a refund.

For further information or comments regarding refund policies and specific withdrawal dates, contact the Student Financial Services Office.

### **Appeal process**

An official appeal process exists for those who feel that individual circumstances warrant exceptions from published policy. The inquiry in this process should be made to Mary Beth Nally, director of Student Financial Services.

### **Partial refund schedule for room and board**

To complete a withdrawal from RIT, a resident student must check out with Housing Operations. All students on a meal plan should check out with the Food Service administrative office, located in the Student Alumni Union, Room A520 (lower level). Refunds, when granted, are from the date of official checkout. Room and board refund policies are established by the Center for Residential Life and RIT Food Service.

Refund schedule and percentages for room and board are as follows:

#### **Room**

1. During the first week of classes—90 percent of unused room charge
2. During the second week of classes—75 percent of unused room charge
3. During the third week of classes—60 percent of unused room charge
4. During the fourth week of classes—50 percent of unused room charge
5. Fifth and subsequent weeks—no refund

#### **Board**

1. Within the first four weeks—75 percent of the unused meal/debit charges
2. After the fourth week (during week five through the end of week eight)—50 percent of the unused meal/debit charges
3. During the last two weeks of classes—no refund

**Any student who intentionally defrauds or attempts to defraud the university of tuition, fees, or other charges, or who gives false information in order to obtain financial aid, is subject to legal liability, prosecution, and university disciplinary action.**

# Financial Aid and Scholarships

RIT feels strongly that cost should not prohibit qualified students from considering RIT. With this in mind, the university offers a full range of traditional financial aid programs and a number of innovative financing plans as well.

More than 75 percent of RIT's full-time undergraduate students receive some type of financial assistance each year. Last year, RIT undergraduates received more than \$258 million from all sources, including more than \$150 million in scholarships and grants. Many families also took advantage of RIT's monthly, interest-free payment plan and a prepayment plan that guarantees participants no increase in tuition.

## Your financial need

Eligibility for need-based financial aid at RIT begins with three basic requirements: graduation from high school or its equivalent, enrollment in a degree program (matriculation), and demonstration of financial need. Most financial aid programs also require at least half-time enrollment.

Financial need is the difference between the cost of education and the amount a student is expected to contribute toward those educational costs (the expected family contribution). The formula used to calculate the expected family contribution is called the federal methodology, and use of the formula is required when colleges are determining a student's financial need for any federal financial aid programs. Financial aid programs are designed to supplement the expected family contribution.

The Free Application for Federal Student Aid (FAFSA) should be completed in order to determine a student's financial need. Information on the FAFSA is used to calculate the expected family contribution. All colleges and universities that award federal financial aid use the FAFSA. Students can complete the FAFSA online at [www.fafsa.gov/](http://www.fafsa.gov/).

Determination of financial aid eligibility can be complex. Therefore, families are encouraged to contact the Office of Financial Aid and Scholarships with any questions or concerns. It is impossible for families to determine their eligibility for financial aid on their own. If students are denied financial aid from one source, that does not necessarily mean they will be denied financial aid from another source. Students and families are encouraged to pursue all available sources of financial aid.

## Application

The process of applying for financial aid should begin in January of the year the student plans to attend college. It is important that freshman and transfer applicants file the FAFSA by March 1 in

order to receive full consideration. Current RIT students should file the FAFSA and the RIT Financial Aid Form by April 1 in order to receive full consideration.

Students must reapply for financial aid each year by completing the FAFSA and the RIT Financial Aid Form. Also, students must maintain minimum standards of satisfactory academic progress. The Office of Financial Aid and Scholarships will make every effort to provide a similar amount of institutional gift aid, provided students apply on time and demonstrate a similar amount of financial need.

## Notification

Freshman and transfer students can expect notification of financial aid awards beginning March 15. Current RIT students can expect award notification beginning in June.

## Types of aid

At RIT, there are four general categories of financial aid: scholarships, grants, loans, and employment. An applicant for financial aid is considered for each of these categories.

## Scholarships

Scholarships generally are awarded on the basis of academic record. RIT awards many such scholarships each year. Other typical scholarship sources are corporations, private donors, foundations, fraternal organizations, unions, and local and state governments.

**RIT offers academic merit scholarships to both freshman and transfer students.** For example, Presidential Scholarships, Achievement Scholarships, and Computing Medal Scholarships are awarded to freshmen. Trustee Scholarships, Achievement Scholarships, and Phi Theta Kappa Scholarships are awarded to transfer students. Scholarship recipients are chosen on the basis of their academic record, recommendations, extracurricular activities, and requirements for their intended major. The combined value of merit scholarships from all sources cannot exceed tuition. Please contact the Office of Financial Aid and Scholarships for more details on these programs.

The Office of Financial Aid and Scholarships encourages students to apply for scholarships awarded by private organizations. This is an excellent source of funding that may reduce the need to borrow. In many cases, no adjustment to a student's financial aid award is necessary. If we are required by federal regulations to adjust a financial aid award as a result of an outside scholarship, we will make every effort to reduce the student's loan or work study award before reducing RIT need-based grants.

Grants

Grants are gifts of financial assistance awarded on the basis of demonstrated need. Grant award amounts from RIT vary up to \$15,000 per academic year. RIT also awards grants under the federally funded Supplemental Education Opportunity Grant Program (SEOG). The Federal Pell Grant and the New York State Tuition Assistance Program (TAP) are additional examples of grants. Other states offer grants as well.

Student loans

Student loans are provided through a formal financial obligation that must be repaid. Students need to be aware of the interest charges, the method of payment after graduation, and the effect that loans will have on their ability to meet later financial obligations. Student loans generally are not repaid until after graduation or termination of study.

Many students utilize the Subsidized Federal Direct Loan or the Unsubsidized Federal Direct Loan in meeting their costs. RIT also awards Federal Perkins Loans. These programs are administered by the Office of Financial Aid and Scholarships for eligible students.

Parents also are eligible to participate in several educational loan programs designed to make funds available for college expenses. The Federal Parent Loan for Undergraduate Students (PLUS) is available to supplement other aid programs in meeting educational costs. While the PLUS is not based on need, the amount borrowed in any year cannot exceed educational costs minus other financial aid received.

Private lenders also may offer educational loans to assist families in meeting educational expenses. These loans are available to students who are creditworthy as determined by the lender. We encourage students and families to use alternative loans as a last option after first pursuing all federal loan options. If you decide that an alternative loan is right for you, you may borrow from any lender that you choose. Additional information is available from the Office of Financial Aid and Scholarships.

Employment

Employment opportunities are available to assist RIT students in meeting college expenses. Students may choose to defray some of their expenses by working part time while attending the university.

As part of a financial aid award at RIT, students may be offered employment in the federal work-study program. More than 6,000 stu-

dents are employed on campus each year. The Student Employment Office also helps students secure part-time employment off campus.

RIT’s cooperative education program is another employment opportunity available to assist in meeting college expenses. Students are encouraged to contact the Office of Cooperative Education and Career Services and their academic adviser to learn more about co-op opportunities.

Payment plans

The RIT Monthly Payment Plan enables students to spread their fixed costs over a 10-month period, with the initial payment beginning August 1. Fixed costs include tuition, fees, RIT housing charges, and RIT meal plans. The enrollment deposit required of all new undergraduates and the advance housing deposit required of returning students will be credited against annual charges. Financial aid also may be deducted from student charges to reduce the amount financed through the plan. Applications cannot be accepted after the first day of fall quarter classes for the academic year.

Additional information, as well as applications for the monthly payment plan, can be obtained from the Student Financial Services Office.

