## 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 2006–2007 academic year. The purpose of this bulletin is to provide students with a comprehensive source of information to use in planning their undergraduate education.

Master's and doctoral degree programs, plus other post-baccalaureate offerings, are described in RIT's *Graduate Bulletin*, available through the Office of Graduate Enrollment Services.

The RIT *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, or other charges; plus 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*.

RIT Undergraduate Bulletin 2006–2007


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## Contents



*RIT will admit and hire men and women; veterans; persons with disabilities; and individuals of any race, creed, religion, color, national or ethnic origin, sexual orientation, age, or marital status in compliance with all appropriate legislation.*

# An Introduction to Rochester Institute of Technology

Respected internationally as a world leader in career-oriented 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 eight colleges offer outstanding programs in business, engineering, art and design, science and mathematics, liberal arts, photography, computing, hospitality management, and many other areas.

More than 200 different 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 every state and more than 90 foreign countries.

Approximately 11,000 full-time undergraduate students, 1,800 part-time undergraduate students, and 2,300 graduate students attend RIT. More than 90,000 RIT 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 students include 1,100 deaf students, and deaf and hearing students often 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 3,300 students in co-op work positions with approximately 1,900 employers every year, and more than 600 companies visit RIT to conduct employment interviews on campus.

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.

RIT encourages the appreciation of diversity through a variety of liberal arts courses, campus events, and special programs (including an annual International Banquet, Black History Month, Martin Luther King Jr. Celebration, and Hispanic Heritage Week). Students are encouraged to take advantage of the diverse educational opportunities RIT provides, because the world in which they will live and work will be composed of people from many backgrounds, lifestyles, and cultures.

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*.

## Colleges

The **College of Applied Science and Technology** offers a wide variety of degrees, diplomas, and certificates to full- and part-time students. Programs and courses are offered during the day, evening, on Saturdays, and by distance delivery. Bachelor of science programs include civil engineering technology; electrical, computer, and telecommunications engineering technology; manufacturing and mechanical engineering technology; electrical-mechanical engineering technology; safety technology; nutrition; hospitality and service management; packaging science; environmental management; and applied arts and science. Many of these programs also offer master's degrees. Associate degrees, diplomas, and certificates are offered in several areas and are especially appropriate for the part-time adult student who is looking for convenience, quality, and practicality. The manufacturing engineering technology program has been recognized as one of the top five in the nation by the Society of Manufacturing Engineers.

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 graphic media marketing. With an emphasis on technology and a global focus, these programs combine specialized courses in the major, and the liberal arts and sciences with cooperative education work experience. The college is consistently ranked in *U.S. New & World Report's* "Top Undergraduate Business Programs," and is also accredited by the Association to Advance Collegiate Schools of Business (AACSB International). The College of Business also awards MBA and MS graduate 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 computer science and information technology. Bachelor degree programs are available in computer science, information technology, information technology/new media option, medical informatics, applied networking and systems administration, and software engineering. The college also houses the Center for Advancing the Study of CyberInfrastructure. In 1972, RIT was among the first institutions 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 AAS, BS, and MS degrees. All BS degree programs require cooperative education. The college is proud to unveil a Ph.D. program in computing and information science. The program, RIT's third doctoral degree, began enrolling students in the fall of 2006.

The **Kate Gleason College of Engineering** offers BS degrees in computer, electrical, industrial, mechanical, and microelectronic engineering. Specialized degree options are also offered for students interested in areas such as ergonomics, manufacturing, aerospace, automotive, or biomedical engineering. Starting in their third year, students in all engineering programs participate in the cooperative education program. For those who need time to decide on a particular major, the college also offers an engineering exploration program in the first year. Accelerated degree programs (combined BS/MS degrees) are available in all departments. Recognized as one of the premier colleges of engineering dedicated to undergraduate teaching and cooperative education, the college also offers the nation's only doctoral program in microsystems engineering.

The **College of Imaging Arts and Sciences** includes the School of Art, School of Design, School for American Crafts, School of Film and Animation, School of Photographic Arts and Sciences, and School of 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. Undergraduate degrees include the associate, bachelor of fine arts, and bachelor of science. RIT is recognized as one of the nation's top-ranked universities for printing/publishing and for the study of photography.

The **College of Liberal Arts** 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 college offers bachelor of science degree programs in advertising and public relations, criminal justice, economics, international studies, professional and technical communication, psychology, public policy, and urban and community studies (pending NYS approval). A one-year RIT exploration program is offered for students who wish to pursue a liberal arts degree, but are undecided about which program to pursue

The **College of Science** is career-oriented, emphasizing 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; and medical

sciences, including a physician assistant program, biotechnology, bioinformatics, biomedical science, polymer chemistry, and other unique programs. A general science exploration option is popular with students who want more time to decide on their major. The premedical core is a set of courses required for admission to most medical, dental, and veterinary schools. The college awards associate, bachelor of science, and master of science degrees, as well as the nation's only doctoral degree in imaging science. Many of the college's bachelor of science degree programs offer a cooperative education option.

The **National Technical Institute for the Deaf** provides technical and professional programs for approximately 575 deaf and hard-of-hearing students enrolled in diploma or associate degree programs, and provides extensive educational access services for more than 525 deaf students who are pursuing a bachelor's or master's degree, or taking courses in RIT's other colleges. Within NTID, students may pursue either career-focused associate degree programs leading directly to employment, or transfer associate degree programs designed to provide optimal transferability to baccalaureate programs. Students choose a variety of associate degree options/concentrations in accounting technology, administrative support technology, applied computer technology, applied optical technology, art and computer design, automation technologies, business technology, computer aided drafting technology, computer integrated machining technology, digital imaging and publishing technology, and laboratory science technology. The college also enrolls hearing students in its ASL-English Interpretation programs.

## Accreditation

RIT is chartered by the legislature of the State of New York and accredited by:

The Commission on Higher Education
Middle States Association of Colleges and Schools
3624 Market Street
Philadelphia, PA 19104-2680
(215) 662-5606

and

New York State Education Department
Office of College and University Evaluation
5 North Mezzanine
Albany, N.Y. 12234
(518) 474-2593

In addition to institutional accreditation, curricula in the colleges are accredited by appropriate professional accreditation bodies. Where applicable, specific mention of these is included in the college descriptions. Students wishing to review documents describing accreditation should contact the Office of the Vice President for Academic Affairs.

## Sponsored Research Projects

Externally sponsored projects are a vital and integral component of RIT's educational and research activity. Faculty and students undertake sponsored projects for a variety of important reasons: to add to their body of knowledge, for professional development, or to strengthen academic programs. Sponsored projects enhance the university's academic programs, broaden its research resources, provide opportunities for student participation in research, strengthen university-industrial partnerships, and serve the wider community.

Moreover, grants and contracts enhance existing resources and provide new opportunities for faculty, staff, and students. External funding comes from federal and state agencies, private foundations, and corporations. RIT's major sponsors include the National Science Foundation (NSF), the National Institutes of Health (NIH), the U.S. Department of Education (USDE), the Department of Defense (DoD), the National Aeronautics and Space Administration (NASA), and New York state. Additional information is available through the Office of Sponsored Research Services at (585) 475-7985, research@rit.edu, or on their website at www.research.rit.edu.

# Campus and Community

Home to more than one million people, the greater Rochester area is a major technical and industrial center and is well known for its rich cultural and intellectual opportunities. Rochester is the third-largest city in New York state and home to a number of major corporations, including Eastman Kodak Co., Bausch and Lomb, Xerox Corp., and Paychex, to name a few. A strong technology-based economy has made Rochester one of the 10 largest exporting cities in the United States.

The city provides a perfect setting for students seeking a dynamic and diverse environment, with a variety of opportunities for employment, entertainment, and personal growth. Large enough to include numerous museums, a variety of restaurants, plenty of live music, movie theaters, parks, beaches, and shopping areas, Rochester is also small enough to explore and enjoy. A city bus line and RIT shuttle bus service provide transportation to and from campus.

Within walking distance of one another in the downtown area are the Rochester Museum and Science Center, Strasenburgh Planetarium, the Memorial Art Gallery, and George Eastman House International Museum of Photography and Film. A short distance from these venues is the Eastman Theatre, home of the city's philharmonic orchestra; and Strong Museum, a hands-on children's museum that features exhibits and turn-of-the-century memorabilia. The nearby mountains, Lake Ontario, and the Finger Lakes provide plentiful year-round recreational opportunities.

## The Campus and Its Facilities

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. The campus landscape has undergone significant growth and renewal, including new academic buildings, student apartments and Greek housing, walkways, plantings, and lighting. A 73-foot high steel and bronze sculpture by Albert Paley and a Japanese garden add further interest to a campus that continues to evolve. A new 160,000-square-foot field house was completed in 2004.

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.

## RIT Libraries

The RIT Libraries are comprised of three distinct entities; Wallace Library, Cary Library, and the RIT Archives. A balanced combination of traditional and electronic resources, Wallace Library is regarded as RIT's cultural and information center. Special events are frequently hosted by the library in The Idea Factory, a sprawling collaborative area on the first floor.

The Cary Library houses a unique collection of more than 20,000 volumes on the history of printing, rare book illustration, book design, and other fascinating aspects of the graphic arts. Located on the third floor, the RIT Archives collects, organizes, preserves, and displays materials from the university's past. Also located within the building are the Educational Technology Center and the Media Resource Center.

From the library's web-based workstations, users can access the library's catalog, search many electronic commercial databases, and surf the Internet. The library's staff offers hands-on instruction for using various electronic and Internet resources. They will schedule specialized class instruction upon request. Interlibrary loan services and in-house book requesting are available online through IDS Express. The second floor computer lab provides access to additional computer workstations, image scanning, and color copying.

A variety of seating options and small-group study rooms are available, which can accommodate more than 1,000 users, in total. Part of the library, the popular Java Wally's café provides a relaxed setting for casual conversation as well as another option for meetings or studying in its After Hours Room.

For library hours, call (585) 475-2046 (voice); for RE: SEARCH ZONE Desk, call (585) 475-2563 (voice/TTY), (585) 475-2564, or e-mail 610wmlref@rit.edu; for the Circulation Desk, call (585) 475-2562 (voice) or (585) 475-2962 (TTY).

## Housing and Recreational Facilities

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. Students may choose from a variety of living arrangements, including residence hall floor assignments by same gender, coeducational, wellness, alcohol/substance free, intensified study, over 21 years of age, or mainstream floors (hearing/deaf students living on the same floor). Living options in Greek fraternities and sororities, and in special interest houses such as Art House, Business Leaders of Tomorrow, Computer Science House, Engineering House, House of General Science, International House, Photo House, and Unity House are also available. Internet and campus data network access is available in all residence hall rooms.

RIT 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 located near the campus. Residents of the RIT Inn enjoy many of the perks of a first-rate hotel, including an indoor/outdoor swimming pool and a fitness center.

Our Student Life Center offers recreational facilities that include a gymnasium, racquetball courts, and an indoor track. Other indoor facilities include two additional gyms, an ice arena, wrestling rooms, a weight training room, and the Gordon Field House.

Outdoor facilities include lighted tennis courts, an all-weather track, playing fields, and a fitness trail. A new synthetic turf field with astroplay surface was completed in 2004 for intramural, club sports, recreation, and intercollegiate athletic teams. This state-of-the-art field is lighted and usable throughout the year.

### Gordon Field House and Activities Center

The Gordon Field House and Activities Center opened in spring 2004. The $25 million facility is a two-story, 160,000-square-foot building that features three areas:

- The **event venue/athletic field**, can be divided into three sections, holding more than 8,000 people for special events such as convocation, guest speakers, or concerts. It can also accommodate activities such as lacrosse, tennis, floor/field hockey, indoor track, baseball, softball, soccer, and volleyball.
- The **aquatics center** includes a competition pool, recreational pool, and spectator seating. The eight-lane, 25-meter competition pool features a moveable bulkhead to provide separation between the diving and swimming areas. The recreational pool includes a spa area with hot tub, waterspouts, and a current channel for relaxation and therapy.
- A **fitness center** of approximately 16,000-square-feet, includes separate areas for free-weight training and cardiovascular equipment.

# Graduation Requirements

To earn any academic credential from RIT, you must satisfy a number of requirements. Graduation requirements may vary slightly from program to program, and all students are strongly encouraged to seek out and use the academic advising resources within their colleges. In general, students should expect to satisfy the following requirements before they can graduate from RIT:

**A. Completion of academic curricula**

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

- Successful candidates for an undergraduate degree, diploma, or certificate must have a program cumulative grade point average of at least 2.0.*
- Graduation honors are conferred on associate and bachelor's degree recipients who achieve a 3.40 or higher program cumulative 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, CLEP, advanced placement, or audit are 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 and advanced placement credit.

**D. Demonstration of writing skills**

- Students must demonstrate, to the satisfaction of the dean of their college, that they have the writing skills needed for successful entry into their chosen careers. The criteria and standards for evaluating abilities are determined by each academic department.

**E. Full payment of all financial obligations to RIT**

## The Liberal Arts General Education Curriculum

Under the university's newly revised curricular requirements (implemented September 1, 2005), students in all baccalaureate degree programs are required to complete at least 90 credit hours of general education. This includes a minimum of 36 credit hours in the humanities and social sciences taken in the College of Liberal Arts. If a student selects 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 (BS) programs also must complete at least 20 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:

- Writing (0502-227) (4 credit hours)
- 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
- Two social science courses (8 credit hours) taken from two different disciplines:
  - Anthropology
  - Economics
  - Political Science
  - Psychology
  - Sociology

II. Arts of Expression course (0504-319) (4 credit hours)

**The physician assistant program requires a program cumulative grade point average of 2.8 or better.*

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 listings in this bulletin, and through academic advisers.

### Liberal arts concentrations and minors

*www.rit.edu/~690www/minors.html*

The College of Liberal Arts offers students two options for completion of their upper-level liberal arts requirements. Students may choose to complete either a liberal arts concentration or a liberal arts minor. It is important to note that the lower-level liberal arts requirements (the core requirements) remain the same regardless of whether a student elects to complete a concentration or a minor.

A liberal arts concentration is a cohesive set of three upper-level courses (12 credits) approved by the faculty for use in meeting RIT's general education requirements. Concentrations may be disciplinary or interdisciplinary, and some may require prerequisite course work.

The College of Liberal Arts offers concentrations in more than 25 areas of study, including American artistic experience, American English for ESL students, American politics, art history, communication, criminal justice, economics, environmental studies, foreign language/culture, global studies, history, international relations, Latino/Latina/Latin American studies, literary and cultural studies, minority relations in the United States, music, peace studies, philosophy, psychology, public policy, religious studies, science and technology studies, sociology/anthropology, women's and gender studies, and writing studies.

Students who are looking for greater depth in the humanities and social sciences may choose to meet the advanced course work requirement by completing a liberal arts minor. Minors require the completion of five upper-level courses (20 credits) in a designated liberal arts area. Students who choose this option will complete a total of 44 credit hours (or more) in the humanities and social sciences as part of their general education curriculum. Liberal arts minors may be disciplinary or interdisciplinary, and some may require prerequisite course work.

The College of Liberal Arts offers minors in more than 50 areas of study including American politics; art history; communication; creative writing; criminal justice; economics; foreign language (Arabic, Chinese, French, German, Italian, Japanese, Russian, Spanish); foreign language/culture; history; historical perspectives on science and technology; international relations; literary and cultural studies; music; philosophy; psychology; public policy; science, technology and environmental studies; sociology/anthropology; women's and gender studies; and writing studies.

Please see the Minors and/or the Liberal Arts Concentrations sections for more information.

## Liberal arts advising

Liberal arts requirements vary within the individual degree programs on campus. Therefore, it is important that students carefully plan their liberal arts program to meet their specific degree requirements. Advising staff are available daily in the College of Liberal Arts' Office of Student Services, located on the second floor of the Liberal Arts Building, 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 play to personal interest - 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 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 individual 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

** The RIT 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.*

## 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 that encourages the use of free time in an enjoyable and constructive manner. The wellness education requirement is designed to assist students in making healthy decisions to support their academic and social interactions in college and beyond. The wellness curriculum provides learning experiences that are an integral part of the educational experience at RIT.

### Wellness for Life

**Upperclass and transfer students seeking a bachelor's degree** who have not completed the requirements for First-Year Enrichment (or an equivalent) must successfully complete the Wellness for Life course (or an acceptable transfer equivalent) and two different wellness activity courses to satisfy graduation requirements.

**Upperclass and transfer students seeking an associate degree** who have not completed the requirements for First-Year Enrichment (or an equivalent) must complete the Wellness for Life course (or an acceptable transfer equivalent) and one wellness activity course to satisfy graduation requirements.