RIT also offers a tuition prepayment plan that guarantees no tuition increase for the equivalent of two years (six academic quarters) of undergraduate education. The cost for the plan is established each year. The plan is available to matriculated full-time undergraduate students who are not receiving any form of RIT need-based aid. Additional information is available from the Office of Financial Aid and Scholarships or the Student Financial Services Office.

Academic progress requirements for state aid programs

New York State Tuition Assistance Program (TAP)

In order to receive a TAP grant, an individual must be admitted as a full-time matriculated student, meet New York state residency and income requirements, pursue the program of study in which he or she is enrolled, and make satisfactory progress toward completion of his or her program of study.

Standard of Satisfactory Progress for the Purpose of Determining Eligibility for New York State Student Aid

Associate Degree—Quarter System

|  |     |      |      |      |      |     |      |      |      |
|--|-----|------|------|------|------|-----|------|------|------|
| Before being certified for this payment                | 1st | 2nd  | 3rd  | 4th  | 5th  | 6th | 7th  | 8th  | 9th  |
| a student must have accrued at least this many credits | 0   | 6    | 12   | 18   | 33   | 48  | 63   | 78   | 93   |
| with at least this grade-point average                 | 0   | 1.30 | 1.50 | 1.80 | 1.80 | 2.0 | 2.00 | 2.00 | 2.00 |

Bachelor’s Degree—Quarter System

|  |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Before being certified for this payment                | 1st | 2nd  | 3rd  | 4th  | 5th  | 6th  | 7th  | 8th  | 9th  | 10th | 11th | 12th | 13th | 14th | 15th |
| a student must have accrued at least this many credits | 0   | 6    | 12   | 18   | 33   | 48   | 63   | 78   | 93   | 108  | 123  | 138  | 153  | 168  | 183  |
| with at least this grade-point average                 | 0   | 1.30 | 1.50 | 1.80 | 1.80 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |



TAP academic requirements are current as of the 2011-2012 year. Standards are subject to change by legislative action.

In addition to accruing degree credits and earning a minimum grade-point average, TAP recipients must:

1. Complete 6 credits per quarter to receive TAP payments two to four
2. Complete 9 credits per quarter to receive TAP payments five to seven
3. Complete 12 credits per quarter to receive TAP payments eight to 12

Completion of a course is defined as meeting course requirements and receiving a letter grade of A, B, C, D or F.

State regulations mandate that if a student repeats a course in which a passing grade acceptable to the university was previously received, the repeated course does not count toward the minimum 12-credit-hour course load required for TAP and other state programs.

In addition, an accelerated TAP payment cannot be received unless the recipient completes a minimum of 36 RIT credit hours in the previous three quarters. An accelerated quarter is the fourth consecutive quarter of enrollment at RIT.

### **Waiver of academic progress standards for TAP**

Students who have been denied TAP benefits due to failure to maintain satisfactory standards of academic progress may request a one-term waiver of those standards. State regulations require that these waivers be granted only under extraordinary circumstances. Students failing to meet satisfactory progress standards will be given the opportunity to contact an institutional representative in the Office of Financial Aid and Scholarships to discuss their situation. The institutional representative will require documentation as appropriate and establish deadlines for submission of this documentation.

Under the regulations established by the Commissioner of Education, the decision of the institutional representative will be final. Students who, in the judgment of the institutional representative, satisfactorily meet the criteria for the waiver may have one waiver at the undergraduate level. One waiver also may be granted at the graduate level. Those wishing to apply for waivers must do so during the quarter in which notification of TAP denial was sent.

Reasons for which a waiver may be granted include the following:

1. Verifiable illness of the student or member of the student's immediate family during the quarter in which academic standards were not met
2. Death of a member of the student's family during the quarter in which standards were not met
3. Divorce/separation within the student's immediate family creating a demonstrable financial/emotional disruption sufficient to affect progress
4. Circumstances that the student feels were extenuating; applicants must explain why circumstances were extenuating and beyond their control

These regulations are subject to legislative change.

### **Academic progress requirements for federal aid programs**

Federal regulations require financial aid recipients to maintain minimum standards of satisfactory academic progress (SAP) for continued receipt of federally sponsored aid. All students receiving federal assistance must maintain matriculated status in a degree program. Regulations require a maximum time frame for degree

completion, a quantitative measurement (credits attempted versus earned toward a degree) and a qualitative measurement (cumulative grade-point average). The annual review of academic progress considers all terms of enrollment, including terms in which no federal aid was received.

Full-time students who have never attended another college are allowed a maximum of six academic years (18 full-time academic quarters) to attain the bachelor's degree. Those pursuing associate degrees are allowed three academic years (nine academic quarters) for degree completion.

Students enrolled in eligible certificate or diploma programs in colleges other than NTID must complete credit hours on a full-time equivalent basis. Certificate/diploma program students are allowed a maximum of 150 percent of the published number of quarters required to complete their program.

Academic progress is reviewed at the end of spring quarter each year and includes a review of cumulative grade-point average and degree credits completed. Minimum cumulative grade-point average standards for full- and part-time students enrolled in RIT or NTID programs are as follows:

- Completion of first quarter—minimum cumulative GPA = 1.0
- Completion of second quarter—minimum cumulative GPA = 1.2
- Completion of third quarter—minimum cumulative GPA = 1.4
- Completion of fourth quarter—minimum cumulative GPA = 1.6
- Completion of fifth quarter—minimum cumulative GPA = 1.8
- Completion of quarters 6 to 18—minimum cumulative GPA = 2.0

Full-time students in colleges other than NTID are expected to complete 30 degree credits after every three academic quarters, as detailed below:

Completion of first academic year (three academic qtrs.)—30 degree credits required

Completion of second academic year (six academic qtrs.)—60 degree credits required

Completion of third academic year (nine academic qtrs.)—90 degree credits required

Completion of fourth academic year (12 academic qtrs.)—120 degree credits required

Completion of fifth academic year (15 academic qtrs.)—150 degree credits required

Completion of sixth academic year (18 academic qtrs.)—180 degree credits required

Part-time students must accumulate credit hours on a full-time equivalent basis.

Students enrolled in certificate, diploma, or associate degree programs at NTID must meet the same GPA standards required for other RIT colleges. However, for NTID programs, the qualitative standard is based on successful completion of 66 percent of annual credit hours attempted. In addition, the maximum time frame for program completion is equal to attempting a maximum of 150 percent of the published credit hours required for a particular NTID certificate, diploma, or degree.

### **Additional eligibility requirements**

#### **Transfer students**

Cumulative grade-point average requirements are the same as for nontransfer students (i.e., students must obtain a 2.0 GPA at the end of six academic quarters). Transfer students also are expected to accumulate 30 degree credits for each three-quarter academic year.

However, the maximum number of quarters allowed for full-time students to accumulate remaining degree credits may be reduced. For every 10 credits, or fraction thereof, granted as transfer credit by RIT, the maximum number of quarters to accumulate remaining degree credits is reduced by one. For example, a student transferring from another college and granted 30 transfer credits would have 15 rather than 18 quarters to accumulate remaining degree credits; the same student transferring to an associate degree program would be allowed six rather than nine quarters to complete the degree. The calculations used in the reduction in maximum quarters allowed for degree completion apply to both federal aid programs and RIT-sponsored awards (18 academic quarters maximum).

**Part-time students**

Students registering for 6 to 11.5 credits per quarter and receiving federal financial assistance must meet the same grade-point average requirements as full-time students (i.e., attainment of a 2.0 GPA after six academic quarters). The established time frame for part-time students is 12 academic years (36 half-time quarters) for completion of bachelor's degree requirements. Associate degree candidates are allowed six academic years (18 half-time quarters) for degree completion. At the end of each three-quarter academic year, 15 credits must be accumulated toward the degree. Quarters in which a student is registered for less than 6 credit hours will be counted on a prorated basis.

**Repeated course work**

Students repeating a course previously passed may do so only once. A course repeated more than once will not be included when determining enrollment status for federally sponsored financial aid.

The federal standards of satisfactory academic progress listed are applicable to the following aid programs: Federal Work-Study, Federal Pell and SEOG grants, and Federal Perkins, Direct Subsidized, Direct Unsubsidized, and Direct PLUS loans.

Student loan recipients also should note that all Federal Direct Loan Programs have specific annual and cumulative maximum amounts. The loan limits are listed in the Undergraduate Financial Aid Programs 2011-2012 chart and in the U.S. Department of Education Student Guide. Copies of the guide are available in the Office of Financial Aid and Scholarships.

**Notification and appeal**

Students whose academic progress is not in compliance with federal regulations will be notified of the deficiency. Students who do not meet minimum SAP standards may continue to receive federal aid during a probationary period, not to exceed one academic year, and not to exceed the 150% timeframe for degree completion, as the result of a successful appeal. Students may appeal due to special circumstances such as death of a relative, or injury or illness of the student. The following information must be provided to the Office of Financial Aid and Scholarships to be considered for receipt of federally sponsored financial aid during a probationary period:

- Documentation of student's special circumstances
- Written letter from student indicating why the student failed to make SAP and what has changed in the student's situation that would allow the student to meet SAP standards, and
- A written plan of work from the student's academic adviser that outlines the courses required and the minimum GPA requirements for the next academic year

**Academic progress requirements for RIT grants and scholarships**

Academic progress requirements for RIT need-based grants are the same as the requirements for federal aid programs. Academic requirements and award duration for merit or special-purpose scholarship programs sponsored by RIT may differ from those used in RIT's need-based programs. Recipients are advised of merit scholarship terms and conditions at the time awards are made.

**Student responsibilities**

Recipients of financial aid are responsible for reporting any significant changes in their financial situation during the year to the Office of Financial Aid and Scholarships for review. These changes may require a revision to the applicant's financial aid.

**Financial aid refund policy**

**Return of federal funds**

In accordance with federal regulations, the Office of Financial Aid and Scholarships recalculates quarterly federal aid eligibility for students who withdraw, drop out, are suspended, or take a leave of absence prior to completing 60 percent of a quarter.

"Withdrawal date" is defined as the actual date the student initiated the withdrawal process, the student's last date of recorded attendance, or the midpoint of the quarter for a student who leaves without notifying the university. Recalculation is based on the percent of earned aid using the following formula: number of days completed up to the withdrawal date/total days in the quarter. Aid returned to federal programs is then equal to 100 percent minus the percentage earned multiplied by the amount of federal aid disbursed.

Funds are returned to the federal government in the following sequence: Federal Direct Unsubsidized Loans, Federal Direct Subsidized Loans, Federal Perkins Loans, Federal Graduate PLUS, Federal Parent PLUS Loans, Federal Pell Grants, Federal SEOG, other federal grants.

**Late disbursement**

If the student is otherwise eligible, the first disbursement of Federal Direct Subsidized Loan or Federal Direct Unsubsidized Loan proceeds is allowed up to 180 days after the student has ceased to be enrolled. Subsequent disbursements are not allowed.

**State scholarships**

Regulations vary. Any adjustments are done in accordance with the specific requirements of the sponsoring state.

**Privately funded grants and scholarships**

In the absence of specific instructions from the sponsor, 100 percent of the quarterly award will be credited to the student's account.

**RIT grants and scholarships**

If a credit balance remains after all federal, state, and private adjustments, a percentage of the remaining credit balance is returned to the RIT scholarship account according to the following formula:

| SCHOLARSHIP                       |   |   |
|-----------------------------------|---|---|
| Scholarship plus student payments | = | Percent returned to RIT scholarship program |

## UNDERGRADUATE FINANCIAL AID PROGRAMS 2011-2012

| MERIT SCHOLARSHIPS  | ELIGIBILITY   | AMOUNT†   | WHERE TO APPLY   |
|---|---|---|--|
| RIT Presidential Scholarships   | Freshman applicants with combined SAT scores of 1950 or higher (or ACT composite of 28 or higher) and a secondary school rank in the top 20% at the end of junior year, OR combined SAT scores of 1860 or higher (or ACT composite of 27 or higher) and a secondary school rank in the top 10% at the end of the junior year. | \$9,000 to \$15,000 per year (amounts based on merit). Renewable.   | All freshman applications submitted to RIT by February 1 will be reviewed for possible selection.  |
| National Merit, National Achievement, and National Hispanic Scholarships            | Semifinalists or finalists in any of these three national scholarship programs.   | Combined RIT Presidential and Merit Scholarships totaling \$17,000 or more per year. Renewable.   | High school records provided for admission must indicate student's semifinalist or finalist selection.   |
| RIT Achievement Scholarships for Business, Liberal Arts, and Hospitality Management | Freshman applicants for these programs demonstrating outstanding leadership, service, entrepreneurship, or citizenship with combined SAT score of 1800 or higher (ACT 26) and B+ average.   | \$6,000 to \$9,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable.                              | Freshman admission applications for these academic programs submitted by February 1 will be reviewed for possible selection based on activities, recommendations, and academic record.     |
| RIT Achievement Scholarships for Art, Design, and Crafts                            | Freshman applicants for these academic programs with combined SAT score of 1800 or higher (ACT 26) and B+ average who submit outstanding art portfolios.  | \$6,000 to \$9,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable. Up to 25 awarded each year.  | Freshman admission applications and art portfolios submitted by February 1 will be reviewed for possible selection.  |
| RIT Achievement Scholarships—All Programs   | Freshman applicants with combined SAT score of 1800 or higher (ACT 26), strong extracurricular achievements, and B+ average.  | \$6,000 to \$9,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable. Up to 100 awarded each year. | Freshman admission applications submitted by February 1 will be reviewed for possible selection.   |
| RIT Honors Program Scholarships   | Freshmen admitted to the RIT Honors program.  | \$1,000 per year. Renewable with Honors program membership. Awarded in addition to the RIT Presidential Scholarship.  | See the undergraduate admission application for instructions. Must apply by February 1.  |
| RIT Computing Medal Scholarships  | Awarded to Computing Medal winners selected by participating high schools based on demonstrated interest and/or outstanding achievements in computing.  | \$6,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable.   | Must apply for admission to RIT by February 1 to be considered.  |
| RIT Innovation and Creativity Award Scholarships                                    | Awarded to Innovation and Creativity Award winners selected by participating high schools based on outstanding achievements in innovation, creativity, and entrepreneurship.  | \$6,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable.   | Must apply for admission to RIT by February 1 to be considered.  |
| RIT National Co-op Scholarships   | Winners selected based on academic record and required scholarship application essay.   | \$6,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable. Up to 10 awarded each year.             | Submit scholarship application online at: <a href="http://www.rit.edu/co-opscholarship">www.rit.edu/co-opscholarship</a> . Apply between October 1 and February 15.                        |
| RIT/SAE Engineering Scholarships  | Freshman applicants to engineering technology or engineering programs. Based on academic record.  | \$6,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable. Up to 25 awarded each year.             | Download scholarship application at: <a href="http://www.students.sae.org/awdscholar/scholarships/">www.students.sae.org/awdscholar/scholarships/</a> . Mail application to SAE by Dec. 1. |
| RIT/FIRST Robotics Scholarships   | Freshman applicants with combined SAT score of 1800 or higher (ACT 26) and B+ average who have participated on a high school FIRST team.  | \$6,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable. Up to 10 awarded each year.             | Download scholarship application at: <a href="http://www.usfirst.org">www.usfirst.org</a> . Mail scholarship application to RIT and apply for admission by February 1.                     |
| RIT/Project Lead The Way (PLTW) Scholarships  | Freshman applicants with combined SAT score of 1800 or higher (ACT 26) and B+ average who complete two or more PLTW courses.  | \$6,000 per year. Students qualifying for an additional RIT merit scholarship will automatically be awarded the scholarship with the highest amount. Renewable. Up to five awarded each year.           | Submit a letter of recommendation from a PLTW teacher along with RIT admission application and school transcripts by February 1.   |