**Transfer students'** physical education courses taken at previous colleges will be accepted in transfer at RIT. Transfer students entering in their first or second year must complete or transfer in the same requirements as incoming freshmen (complete the Wellness for Life course plus two different wellness activity courses). Transfer students entering RIT in year three, four, or five must complete the Wellness for Life course (or transferred in an acceptable equivalent course) and one wellness activity course. Important Note: Transfer students may apply course work completed at the previous institution. Decisions regarding the transfer of courses is based on the course description and a review by a wellness program administrator. These activity experiences are accepted in lieu of wellness course work, as long as: (1) the experience was completed no more than one year before matriculation at RIT; and (2) the experience was the same as a course offered within the Wellness Instructional Program curriculum.

### Wellness Education Credit/Exemption Scenarios

**A permanent medical excuse** may exempt a student from participation in the activity segment of the graduation requirement, but they must complete First-Year Enrichment or Wellness for Life. The exemption will be granted only by the college dean, with input from the Wellness Program staff. 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 the student's academic department.

**Intercollegiate athletics** Students participating in the intercollegiate athletic programs are granted wellness activity course credit for the season(s) of participation, but must complete First-Year Enrichment or Wellness for Life.

**Club sports** In addition to intercollegiate sports and intramural programs, RIT offers several club sports. The program is a division of RIT Student Government and the Center for Intercollegiate Athletics and Recreation. Its purpose is to provide extramural/intercollegiate competition for recognized club sports, although some are solely for recreational or instructional purposes. Participation is open to all RIT students (full- and part-time).

**Veterans** Students who have completed six months or more of active military duty are not exempt from the wellness education requirement, but are encouraged to enroll in any wellness course on a space-available basis.

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

**Nonmatriculated status** Nonmatriculated students are exempt from the wellness education requirement.

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

**NTID students** NTID pre-baccalaureate and associate degree students are required to complete the Wellness for Life course and one wellness activity course to satisfy their graduation requirement.

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

## Cooperative Education Requirement

Many academic programs at RIT require that students participate in the university's cooperative education program. Other academic programs may offer co-op as an option or provide other experiential education opportunities (e.g., internships). Cooperative education involves alternating quarters of classroom study and full-time paid employment in a position related to the student's academic program. Requirements, which may vary significantly, are included for each program in this bulletin.

# Academic Programs of Study

| Undergraduate Programs | College | Degree and HEGIS* | | | | | | | Evening Options |
|---|---|---|---|---|---|---|---|---|---|
| | | Certificate | Diploma | AOS | AS | AAS | BFA | BS | |
| Accounting Technology | NTID | | 5002 | | | 5002 | | | |
| Administrative Support Technology | NTID | | 5005 | | | 5005 | | | |
| Advertising and Public Relations | Liberal Arts | | | | | | | 0604 | |
| Applied Arts and Science | Applied Science & Technology | | 5699 | | | 5699 | | 4999 | Y |
| Applied Computer Technology | NTID | | 5101 | 5101 | 0799 | 5101 | | | |
| Applied Optical Technology | NTID | | | 5212 | | 5212 | | | |
| Art and Computer Design | NTID | | | 5012 | | 5012 | | | |
| ASL-English Interpretation | NTID | | | | | 5506 | | 1199 | |
| Automation Technologies | NTID | | | 5399 | | 5399 | | | |
| Biochemistry# | Science | | | | | | | 0414 | |
| Bioinformatics# | Science | | | | | | | 0499 | |
| Biology | Science | | | | 5604 | | | 0401 | |
| Biomedical Photographic Communications | Imaging Arts & Sciences | | | | | 5299 | | 1217 | |
| Biomedical Sciences | Science | | | | | | | 0499 | |
| Biotechnology | Science | | | | § | | | 0499 | |
| Business | NTID | | | | 5001 | | | | |
| Business Administration: | | | | | | | | | |
| Accounting | Business | | | | | | | 0502 | |
| Business Administration | Applied Science & Technology | | | | | 5001 | | | Y |
| Finance | Business | | | | | | | 0504 | |
| Graphic Media Marketing | Business | | | | | | | 0509 | |
| International Business | Business | | | | | | | 0513 | |
| Management | Business | | | | | | | 0506 | Y |
| Management Information Systems | Business | | | | | | | 0599 | |
| Marketing | Business | | | | | | | 0509 | |
| Business Technology | NTID | | | 5004 | | | | | |
| Ceramics and Ceramic Sculpture | Imaging Arts and Sciences | | | | | 5610 | 1009 | | |
| Chemistry# | Science | | | | 5619 | | | 1905 | Y |
| Communication, Technical: | | | | | | | | | |
| Basic | Applied Science & Technology | 5008 | | | | | | | Y |
| Advanced | Applied Science & Technology | 5008 | | | | | | | Y |
| Communication, Professional and Technical | Liberal Arts | | | | | | | 0601 | |
| Communications, Public Relations: | | | | | | | | | |
| Graphic Communication | Applied Science & Technology | 5008 | | | | | | | Y |
| Computer-Aided Drafting Technology | NTID | | 5303 | 5303 | | 5303 | | | |

| Undergraduate Programs | College | Degree and HEGIS* | | | | | | | Evening Options |
|---|---|---|---|---|---|---|---|---|---|
| | | Certificate | Diploma | AOS | AS | AAS | BFA | BS | |
| Computer Science# | Computing & Information Sciences | | | | 5101 | | | 0701 | Y |
| Craft Major, Double** | Imaging Arts & Sciences | | | | | | 1009 | | |
| Criminal Justice | Liberal Arts | | | | | | | 2105 | |
| Deaf Studies/American Sign Language | NTID | 5506 | | | | | | | Y |
| Design: | | | | | | | | | |
| Graphic | Imaging Arts & Sciences | | | | | 5012 | 1009 | | |
| Industrial | Imaging Arts & Sciences | | | | | | 1009 | | |
| Interior | Imaging Arts & Sciences | | | | | | 1009 | | |
| Diagnostic Medical Sonography | Science | 5299 | | | § | | | 1299 | |
| Digital Cinema | Imagine Arts & Science | | | | | | | 1010 | |
| Digital Imaging and Publishing Technology | NTID | | 5007 | 5007 | | 5007 | | | |
| Disaster and Emergency Management | Applied Science & Technology | 5508 | | | | | | | |
| E-Business | Applied Science & Technology | 5001 | | | | | | | Y |
| Echocardiography | Science | 5217 | | | | | | | |
| Economics | Liberal Arts | | | | | | | 2204 | |
| Engineering: | | | | | | | | | |
| Computer Engineering# | Engineering | | | | | | | 0999 | |
| Electrical Engineering# | Engineering | | | | | | | 0909 | |
| Industrial Engineering# | Engineering | | | | | | | 0913 | |
| Mechanical Engineering# | Engineering | | | | | | | 0910 | |
| Microelectronic Engineering# | Engineering | | | | | | | 0999 | |
| Engineering Science | Engineering | | | | 5609 | | | | Y |
| Engineering Technology: | | | | | | | | | |
| Civil Engineering Technology | Applied Science & Technology | | | | | | | 0925 | |
| Computer Engineering Technology | Applied Science & Technology | | | | | | | 0925 | Y |
| Electrical Engineering Technology | Applied Science & Technology | | | | | | | 0925 | Y |
| Electrical Technology | Applied Science & Technology | | | | | 5310 | | | Y |
| Electrical/Mechanical Engineering Technology# | Applied Science & Technology | | | | | | | 0925 | Y |
| Manufacturing Engineering Technology (CIM)# | Applied Science & Technology | | | | | | | 0925 | Y |
| Mechanical Engineering Technology | Applied Science & Technology | | | | | | | 0925 | Y |
| Mechanical Technology | Applied Science & Technology | 5301 | | | | 5315 | | | Y |
| Telecommunications Engineering Technology# | Applied Science & Technology | | | | | | | 0925 | |
| Environmental Science# | Science | | | | | | | 0420 | |
| Exercise Science | Science | 5299.3 | | | | | | | |
| Fine and Applied Arts | Imaging Arts & Sciences | | 5012 | | | | | | Y |
| Fine Arts Studio | Imaging Arts & Sciences | | | | | 5610 | 1002 | | |
| General Management | Applied Science & Technology | | | | | 5004 | | | Y |
| Glass and Glass Sculpture | Imaging Arts & Sciences | | | | | 5012 | 1009 | | |
| Graphic Communications+ | Imaging Arts & Sciences | | | | | | | 0699 | |

| Undergraduate Programs | College | Degree and HEGIS* | | | | | | | Evening Options |
|---|---|---|---|---|---|---|---|---|---|
| | | Certificate | Diploma | AOS | AS | AAS | BFA | BS | |
| Health Care Billing and Coding Technology | NTID | | 1202 | 1202 | | | | | |
| Health Systems Management | Applied Science & Technology | 5299 | | | | | | | Y |
| Hospitality and Service Management | Applied Science & Technology | | | | | 5010 | | 0508 | |
| Human Resource Administration | Applied Science & Technology | | | | | 5004 | | | Y |
| Illustration | Imaging Arts & Sciences | | | | | 5610 | 1002 | | |
| Imaging Science | Science | | | | | | | | |
| Imaging and Photographic Technology | Imaging Arts & Sciences | | | | | 5007 | | 1011 | |
| Information Technology: | | | | | | | | | |
| Applied Networking and System Administration | Computing & Information Science | | | | | | | 0702 | Y |
| Information Technology | Computing & Information Science | | | | | 5101 | | 0699 | Y |
| Medical Informatics# | Computing & Information Science | | | | | | | 1217 | |
| New Media–Information Technology | Computing & Information Sciences | | | | | | | 0699 | |
| International Studies | Liberal Arts | | | | | | | 2210 | |
| Laboratory Science Technology | NTID | | | 5407 | | 5407 | | | |
| Management Development | Applied Science & Technology | 5004 | 5004 | | | | | | Y |
| Mathematics: | | | | | | | | | |
| Applied Mathematics# | Science | | | | 5617 | | | 1703 | |
| Computational Mathematics# | Science | | | | | | | 1703 | |
| Medical Illustration | Imaging Arts & Sciences | | | | | 5011 | | 0510 | |
| Metals and Jewelry Design | Imaging Arts & Sciences | | | | | 5012 | 1009 | | |
| New Media: | | | | | | | | | |
| New Media–Design & Imaging | Imaging Arts & Sciences | | | | | | 0605 | | |
| New Media–Publishing | Imaging Arts & Sciences | | | | | | | 0605 | |
| Nutrition Management | Applied Science & Technology | | | | | 5404 | | 1306 | |
| Organizational Development: | | | | | | | | | |
| Human Resource Development | Applied Science & Technology | 5004 | | | | | | | Y |
| Organizational Change and Leadership | Applied Science & Technology | 5004 | | | | | | | Y |
| Performing Arts | NTID | 5610 | | | | | | | |
| Photographic Illustration, Professional: | Imaging Arts & Sciences | | | | | 5007 | 1011 | | |
| Advertising Photography | Imaging Arts & Sciences | | | | | | | | |
| Fine Art Photography | Imaging Arts & Sciences | | | | | | | | |
| Photojournalism | Imaging Arts & Sciences | | | | | | | | |
| Physician Assistant | Science | | | | | | | | |
| Physics | Science | | | | 5619 | | | 1902 | |
| Polymer Chemistry# | Science | | | | | | | 1907 | |
| Psychology | Liberal Arts | | | | | | | 2001 | |
| Public Policy# | Liberal Arts | | | | | | | 2102 | |
| Quality, Basic | Applied Science & Technology | 5004 | | | | | | | |

| Undergraduate Programs | College | Degree and HEGIS* | | | | | | | Evening Options |
|---|---|---|---|---|---|---|---|---|---|
| | | Certificate | Diploma | AOS | AS | AAS | BFA | BS | |
| Safety Technology | Applied Science & Technology | 5312 | | | | | | 0420 | |
| Small Business Management | Applied Science & Technology | 5004 | | | | | | | Y |
| Software Engineering | Computing & Information Sciences | | | | | | | 0999 | |
| Statistics, Applied# | Science | | | | | | | 1702 | |
| Structural Design | Applied Science & Technology | 5399 | | | | | | | |
| Visual Media | Imaging Arts & Sciences | | | | | | 1009 | | |
| Woodworking and Furniture Design | Imaging Arts & Sciences | | | 5317 | | 5012 | 1009 | | |

**Source: Higher Education General Information Survey*
*** Upon approval of the School for American Crafts*
§ *Students in these programs may receive an AS in general science (HEGIS #5649) upon successful completion of the first two years.*
*# Dual degree (BS/MS) option available*
*This program has been approved for discontinuance. No new students will be admitted in 2006-07.*

# College of Applied Science and Technology

***Wiley R. McKinzie, Dean***
*www.rit.edu/~700www/*

The College of Applied Science and Technology (CAST) provides programs that stress technology in many 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 CAST program. This technology may be used to provide productive manufacturing and distribution of durable and consumable goods, the proper flow of information worldwide, the proper protection of the environment, or the enhancement of customer satisfaction in the service sector.

The college offers a number of dynamic programs. There are seven engineering technology programs: civil, computer, electrical, electrical/mechanical, manufacturing, mechanical, and telecommunications. The college includes programs in hospitality and service management, nutrition management, packaging science, environmental management and technology, safety technology, health systems administration, and applied arts and science. Degree programs are offered at the associate, baccalaureate, and master's degree levels, and a wide array of diplomas and certificates are offered in a variety of programs. The department of military science (Army ROTC), the department of aerospace studies (Air Force ROTC), and The Center for Electronic Manufacturing Assembly (CEMA) also are part of the college.

## Admission requirements

CAST welcomes students as freshmen and transfers. Most CAST programs give students with an appropriate associate degree full junior standing. Such students are eligible to graduate from RIT in two academic years, plus the required co-op experience. Transfer students with a less appropriate academic background may have to complete additional course work. Part-time students have an extended schedule to meet the needs of their employers.

## Faculty

Faculty members in CAST 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 their primary concern, they also serve as active industrial consultants and researchers who maintain current knowledge in their fields. The faculty are committed to student growth and development.

## Facilities and resources

The experiential nature of all CAST programs requires excellent facilities and equipment. Groundbreaking for a new $8 million Engineering Technology building takes place in the fall of 2006. The new building, opening for classes in the fall of 2007, will house the William G. McGowan Telecommunications Center and Student Commons, the department of civil engineering technology/environmental management and safety, and the new Integrated Plastics Center. The student commons will provide project, study, and student support areas. Many existing laboratories will move into enhanced facilities in this new building, providing the opportunity for renovations to the current CAST building.

The CAST building houses laboratories for electrical, computer, and telecommunications engineering technology (electronics, electronic design, wide-area networks, digital systems, and telecommunication systems), and manufacturing and mechanical engineering technology (mechanical systems and materials). In addition, CAST includes many academic laboratories housed in the Center for Integrated Manufacturing Studies. CIMS' educational areas include state-of-the-art labs in CAD/CAM systems, electronics manufacturing, instrumentation, and packaging testing. The soils and environmental laboratories for civil engineering technology have been upgraded and relocated to larger facilities.

The college's student-run kitchen and restaurant contain some of the most sophisticated service equipment in the country. Newly remodeled food product development laboratories allow students to create menu items for the growing food service industry. Information laboratories provide data that enable students to assess the supply and demand for food commodities throughout the world.

A new environmental management and technology lab simulates many of the industrial and commercial environmental and safety issues of significance to students.

### Advising

CAST provides advising services to support students throughout their academic careers. A faculty adviser, co-op adviser, professional adviser, and staff in the departmental offices each 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. With a prearranged appointment, part-time students will find advisers available during the evening. Each of these advisers will also help identify appropriate RIT support services for specific student needs.

### Program planning

Each student in CAST is considered individually when his or her program is planned. The variety of transfer programs from two-year colleges necessitates an almost tailor-made pattern of courses and knowledge. Every effort is made to ensure that associate degrees retain the integrity they deserve and to avoid repetition of previously studied material.

## Engineering Technology

RIT is a leader in the development of baccalaureate programs in engineering technology. The program's bachelor of science degree meets the growing needs of business and industry for engineering technologists at the baccalaureate level.

### Degree programs

Engineering technology offers five-year cooperative education programs leading to the bachelor of science (BS) degree in:

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

The upper-division of these programs is designed to accept graduates of associate degree programs in similar engineering technology fields and to provide continued study in the student's specialization. Each program consists of a balance of professional studies, liberal education, mathematics, and co-op experience. Through the selection of technical electives, students can build and tailor their program based on previous knowledge and co-op experience to launch a career that best meets their needs and aspirations.

**Upper-division:** Part-time study in all engineering technology upper-division programs is available during the day. The computer, electrical, computer integrated manufacturing, electrical/mechanical, mechanical, and telecommunications engineering technology programs also offer courses in the evening for part-time students. These programs allow students with full-time jobs to obtain a BS degree on a part-time basis.

The upper-division programs in electrical/mechanical and telecommunications engineering technology are also offered through online learning.