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| RIT Trustee Scholarships for Transfer Students         | Transfer applicants with a GPA of 3.3 or higher (computed by RIT) who will complete an associate degree before entering RIT.                                    | \$9,000 per year with transfer GPA of 3.6 or higher; \$6,000-\$7,500 per year with GPA of 3.3-3.59. May be combined with Phi Theta Kappa scholarship. Renewable.             | Submit all required admission application documents by April 1 for summer/fall entry; October 1 for winter entry; January 15 for spring entry. |
| RIT Achievement Scholarships for Transfer Students     | Transfer applicants with 3.3 or higher transfer GPA (computed by RIT) and 30 semester or 45 quarter hours completed at previous institution.                    | \$6,000 per year. May not be combined with RIT Trustee Scholarship. Renewable.   | Submit all required admission application documents by April 1 for summer/fall entry; October 1 for winter entry; January 15 for spring entry. |
| RIT Phi Theta Kappa Scholarships for Transfer Students | Awarded to transfer students with an associate degree elected to Phi Theta Kappa honor society.   | \$2,000 per year. May be combined with RIT Trustee or Achievement Scholarship. Renewable.  | Proof of PTK membership must be submitted with transfer admission application.   |
| RIT Nathaniel Rochester Society (NRS) Scholarships     | Full-time undergraduate students who have completed at least 72 credit hours at RIT with a GPA of 3.4 or higher. Winners selected by NRS scholarship Committee. | Maximum award is \$2,000 for six quarters of academic study (\$333 per quarter applied toward tuition charges). Awarded in addition to other financial aid and scholarships. | Download scholarship application at: <a href="http://www.rit.edu/nrs">www.rit.edu/nrs</a> and file the completed application in March.         |
| ROTC Scholarships                                      | Students enrolling in ROTC who are academically qualified.  | Tuition support, fees, books, and monthly stipend.   | Air Force: (585) 475-5197; Army: (585) 475-2881; Navy: (585) 275-4275  |
| RIT/ROTC Subsidy                                       | Army, Air Force, or Navy ROTC cadets awarded three- or four-year scholarships prior to enrollment.  | Up to the amount of a standard room and board plan, minus other financial aid and benefits.  | Contact the Office of Financial Aid and Scholarships.  |

† Scholarship amounts indicated are based on RIT day tuition rates. Awards may be prorated for NTID-sponsored students or for evening tuition rates.

| NEED-BASED GRANTS   | ELIGIBILITY  | AMOUNT†  | WHERE TO APPLY   |
|---|--|--|--|
| RIT Grants  | Students demonstrating financial need.   | Amounts vary up to \$15,000 per year for full-time study.                                    | File the Free Application for Federal Student Financial Aid (FAFSA) by March 1 for priority consideration. |
| RIT Endowed Scholarships                                  | Full-time RIT students meeting selection criteria as established by the donor for each program; most awarded to upperclassmen based on financial need and academic performance at RIT.   | Amounts vary   | File the Free Application for Federal Student Aid (FAFSA) by the priority deadline.                        |
| NTID Grant-in-Aid   | Full-time students enrolling in RIT's National Technical Institute for the Deaf (NTID) who demonstrate financial need.   | Amounts vary.  | File the Free Application for Federal Student Aid (FAFSA) by the priority deadline.                        |
| RIT/NTID Grant  | NTID students who are enrolled in an RIT bachelor's degree program who demonstrate financial need.   | Amounts vary.  | File the Free Application for Federal Student Aid (FAFSA) by the priority deadline.                        |
| RIT Part-time Studies Grant                               | Part-time undergraduate students enrolled for less than 12 credit hours in an RIT degree program who demonstrate financial need.   | Amounts vary.  | File the Free Application for Federal Student Aid (FAFSA) by the priority deadline.                        |
| RIT Opportunity Scholarships                              | Full-time matriculated students who demonstrate exceptional financial need. Preference is given to students who are from underrepresented populations and those not traditionally studying in certain academic disciplines.                                    | Up to \$3,000 per academic year; renewable.  | Apply for admission to RIT by February 1 and file FAFSA by March 1.  |
| New York state Tuition Assistance Program (TAP)           | Full-time students who are New York state residents and meet state income guidelines.  | \$500-\$5,000 per year for entering freshmen; transfer and returning student maximum varies. | File New York state Express TAP Application and the Free Application for Federal Student Aid (FAFSA).      |
| New York state Aid for Part-time Studies (APTS)           | Matriculated undergraduate New York state residents enrolled for 6-11 credits per term who meet NYS residency requirements and demonstrate financial need based on NYS net taxable income; must not have received the equivalent of four years of NYS TAP aid. | Maximum award is \$2,000 per year, not to exceed cost of tuition.                            | Submit Aid for Part-time Studies Application to RIT's Office of Financial Aid and Scholarships.            |
| Federal Pell Grant  | Students who are pursuing their first bachelor's degree and meet need criteria.  | \$555 to \$5,550 per year; prorated for part-time study.                                     | File the Free Application for Federal Student Aid (FAFSA).   |
| Federal Supplemental Educational Opportunity Grant (SEOG) | Students with high financial need (those who qualify for a Federal Pell Grant).  | \$100-\$4,000 per year.  | File the Free Application for Federal Student Aid (FAFSA).   |
| NYS Higher Education Opportunity Program (HEOP)           | Economically and academically disadvantaged residents of New York state.   | Amounts vary, based on individual need and New York state funding.                           | Contact the HEOP director at RIT (585-475-2221) for eligibility guidelines.                                |
| Other State Grants  | Varies.  | Amounts vary.  | Contact the state education department in your state.  |

† Scholarship amounts indicated are based on RIT day tuition rates. Awards may be prorated for NTID-sponsored students or for evening tuition rates.

| LOANS  | ELIGIBILITY   | AMOUNT†  | WHERE TO APPLY   |
|--|---|--|--|
| Federal Perkins Loans  | Students who meet requirements established by federal government.   | Up to \$5,000 per year;  | File the Free Application for Federal Student Aid (FAFSA).   |
| Federal Direct Loans   | All students enrolled at least half-time in a degree program.   | Maximum amount: 1st year: \$3,500; 2nd year: \$4,500; 3rd, 4th, 5th years: \$5,500. Additional maximum \$2,000 Unsubsidized Federal Direct Loans – all years.  | File the Free Application for Federal Student Aid (FAFSA).   |
| Federal Direct Loans – Independent Students  | All independent undergraduates enrolled at least half time in a degree program.   | Maximum amount (including unsubsidized): 1st year: \$9,500; 2nd year: \$10,500; 3rd, 4th, 5th years: \$12,500.   | File the Free Application for Federal Student Aid (FAFSA).   |
| Federal Direct PLUS Loans  | Parent of a dependent student who is enrolled at least half time in a degree program.   | Total cost of education minus all other financial aid awarded.   | File the FAFSA and obtain loan application from RIT Office of Financial Aid and Scholarships.  |
| EMPLOYMENT   | ELIGIBILITY   | AMOUNT†  | WHERE TO APPLY   |
| Federal Work Study Program   | Students with financial need; most jobs provided are on campus, and some community service positions are available.   | Varies depending on hours and wage rate (RIT wage rates start at \$7.25 per hour).   | File the Free Application for Federal Student Aid (FAFSA).   |
| RIT Employment Program   | No financial need requirement; may be on campus or off campus.  | Varies, depending on hours and wage rate (RIT wage rates start at \$7.25 per hour).  | Contact the RIT Student Employment Office at <a href="http://www.rit.edu/emcs/seo">www.rit.edu/emcs/seo</a> .  |
| OTHER AWARDS   | ELIGIBILITY   | AMOUNT†  | WHERE TO APPLY   |
| Regents Award for Child of Veteran (CV)  | Students whose parent(s) served in the U.S. Armed Forces during specified periods of war or national emergency and, as a result of service, either died, suffered a 40% or more disability, was classified as missing in action, or was a prisoner of war. The veteran must currently be a New York state resident or have been a New York state resident at the time of death. | \$450 per year for up to five years, depending on the normal length of the program.  | Same as TAP. In addition, file the CV Award Supplement available at <a href="http://www.hesc.com">www.hesc.com</a> . May 1 deadline.   |
| Military Service Recognition Scholarship (MSRS)  | Children, spouses, and financial dependents of members of the United States Armed Forces or state-organized militia who, at any time on or after Aug. 2, 1990, while New York state residents, died or became severely and permanently disabled while engaged in hostilities or training for hostilities.   | Award equal to SUNY four-year college tuition and mandatory educational fees (or student's actual tuition and fees, whichever is less) and allowances for room and board, books, supplies, and transportation. | Same as TAP. In addition, file the Military Service Recognition Scholarship Supplement, available at <a href="http://www.hesc.com">www.hesc.com</a> .                              |
| Memorial Scholarships for Families of Deceased Firefighters, Volunteer Firefighters, Police Officers, Peace Officers, and Emergency Medical Service Workers. | Must be a child or spouse of deceased firefighter, volunteer firefighter, or emergency medical service worker, police officer, peace officer, who died as a result of injuries sustained in the line of duty.   | Award equals SUNY four-year college tuition and fees and allowances for room and board, books, supplies and transportation.  | Same as TAP. In addition, file the appropriate award supplement, available at <a href="http://www.hesc.com">www.hesc.com</a> . May 1 deadline.                                     |
| NYS Aid to Native Americans  | Members of a New York state tribe and their children who are attending, or planning to attend, a college in New York state and are New York state residents.  | Up to \$2,000 per year for a maximum of four years (five years for certain programs)   | Contact: the Native American Education Unit, NYS Education Department, Room 374 EBA, Albany, NY 12234, (518) 474-0537.   |
| Vietnam Veterans Tuition Award Program   | Eligible veterans who are New York state residents.   | \$2,000 per year for full-time study or \$1,000 per year for part-time study; available for undergraduate or graduate study.   | Same as TAP. In addition, file the Vietnam Veterans Tuition Award Supplement at <a href="http://www.hesc.com">www.hesc.com</a> .   |
| NYS Regents Professional Opportunity Scholarship   | U.S. citizen and permanent NYS resident as defined by legislation, for certain approved professional programs (e.g., accounting, engineering, physician's assistant); must agree to practice for 12 months in chosen profession in NYS for each annual payment received.  | \$1,000-\$5,000 per year (TAP and some other benefits may supplement this award).  | Contact: NYS Education Department, Office of K-16 Initiatives and Access Programs, Scholarship & Grants Administration Unit, Room 1078 EBA, Albany, NY 12234. Call (518) 486-1319. |
| Robert C. Byrd Honors Scholarship Program (federally funded)   | Academically talented high school seniors who are U.S. citizens and NYS residents attending any approved institution of higher education.   | \$1,500 per year, 310 awards statewide (10 to each of 31 congressional districts).   | Contact high school guidance counselor for application information.  |
| New York Scholarships for Academic Excellence  | Outstanding graduate from registered New York state high schools. Awards are based on grades in certain Regents exams.  | \$1,500 to top graduating senior of each high school in the state; \$500 to other academically gifted students.  | Contact your high school guidance counselor.   |

† Scholarship amounts indicated are based on RIT day tuition rates. Awards may be prorated for NTID-sponsored students or for evening tuition rates.



|                         |  |               |  |
|-------------------------|--|---------------|--|
| Veterans Benefits       | Eligible veterans and children of deceased veterans or service-connected disabled veterans.            | Amounts vary. | Contact the Office of Veterans Affairs at (888) 442-4551, or visit their website at <a href="http://www.va.gov">www.va.gov</a> . |
| Aid to Native Americans | Students who are at least one-quarter American Indian, Eskimo, or Aleut who demonstrate financial need | Amounts vary  | Contact U.S. Department of Interior, Bureau of Indian Affairs, Federal Bldg., Room 523, 100 S. Clinton St., Syracuse, NY 13202.  |

† Scholarship amounts indicated are based on RIT day tuition rates. Awards may be prorated for NTID-sponsored students or for evening tuition rates.

## Notes:

This chart covers the most commonly awarded financial aid programs available to full-time undergraduate students at RIT. Information is correct as of May 2011. Most programs require satisfactory progress toward degree completion to maintain eligibility.

Filing the FAFSA by March 1 (March 15 for transfer students and April 1 for continuing students) will ensure priority consideration for all programs. Applications filed after this date will receive consideration as long as funds remain available.

## Endowed Scholarships

Each year the university awards endowed scholarships, made possible through the generosity of hundreds of individuals and organizations. Awards are made by RIT's Office of Financial Aid and Scholarships or RIT academic departments in accordance with the special criteria of each scholarship. All applicants for financial aid are automatically considered for scholarships for which they meet the established criteria.

Harriet Thayer Adams Scholarship  
Max Adler Scholarship  
George Alden Scholarship Fund  
Mary R. Alexander Scholarship  
Fanny Knapp Allen Scholarship  
Altier & Sons Scholarship  
Alumni Legacy Scholarship  
Amzalek Ames Scholarship  
Salvador Anchondo Jr. Memorial Scholarship  
Robert Anderson Scholarship  
Avis Mason Andrews Graduate Scholarship  
Betsy L. Andrews Scholarship  
Clara L. Andrews Scholarship  
Ezra R. Andrews Scholarship  
Kate Rider Andrews Scholarship  
Randall Andrews Scholarship  
Howard Applegate Scholarship  
Association of Women in Computing  
Lee Augustine Memorial Scholarship  
Ralph Avery Scholarship  
Alfred Bader COB International Study Program  
Helen Bader Foundation  
Joseph Bader Scholarship  
Andrew Baker Scholarship at NTID  
David Baldwin Scholarship  
Thomas Ward Ball Scholarship  
Barlow Endowed Scholarship Fund  
John & Mary Bartholomew Scholarship  
Bruce and Nancy Bates Scholarship  
Bausch & Lomb Scholarship  
John Bausch Scholarship  
Clarence & Birdice Beal Scholarship  
Alice Beardsley Memorial Endowed Scholarship Fund for Interpreting Students at NTID  
Ned Behnke Memorial Scholarship at NTID  
Richard Benjamin Memorial  
Hillary Blair Benner Memorial Scholarship