The requirements for the part-time programs and graduation are the same as 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
- mechanical technology

These programs allow students with full-time jobs to obtain an AAS degree on a part-time basis. Certificate programs are also available during the evening and some through online learning. Information on these part-time, evening, and certificate programs is available in the *Part-time/Online Guide.*

### Accreditation

The following baccalaureate programs are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 1 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700: civil engineering technology, computer engineering technology, electrical engineering technology, electrical/mechanical engineering technology, computer integrated manufacturing engineering technology, manufacturing engineering technology, mechanical engineering technology, and telecommunications engineering technology. The engineering technology associate programs have been designed to facilitate easy transfer for students to the BS programs. Students enrolled in the engineering technology associate degree programs may transfer all of their credits to the TAC of ABET-accredited bachelor of science degree program in the appropriate field.

### Careers

A graduate with a bachelor's degree in engineering technology is a distinct type of professional whose main concern and interest is with existing operation, maintenance, and management of products and processes. As such, graduates qualify for positions to fulfill a role within the broad engineering requirements of business, industry, and government. Graduates find increasing acceptance in positions formerly filled by engineers in such fields as sales engineering, manufacturing engineering, field service engineering, process engineering, and product engineering.

The associate degree graduate—an engineering technician—works closely with engineers and technologists and is prepared for positions requiring skills in fabricating and producing equipment as well as maintaining and operating apparatus and systems.

## Cooperative education plan

An integral and significant part of each engineering technology program is on-the-job experience through RIT's cooperative education plan. This involves alternate periods of study and related industrial employment.

**Typical co-op schedule for engineering technology programs**

| Year | Fall | Winter | Spring | Summer |
|---|---|---|---|---|
| 1 and 2 | RIT | RIT | RIT | — |
| 3 | RIT | RIT | Co-op | Co-op |
| 4 | RIT | Co-op | RIT | Co-op |
| 5 | Co-op | RIT | RIT | — |

The co-op plan provides an opportunity for students to learn and become familiar with the direct application of techniques, skills, and the latest developments in their fields. Students are encouraged to explore and test the wide range of opportunities available. Such things as the specific type of work, the size of the company, the location and familiarization with the industrial community and environment can affect an individual's decision on the direction of his or her career. Co-op can provide a suitable trial ground.

Co-op can also provide a significant income during work periods, which helps defray a major portion of one's educational expenses. Assistance is available to students as they search for a co-op position related to their specific career goals. However, as is the case in any employment situation, the major impetus must come from the individual.

All full-time engineering technology programs at RIT require students to compete 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. Most part-time students are employed full-time and are using the education they gain on a regular basis. Some RIT engineering technology programs require an official entry of co-op while others do a search of background but do not place this on the student 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.

## Undeclared Engineering Technology Option

***Thaddeus Hopkins, Program Adviser***

*www.rit.edu/~719www/*

Students interested in engineering technology or packaging science but undecided about selecting a specific major should consider this option. The undeclared engineering technology option allows students to spend up to a year earning credits applicable to all engineering technology programs while exploring the various options available at RIT. During the first quarter, students take basic technical skills courses in both electrical and mechanical disciplines. They also participate in an Engineering Technology Seminar in which they explore the unique characteristics of each engineering technology discipline. After the first quarter, students are expected to select a specific major or to focus on either the electrical (computer, electrical, telecommunications), mechanical (manufacturing, mechanical, packaging) or civil (civil, environmental management, safety) disciplines. During the spring quarter, they are required to select a specific major. In their first two years, students take some courses at different times from students who entered a specific program. In most cases, however, students who spend a full year in the undeclared option are able to start their junior year on track with other students in the same program.

**Undeclared engineering technology, freshman year course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **Fall Quarter** | Liberal Arts* | 4 |
| | Solid Modeling and Design 0617-262 | 4 |
| | Circuit Theory I and Lab0609-214 | 4 |
| | Precalculus 1016-230 or Math sequence | 4 |
| | Engineering Technology Seminar 0606-101 | 2 |
| | First-Year Enrichment 1105-051 | 1 |
| **Winter Quarter§** | 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 |
| | First-Year Enrichment 1105-052 | 1 |
| | Calculus for Engineering Tech. 1016-231 or Math sequence | 4 |
| | Two courses from selected option (with adviser approval) | 8 |
| **Spring Quarter** | Calculus for Engineering Tech. II 1016-232 or math sequence | 4 |
| | Liberal Arts* | 4 |
| | Two courses within option selected (with adviser approval) | 8 |
| | ***Total Quarter Credit Hours*** | ***52*** |

** Please see Liberal Arts General Education Requirements for more information.*
*§ In the Winter Quarter, students select from the options listed.*

## Civil Engineering Technology

***Maureen S. Valentine, Chair***
***Scott B. Wolcott, Undergraduate Coordinator***

*www.rit.edu/~704www/*

Graduates of the civil engineering technology program translate the innovative concepts of the engineer into functioning systems and structures, using the language of codes, working drawings, and specifications. The mission of the civil engineering technology program is to provide an academically demanding education to meet the needs of students and properly prepare them for a successful career after graduation.

The main objective of this program is to prepare individuals to attain gainful employment in the field of civil engineering technology, construction management, or any other closely related field. In addition, the program teaches the skills necessary for that graduate to pursue additional education, certification, and/or professional licensure. Another objective of the program

is to allow graduates to attain increasing levels of responsibility and leadership in their chosen field. The coursework and extracurricular activities teach the students to participate in organizations or activities within and outside of their profession.

These objectives are achieved through a broad-based curriculum that offers students a choice of five elective paths that meet their specific interests.

The program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700, and is operated as a cooperative education program.

## Cooperative education plan

Work experience gained while completing alternating quarters of work and study is especially valuable. A typical co-op job at an engineering consulting firm might include assisting engineers in design drafting; feasibility and preliminary report writing; and inspecting, surveying, or investigating in the field. Other co-op students work in water and wastewater treatment plants; or checking control panels, operating systems, pumps, and other equipment. Students in the construction field typically perform a wide range of duties from craft supervision to assisting project superintendents, recording change orders, estimating, drafting, and surveying.

The scope of work accomplished varies with the interests of each student and increases in complexity with each succeeding job. Construction companies, facility departments of large corporations, engineering consultants, testing agencies, and all branches of government employ our students. Some students work all their co-op quarters with the same firm, while others choose from various work experiences. All are expected to use their education on the job and bring back innovative, new, and unusually successful technologies to share with classmates.

## Faculty

Faculty members have outstanding academic credentials and industrial experiences. They serve as consultants and professional engineers in their fields of expertise. They also participate and serve in local/regional professional associations.

## Advisory board

Local and regional industry leaders, from consulting, construction, and the municipal market, make up the Industrial Advisory Board, which uses their professional and technical expertise to enhance the program, strengthening the development of its future.

## Transfer admission

The admission of transfer students at the third-year level is open to all students who have already received an appropriate associate degree, which should include:

**Technical math (2 semesters of college-level math with an introduction to calculus)**
**Drafting (to include CAD)**
**Technical physics (2 semesters)**
**Soil Mechanics**
**Plane Surveying**
**Route Surveying**
**Statics (mechanics)**
**Strength of Materials**
**Methods and Materials of Construction**

Students lacking these courses are still admitted but are required to take the missing courses concurrently within the program or in addition to the program requirements.

Normally, an associate degree in science is acceptable from an engineering transfer program, with students taking courses they lack concurrently in the program. Typically these students graduate in the same six academic quarters as an engineering technology transfer student.

## Graduates

Engineering technology graduates are employed by consulting engineers; construction companies and industries; and federal, state, and local government agencies. They are scattered from coast to coast and around the world. Their initial job titles range from assistant project manager, structural designer or junior engineer, to construction inspector and environmental engineer. Several graduates have completed master's degrees, a large number have gained registration in several states as professional engineers, and several manage their own consulting firms.

## 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.

| **Water Resources** | **Qtr. Cr. Hrs.** |
|---|---|
| 0608-482 Hydrology | 4 |
| 0608-485 Hydraulic Structures | 4 |
| 0608-480 Groundwater Hydraulics | 4 |
| **Environmental Controls** | |
| 0608-510 Design of Water Treatment Facilities | 2 |
| 0608-514 Land Use Planning | 4 |
| 0608-520 Design of Wastewater Treatment Facilities | 4 |
| 0608-525 Resource Recovery/Waste Management | 4 |
| **Construction Management** | |
| 0608-500 Labor Relations | 2 |
| 0608-509 Cost Estimating | 4 |
| 0608-560 Construction Project Management | 4 |
| 0608-544 Contracts and Specifications | 2 |
| **Structures** | |
| 0608-470 Timber Design | 4 |
| 0608-496 Reinforced Concrete Design | 4 |
| 0608-497 Structural Steel Design | 4 |
| **Building and Heavy Construction** | |
| 0608-460 Construction Equipment | 2 |
| 0608-505 Construction Safety | 2 |
| 0608-535 Pavement Design | 4 |
| 0608-444 Mechanical Equipment | 2 |
| **Other Electives** | |
| 1016-319 Data Analysis | 4 |
| 0610-440 Applied Thermodynamics | 4 |
| 0630-370, 372 Environmental Geology/Lab | 4 |

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.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to CET, Freshman 0608-198 | 1 |
| | College Algebra 1016-200 | 4 |
| | Engineering Graphics with CAD 0608-211 | 4 |
| | Materials of Construction 0608-330 | 4 |
| | Precalculus 1016-230 | 4 |
| | College Physics I and Lab 1017-211, 271 | 4 |
| | Problem Solving and Communication with Computers 0608-225 | 2 |
| | Introduction to Statics 0610-302 | 4 |
| | College Physics II and Lab 1017-212, 272 | 4 |
| | Civil Engineering Graphics 0608-220 | 4 |
| | Arts of Expression | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 1 |
| | First-Year Enrichment | 2 |
| Second Year | College Physics III and Lab 1017-213, 273 | 4 |
| | Plane Surveying 0608-320 | 4 |
| | Effective Technical Communication 0535-403 | 4 |
| | Strength of Materials 0610-303 | 4 |
| | Elementary Soil Mechanics 0608-360 | 4 |
| | Elements of Building Construction 0608-422 | 4 |
| | Calculus for Engineering Tech. I 1016-231 | 4 |
| | Route Surveying 0608-340 | 4 |
| | Elementary Structures 0608-380 | 4 |
| | Calculus for Engineering Tech. II 1016-232 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| | (Or completion of an appropriate associate degree or equivalent) | |
| Third Year | Introduction to CET, Transfer 0608-199 | 1 |
| | Hydraulics and Lab (or Technical Elective) 0608-420, 421 | 4 |
| | Structural Loads and Systems 0608-304 | 2 |
| | Land Development Computer Applications 0608-303 | 2 |
| | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | Structural Computer Applications 0608-305 | 2 |
| | Applied Mechanics of Materials 0608-404 | 4 |
| | Technical Elective | 2 |
| | Fundamentals of Chemistry 1011-271 | 3 |
| | Chemistry I Lab 1011-205 | 1 |
| | Liberal Arts* | 8 |
| | Co-op Preparation 0606-099 | 0 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Water and Wastewater Transport Systems 0608-432 | 2 |
| | Structural Analysis 0608-490 | 4 |
| | Chemistry of Water and Wastewater and Lab 1011-272, 276 | 4 |
| | Technical Elective | 8 |
| | Principles of Water and Wastewater Treatment 0608-438 | 4 |
| | Structural Design 0608-496 or 0608-497 | 4 |
| | Soil Mechanics and Foundations and Lab 0608-527, 528 | 4 |
| | Professional Principles and Practices 0608-546 | 1 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Transportation Engineering 0608-530 | 4 |
| | Free Electives | 12 |
| | Basic Electrical Principles 0609-414 | 4 |
| | Engineering Economics 0617-436 | 4 |
| | Principles of Dynamics in CET 0608-570 | 4 |
| | Liberal Arts* | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***195*** |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

## Structural Design Certificate

This certificate is for those with an associate degree in civil engineering technology, or a similar program, who are employed in a design environment (consulting engineering firm or architecture-engineering firm) and need formal training in proper design techniques to better perform those preliminary design functions that may be allocated to them under the supervision and guidance of a professional engineer. The 20-credit certificate program in structural design consists of five four-credit courses. The program is offered on campus and online.

This certificate sequence includes the latest technique 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 and needing additional training, or those with a bachelor's degree in civil engineering, civil engineering technology, or architecture employed in a design environment.

Admissions requirements include an official transcript from the previous institution indicating successful completion of the courses equivalent to the program's prerequisites.

| Courses | 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 |
| **Certificate Total** | **20** |

## Electrical Engineering Technology

***Michael Eastman, Acting Department Chair***
***Steven M. Ciccarelli, Program Chair***

*www.rit.edu/ect*

The five-year bachelor of science program in electrical engineering technology (EET) includes more than a year of cooperative work experience for full-time students. The program also accepts transfer students (see Transfer Admission). The upper-division feature of the program provides a viable option for students who have completed their associate degree and desire to continue their education in technology.

The bachelor of science degree program in electrical engineering technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700.

The first two years of the program provide students with basic courses in circuits, analog and digital electronics, physics, calculus, and liberal arts. The third and fourth years expand on the basic courses with more advanced courses in applied differential equations, the liberal arts, advanced circuits and electronics, transform methods, control systems, analog and digital electronics, and mechanical engineering technology. The program is completed with the student's choice of free electives, or mechanical/manufacturing or professional electives. Professional elective sequences are available in electric power systems, electronic communications, computer design, telecommunications, networking, and optics. Several electives also are available from other technical disciplines, and the student's academic adviser will help to determine the best choices.

Students begin their cooperative work experience in the third year of the program and are required to complete five quarters of co-op experience. A co-op counselor is assigned to each student.

The EET program consistently achieves its long-term objectives. Graduates, five or more years after graduation will have:

- attained gainful employment in the field,
- pursued additional formal education and/or certification, and
- attained increasing levels of responsibility and leadership in their chosen field.

These goals recognize that EET graduates are prepared to go in a wide variety of directions. Graduates enter not only design, but other related disciplines including manufacturing, research, sales and marketing, applications engineering, and education. To attain these objectives specific program outcomes are specified for program graduates. These can be found by visiting the department website, www.rit.edu/ect.

## Transfer admission

Transfer admission is open to graduates of two-year associate degree programs in electrical or electronic engineering technology. Students currently enrolled in engineering science associate degree programs also may apply and be assigned to a slightly different series of courses. Students from associate degree programs closely related to electrical technology and who have appropriate circuits and electronics course levels are also accepted, but may be required to complete some lower-level courses before starting the third year of the program.

## Possible EET 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 |
| 0609-535 | Communication Systems II | 0609-534 |
| **Optics** | | |
| 0609-554 | Electro-Optic Devices | 0609-362 |
| 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 credit) | 1016-304, 0614-477, 0614-475 |
| | < AND > | |
| 0614-562 | Network Engineering Lab (1 credit) | |
| 0614-574 | Networking Planning and Design | 0614-479, 0614-561 & 562 |

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year** | Circuit Theory I 0609-214 | 4 |
| | Calculus with Foundations I 1016-261 | 8 |
| | First-Year Enrichment I, II | 2 |
| | Liberal Arts* | 12 |
| | Writing 0502-227 | 4 |
| | Circuit Theory II 0609-215 | 4 |
| | Technical Programming I 0618-231 | 4 |
| | College Physics I, Lab 1017-211, 211 | 4 |
| | College Physics II, Lab 1017-212, 212 | 4 |
| | College Physics III, Lab 1017-213,213 | 4 |
| | Digital Fundamentals 0618-301 | 4 |
| | Circuit Theory III 0609-216 | 4 |
| | Wellness Education† | 0 |
| **Second Year** | Electronics I, II, III 0609-360, 361, 362 | 12 |
| | Liberal Arts* | 12 |
| | Machines and Transformers 0609-337 | 4 |
| | Calculus with Foundations II 1016 262 | 4 |
| | Calculus B, C 1016-272, 273 | 8 |
| | Technical Writing 0502-444 | 4 |
| | Microcomputers 0618-303 | 4 |
| | Microcontrollers 0618-339 or Technical Programming II 0618-232 | 4 |
| | Wellness Education† | 0 |
| | (Or completion of an appropriate associate degree or equivalent) | |
| **Third Year** | Digital Systems Design I 0618-438 | 4 |
| | Electronics IV 0609-363 | 4 |
| | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | Public Speaking 0535-501 | 4 |
| | Career Orientation 0609-407 | 1 |
| | Data Analysis 1016-319 | 4 |
| | Liberal Arts* | 12 |
| | Arts of Expression 0504 319 | 4 |
| | Electronic Design Automation 0618-439 | 4 |
| | Concepts in Systems and Signals 0609-333 | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| **Fourth Year** | Free Elective | 4 |
| | Liberal Arts* | 8 |
| | Digital Signal Processing 0609-547 | 4 |
| | Advanced Circuit Theory 0609-403 | 4 |
| | Mechanical/Manufacturing ET Elective | 4 |
| | Advanced Electronics 0609-442 | 4 |
| | Transmission Lines 0609-408 | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| **Fifth Year** | Control Systems I 0609-404 | 4 |
| | Ethics, Economics and Planning for Engineers 0614-440 | 4 |
| | Professional Electives | 8 |
| | Free Elective | 8 |
| | Liberal Arts* | 4 |
| | General Education Elective | 2 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***194*** |

** Please see Liberal Arts General Education Requirement for more information.*
*†Please see Wellness Education Requirement for more information.*
*The program shown is that which would be taken by those who start at RIT as freshmen. Each transfer student will be given a program tailored to his or her particular needs upon acceptance. Graduates will have to meet a minimum of 36 quarter credit hours of mathematics and science (including credits transferred) and include mathematics 1019-422 or equivalent.*

## Computer Engineering Technology

***Michael Eastman, Acting Department Chair***
***George Zion, Program Chair***
*www.rit.edu/ect*

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

From a software perspective, students are provided with a strong background in leading edge development using programming languages that are fully entrenched 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 both 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 appreciation 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 and programmable logic development in VHDL using industry standard computer aided engineering (CAE) tools.