Bennett Family Scholarship  
Frank P. Benz Jr. Memorial Scholarship  
Ruth L. Bernhardt Scholarship  
Ruth E. Bice Endowed Chemistry Scholarship  
Fanny R. Bigelow Scholarship  
Roscoe Bills Scholarship  
Howard Bingham/Eastman Kodak Scholarship  
Helen & Frederick Blaessig Memorial Scholarship  
Joseph & Helen Blatecky Scholarship  
Harriet Blickwede Scholarship  
Boeing Company Scholarship  
Donald & Jaris Boyce Scholarship  
Farid Bozorgi Memorial Endowed Scholarship Fund  
John and Honorable Caroline Branch  
Braverman Scholarship  
Joseph Briggs Endowed Scholarship  
Chester W. Brink Scholarship  
Stephen Briody Scholarship  
Bernard B. Brody Medical Sciences Scholarship  
Steffan Brown Scholarship  
Peter C. Browne Scholarship  
Nettie Bullis Scholarship  
Cheryl Bulls, Lynette Moore, and Susan Willoughby Memorial Scholarship  
Business Alumni Scholarship  
Business Faculty Endowed Scholarship  
College of Business Recent Alumni  
Business Women's Alumni Network  
Owen Butler Scholarship  
Orilla Butts Scholarship  
Harold Cadmus Memorial Scholarship  
Deborah Cahn Memorial Scholarship  
Cala Family Endowment  
Donn J. Calabrese Scholarship  
Campus Connections Book and Supply Scholarship  
Richard Capilla Scholarship  
Chester Carlson Scholarship  
Howard F. Carver Scholarship  
Howard T. Case Scholarship  
Theodore Chapman Scholarship  
Arunas Chesonis Scholarship for the College of Business  
Pamela Chesonis Scholarship in the School for American Crafts  
John & Ruth Christie Scholarship  
Citigroup Foundation Endowed Scholarship Fund at NTID  
Adele Hathaway Clark Scholarship  
Erma and Earl Clark Scholarship

Florence Clark Scholarship  
 H. E. Clark Scholarship  
 Ruth and Brackett Clark Scholarship  
 Class of '69 Scholarship  
 Albert G. Coenen Scholarship  
 Eugene Colby Scholarship  
 Coleman Corporation Scholarship  
 Wells Coleman Scholarship  
 Colleges of RIT Annual Fund Awards  
 Ward D. Collister Scholarship  
 Comstock Foundation Scholarship  
 Karen Conner Annual Scholarship  
 Continental Corporation Scholarship Endowed Fund at NTID  
 Henry and Pinney Cooke Scholarship  
 Jerome Countryman Memorial  
 Lillian M. Cowin Memorial Endowed Scholarship Fund  
 Walter Crighton Scholarship  
 Alvin Cronig Scholarship  
 Crowe, Chizek and Company  
 CSX Scholarship  
 Byron Culver Scholarship  
 Curtice Burns Scholarship  
 Robert R. and Donna E. Davila Endowed Scholarship Fund  
 Alfred L. Davis International Student Scholarship  
 Alfred L. & Ruby C. Davis Continuing Education Scholarship  
 Alfred L. & Ruby C. Davis Leadership Award  
 Nancy J. Davis Scholarship  
 Donald F. and Maxine B. Davison Scholarship  
 James J. DeCaro Endowed Scholarship Fund  
 Del Rosso Family Scholarship  
 De Ridder Corporation Scholarship  
 Eliot Derman–GTS Scholarship  
 Michael DiRoma Memorial Scholarship  
 Ronald Dodge Engineering Scholarship  
 Ronald Dodge Faculty/Staff Grants Endowed Scholarship  
 Ronald Dodge Memorial Endowed Scholarship Fund  
 Patrick Donovan Memorial  
 Doolittle/Merrill Scholarship  
 Dorothy E. Ann Fund (D.E.A.F.) Endowed Scholarship  
 Thomas W. Dougherty Scholarship  
 Chris Dudek Memorial Scholarship  
 Mr. and Mrs. Joseph F. Dyer Endowed Scholarship Fund  
 Eberly Family Scholarship  
 ECI Systems & Engineering  
 ECT Department Academic Excellence Scholarship  
 Educational Technology Center Scholarship  
 Eisenhart Memorial Scholarship  
 Robert Elder Scholarship  
 Ellingson Foundation Scholarship  
 Fred Emerson Foundation Scholarship  
 Isabel & Benjamin Emerson Scholarship  
 Raymond Englert Scholarship  
 Gerald Ephraim Scholarship  
 Louise Epstein Supply Scholarship in SAC  
 Eyer Foundation Scholarship  
 Max Factor Family Foundation Endowed Scholarship Fund  
 John Doane Fay Scholarship  
 Rose & George Feigenbaum Scholarship Endowed Scholarship Fund

Nancy and Len Fein Endowed Scholarship  
 William & Mildred Feinbloom Scholarship  
 Ruth H. Fenyvessy Memorial Endowed Scholarship Fund  
 Joseph Ferraro Memorial Scholarship  
 James Fitz Memorial Scholarship  
 Flora J. Foley Scholarship  
 Benjamin Forman Scholarship  
 Maurice & Maxine Forman Endowed Scholarship Fund  
 Donald J. Forst Endowed Scholarship  
 J. Andrew Foster Senior and J. Andrew Foster Junior Scholarship  
 Dr. Eugene Fram Scholarship  
 Ron Francis Scholarship  
 Howard Freckleton and Roy Hamel Endowed Scholarship  
 R. T. French Scholarship  
 Richard A. Freund Scholarship  
 Ann Wadsworth Frisina Memorial  
 Dr. Robert Frisina Award  
 Max & Helene Frumkes Memorial  
 Karl Fuchs Scholarship  
 Garlinghouse Endowed Scholarship Fund  
 Garthwaite-Brennan Endowed Scholarship  
 Gegeheimer/McClure Scholarship  
 Frank Geist Scholarship  
 Gelsomino Entrepreneurship Scholarship  
 General Motors Scholarship  
 George T. Georgantis Memorial Scholarship  
 Sarah Margaret Gillam Scholarship  
 Jean Gillings Scholarship  
 Gitner Family Scholarship  
 E. B. Gleason Scholarship  
 George & Anne Gleason Memorial Scholarship  
 Kate Gleason COE Alumni Endowed Scholarship  
 Kate Gleason Scholarship  
 Good Samaritan Association Scholarship  
 Allen & Gloria Gopen Endowed Scholarship Fund  
 George Gordon Scholarship  
 Isaac Gordon Scholarship  
 Goulds Pumps Inc. Award  
 Graflex Scholarship  
 Phillip L. Graham Scholarship  
 Gravure Foundation Scholarship  
 Edward Hableib Scholarship  
 Hakes Assoc. Scholarship  
 Ezra Hale Scholarship  
 Hale Foundation Packaging Scholarship  
 William B. Hale Scholarship  
 Mildred F. Hall Endowed Scholarship  
 Sil Hall Scholarship  
 Carter Harmon Scholarship  
 Denton P. and Alice F. Harris Endowed Scholarship  
 Harris Semiconductor Scholarship  
 Dr. Howard N. Harrison Scholarship  
 Franz Haverstick Scholarship  
 G. Sherwin Haxton Scholarship  
 Safford Hazlett Scholarship  
 Healthcare Purchasing Scholarship  
 William Randolph Hearst Endowed Scholarship  
 Heidelberg/RIT Scholarship  
 Mary Jane Hellyar Endowed Scholarship Fund