This emphasis on both disciplines, along with the program's solid foundation of math, science, and general education, enable the program to meet its goal of producing graduates who are prepared. Students will graduate with the depth of knowledge, breadth of experience, and attitude of professionalism that will enable them to pursue successful careers in their chosen professional field, embark on careers of personal and professional growth, and pursue life-long learning to enhance their undergraduate degree and advance their careers. Specific program outcomes are available on the department website, www.rit.edu/ect.

RIT's computer engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700.

### Combined five-year BS/MS degree option

The computer engineering technology program, in conjunction with the department of computer science (B. Thomas Golisano College of Computing and Information Sciences) offers a combined bachelor of science/master of science degree. This accelerated sequence provides an excellent opportunity for outstanding undergraduate students to earn both a 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 will be 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 of these credits must have been earned at RIT. Continuance in this program also requires the maintenance of at least a 3.0 cumulative grade point average and at least a 3.0 in the 45-quarter hours directly applicable to the master of science degree.

### Transfer admission

Transfer admission is open to graduates of closely allied associate degree programs. Transfer students from such programs may normally expect to complete the requirements for the BS degree in three years, which includes six academic quarters and five quarters of cooperative work experience. Because no single program of study can effectively integrate all AAS transfer students into the curriculum, each qualified transfer student is evaluated on a course-by-course basis and is given a specific program of study that best meets his or her career goals, provides a meaningful cooperative work experience, and permits the student to fulfill the degree requirements in a reasonable period of time.

### Electives

Because of the need in the computer industry for graduates with diversified areas of expertise, the computer engineering technology program has a required three-course professional concentration sequence. This concentration can be taken in the areas of computer science, systems administration, local area networks, wide area networks, or communications systems. This professional concentration allows students to customize their education, yet ensures depth of knowledge in a subject matter beyond the core curriculum.

In addition to the professional concentration electives, the computer engineering technology curriculum has three free electives. These free electives can be used to pursue minors, provide additional technical expertise for greater career specialization, or simply to take courses for personal satisfaction and growth.

### Possible professional concentrations

**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
4050-422 Systems Administration II
**Local Area Networking**
4050-342 Principles of Networking
4050-403 Concept Wireless Data Networking
4050-413 Applications of Wireless Nets
**Wide Area Networking**
0614-271 Telecommunications Fundamentals
0614-465/0614-466 Voice Communications
0614-475 Switching Technologies
**Communication Systems**
0609-363 Electronics IV
0609-534 Communication Systems I
0609-547 Digital Signal Processing

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 0609-051, 052 | 2 |
| | Freshman Seminar | 4 |
| | Technical Programming I, II 0618-231, 232 | 8 |
| | Digital Fundamentals 0618-301 | 4 |
| | Circuit Theory I, II, III 0609-214, 215, 216 | 12 |
| | Calculus with Foundations I, II 1016-261, 262 | 8 |
| | Calculus B 1016-272 | 4 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Second Year | Microcomputers 0618-303 | 4 |
| | Microcontrollers 0618-339 | 4 |
| | Technical Programming III 0618-233 | 4 |
| | Electronics I, II, III 0609-360, 361, 362 | 12 |
| | College Physics I, II, III 1017-211, 212, 213 | 12 |
| | Calculus C 1016-273 | 4 |
| | Liberal Arts* | 8 |
| Third Year | Arts of Expression 0504 319 | 4 |
| | Digital Systems Design I 0618-438 | 4 |
| | Electronic Design Automation 0618-439 | 4 |
| | Career Orientation 0609-407 | 1 |
| | Networking Technologies 0614-477 | 4 |
| | Principles of Optics 1017-320 | 4 |
| | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | Effective Technical Communication 0535-403 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Embedded Systems Design I, II 0618-561, 562 | 8 |
| | Concepts in Systems and Signals 0609-333 | 4 |
| | Professional Concentration Elective | 4 |
| | Advanced Electronics 0609-442 | 4 |
| | Liberal Arts * | 8 |
| | Free Elective | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Embedded Systems Design III 0618-563 | 4 |
| | Professional Concentration Electives | 8 |
| | Liberal Arts * | 4 |
| | Ethics, Economics and Planning for Engineers 0614-440 | 4 |
| | Free Elective | 8 |
| | Cooperative Education (1 quarter) | Co-op |
| | *Total Quarter Credit Hours* | *192* |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*Note: One physical education wellness and two different physical education activity courses need to be taken any time during the five years.*

## Telecommunications Engineering Technology

***Michael Eastman, Acting Department Chair***
***Warren L. G. Koontz, Program Chair***
*www.rit.edu/ect*

The telecommunications engineering technology program is designed to meet industry's ever-increasing need for people who understand state-of-the-art principles, applications, equipment, and regulatory policies. Telecommunications service providers, equipment manufacturers, and telecommunications users all need a cadre of those capable of utilizing equipment to its fullest, both from a technical and from a managerial perspective. The five-year BS program in telecommunications engineering technology includes more than a year of cooperative work experience for full-time students.

The program prepares graduates for productive careers in the rapidly changing workplace. Program graduates are prepared to think critically, maintain high professional standards, and identify and solve problems by communicating the solutions in an effective manner. They understand and apply the principles of electrical/electronic theory and practice, and are at home with component-level operation as well as system level design. While learning the broad range of telecommunications technologies, their education allows continued learning to master the newest and most important technology advancements in their field as they arise. The graduate's technical skills are balanced by a significant liberal arts education and the basic principles of telecommunication policy and project management. The RIT telecommunications engineering technology graduate is prepared to apply current technologies and lead the way in leveraging them into the future. A description of the specific program objectives is available on the department website, www.rit.edu/ect.

Options are available to fulfill your educational needs. The telecommunications curriculum contains a sufficient number of electives allowing students to tailor their studies to their interests, or to pursue a minor. If the 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 see themselves moving into the management of telecommunications resources, a minor in business can be obtained to prepare them for the challenges they'll face as a future manager.

Students begin their cooperative work experience in the third year of the program and are required to complete five quarters of co-op. A cooperative education counselor is available for each program.

RIT's telecommunications engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 1 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700.

### Transfer admission

Transfer admission is open on a course-by-course evaluation to those who have attended two-year associate degree programs. Students from closely related programs, such as telecommunications technology or electrical/electronics technology, can normally expect to graduate in three years, which includes six academic quarters and five quarters of cooperative employment. Graduates of less closely related programs are also welcome to apply, but may expect to take longer to complete the program.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | ECT ET First-Year Enrichment I, II 0609-051, 052 | 2 |
| | Calculus with Foundations I, II 1016-261, 262 | 8 |
| | Data Analysis I 1016-319 | 4 |
| | Circuit Theory I 0609-214 | 4 |
| | College Physics I 1017-211 | 4 |
| | Telecommunications Fundamentals 0614-271 | 4 |
| | Circuit Theory II 0609-215 | 4 |
| | College Physics II 1017-212 | 3 |
| | Digital Fundamentals 0618-301 | 4 |
| | Liberal Arts* | 12 |
| | Circuit Theory III 0609-216 | 4 |

| | | |
|---|---|---|
| Second Year | Electronics I, II, III 0609-360, 361, 362 | 12 |
| | Calculus B, C 1016-272, 273 | 8 |
| | Technical Programming I, II 0618-231, 232 | 8 |
| | College Physics III 1017-213 | 4 |
| | Voice Telecommunications 0614-465, 466 | 4 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | Concepts in Signals and Systems 0609-333 | 4 |
| | Networking Technologies 0614-477 | 4 |
| | Microcomputers 0618-303 | 4 |
| | Electronics IV 0609-363 | 4 |
| | Career Orientation 0609-407 | 1 |
| | Liberal Arts* | 8 |
| | Effective Technical Communications 0535-403 | 4 |
| | Technical Electives | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Introduction to Telecommunications Policy 0614-480 | 4 |
| | Telecommunications Transmission Systems and Lab 0614-483, 484 | 4 |
| | Network Management 0614-479 | 4 |
| | Switching Technologies 0614-475 | 4 |
| | General Education Elective | 4 |
| | Free Elective | 4 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Telecommunications Network Engineering and Lab 0614-561, 562 | 4 |
| | Communication Systems I 0609-534 | 4 |
| | Liberal Arts* | 4 |
| | Free Elective | 8 |
| | General Ed Elective | 4 |
| | Network Planning and Design 0614-574 | 4 |
| | Ethics, Economics and Planning for Engineers 0614-440 | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours (includes lower division)*** | ***194*** |

** Please see Liberal Arts General Education Requirements for more information*
*† Please see Wellness Education Requirement for more information.*

## Telecommunications Engineering Technology – BS/MS Option

***Michael Eastman, Acting Department Chair***
***Warren L. G. Koontz, Program Chair***

*www.rit.edu/ect*

Qualified students may pursue the simultaneous award of a BS and an MS degree in telecommunications engineering technology. This 230 quarter credit hour program includes a minimum of 48 quarter credit hours of graduate coursework plus four quarters of cooperative work experience. The program 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 for completing the program is shown. Note that a student may elect to complete a master's thesis for six credits or a master's project for two credits. In the latter case, the student must complete an additional graduate elective course.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | ECT ET First-Year Enrichment I, II 0609 -051, 052 | 2 |
| | Calculus with Foundations I, II 1016-261, 262 | 8 |
| | Data Analysis I 1016-319 | 4 |
| | Circuit Theory I 0609-214 | 4 |
| | College Physics I 1017-211 | 4 |
| | Telecommunications Fundamentals 0614-271 | 4 |
| | Circuit Theory II 0609-215 | 4 |
| | College Physics II 1017-212 | 3 |
| | Digital Fundamentals 0618-301 | 4 |
| | Liberal Arts* | 8 |
| | Freshman Seminar 0614-207 | 1 |
| | Circuit Theory III 0609-216 | 4 |
| Second Year | Electronics I, II, III 0609-360, 361, 362 | 12 |
| | Calculus B, C 1016-272, 273 | 8 |
| | Technical Programming I, II 0618-231, 232 | 8 |
| | College Physics III 1017-213 | 4 |
| | Voice Telecommunications 0614-465, 466 | 4 |
| | Liberal Arts* | 12 |
| | Career Orientation 0609-407 | 1 |
| | Wellness Education† | 0 |
| Third Year | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | Concepts in Signals and Systems 0609-333 | 4 |
| | Networking Technologies 0614-477 | 4 |
| | Microcomputers 0618-303 | 4 |
| | Electronics IV 0609-363 | 4 |
| | General Education Elective | 4 |
| | Technical Electives | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Telecommunications Policy and Regulation 0614-650 | 4 |
| | Effective Technical Communications 0535-403 | 4 |
| | Telecom Transmission Systems 0614-662 | 4 |
| | Network Management 0614-479 | 4 |
| | Switching Technologies 0614-475 | 4 |
| | Technical Electives | 8 |
| | Free Electives | 8 |
| | Liberal Arts* | 8 |
| | Ethics, Economics and Planning for Engineers 0614-440 | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| Fifth Year | Telecom Network Engineering 0614-640 | 4 |
| | Telecom Systems 0614-660 | 4 |
| | Telecom Concepts 0614-720 | 4 |
| | Telecom Principles 0614-722 | 4 |
| | Telecom Project Management 0614-726 | 4 |
| | Wan/Lan Planning and Design 0614-642 | 4 |
| | Telecom Operating Systems 0614-728 | 4 |
| | Thesis/Project Planning 0614-890 | 2 |
| | Masters Thesis or Project & Elective 0614-892/3 | 6 |
| | Telecom Protocols 4002-746 | 4 |
| | Liberal Arts* | 8 |
| | Free Elective | 4 |
| | ***Total Quarter Credit Hours (includes lower division)*** | ***230*** |

**Please see Liberal Arts General Education Requirements for more information*
*†Please see Wellness Education Requirement for more information.*

## Manufacturing and Mechanical Engineering Technology/Packaging Science

***George Sutherland, Chair***

*www.rit.edu/~719www/*

The department provides a supportive, cooperative and synergistic environment for the delivery of undergraduate and graduate programs in: electrical/mechanical engineering technology, manufacturing engineering technology, mechanical engineering technology, and packaging science.

The department is a leader in providing innovative career-oriented education in the design, manufacturing, packaging, and distribution of goods. The associate degree program is in mechanical technology. The three BS programs in engineering technology are accredited by the Technology Accreditation

Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, Maryland 21202-4012, telephone (410) 347-7700.

Instructional and research laboratories for all of the programs are in the College of Applied Science and Technology building and 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.

### Combined BS/MS degree programs

Combined accelerated five-year BS/MS degree programs are an option for exemplary mechanical, manufacturing, and electrical/mechanical engineering technology students. (The combined BS/MS programs are respectively known as the mechanical systems integration, manufacturing systems integration, and electrical/mechanical systems integrations programs.) Graduation from each program requires the successful completion of 230 quarter credit hours (or 229 hours for the E/M version). After completing this requirement, the student is awarded the applicable BS and MS degrees simultaneously. The MS degree is a master of science in manufacturing and mechanical systems integration (MMSI). A student may apply to this program after receiving RIT credit for at least 60 quarter credit hours. The most recent 30 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 GPA's less than 3.0 will automatically return to the BS program they started in at RIT, and will not longer be eligible for readmittance into the BS/MS program.)

The coursework for the first two years and two quarters of the program is the same as 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 go on a spring/summer co-op block, but instead will take RIT courses in the spring quarter and co-op in the summer quarter. In the fourth and fifth years the student will begin to 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 the graduation requirements for an MS in manufacturing and mechanical systems integration.

The BS/MS student must complete the department's required 48 weeks of documented work experience as a co-op student, which can be taken in four quarters, which includes the summer between the second and third years. The BS/MS student may use three summer quarters and one other quarter to fulfill their MMET co-op work experience requirement. Students taking full course loads every quarter can complete the BS/MS requirements, including co-op work 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.

## Electrical/Mechanical Engineering Technology

***John Stratton, Program Chair***

*www.rit.edu/~719www/programs/bs/emet.htm*

### Baccalaureate program

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. The program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 1 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700.

### Program goals

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

### Program educational objectives

Graduates from RIT's electrical/mechanical engineering technology program will demonstrate:

1. A professional work ethic and a commitment to lifelong learning, quality, and continuous improvement through the clear ability to assume increasing levels of technical and/or management responsibility.
2. Participation and leadership while working on teams involved in the analysis, design, development, implementation, or oversight of electrical, mechanical and/or manufacturing systems and processes.
3. An ability to design effective and efficient new products, systems, and processes.
4. Effective communication at all levels of the organization.

### Curriculum

The program's requirements are based on an entire baccalaureate degree. Approximately half of the courses are in mathematics, physics, chemistry, communications, programming and liberal arts. In addition to these general education requirements, the core of the program consists of 66 credits of specified technical courses. These courses cover the disciplines of electricity, electronics, microprocessors, mechanics, materials, thermal science, solid modeling, and manufacturing processes. Once a student completes the core, he or she will select a group of three courses in a particular discipline, called an upper division technical concentration. The student may use this concentration to tailor the degree to meet specific employment objectives or to become part of a technical minor. In addition, the student will be required to complete 12 credits of free electives and 12 credits of technical electives.

## Transfer admission

Students with associate degrees in either electrical or mechanical engineering technology can generally transfer to the upper-division portion of the program with third-year status. Students with other backgrounds usually need additional core course work to achieve third-year status. Transfer students will more closely follow the requirements outlined in the upper-division part-time and online course sequence, since some lower-division courses are replaced by parts of upper-division courses. The actual course sequence will be determined by advisement.

## Evening and online learning program

The upper-division portion of this program may be taken part-time during the evening or through online learning. This enables students who are employed full-time to complete the program even if they reside some distance from campus. Some courses will require a trip to Rochester to complete the required laboratory exercises. These labs will be scheduled on either a single Saturday for the entire course or will be run on a single long weekend. The typical student with an associate degree will require approximately five years to complete the program requirements. Some electives may be available in online learning format only every other year.

## Sample technical concentrations

The following is a sample of the upper division technical concentrations available. A student will typically take three courses chosen from a set of three to seven courses in a particular concentration. Other concentrations can be developed to meet the needs of a particular student, for example:

Electrical PowerSystems
Manufacturing Management
Telecommunications
Structures – Civil
Safety Technology
Environmental Management

A student may also use appropriate courses to fulfill the requirements for a minor.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment I, II 1105-051, 052 | 2 |
| | Circuit Theory I, II, III 0609-214, 215, 216 | 12 |
| | Freshman Seminar 0610-101 | 1 |
| | Manufacturing Processes 0617-220 | 4 |
| | Pre-Calculus 1016-230 | 4 |
| | Liberal Arts * | 4 |
| | Solid Modeling and Design 0617-262 | 4 |
| | College Physics I 1017-211 | 4 |
| | Calculus for Engineering Technology I, II, 1016-231, 232 | 8 |
| | Liberal Arts* | 12 |
| Second Year | Introduction to Statics 0610-302 | 4 |
| | College Physics II, III 1017-212,213 | 8 |
| | Liberal Arts * | 12 |
| | Differential Equations for Eng Tech 1016-304 | 4 |
| | Strength of Materials 0610-303 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Applied Microprocessors 0609-413 | 4 |
| | Elec. Machines and Transformers 0609-337 | 4 |
| | Introduction to Materials Technology 0610-211 | 3 |
| | Materials Testing 0610-304 | 1 |
| | Effective Technical Communications 0535-403 | 4 |
| | Computers in MET | 2 |
| | Wellness Education† | 0 |
| Third Year | Fundamentals of Chemistry and Lab 1011-271, 205 | 4 |
| | Technical Programming I 0618-231 | 4 |
| | Applied Dynamics 0610-405 | 4 |
| | Telecommunications Fundamentals 0614-271 | 4 |
| | Co-op Preparation 0606-099 | 0 |
| | Electric Principles II 0609-412 | 4 |
| | Liberal Arts* | 4 |
| | Thermodynamics and Heat Transfer 0610-441 | 4 |
| | Wellness Education | 0 |
| | Introduction to Chemistry of Materials and Lab 1011-273, 277 | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Controls for Manufacturing Automation 0617-470 | 4 |
| | Materials Technology 0610-416 | 4 |
| | Production and Operations Management I 0617-440 | 4 |
| | MET Lab I, II 0610-407, 409 | 4 |
| | Cooperative Education (2 quarters) 0610--499 | Co-op |
| | Liberal Arts* | 8 |
| | Applied Fluid Mechanics 0610-460 | 4 |
| | Upper Division Technical Concentration | 4 |
| Fifth Year | Cooperative Education (1 quarter) 0610--499 | Co-op |
| | Engineering Economics 0617-436 | 4 |
| | Upper Division Technical Concentration | 7-8 |
| | Free Electives | 12 |
| | Liberal Arts* | 12 |
| | General Education Elective | 2 |
| | *Total Quarter Credit Hours* | *195* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*For the electrical/mechanical engineering technology BS degree upper-division evening and online learning program typical course sequence, please see the Part-time/Online Guide.*

# Manufacturing Engineering Technology

***Daniel P. Johnson, Program Chair***

*www.rit.edu/~719www/programs/bs/cimet.htm*

Leaders in the manufacturing engineering profession estimate that the present shortage of qualified manufacturing engineers and technologists is between 50,000 and 100,000 people—and the need is increasing. They also estimate that between 20,000 and 30,000 new jobs are created in manufacturing engineering every year. The two principal factors generating this demand are industrial productivity and technological innovations.

Realizing that competitive positions in world and domestic markets are tied to the productivity of manufacturing units, there is considerable effort by industrial organizations to improve productivity. This nationwide effort is causing organizational and planning changes in many corporations that now recognize the manufacturing unit as the key to profits. For example, many corporations have placed manufacturing engineers in charge of new product design functions in an effort to ensure product manufacturability.

Efforts to improve productivity have led to the rapid introduction of new processes and equipment and in increased levels of automation. This has created a demand for personnel well versed in the new manufacturing technologies: computer aided design, computer numerical control, microprocessor controls, robotics, computer-aided manufacturing, flexible manufacturing systems, assembly automation, computer integrated manufacturing, and electronics manufacturing.

The manufacturing engineering technology program is designed to meet industry demands and is operated on the cooperative education plan. The BS in manufacturing engineering technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 1 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700.

## Program goal

The goal of the manufacturing engineering technology program is to prepare individuals for professional employment in the manufacturing field. This program is designed to provide the skills necessary for applying both today's and tomorrow's manufacturing technologies. These skills are enhanced by a full co-op program in manufacturing industries. Throughout the academic program, a large measure of hands-on laboratory experiences related to manufacturing technology is provided.

## Program educational objectives

Graduates from the manufacturing engineering technology program will demonstrate:

- A professional work ethic, a commitment to lifelong learning, quality, and continuous improvement through the clear ability to assume increasing levels of technical, and/or management responsibility.
- Leadership and participation in teams that act as change agents and innovators in product design and manufacturing related organizations.
- The ability to drive the design of manufacturable products, design effective and efficient new production processes, and improve the performance of existing operations.
- Effective communication at all levels of the organization.

## Curriculum

The curriculum has been designed with the aid and consultation of professionals in the field. The program's major emphases are on computer integrated manufacturing and product development. Subjects covered include 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.

## Transfer admission

Transfer students from two-year colleges should have an AAS degree or equivalent in one of the following majors: manufacturing technology, mechanical technology, management engineering technology, engineering science, electrical technology, computer technology, quality control technology, design and drafting technology, or electromechanical technology. Students with other backgrounds may have to take additional courses to meet the entrance requirements.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Materials Technology 0610-211 | 3 |
| | Materials Testing 0610-304 | 1 |
| | Manufacturing Processes I 0617-220 | 4 |
| | Calculus for Engineering Technology 1016-231 | 4 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Solid Modeling and Design 0617-262 | 4 |
| | Manufacturing Processes II 0617-420 | 4 |
| | Calculus for Engineering Technology II 1016-232 | 4 |
| | Design Dimensioning and Tolerancing 0610-220 | 4 |
| | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | College Physics I, Lab 1017-211, 271 | 4 |
| | Liberal Arts* | 12 |
| Second Year | Introduction to Statics 0610-302 | 4 |
| | Pneumatics and Hydraulics 0610-305 | 4 |
| | Data Analysis I, Lab 1016-319, 379 | 6 |
| | College Physics II, Lab 1017-212, 272 | 4 |
| | Electrical Principles for Design I 0609-411 | 4 |
| | Strength of Materials 0610-303 | 4 |
| | College Physics III, Lab 1017-213, 273 | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |
| | Principles of Mechanical Design I 0610-315 | 4 |
| | Computational Methods for Engineering Technology 0610-309 | 1 |
| | Ethics Elective | 4 |
| | Effective Technical Communication 0535-403 | 4 |
| Third Year | Cooperative Education Preparation 0606-099 | 0 |
| | Introduction to Electronics Packaging and Lab 0617-455, 457 | 5 |
| | Robots in Manufacturing 0617-485 | 4 |
| | Technical Programming 0618-231 | 4 |
| | Engineering Economics 0617-436 | 4 |
| | Computer Numerical Control 0617-471 | 4 |
| | Chemistry and Chemistry Lab 1011-205, 271 | 4 |
| | Free Electives | 8 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Production and Operations Management I 0617-440 | 4 |
| | Materials Technology 0610-416 | 4 |
| | Controls for Manufacturing Automation 0617-470 | 3 |
| | Production and Operations Management II 0617-441 | 4 |
| | Liberal Arts* | 8 |
| | Mechanical Engineering Tech. Lab II 0610-409 | 2 |
| | Tool Engineering 0617-472 | 4 |
| | General Elective | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Computer-Aided Manufacturing 0617-475 | 4 |
| | Technical Electives | 8 |
| | Process Design 0617-510 | 4 |
| | Liberal Arts* | 12 |
| | Free Elective | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***196*** |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

### Part-time option

The upper division of this program may be taken on a part-time basis during the evening by those who are employed full time and desire to receive an accredited baccalaureate degree.

The typical evening student requires approximately 13 quarters to complete the upper-division course requirements. In the early quarters, the fundamentals of mathematics, science, engineering, electronics, and processes are emphasized to provide the background 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 your program technical elective content.*

## Mechanical Engineering Technology

***Robert Merrill, Program Chair***

*www.rit.edu/~719www/*

### Baccalaureate program

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.

Mechanical engineering technology students will study the foundations of mechanics, materials, and energy. Students will learn technical skills such as computer-aided design (CAD), computer-aided engineering (CAE), how to test materials, and how to make parts. Students will also learn to 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.

The BS in mechanical engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 1 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700.

### Program goals

The goal of the program is to prepare graduates 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 through the use of project-oriented assignments.

### Program educational objectives

Program educational objectives for mechanical engineering technology were established with the assistance of the industrial advisory board.

Graduates from the mechanical engineering technology program will demonstrate the following objectives:

- A professional work ethic, a commitment to lifelong learning, quality, and continuous improvement through the clear ability to assume increasing levels of technical, and/or management responsibility.
- Participation and leadership while working on teams involved in the analysis, design, development, implementation, or oversight of mechanics and/or manufacturing systems and processes.
- An ability to design new and improved products, systems, and processes that are appropriate for their use.
- Effective communication with all levels of the organization.

### Curriculum

In the early quarters, students develop their skills in the fundamentals of mechanics, mathematics, materials technology, and computer-aided design. In later quarters, courses focus both on mechanical design and applied thermofluid engineering. The program includes five technical electives and three free electives making it possible for students to specialize by taking technical electives 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 the use of the computer is emphasized throughout the program.

### Transfer admission

Transfer students enter this program at the third-year level, having received an appropriate associate degree in mechanical technology, design-drafting technology, air conditioning technology, engineering science, or an acceptable equivalent. It is expected that these associate degree programs will have provided the student with background in the following:

- mathematics through introductory calculus
- physics
- computer-aided design and drafting
- manufacturing processes
- statics and strength of materials
- computer skills (word processing, data analysis, presentation graphics, equation solving)
- metallurgy
- electric circuits
- statistics
- mechanical design

## Elective concentrations in mechanical engineering technology

In the last three quarters of the program, students may elect to take a concentration in one of the following areas: product design; heat, power, and HVAC; or plastics processing. Customized sequences may be developed with departmental approval.

## Evening program

Students who are employed full time and wish to pursue a baccalaureate degree in mechanical engineering technology may take the upper division portion of this program on a part-time basis 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, associate degree program

This part-time evening program is designed to prepare technicians for employment in the mechanical design and manufacturing fields. Since it is identical to the lower division of the day school BS degree program, it prepares graduates for continuing their studies toward a baccalaureate degree in engineering technology. The program begins with courses in mathematics, physics, computer-aided drafting and design (CADD), 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 engineering technology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Materials Technology I 0610-211 | 3 |
| | Materials Testing 0610-304 | 1 |
| | Manufacturing Processes I 0617-220 | 4 |
| | Calculus for Engineering Technology 1016-231 | 4 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Solid Modeling and Design 0617-262 | 4 |
| | Manufacturing Processes II 0617-420 | 4 |
| | Calculus for Engineering Technology II 1016-232 | 4 |
| | Design, Dimensioning, and Tolerancing 0610-220 | 4 |
| | Differential Equations for Engineering Tech. 1016-304 | 4 |
| | College Physics I 1017-211 | 4 |
| | Liberal Arts* | 12 |
| Second Year | Introduction to Statics 0610-302 | 4 |
| | Pneumatic and Hydraulic Systems 0610-305 | 4 |
| | Data Analysis and Lab 1016-319, 379 | 6 |
| | College Physics II 1017-212, | 4 |
| | Physical Education | 0 |
| | Electrical Principles for Design I 0609-411 | 4 |
| | Strength of Materials 0610-303 | 4 |
| | College Physics III 1017-213 | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |
| | Principles of Mechanical Design 0610-315 | 4 |
| | Computational Methods for Engineering Tech. 0610-309 | 1 |
| | Ethics Elective | 4 |
| | Free Elective | 4 |
| Third Year | Cooperative Education Preparation 0606-099 | 0 |
| | Effective Technical Communication 0535-403 | 4 |
| | Applied Dynamics 0610-405 | 4 |
| | Applied Fluid Mechanics 0610-460 | 4 |
| | Fundamentals of Chemistry, Lab 1011-271, 205 | 4 |
| | MET Lab II 0610-409 | 2 |
| | Materials Technology 0610-416 | 4 |
| | Applied Thermodynamics 0610-440 | 4 |
| | Introduction to Chemistry of Materials, Lab 1011-273, 277 | 4 |
| | Liberal Arts* | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Failure Mechanics 0610-403 | 4 |
| | MET Lab I 0610-407 | 2 |
| | Technical Elective I | 4 |
| | Engineering Economics 0617-436 | 4 |
| | Machine Design I 0610-506 | 4 |
| | Thermofluids Lab 0610-465 | 3 |
| | Technical Elective 2 | 4 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Technical Elective 3 | 4 |
| | Technical Elective 4 | 4 |
| | Free Elective 2 | 4 |
| | Technical Elective 5 | 4 |
| | Liberal Arts* | 8 |
| | Free Elective 3 | 4 |
| | General Educational Elective | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***196*** |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*For mechanical engineering technology, BS degree, upper-division evening, and mechanical technology, evening, typical course sequences, please see the Part-time/Online Guide.*

## Packaging Science

***Thomas Voss, Program Chair***

*www.rit.edu/~719www/programs/bs/ps.htm*

The interdisciplinary packaging science program, leading to a bachelor of science degree, provides educational opportunities for students seeking careers in the multifaceted packaging industry. Graduates are prepared for initial employment in such areas as package development, sales, purchasing, structural design, production, research, and marketing.

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

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.

### Program educational objectives

Graduates from the packaging science program will demonstrate:

- a professional work ethic and a commitment to lifelong learning through the clear ability to achieve increasing technical/management responsibility;
- the ability to lead and participate in teams that act as change agents and innovators in the packaging field and related organizations;
- the ability to design effective and efficient new packaging systems, as well as improve the performance of existing packaging systems; and
- the ability to communicate at all levels of the organization and articulate the economic and organizational importance of packaging to companies.

### Program characteristics

The program is:

- Career-oriented—Graduates are ready to enter the work force in a position of responsibility.
- Interdisciplinary—Students become familiar with the many facets of packaging through courses in several RIT colleges.
- Flexible—Students have ample opportunity to customize their programs with minors, according to interest.
- Representative of industry needs—Curriculum content is developed with the assistance of an industry advisory board, consultants from industry, and educational specialists.
- Adaptable to a modified cooperative education plan—Co-op can be scheduled at the student's convenience, following development of appropriate skills.

### 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.

### Industrial Advisory Board

National industry leaders compose the Industrial Advisory Board, through which they contribute professional and technical expertise to undergraduate programs. This strengthens and develops the program to reflect the dynamics and growth of the industry.

### Cooperative education

The packaging science program requires six months, or two terms, of co-op experience for each student, in addition to the program's course work, to meet graduation requirements.

### Transfer admission

Transferring into the program with advanced standing is particularly advantageous, since RIT has had many years of experience in assimilating graduates of two-year colleges into its programs and moving them directly into a chosen career field. Students with an appropriate two-year degree may normally expect to complete the course requirements for the BS in two years. In addition, six months of co-op is also required to meet graduation requirements. Transfer students with less than two years of college or an other educational background also can be accommodated. The amount of transfer credit is determined by evaluating individual student transcripts.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | New Student Seminar I 0607-200 | 1 |
| | Principles of Packaging 0607-201 | 3 |
| | Engineering Design Graphics 0607-301 | 4 |
| | Packaging Materials II 0607-312 | 4 |
| | College Algebra and Trigonometry 1016-204 or 1016-225 | 4 |
| | Elementary Calculus 1016-214, 215 or 1016-226, 379 | 6 |
| | College Chemistry 1011-208 | 4 |
| | Introduction to Chemistry of Materials, Lab 1011-273, 277 | 4 |
| | Introduction to Organic Chemistry, Lab 1011-213, 207 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| Second Year | Packaging Materials I 0607-311 | 4 |
| | Rigid Containers 0607-321 | 4 |
| | Flexible Containers 0607-322 | 4 |
| | Computer Applications 0607-341 | 4 |
| | Technical Communication 0607-420 | 3 |
| | Principles of Printing 2082-371 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Introduction to Polymer Technology 1029-301 | 2 |
| | Microbiology in Health Disease 1004-210 or 1016-320 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Liberal Arts* | 8 |
| | Electives | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 0607-499 | Co-op |
| Third Year | Career Seminar 0607-401 | 1 |
| | Packaging Production Systems 0607-431 | 4 |
| | Packaging for Distribution 0607-432 | 4 |
| | Packaging for Marketing 0607-433 | 4 |
| | Shock and Vibration 0607-485 | 4 |
| | College Physics I, 1017-211 | 4 |
| | College Physics II, 1017-212 | 4 |
| | College Physics III, 1017-213, or 1016-320 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Effective Speaking 0535-501 | 4 |
| | Liberal Arts* | 8 |
| | Electives | 4 |
| | Cooperative Education 0607-499 | Co-op |
| Fourth Year | Packaging Regulations 0607-462 | 4 |
| | Professional (Packaging) Electives | 12 |
| | Liberal Arts* | 12 |
| | Electives | 16 |
| | *Total Quarter Credit Hours* | *188* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## Hospitality and Service Management

***Francis Domoy, Chair***

*www.rit.edu/hsm*

The School of Hospitality and Service Management offers a bachelor of science degree in hospitality and service management. Students can tailor their degree toward their professional goals by choosing one of eight concentrations, including: food management, food marketing and distribution, health services management, hotel and resort management, human resource management, international public relations, small business development, and travel and tourism management. The school

also offers a separate degree program in nutrition management.