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| Hermance Family Scholarship                                  | Dawn and Jacques Lipson M.D. Scholarship             |
| Sol Heumann Scholarship                                      | Lockheed Martin Scholarship                          |
| Brian E. and Jean P. Hickey Scholarship                      | Lomb Citizen Soldier Scholarship                     |
| John and Catherine Hill Endowed Scholarship                  | Lomb People Scholarship                              |
| Francis Sallie Ann Hilliard Scholarship                      | Arthur E. Lowenthal Scholarship                      |
| Laura Church Hillman Scholarship                             | Eugene M. Lowenthal Jr. Memorial Scholarship         |
| Richard J. Hoerner Endowed Scholarship                       | Max Lowenthal Memorial Scholarship                   |
| Hoffend Scholarship Fund                                     | Claire Booth Luce Scholarship                        |
| Hogadone & Larwood Scholarship                               | Patrick T. Lynch Memorial Scholarship                |
| Holmes Family Endowed Scholarship                            | M/E Engineering                                      |
| Eric Honsberger Endowed Memorial Scholarship                 | MITEL Scholarship                                    |
| Charles C. Horn Scholarship                                  | MMET Faculty, Staff, Alumni                          |
| Frank Horton Endowed Scholarship Funds                       | M&T Bank Urban Scholars Scholarship                  |
| Jerry Hughes Endowed Scholarship                             | Barbara MacCameron Scholarship                       |
| Alan & Vicki T. Hurwitz Family Endowed Scholarship           | Robert J. Macon Memorial Scholarship                 |
| Frank Hutchins Scholarship                                   | Lois C. Macy Scholarship                             |
| The Ralph Hymes Endowed Scholarship Fund                     | Magazine Publishers Scholarship                      |
| Arthur Ingle Scholarship                                     | Thomas H. Maguire Memorial Scholarship               |
| Insero and Company Scholarship                               | Jack & Judy Maltby Scholarship                       |
| Institute of Fellows Scholarship                             | Manufacturers Hanover Scholarship                    |
| Interpretek Scholarship                                      | Donald Margolis Scholarship                          |
| Louis & Sylvia Jackson Scholarship                           | Marine Midland Fellowship                            |
| Candy Thompson Jagus Endowed Memorial Scholarship            | William Mariner Scholarship                          |
| Dorothy B. James Scholarship                                 | Clara Martin Scholarship                             |
| Sharyn & Steven Janis Scholarship                            | Dr. James C. Marsters Endowed Scholarship Fund       |
| Jack Jenkins Endowment Scholarship                           | Margaret McEwen-Craven Scholarship                   |
| Lucille Ritter Jennings Endowed Scholarship Fund             | John McIntee Scholarship                             |
| Leo Joachim Scholarship                                      | McIntosh Education Fund                              |
| Helen Lucille Jones Memorial Scholarship                     | Dean McWhirter Memorial Scholarship                  |
| John Wiley Jones International Scholarship                   | Melissa Meisenhelder Scholarship                     |
| John Wiley Jones Science Scholarship                         | Alice Melnyk Scholarship                             |
| Michael Jones Memorial Scholarship                           | Bernadette Merkel Memorial Scholarship               |
| Isaac Jordan Memorial Scholarship                            | Norman Miles Scholarship                             |
| Abraham & Teresa Katz Scholarship                            | Norman Miller Electrical Engineering Scholarship     |
| Robert and Doris Kaufman Memorial Endowed Scholarship        | Barbara Milliman Scholarship                         |
| David T. Kearns Endowed Fund for Technical Excellence        | Abraham & Sadie Milstein Scholarship                 |
| Henry & Mary Kearse Memorial Fund                            | Earl Morecock Scholarship                            |
| Stephen J. Kersting Memorial Scholarship                     | Bernice Skinner Morelock Scholarship                 |
| Katherine Keyes Scholarship                                  | Clifford Waite Morgan Scholarship                    |
| Drew & Francis King Endowment Fund                           | Catherine Morse Scholarship                          |
| Kirsch Scholarship in Science                                | Mowris-Mulligan Memorial Scholarship                 |
| Ruth Klee Award  | Charles W., Sue L., Freda L. Muffitt Scholarship     |
| David Klieman Scholarship                                    | Dennis and Cathy Mullen Endowed Scholarship          |
| Kodak Professional Imaging Award                             | Irene Muntz Endowed HSM Scholarship                  |
| Lowell Koenig Scholarship                                    | Irene L. Muntz Endowed Scholarship                   |
| Bernard & Mary Kozel Entrepreneurial Scholarship             | Dr. Gengi Murai Endowed Scholarship Fund             |
| Jack Kronenberg Scholarship                                  | Nicholas F. Murray Memorial Scholarship              |
| Sara L. Kuhnert Endowed Scholarship Fund at NTID             | Michelle "Shelley" Nagoette Memorial Scholarship     |
| Lancer Graphics Scholarship                                  | Nathaniel Rochester Society Scholarships             |
| Francis Lang Scholarship                                     | Don Naylor Scholarship                               |
| Learning Support Services Scholarship                        | C. B. Neblette Memorial Scholarship                  |
| LeChase Corp. Scholarship                                    | Evaline and Louis Neff Scholarship                   |
| Leenhouts Family Scholarship                                 | Grace B. Norton Scholarship                          |
| Lehigh Press Scholarship                                     | Ruth D. Norton Endowed Scholarship Fund              |
| JayJ and Stephanie M. Levine Scholarship                     | Joseph F. Noveck Memorial Scholarship                |
| Richard B. Lewis Memorial Scholarship                        | Meta Noveck Memorial Scholarship at NTID             |
| Liberal Arts Alumni and Friends Endowed Scholarship          | NTID Alumni Association Endowed Scholarship Fund     |
| The Edward H. Lichtenstein Memorial Endowed Scholarship Fund | NTID Annual Fund                                     |
| Abe Lincoln Scholarship                                      | NTID Architectural Technology Award Scholarship Fund |

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# Rochester Institute of Technology

## 2011–12 University Calendar

### Fall Quarter (20111)

**April 19–September 5, 2011**

Fall registration

**September 5**

Day, evening, and online classes begin

**September 10**

Saturday classes begin

**September 11**

Last day to add/drop courses

**September 12**

First day to withdraw online via SIS;  
receive a “W” grade

**October 28**

Last day to withdraw online with a “W”  
grade

**November 11**

Last day and evening classes

**November 12**

Last Saturday and online classes

**November 14, 15, 16, 17, 18, 19\***

Final exams

**November 20–27**

Fall/Winter break

**November 24–25**

Thanksgiving  
(University closed)

### Winter Quarter (20112)

**October 18–November 28, 2011**

Winter registration

**November 28**

Day, evening, and online classes begin

**December 3**

Saturday classes begin

**December 4**

Last day to add/drop courses

**December 5**

First day to withdraw online via SIS;  
receive a “W” grade

**December 16**

Last day and evening classes before break

**December 17**

Last Saturday and online classes before  
break

**December 18, 2011–January 2, 2012**

Holiday break

**December 25, 2011–January 2, 2012**

(University closed)