The school prepares students for a wide variety of career choices that include, but are not limited to, food management, hotel/resort management, health care management, corporate travel management, food marketing sales and distribution, small business, 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 a common set of abilities: creative problem solving, technical knowledge, communication skills, and leadership. Our first priority is to equip students with these skills and qualities.

Now in its 115th year, RIT's hospitality and service management program is among the nation's leading hospitality and travel management programs, recognized by F*orbes, Travel Weekly, Nation's Restaurant News,* and *Corporate Travel* magazines. The program is accredited by the Middle States Association of Colleges. Students from around the United States and from more than 38 countries are alumni of the program.

The curriculum is integrated, encompassing a broad base of competencies defined in partnership with faculty, students, and industry. Students take courses that contribute to building a strong concept of the total industry 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.

The goal is to offer students a rigorous, challenging, and interdisciplinary program of study in order to develop their talents. It provides them with the opportunity to develop their full potential in a managerial environment. Small classes promote a dynamic learning interaction among faculty, students, and industry professionals.

Freshman students not sure of a career field can apply for an undeclared program within the school. Prior to fall enrollment of the sophomore year, a student must decide upon a concentration. This option allows the student to experience courses in all fields within the hospitality industry before selection of a specific program. In addition, some students may opt to custom design their own unique concentration based upon their interest. This must be accomplished with an adviser for a preplanned set of courses.

## Vision statement

The School of Hospitality and Service Management is a leader in hospitality, nutrition, and service management education by creating an environment of both individualized and team-oriented learning, fusing the human values of hospitality, applying future technologies and innovation, and highlighting cultural diversity in a highly integrated global service economy.

## Objectives

It is the program's mission to prepare students to excel in their chosen profession by developing:

- theoretical and service strategies essential to professional executive-level management skills,
- the ability to apply knowledge and original thinking to solving management problems,
- the skills and techniques of leadership and teamwork,
- an awareness of and desire for a lifetime of learning, and
- an intellectual spirit for constructive thought and action in building a good life and effective citizenship.

## Cooperative education

The hospitality and service management program requires each student to combine 1,200 hours of practical cooperative education (co-op) experience with classroom theory in order to graduate.

Co-op is one of the many ways students are introduced to hands-on learning and employment 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 seniors 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.

Many students find that their career goals take shape and become refined as they progress through co-op experiences. In general, co-op provides students with the opportunity to apply classroom instruction to actual work settings.

## 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

National industry leaders compose the National Advisory Board, contributing professional and technical expertise to undergraduate programs to strengthen their future development.

## Two-year transfer program

Students who have earned an appropriate associate degree or its equivalent before enrolling in RIT may normally expect to complete the requirements for the BS in two years, including six academic quarters and cooperative education.

Transfer students must complete a minimum of 85 to 90 quarter credit hours, with an earned minimum grade point average of 2.3, and two quarters of approved cooperative education assignments.

Transfer students with less than two years of college or other educational backgrounds can also be accommodated. The amount of transfer credit is determined by evaluating the individual transcript. It is the policy of the college to recognize as fully as possible the past academic accomplishments of each student.

## Two-year transfer in nutrition management

RIT makes every effort to facilitate transfer credit. 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 3.0 is required for admission to this program.

## International programs in Croatia

The American College of Management and Technology in Dubrovnik, Republic of Croatia, is a branch of RIT that enrolls approximately 800 undergraduate students. The college offers associate of applied science and bachelor of science degrees in hospitality and service management. The Dubrovnik campus provides an exchange opportunity for Rochester campus students who may wish to spend a quarter studying aboard. Classes are taught by a combination of RIT faculty members and European instructors.

## Facilities

State-of-the art equipment and laboratories are available to enhance the educational experience of all students. Henry's, a full-service, licensed restaurant, provides an excellent training environment for students, who manage 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.

Approximately 40 to 50 health care, corporate, and community-based facilities are used by nutrition management students for practicum experience.

## Requirements

Students enrolled in the bachelor of science degree program in hospitality and service management will complete the requirements outlined in the typical course schedule below, including one of the eight program concentration areas.

**Hospitality and service management, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Survey of Service Management 0619-220 | 2 |
| | Basic Computer Applications 0619-221 | 2 |
| | Program Concentration 06xx-xxx | 12 |
| | HSM Elective 062x- xxx | 4 |
| | Algebra for Management Science 1016-225 | 4 |
| | Science Electives with Lab | 8 |
| | Liberal Arts* | 16 |
| | Wellness Education† | 0 |
| | First-Year Enrichment | 2 |
| | Cooperative Education 0621-499 | Co-op |
| Second Year | Financial Accounting 0101-301 | 4 |
| | Managerial Accounting 0101-302 | 4 |
| | Global Standards 0619-320 | 4 |
| | Program Concentration 06xx-xxx | 12 |
| | Data Analysis I 1016-319 | 4 |
| | Data Analysis II 1016-320 | 4 |
| | Data Analysis Lab 1016-379 | 2 |
| | HSM Elective | 2 |
| | Liberal Arts* | 8 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Cooperative Education 0621-499 | Co-op |
| Third Year | Principles of Marketing 0105-363 | 4 |
| | Assessment of Service Quality 0619-410 | 4 |
| | Technology in Service Systems 0619-426 | 4 |
| | Human Resources Management 0619-480 | 4 |
| | HSM Electives | 8 |
| | Liberal Arts* | 4 |
| | General Education Requirements | 16 |
| | Free Electives | 4 |
| | Cooperative Education 0621-499 | Co-op |
| Fourth Year | Leadership Management in Service Culture 0619-470 | 4 |
| | Senior Project 0619-490 | 4 |
| | Free Electives | 12 |
| | General Education Requirements | 16 |
| | Cooperative Education 0621-499 | Co-op |
| | *Total Quarter Credits* | *82* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

## Food management concentration

The food service industry employs more people than any other industry in the nation, and will continue to do so as long as the public demands more services. Food service offers an array of work places located far and wide, including 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.

Students in food service management experience a sampling of these food service sectors during cooperative education. By graduation, students will have accumulated more hours of work than in any other hospitality program in the country. It is because of this depth of exposure that RIT students are in demand by food and beverage operations.

The program prepares students for management through lab experience in Henry's, a full-service, beverage-licensed restaurant. In addition, students develop competencies in problem solving and decision making through individual and team-based class projects, computerized exercises, and industry-related activities.

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. The program requires several management courses, including accounting, statistics, leadership management, technology in service systems, and assessment of service quality. These professional and business courses are balanced by a strong component of the liberal arts and science.

The first student chapter chartered by the New York State Restaurant Association is available to food service management students. The association's goal is to foster the interchange of ideas between industry and students, and support professional growth in organizational and social skills. Juniors are encouraged to attend the annual National Restaurant Association show in Chicago.

| Concentration Courses | |
|---|---|
| 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 |
| **Concentration Total** | **24** |

## Food marketing and distribution concentration

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: food service operations and food marketing, logistics, distribution, and packaging.

Many of the normal food management course requirements remain in this concentration. Other curriculum options include commodity analysis; food marketing; food processing, packaging, distribution, and national and global logistics; and quality assurance.

| Concentration Courses | 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 |
| **Concentration Total** | **24** |

## Health systems management concentration

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, the ability to adapt to change, and a demonstrated level of achievement in education. This concentration of courses prepares students for entry-level positions working within the administrative areas of health care. When combined with another concentration that is more clinical or hospitality-oriented, the health systems management concentraton can result in a level of expertise valued by health care systems today. Graduates may achieve an entry management position within a health care system.

This sequence of courses consists of three survey courses: Survey of Health Care Systems, Health Care Administration, and Healthcare Economics and Finance. It is complemented by three specialized courses: Legal Aspects of Health Care Administration, Health Care Quality, and Health Planning and Program Development. For a person new to the health care field, it would be helpful for the survey courses to be completed before the specialty courses. This approach allows students to gain an understanding of the field before specific applications are discussed. These courses are offered in an online learning format only; some previous experience with this learning medium may be required.

| Concentration Courses | Qtr. Cr. Hrs. |
|---|---|
| Survey courses: | |
| 0635-310 Survey of Health Care Systems | 4 |
| 0635-320 Health Care Administration | 4 |
| 0635-351 Health Care Economics and Finance | 4 |
| | |
| Specialty Courses: | |
| 0635-421 Legal Aspects of Health Care Administration | 4 |
| 0635-490 Health Care Quality | 4 |
| 0635-441 Health Planning and Program Development | 4 |
| **Concentration Total** | **24** |

## Health systems management certificate

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, 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 in an online learning format. Questions about the certificate should be directed to Linda Underhill at (585) 475-7359 or lmuism@rit.edu.

## Hotel and resort management concentration

This is a professionally oriented curriculum for students interested in careers involving the management and operation of hotel, resort, leisure, and related enterprises. A composite of discipline areas allows students to understand the physical characteristics of specific properties and gain the business expertise to manage and market them.

The concentration builds students' skills with a balanced academic program of the basic principles of hotel and restaurant operations, tourism, resort development and management, business and financial management, and the liberal arts, together with paid work experience (co-op) for three quarters, hands-on class projects, laboratories, and school activities. Specialized courses include statistics, engineering systems and property management, assessment of service quality, technology in service systems, financial management for hotels, hotel marketing and sales, hotel and resort development, and casino management.

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 best practices. International co-ops are highly encouraged because they develop global linkage. Students have the opportunity to choose electives in one or two minor program areas. They can choose from any of the seven other program concentrations. Students develop communication skills through participation in student chapters of organizations, and are encouraged to attend the annual International Hotel/Motel and Restaurant shows in New York City and Chicago.

| Concentration Courses | 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 |
| **Concentration Total** | **24** |

## Human resource management concentration

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 people in today's workplace affect numerous organizational outcomes, yet many employers don't put enough effort into attracting, developing, and retaining this valuable resource. Whether you work in hospitality, food, travel, service, or health care, effectively supporting your "human resources" is the key to gaining and sustaining competitiveness in your field.

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 workforce and to avoid the cost of lawsuits.

Any student who will be hiring, supervising, or managing in their future career will benefit from gaining human resource administration competencies.

| Concentration Courses | 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 |
| **Concentration Total** | **24** |

## Small business management concentration

The small business management concentration 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 people who want to open small eating establishments or other related businesses, such as B&B's.

The courses in this concentration 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.

| Concentration Courses | Qtr. Cr. Hrs. |
|---|---|
| 0681-221 New Venture Development | 4 |
| 0681-222 Small Business Management | 4 |
| 0681-223 Small Business Marketing and Planning | 4 |
| 0681-273 Real Estate Investment and Finance | 4 |
| 0619-506 Franchising in the Service Sector | 4 |
| 0619-501 Service Management | 2 |
| 0623-522 Negotiation and Conflict Management | 2 |
| **Concentration Total** | **24** |

## Travel and tourism management concentration

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 program 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 also are versed in the communication 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.

This program prepares students for careers in corporate travel, consulting, and professional meeting management. Employment opportunities also are excellent with hotel, resorts, retail travel agencies, major corporations, and other businesses.

| Concentration Courses | 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 |
| **Concentration Total** | **24** |

# Nutrition Management

***Barbara A. Cerio-Iocco, Chair***

*www.rit.edu/~720www/nutmng.html*

People are increasingly interested in the nutritional requirements for obtaining good health and living a long life. They are concerned about balanced menus away from home and the availability of special diet menus for those with serious ailments. Physical fitness centers seek educated advice about meal planning and human performance.

Dietitians are involved with people of all ages, cultures, and economic means. They enjoy people and learn to understand them as individuals, thereby helping to solve their nutritional needs. Dietitians are health professionals who apply the science and art of human nutrition.

The BS program in nutrition management offers a challenging curriculum that prepares students for diverse career opportunities. From their base of knowledge about nutrition, registered

dietitians practice in many settings. Possible career paths may be developed in private practice; community nutrition and public health; wellness; sports fitness programs; education and corporations; clinical dietetics, hospital, or long-term care food management facilities; research for clinical, educational, or food manufacturing operations; nutrition education; restaurant consulting; and writing.

The nutrition management program leads to a BS degree that meets the education requirements of the American Dietetic Association (ADA). Students must complete three quarters of approved cooperative education experience. To become credentialed as a registered dietitian, students also need to complete an ADA-accredited supervised practice after graduation from RIT and pass the National Registration Exam for Dietitians.

**Nutrition management, BS degree, typical course sequence****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Service Management Careers in Hospitality Industry 0619-220 | 2 |
| | Contemporary Nutrition 0620-213 | 4 |
| | Principles of Food Production 0621-225 | 4 |
| | Sanitation and Safety 0621-314 | 2 |
| | Orientation to Computers in Hospitality 0619-221 | 2 |
| | Survey of General Chemistry and Lab 1011-201, 205 | 6 |
| | Survey of Organic Chemistry and Lab 1011-202, 207 | 5 |
| | Biochemistry 1011-203 | 4 |
| | Algebra for Management Science 1016-225 | 4 |
| | Liberal Arts* | 12 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Wellness Education† | 2 |
| | Cooperative Education 0621-499 | Co-op |
| Second Year | Financial Accounting 0101-301 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Microbiology 1004-210 | 4 |
| | Anatomy and Physiology I 1026-350 | 5 |
| | Anatomy and Physiology II 1026-360 | 5 |
| | Data Analysis I 1016-319 | 4 |
| | Liberal Arts* | 12 |
| | Food and Beverage Management 0621-318 | 4 |
| | Free Electives | 8 |
| | Cooperative Education 0621-499 | Co-op |
| Third Year | Assessment of Service Quality 0619-410 | 4 |
| | Technology in Service Systems 0619-426 | 4 |
| | Human Resources Management 0619-480 | 4 |
| | Product Development 0621-416 | 4 |
| | Dietetic Environment 0620-402 | 4 |
| | Restaurant Operations 0621-331 | 6 |
| | Nutrition in Life Cycle 0620-554 | 5 |
| | Techniques of Dietetic Education 0627-519 | 4 |
| | Liberal Arts* | 8 |
| | Cooperative Education 0621-499 | Co-op |
| Fourth Year | Leadership Management in Service Culture 0619-470 | 4 |
| | Senior Project 0619-490 | 4 |
| | Medical Nutrition Therapy I 0620-525 | 5 |
| | Medical Nutrition Therapy II 0620-526 | 4 |
| | Community Nutrition 0620-550 | 4 |
| | Nutrition and Alternative Medicine 0620-510 | 2 |
| | Free Electives | 4 |
| | Liberal Arts* | 12 |
| | General Education | 5 |
| | *Total Quarter Credits* | *188* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
***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.*

## Environmental Management and Technology

***Maureen S. Valentine, Chair***
*www.rit.edu/~704www/*

In its 1997 report, "Global Environment Outlook," the United Nations Environment Programme has concluded that "during the last decade, the environment has continued to degrade, and significant problems still persist," and charges that "the pace at which the world is moving toward a sustainable future is simply too slow."

Society is beginning to realize that environmental resources are finite and valuable, and must not be used at a rate faster than that at which they can be replenished naturally. The question is, how do we change our resource-intensive systems of production and consumption toward that end?

Answering this question, in part, is the job of the environmental manager. It's a big job, for sure, but while some of what we do to pursue a sustainable future will take significant time, involve research, and require new knowledge, most of it involves caring about the environment, using common sense to prevent pollution from occurring in the first place, and considering the environmental impact of everything we do.

RIT's BS degree program in environmental management and technology prepares students to move the organizations in which they work toward a sustainable future. Activities range from simple tasks like keeping contaminated wastewater separated from clean water to determining how a product can be manufactured using less energy or without using toxic materials.

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 graduates feel good about their contribution from their first day on the job.

## Cooperative education

Environmental management and technology students start their first co-op jobs in the spring of their third year. Our co-op students are especially helpful to the organizations for which they work because they are qualified and ready to take on the many interesting environmental projects organizations seem never to have the time to get done otherwise. Co-op jobs range from field research to office work, and employers range from government to industry. Typically the jobs are located in the Rochester area or near a student's hometown, but some more adventurous individuals seek jobs across the continent or overseas.

## Transfer

The program is designed to accept graduates of associate degree programs in similar environmental fields and provide continued study in the student's specialization.

## Electives

The ample allowance of electives in the curriculum permits students to pursue various competency areas and other areas of interest in greater depth.

**Environmental management and technology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemistry Principles I, Lab 1011-211, 205 | 4 |
| | Chemistry Principles II, Lab 1011-212, 206 | 4 |
| | Algebra for Management Science 1016-225 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Environmental Management Health and Safety Seminar 0630-200 | 1 |
| | Principles of Environmental Management 0630-201 | 4 |
| | Introduction to Organic Chemistry, Lab 1011-213, 207 | 4 |
| | Field Biology 1005-210 | 4 |
| | Environmental Communication 0688-327 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| Second Year | Human Biology II, Lab 1004-212, 232 | 4 |
| | Financial Accounting 0101-301 | 4 |
| | Data Analysis I 1016-319 | 4 |
| | Data Analysis II 1016-320 | 4 |
| | Professional Elective | 4 |
| | College Physics I and Lab 1017-211, 271 | 4 |
| | College Physics II and Lab 1017-212, 272 | 4 |
| | Environmental Geology, Lab 0630-370, 372 | 4 |
| | Problem Solving and Communication with Computers 0608-225 | 2 |
| | Liberal Arts* | 16 |
| Third Year | Occupational Health 0630-450, 451 | 5 |
| | Introduction to Hydrology, Lab 0630-380, 382 | 4 |
| | Solid and Hazardous Waste Management 0630-350 | 4 |
| | Cooperative Education Preparation 0606-099 | Co-op |
| | Organizational Behavior 0102-430 | 4 |
| | Air Emissions Management 0630-354 | 4 |
| | Industrial Wastewater Management 0630-352 | 4 |
| | Environmental Monitoring and Measurement, Lab 0630-360, 362 | 4 |
| | Free Elective | 4 |
| | Cooperative Education (2 quarters) 0630-499 | Co-op |
| Fourth Year | Environmental Regulatory Law I 0630-480 | 4 |
| | Remedial Investigation and Corrective Action 0630-444 | 4 |
| | Project Management 0630-490 | 4 |
| | Environmental Permitting 0630-440 | 4 |
| | Professional Electives | 8 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) 0630-499 | Co-op |
| Fifth Year | Resource Reduction 0630-505 | 4 |
| | Corporate Environmental Management 0630-515 | 4 |
| | Senior Project Planning 0630-509 | 1 |
| | Senior Project 0630-511 | 3 |
| | Electives | 12 |
| | Liberal Arts* | 8 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***194*** |

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

# Environmental Technology and Environmental, Health, and Safety Management

***Maureen S. Valentine, Department Chair***
***Scott B. Wolcott, Undergraduate Coordinator***

*www.rit.edu/~704www/*

Qualified environmental management and technology undergraduate students may pursue an accelerated BS/MS five-year program. Successful completion of the accelerated program will result in simultaneously earning a BS in environmental management and technology and an MS in environmental, health, and safety management. The BS/MS program requires the completion of 232 total quarter credit hours, including 50-quarter credit hours of graduate coursework plus three quarters of cooperative work experience. The BS/MS program is an option for students who are already enrolled in the BS in environmental management and technology degree program, have completed at least four quarters of undergraduate study, and have a cumulative GPA of at least 3.4.

Below is a model course schedule for completing the BS/MS program. Students interested in the BS/MS program should work with their program advisers and start following this course schedule during their freshman year.

**Environmental management and technology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemistry Principles I, Lab 1011-211, 205 | 4 |
| | Chemistry Principles II, Lab 1011-212,206 | 4 |
| | Algebra for Management Science 1016-225 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Environmental Management Health and Safety Seminar 0630-200 | 1 |
| | Principles of Environmental Management 0630-201 | 4 |
| | Introduction to Organic Chemistry, Lab 1011-213, 207 | 4 |
| | Field Biology 1005-210 | 4 |
| | Environmental Communication 0688-327 | 4 |
| | Human Biology II, Lab 1004-212, 232 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| Second Year | Wellness Education† | 0 |
| | Data Analysis I 1016-319 | 4 |
| | Data Analysis II 1016-320 | 4 |
| | Professional Elective | 4 |
| | College Physics I and Lab 1017-211, 271 | 4 |
| | College Physics II and Lab 1017-212, 272 | 4 |
| | Environmental Geology, Lab 0630-370, 372 | 4 |
| | Problem Solving and Communication with Computers 0608-225 | 2 |
| | Occupational Health 0630-450, 451 | 5 |
| | Liberal Arts* | 16 |
| | Free Elective | 4 |
| | Cooperative Education Preparation 0606-099 | 0 |
| | Cooperative Education (1 quarter) | Co-op |

| | | |
|---|---|---|
| **Third Year** | Wellness Education† | 0 |
| | Introduction to Hydrology, Lab 0630-380, 382 | 4 |
| | Solid and Hazardous Waste Management 0630-350 | 4 |
| | Environmental Permitting 0630-440 | 4 |
| | Remedial Investigation and Corrective Action 0630-444 | 4 |
| | Air Emissions Management 0630-354 | 4 |
| | Industrial Wastewater Management 0630-352 | 4 |
| | Environmental Monitoring and Measurement, Lab 0630-360, 362 | 4 |
| | Project Management 0630-490 | 4 |
| | Liberal Arts* | 8 |
| | Free Elective | 4 |
| | Professional Elective | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| **Fourth Year** | Environmental Regulatory Law I 0630-480 | 4 |
| | Corporate Environmental Management 0630-515 | 4 |
| | Resource Reduction 0630-505 | 4 |
| | Professional Elective (graduate) | 4 |
| | Professional Electives (undergraduate) | 8 |
| | Free Elective | 4 |
| | Liberal Arts* | 8 |
| | Occupational Safety 0630-712 | 4 |
| | Organizational Behavior and Leadership 0102-701 | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| **Fifth Year** | EHS Management 0630-720 | 4 |
| | EHS Accounting and Finance 0630-725 | 4 |
| | EHS Management System design 0630-740 | 4 |
| | Integrating EHS into Business Management 0630-760 | 4 |
| | EHS Internal Auditing 0630-790 | 4 |
| | Graduate Project/Thesis Planning 0630-890 | 2 |
| | Graduate Project/Thesis 0630-891/899 | 4 |
| | Professional Electives (graduate) | 12 |
| | *Total Quarter Credit Hours* | *232*** |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*** The total quarter credit hours include 182 quarter credit hours of undergraduate course work and 50 quarter credit hours of graduate course work.*

## Environmental Management Science Certificate

Since so many of our environmental concerns and problems involve subsurface contamination and contaminant migration via surface and groundwater systems, understanding the principles of environmental geology and hydrology are key to sound environmental management. The environmental management science certificate program provides this valuable knowledge plus practitioner-oriented instruction on how to design and implement a successful environmental monitoring and measurement program. Prerequisites for this program include general and organic chemistry, college algebra, and trigonometry.

| Courses | | Qtr. Cr. Hrs. |
|---|---|---|
| 0630-360, 362 | Environmental Monitoring and Measurement w/ Lab (prerequisite 0630-380) | 4 |
| 0630-370, 372 | Environmental Geology w/ Lab | 4 |
| 0630-380, 382 | Introduction to Hydrology w/ Lab (prerequisite 0630-370) | 4 |
| **Certificate Total** | | **12** |

## Industrial Environmental Management Certificate

This certificate program was designed and developed with the active participation of RIT's Industrial Environmental Management Advisory Committee—all experienced, practicing environmental professionals from industry who have achieved the level of program manager or above. It covers all key elements of environmental management in industry. Waste minimization is emphasized as a major element of pollution control in each area of environmental management. Prerequisites include general and organic chemistry, college algebra, and trigonometry.

The industrial environmental management certificate is available in an online format for those wishing to continue their education while working.

All the courses offered under these certificate programs can be applied to either full-time or part-time offerings of the bachelor of science in environmental management and technology, or as part of a professional concentration in the BS degree for applied arts and science. Part-time tuition rates are charged for students who are matriculated in the part-time program. For more information regarding these certificates, contact the department at (585) 475-7318. Students must achieve a program GPA of at least 2.5 in order to be certified for graduation.

| Courses | | Qtr. Cr. Hrs. |
|---|---|---|
| 0630-201 | Principles of Environmental Management | 4 |
| 0630-350 | Solid and Hazardous Waste Management (prerequisite 0630-201) | 4 |
| 0630-352 | Industrial Wastewater Management (prerequisite 0630-201) | 4 |
| 0630-354 | Air Emissions Management (prerequisite 0630-201) | 4 |
| 0630-444 | Remedial Investigation/Corrective Action | 4 |
| | Elective | 4 |
| **Certificate Total** | | **24** |

## Safety Technology

***Maureen S. Valentine, Chair***

*www.rit.edu/~704www/*

Virtually every organization today depends on safety experts to ensure a safe, smooth, and effective operation. These professionals address their organizations' immediate safety needs, which range from creating physically safer work places and modifying employee behaviors to implementing voluntary protection programs that go beyond legal standards.

Safety professionals protect resources such as workers, buildings, equipment, intellectual capital, and corporate reputations. They perform their functions in a variety of settings, including manufacturing, construction, engineering, insurance, risk management, consulting, corporate business, government, education, and health care.

This program responds to the changing needs of society by offering traditional or nontraditional (distance-learning) means of earning a degree in this program.

The mission of the safety technology program is to provide an academically challenging program that prepares graduates with the skills and knowledge to address their organization's immediate and long-term safety needs, including protection and preservation of workers, buildings, equipment, and corporate reputations.

The program prepares graduates to be:

- qualified to practice as safety professionals in industry, government, or other related areas of employment;
- able to progress toward safety management (leadership) positions; and
- able to pursue appropriate advanced education or certification as safety professionals.

The curriculum is grounded in math, science, and the liberal arts, with specialized courses in a wide range of subjects, including occupational safety, fire protection, construction safety, incident investigation, and ergonomics. The safety technology curriculum emphasizes creative problem solving through challenging application-based courses that provide the opportunity to solve actual safety problems provided by industry.

The program is accredited by the Applied Science Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, Maryland 21202, telephone (410) 347-7700. It is operated as a cooperative education program.

## Transfer admission

The admission of transfer students at the third-year level is open to all students who have received an appropriate associate degree or the equivalent of two years of college. Coursework should include:

- technical math (two semesters of college-level math with an introduction to calculus);
- technical physics;
- technical sciences including chemistry, organic chemistry, and biology;
- computer applications/programming; and
- the liberal arts.

Students lacking these courses may still be admitted, but are required to take the missing courses concurrently within the program or in addition to the program requirements.

You may enter the upper-division safety technology BS program from a wide variety of associate degree programs or with the equivalent of two years of college, including appropriate courses in math, science, and the liberal arts. In this program you will build on your foundation of science and math with specialized courses in a wide range of subjects, including occupational safety, fire protection, construction safety, incident investigation, and ergonomics. The safety technology curriculum emphasizes creative problem solving through challenging application-based courses. Students will have the opportunity to solve actual safety problems provided by industry.

The upper-division safety technology BS program is offered in an online format for people wishing to continue their education while working. For further information, contact the department at (585) 475-7318.

## Cooperative education

Today's employers are looking for ambitious graduates who have professional work experience in addition to a quality academic background. Because the safety technology program requires a minimum of four quarters of cooperative education, students get the chance to apply their skills in real-world situations before they graduate. Hundreds of employers recruit on campus each year because they know RIT graduates have professional abilities, technical skills, and work experience that are current with industry demands. A student's prior safety-related experience may be counted toward the cooperative education requirement. Students should speak with an adviser for more information.

## Certification

The hallmark of professional capability in the field of safety is the certified safety professional (CSP) designation. In order to sit for the two exams leading to the CSP, an individual must have academic preparation in addition to work experience in the safety field. All students completing the BS degree program in safety technology will be eligible to take the associate safety professional examination upon graduation. Eligibility for the CSP examination occurs once the graduate has acquired enough appropriate work experience (usually three additional years for students who have completed a full year of appropriate co-op assignments). RIT has structured the safety technology program to be at the leading edge of this field, providing you with high-quality academic preparation and relevant work experience.

**Safety technology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Environmental Health and Safety Seminar 0630-200† | 1 |
| | General Chemistry and Lab 1011-201, 205† | 4 |
| | College Algebra and Trigonometry 1016-204 | 4 |
| | College Physics I, Lab 1017-211, 271† | 4 |
| | Principles of Environmental Management 0630-201 | 4 |
| | Calculus for Engineering Technology I 1016-231 | 4 |
| | Occupational Safety 0630-454 | 4 |
| | Introduction to Organic Chemistry and Lab 1011-213, 207† | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | General Elective | 4 |
| Second Year | Manufacturing Processes 0617-220† | 4 |
| | Human Biology II, Lab 1004-212, 232† | 4 |
| | College Physics II, Lab 1017-212, 272† | 4 |
| | Data Analysis I 1016-319 | 4 |
| | Elements of Building Construction 0608-422 | 4 |
| | Construction Safety 0633-505 | 4 |
| | Program Electives | 12 |
| | Liberal Arts* | 12 |
| | Problem Solving and Communication with Computers 0608-225† | 2 |
| Third Year | Occupational Health and Lab 0630-450, 451 | 5 |
| | Fire Protection 0630-401 | 4 |
| | Manmade Hazards 0634-321 | 4 |
| | Occupational Health II 0633-526† | 4 |
| | Instructional Design Principles 0688-362 | 4 |
| | Liberal Arts* | 4 |
| | General Education Electives | 4 |
| | Program Electives | 8 |
| | Cooperative Education Preparation 0606-099 | 0 |
| | Cooperative Education (2 quarters) 0630-499 | Co-op |
| Fourth Year | Product Stewardship 0630-465 | 4 |
| | Project Management 0630-490 | 4 |
| | Ethics | 4 |
| | Program Electives | 12 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) 0630-499 | Co-op |
| Fifth Year | Mechanical and Electrical Controls 0633-530 | 4 |
| | System Safety/Incident Investigation 0633-540 | 4 |
| | Senior Project Planning 0630-509 | 1 |
| | Liberal Arts* | 4 |
| | Ergonomics 0303-415 | 3 |
| | Safety and Health Program Management 0633-545 | 4 |
| | Senior Project 0630-511 | 3 |
| | Program Electives | 8 |
| | ***Total Quarter Credit Hours*** | ***193*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Courses either not available in distance learning format or have an on-campus component.*

# Certificates

## Disaster and Emergency Management

Heightened public and governmental awareness of the hazards associated with high technology has led to stringent new federal and state laws requiring communities to plan comprehensively for toxic chemical or radiation emergencies. In addition, there has been a need to protect the public during natural emergencies such as floods, earthquakes, and tornadoes.

Emergency management practitioner organizations and the federal government are working to develop national standards for the accreditation of emergency managers. The certificate in disaster and emergency management is intended to upgrade the skills of public safety planners, emergency officials in industry, and existing or aspiring emergency managers in police, fire, and ambulance work. The certificate program also is also an excellent capstone program for individuals with associate degrees in fire science, environmental health and safety, or other areas of emergency response.

The six-course sequence is designed to provide students with knowledge of the physical phenomena underlying emergency situations, such as elementary meteorology, earthquake phenomena, toxic chemicals, and radiation; the legal aspect of emergency planning and operations; the theory and methodology of emergency planning, including evacuation planning and management; and the theory and practice of operations at a disaster scene. Up to four credits may be awarded to emergency response agency personnel for appropriate training or experience.

Courses are scheduled so that the certificate may be completed in as little as one year. The courses in this upper-level program also may be applied toward professional requirements for the BS degree in applied arts and science. Students must achieve a program GPA of at least 2.0 in order to be certified. These courses are offered in the online learning format.

Certificate courses have been developed with the assistance of local and state professionals in emergency management and are taught by these professionals. For advising and further information about this program, call (585) 475-7318.

| Courses | Qtr. Cr. Hrs. |
|---|---|
| 0634-311 Earth Science | 4 |
| 0634-321 Manmade Hazards | 4 |
| 0634-401 Emergency Preparedness Laws and Regulations | 4 |
| 0634-471 Emergency Planning and Methodology | 4 |
| 0634-481 Emergency Operations | 4 |
| 0634-475 Counterterrorism for the First Responder | 4 |
| **Certificate Total** | **24** |

## Safety and Health Technology

Designed for accessibility and convenience, this certificate program is offered in both campus-based and online learning formats, and consists of the seven four-credit courses. Transfer credits and course substitutions require the approval of the department chair. Upon approval, these courses may also be applied toward the BS program in safety technology. Prerequisites for this program include general chemistry, biology, college algebra, and trigonometry. Students must achieve a program GPA of at least 2.5 in order to be certified.

| Courses | Qtr. Cr. Hrs. |
|---|---|
| 0630-450 Occupational Health | 4 |
| 0630-454 Occupational Safety | 4 |
| 0633-401 Fire Protection | 4 |
| 0633-540 System Safety/Incident Investigation (prerequisite 0630-450, 454) | 4 |
| 0633-545 Safety and Health Program Mgmt. (prerequisite 0630-540) | 4 |
| 0630-570 Environmental Risk, Mgmt. and Comm. (prerequisite 0630-450) | 4 |
| Professional Elective (Suggested electives include Manmade Hazards and Project Management) | 4 |
| **Certificate Total** | **28** |

# Center for Multidisciplinary Studies

***James Myers, Director***

*www.rit.edu/cms*

Through the Center for Multidisciplinary Studies (CMS), students interested in more than one area of study have the option of creating personalized undergraduate programs directly related to their interests and aspirations. Today's professional workplace looks for and values individuals with a diverse academic background. CMS offers students this valuable opportunity through their applied arts and science degree programs and specialized certificate programs. These programs provide students with a multidisciplinary approach to learning that can be applied to the professional environment. The diverse nature of the applied arts and science program is an asset in any corporation looking to do more with less.