**January 3**

University re-opens

**January 9**

Day, evening, and online classes resume

**January 14**

Saturday classes resume

**February 10**

Last day to withdraw online with a “W”  
grade

**February 24**

Last day and evening classes

**February 25**

Last Saturday and online classes

**February 27, 28, 29, March 1, 2, 3\***

Final exams

**March 4– March 11**

Winter/Spring break

### Spring Quarter (20113)

**January 24–March 12, 2012**

Spring registration

**March 12**

Day, evening, and online classes begin

**March 17**

Saturday classes begin

**March 18**

Last day to add/drop courses

**March 19**

First day to withdraw online via SIS;  
receive a “W” grade

**May 4**

Last day to withdraw online with a “W”  
grade

**May 18**

Last day and evening classes

**May 19**

Last Saturday and online classes

**May 21, 22, 23, 24, 25\***

Final exams

**May 25**

Academic Convocation and  
Commencement Ceremonies

**May 26**

Commencement Ceremonies

**May 27–June 3**

Spring/Summer break

**May 28**

Memorial Day  
(University closed)

### Summer Quarter (20114)

**April 16–June 4, 2012**

Summer quarter registration

**June 4**

Day, evening, and online classes begin

**June 9**

Saturday classes begin

**June 10**

Last day to add/drop summer courses

**June 11**

First day to withdraw online via SIS;  
receive a “W” grade

**July 4**

Independence Day  
(University closed)

**July 27**

Last day to withdraw online with a “W”  
grade

**August 10**

Last day and evening classes

**August 11**

Last Saturday and online classes

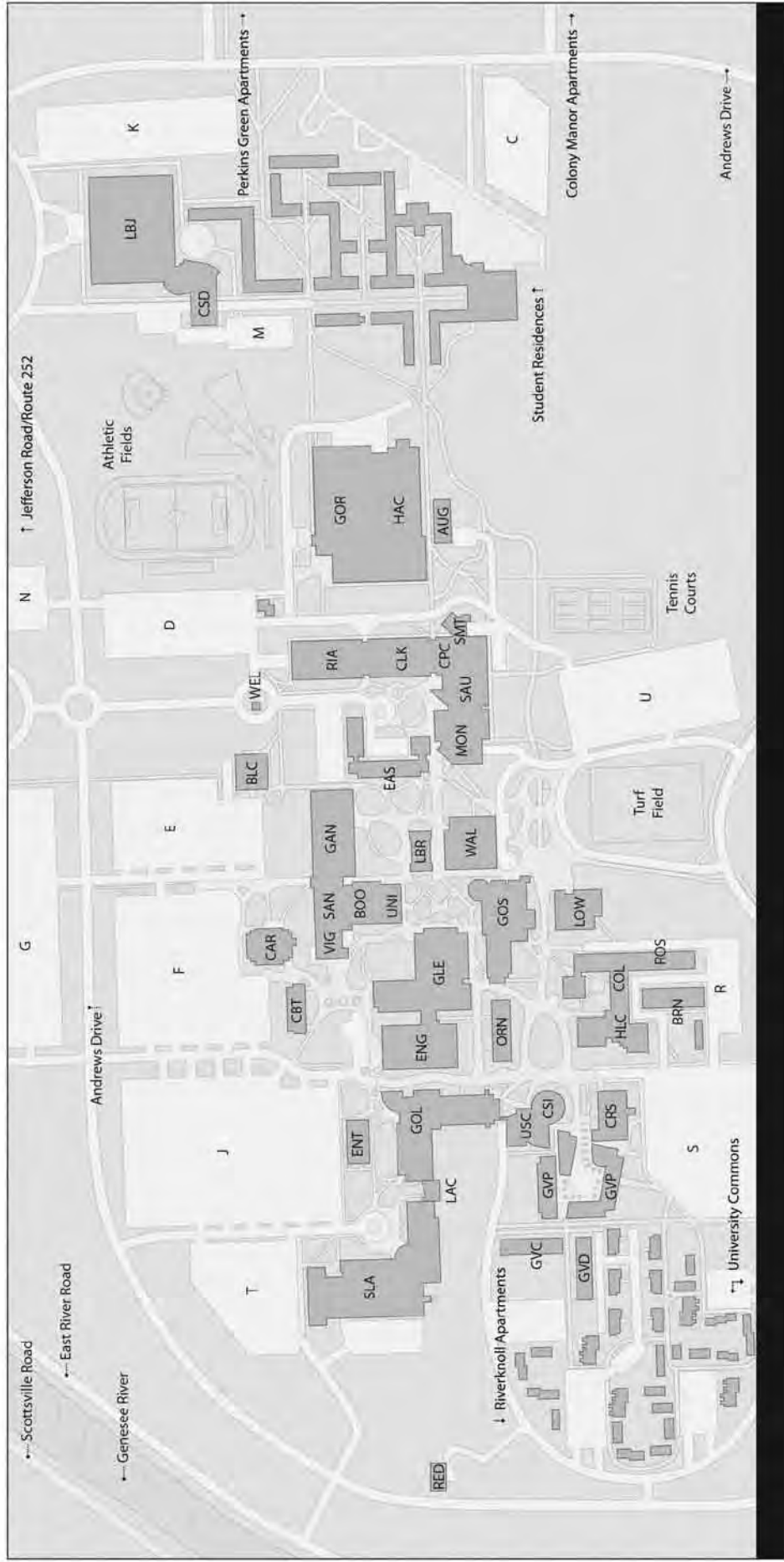
**August 13, 14, 15, 16, 18\***

Final exams

*\* Day students can view their individual exam schedules online through SIS. Others can view the complete exam schedule at [infocenter.rit.edu](http://infocenter.rit.edu) by selecting Exam Schedule in the public box. Students attending evening, Saturday and on-line courses should check with their instructors regarding their final exam schedules.*

*† Check Academic Planning at [infocenter.rit.edu](http://infocenter.rit.edu) for summer short session (1–5 week) course dates.*





## RIT CAMPUS MAP

|     |   |     |  |     |                                  |     |                                    |
|-----|---|-----|--|-----|----------------------------------|-----|------------------------------------|
| AUG | August Center                                 | CSI | Center for Student Innovation            | GVP | Global Village Plaza             | ROS | Lewis P. Ross Hall                 |
| BLC | Bausch & Lomb Center                          | EAS | George Eastman Hall                      | HAC | Hale-Andrews Student Life Center | SAN | Sands Family Studios               |
| BOO | James E. Booth Hall                           | ENG | Engineering Hall                         | HLC | Hugh L. Carey Hall               | SAU | Student Alumni Union               |
| BRN | Brown Hall                                    | ENT | Engineering Technology Hall              | LAC | Laboratory for Applied Computing | SLA | Louise Slaughter Hall              |
| CAR | Chester F. Carlson Center for Imaging Science | GAN | Frank E. Gannett Hall                    | LBJ | Lyndon Baines Johnson Hall       | SMT | Schmitt Interfaith Center          |
| CBT | Center for Bioscience Education & Technology  | GLE | James E. Gleason Hall                    | LBR | Liberal Arts Hall                | UNI | University Gallery                 |
| CLK | George H. Clark Gymnasium                     | GOL | Gollisano Hall                           | LOW | Max Lowenthal Hall               | USC | University Services Center         |
| COL | Color Science Hall                            | GOR | Gordon Field House and Activities Center | MON | Monroe Hall                      | VIG | Vignelli Center for Design Studies |
| CPC | Campus Center                                 | GOS | Thomas Gosnell Hall                      | ORN | Orange Hall                      | WAL | Wallace Library                    |
| CRS | Crossroads                                    | GVC | Global Village Way C                     | RED | Red Barn                         | WEL | Welcome Center                     |
| CSD | CSD Student Development Center                | GVD | Global Village Way D                     | RIA | Frank Ritter Ice Arena           |     |                                    |