Like the center itself, CMS students 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 from their college degree. Through the center's flexible multidisciplinary programs, students tailor their plans of study to their individual interests by incorporating courses or sets of courses from the center or other RIT departments. The center's flexible multidisciplinary programs include:

- Applied arts and science undergraduate degree programs —a comprehensive undergraduate program with BS, AAS, and diploma options that allow students to pursue unique and customized plans of study that include several areas of concentration
- AAS degrees in business administration and human resources
- A management development program (certificate and diploma)
- Specialized certificate programs

# General information

## Enrollment policies

The Center for Multidisciplinary Studies 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, and may be obtained from an adviser or Professor Tom Moran, at (585) 475-4936.

Students matriculated in the center's bachelor's degree programs are expected to complete their degrees within seven years.

## Academic advising

The Center for Multidisciplinary Studies provides academic advising for educational and career goals. This service is available at no charge to all undergraduate students interested in CMS degrees, diplomas, and certificate programs, as well as all students who are enrolled in one or more of the center's courses.

The 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, 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.

To schedule an advising session, please call (585) 475-2234 or e-mail cms@rit.edu. The CMS office is located in Building 1 (George Eastman Building), Room 2210.

## Transfer credit

Degree programs in the center are structured to permit transfer of credit from other accredited institutions. When a student matriculates into a specific program, a complete evaluation is made of prior academic work. The student will know immediately how much transfer credit is awarded and what courses will be needed to earn a specific degree.

Transfer credit also may be awarded for courses included in the New York State Education Department publication "Guide to Educational Programs in Non-Collegiate Organizations."

## 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. Materials presented in credit-by-experience portfolios are reviewed by faculty members within and outside of CMS. There is a $150 fee per credit hour for any credit earned.

## 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 efcvet@rit.edu for an evaluation and recommendation of college credit for their military experience. RIT also is an institutional member of the Servicemembers Opportunity Colleges (SOC), which is a consortium of more than 1,500 colleges and universities that provide educational opportunities for servicemembers and their families. SOC is funded by the Department of Defense and managed by the Defense Activity for Non-Traditional Education Support (DANTES).

## Faculty

Most courses in CMS are conducted by part-time instructors who teach what they do professionally. Our faculty are selected for their professional competence, academic background, and teaching ability.

## Online learning

CMS offers a variety of courses through online learning. Students can complete certificates, diplomas, AAS, and BS degrees online through the center. Online learning allows students flexibility in completing their courses while maintaining a class atmosphere through online discussions via chat/e-mail conferencing. Courses taught through online learning also use textbook readings, assignments, and exams to deliver coursework. Students have access to instructors by e-mail, computer, telephone, or individual appointments. For more information about these and other online learning programs, call (585) 475-5089; for advising, call (585) 475-2234.

## Financial aid

Specially trained RIT financial aid counselors can provide students with information about the grants and loans available for full- and part-time students. In addition to federal, state, and private programs, RIT has special financial aid programs for part-time students and students who have recently been laid-off from their job. Many companies also offer employer education benefits that will pay for some or all of RIT's tuition costs. Active U.S. Army Reserve and National Guard members are eligible for benefits that pay up to 90 percent of tuition. To be eligible for financial aid, full-time students must be enrolled in at least 12 credit hours; part-time students at least six credit hours. Call (585) 475-2958 for more information.

## Center for Multidisciplinary Studies Scholarship

- Offered to matriculated students in CMS programs with a GPA of 3.0 or better
- Awards based upon merit and financial need.

Students can find out more information about this scholarship from their academic adviser or by visiting www.rit.edu/cms/financial.html

## Course scheduling options

The center's courses and programs are offered during the day, at night, on Saturdays, and in an online learning format. The center also works with employers to design multidisciplinary programs that are specially suited to meet their employees' needs. Please visit the "corporate" link on the center's website (www.rit.edu/cms) to learn more.

## Applied arts and science degrees

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, or who want to prepare themselves for a career that requires skills and expertise from several disciplines. There are three levels:

**Bachelor of science (BS) degree:** 180 quarter 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 quarter credit hours total; 52 core credits in general education plus 38 credits in one to two areas of concentration

**Diploma:** 36 quarter credits hours; one area of concentration

The AAS and BS degrees are available to full-time day students, part-time evening students, and online students. The associate and bachelor of science degrees allow you to study several different professional and technical areas of study, selected specifically to meet your career and personal goals.

For your professional concentrations, you can draw on a wealth of educational resources from across RIT colleges and departments. Professional concentrations cannot be fully designed using BFA courses. Examples of professional concentrations include:

**Business/management focus**
- Management
- Quality Management
- Reliability
- Health Systems Administration
- Print Management Studies
- Disaster and Emergency Management
- Industrial and Environmental Management
- E-business
- Public Relations

**Computer/technical focus**
- Applied Computing
- Technical Communications
- Computer Science Studies
- Engineering Technology Studies
- Telecommunications
- Computer Graphics
- Structural Design
- Safety and Health Technology
- Mechanical Technology

**Liberal arts focus**
- Economics
- Criminal Justice Studies
- Psychology Studies
- Creative Writing
- Foreign Language

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 his or her 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 their 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.

### Common features

Every applied arts and science degree has certain features in common:
- An approved program of study developed with faculty, an individual adviser, and the degree committee
- General education courses in mathematics, computer literacy, science, and the liberal arts (52 credits for the AAS, 90 for the BS)
- One or more professional concentrations that provide each student with the opportunity to develop a multidisciplinary program tailored to specific career and personal objectives
- Students must achieve a program GPA of at least 2.0 in order to be certified for completion/graduation

**Course requirements, AAS and BS Degrees in Applied Arts and Science** (See adviser for course options.)

| | Math/Computer/Science | Credit | Liberal Arts | Credit | Professional Core(s) 1 to 2 | Credit |
|---|---|---|---|---|---|---|
| AAS | Computer/Technology Elective | 4 | Writing 0502-227 | 4 | One to two professional concentrations* To be developed by student and adviser. | 38 |
| AAS | Math Electives | 8 | Arts of Expression 0504-319 | 4 | | |
| AAS | Science Electives | 8 | Communication Elective | 4 | | |
| AAS | Math/Science | 4 | Humanities Electives | 8 | | |
| AAS | | | Behavioral Science Electives | 8 | | |
| BS | BS only in addition to above | 8 | General Education ‡ | 30 | Two to Four professional concentrations* To be developed by student and adviser. | 48 |
| BS | | | Liberal Arts Concentration# | 12 | | |
| | | | | | *Free Electives* | *12* |

**A concentration equals 20 (or more) quarter hours in one subject area (e.g., applied computing, business, communication).*

*§A writing pretest is required; call (585) 475-2234 for information. Students completing the BS degree must also pass a writing competency test.*

*‡See adviser for a list of accepted general education electives.*

*#Students choosing a liberal arts area for a professional concentration must choose their liberal arts concentration and electives in other disciplines or interdisciplinary areas in the College of Liberal Arts.*

## Business and Management AAS Degree Programs

The center offers associate degrees in business administration and human resources administration. All business and management degree programs include a core group of business courses in organization and management, accounting, management, and business law. Approximately half of the credits in degree programs are earned through these professional courses. In addition, all business and management degree programs include a broad spectrum of courses in communication, behavioral/social sciences, humanities, math, and science. Students must achieve a program GPA of at least 2.0 in order to be certified. The AAS degrees in business administration and human resources administration are fully transferable into the bachelor of science in applied arts and science.

**Professional concentration requirements, business and management AAS programs**

| **Business administration** | **Qtr. Cr. Hrs.** |
|---|---|
| History or Fine Arts Elective | 4 |
| 0680-315 Legal Environment of Business | 4 |
| 3 Business Electives | 12 |
| Concentration Total | 20 |
| Human Resource Administration | Qtr. Cr. Hrs. |
| 0619-480 Human Resource Administration | 4 |
| 0626-234 Interviewing Techniques | 4 |
| 0680-311 Business Law I | |
| or | |
| 0680-315 Legal Environment of Business | 4 |
| 2 Business Electives | 8 |
| **Concentration Total** | **20** |

## The management development program

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 a 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 program GPA of at least 2.0 in order to be certified for completion/graduation.

### Management Development Certificate

The management development certificate is earned by successfully completing a three-course sequence in management. The courses focus on practical applications of management theory; management problems, solutions, and ideas; and personal development as an effective manager.

The management sequence offers a comprehensive, integrated study of supervisory management. Topics covered include 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.

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 program GPA of at least 2.0 in order to be certified for completion/graduation.

### Core Requirements, All Business and Management AAS Programs

Professional program requirements are added to these core requirements

| **Professional Courses** | **Credit** | **General Education** | **Credit** | **Math, Statistics, and Science** | **Credit** |
|---|---|---|---|---|---|
| Financial Accounting 0680-201 | 4 | Writing and Arts of Expression 0502-227/0504-319 | 8 | Science Electives† | 8 |
| Managerial Accounting 0680-203 | 4 | or | | College Math for Business I, II 0692-211, 212 | 8 |
| Organization and Mgmt. 0681-205 | 4 | Communicating in Business and Writing 0688-325 /0502-227 | 8 | Statistics I, II 0692-311, 312 | 8 |
| Information Resources and Network Tools 0680-341 | 4 | Micro and Macro Economics 0511-211, 402 | 8 | | |
| Principles of Marketing 0681-361 | 4 | Psychology 0514-210 | 4 | | |
| Management Science 0680-353 | 4 | Sociology 0515-210 | 4 | | |
| Professional Concentration Courses (see above) | 20 | | | | |
| **Total** | **44** | **Total** | **24** | **Total** | **24** |

*In sequentially numbered courses, the lower-number course is prerequisite.*

*† Science electives may include any of the following:*
*0692-231 Contemporary Science/Biology*
*0692-232 Contemporary Science/Chemistry*
*0692-233 Contemporary Science/Physics*
*0692-234 Contemporary Science/Oceanus*
*1026-305 Sports Physiology and Life Fitness*
*1026-306 Fitness Prescription/Programming*
*1026-307 Exercise Prescription*
*0634-311 Earth Science*
*0634-321 Man-Made Hazards*

| Management Certificate | Qtr. Cr. Hrs. |
|---|---|
| 0681-200 Management Process I | 4 |
| 0681-201 Management Process II | 4 |
| 0681-202 Management Process III | 4 |
| **Certificate Total** | **12** |

## Management Diploma

In the management diploma program, students concentrate their studies in one of three specific areas of business and management that may be relevant on the job immediately.

Typically, the management diploma is earned by completing 16 quarter credits in addition to the management certificate. However, the small business management certificate also may be taken as a component of the diploma.

Courses applied toward a management diploma also may be counted as professional courses in appropriate degree programs. Students must achieve a program GPA of at least 2.0 in order to be certified for completion/graduation.

| General Management | Qtr. Cr. Hrs. |
|---|---|
| 0681-200, 201, 202 Management Process (or approved alternative) | 12 |
| 0680-201 Financial Accounting | 4 |
| 0680-203 Managerial Accounting | 4 |
| 0680-341 Information Resources and Network Tools | 4 |
| 0681-361 Marketing (or Business Elective) | 4 |
| **Diploma Total** | **28** |

| Marketing | Qtr. Cr. Hrs. |
|---|---|
| 0681-200, 201, 202 Management Process (or approved alternative) | 12 |
| 0681-361 Marketing | 4 |
| 0681-261 Effective Selling | 4 |
| 0681-263 Advertising Principles | 4 |
| Business Elective | 4 |
| **Diploma Total** | **28** |

| Human Resource Administration | Qtr. Cr. Hrs. |
|---|---|
| 0681-200, 201, 202 Management Process (or approved alternative) | 12 |
| 0619-480 Human Resource Administration | 4 |
| 0626-234 Interviewing Techniques | 4 |
| 0680-311 Business Law I | 4 |
| Business Elective | 4 |
| **Diploma Total** | **28** |

# Specialized Certificates

In these days of rapid change, meeting professional and educational goals can be a challenge. Many employers are looking for upgraded skills while employees or students are looking to enhance their skills or take on a new direction professionally or personally. To help meet these challenges, programs are needed that can offer new skills or enhance current skills in a quick and efficient manner. The center provides this opportunity through its specialized certificate programs in:

- Management Development
- Organizational Change and Leadership
- Small Business Management
- Computer Graphics
- Basic Technical Communication
- Advanced Technical Communication
- Public Relations-Writing Option
- Public Relations-Graphic Communication Option
- Quality Implementation Management
- Basic Quality
- Reliability Maintenance
- E-Business
- International Logistics and Transportation
- Human Resource Development
- Computer Aided Drafting
- Manufacturing Processes
- Robotics
- Fundamentals of Manufacturing Management

All certificate programs are applicable to the applied arts and science degree or diploma programs as professional concentrations.

## Organizational Change and Leadership

Profound and ongoing changes are taking place in organizations, and individuals need to be flexible and proactive in their response. The organizational change and leadership certificate will help students understand corporate culture and develop skills necessary to manage organizational and individual change. Through the study of leadership, corporate culture, change management, organizational behavior, and teams, individuals will understand and obtain the skills necessary to proactively manage change.

| Certificate in Organizational Change | Qtr. Cr. Hrs. |
|---|---|
| 0697-430 Survey of Organizational Change | 4 |
| 0697-432 Managing Organizational Change | 4 |
| 0697-431 Understanding Corporate Culture | 4 |
| 0697-435 Global Forces and Trends | 4 |
| 0697-434 Change and Leadership Project | 4 |
| Elective | 4 |
| **Certificate Total** | **24** |

## Reliability maintenance

In manufacturing, utility, and service industries, equipment reliability means bottom-line profitability. Unscheduled downtime costs businesses millions of dollars each year, taxing the patience of maintenance teams and management alike. The technician, engineer, or manager who understands how to cost-effectively avoid equipment failure through the science and techniques of reliability is worth his or her weight in gold.

The reliability maintenance certificate program prepares individuals to implement a reliability-based maintenance strategy within an organization. Emphasis is placed equally on understanding the theory underlying reliability and the application of tools and software that participants can use immediately on the job. Some topics of instruction include root cause analysis, failure mode and effects analysis, maintenance strategies, probability distributions, and spare parts forecasting. Students will learn to apply reliability techniques and use industry-standard software through completing individual and group assignments. This certificate program can be taken online.

| Certificate in Reliability Maintenance | Qtr. Cr. Hrs. |
|---|---|
| 0684-340 Statistics for Total Quality | 4 |
| 0684-370 Reliability I | 4 |
| 0684-375 Problem Investigation, Isolation and Analysis | 4 |
| 0684-376 Reliability II | 4 |
| 0684-377 Reliability III | 4 |
| 0684-378 Reliability IV | 4 |
| 0688-331 Report Writing | 2 |
| **Certificate Total** | **26** |

## E-Business

The e-Business certificate is designed to create professionals who understand how to do business on the Web. Graduates of the program will have a real grounding in the technologies, strategies, and tactics that make e-business initiatives successful. This certificate can be taken online.

| Certificate in E-Business | Qtr. Cr. Hrs. |
|---|---|
| 0112-310 Introduction to e-Business Technologies | 4 |
| 0105-445 Business-to-Business e-Commerce | 4 |
| 0112-510 Designing the e-Business Organization | 4 |
| 0105-440 Internet Marketing | 4 |
| Two Business Electives* | 8 |
| **Certificate Total** | **24** |

**Business electives require approval from an academic adviser.*

## Small Business Management

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.

The three courses in the program 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.

| Certificate in Small Business Management | Qtr. Cr. Hrs. |
|---|---|
| 0681-221 New Venture Development | 4 |
| 0681-222 Small Business Management and Finance | 4 |
| 0681-223 Small Business Marketing and Planning | 4 |
| **Certificate Total** | **12** |

## Quality Management

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. Organizations have begun to understand that prevention saves more time and money than the discovery of flaws after the fact.

The center's management-oriented certificate programs focus on quality as a priority. Developed in cooperation with industry, the courses can help you 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.

The certificate in basic quality teaches the "nuts and bolts" of a quality organization and prepares you to introduce quality concepts to your organization. The certificate in quality implementation teaches you how to put quality principles to work for you. Together, the certificate package can prepare you to work as a quality trainer, facilitator, team leader, or manager at various levels of an organization. Both certificate programs can be taken online.

| Certificate in Basic Quality | Qtr. Cr. Hrs. |
|---|---|
| 0684-310 Introduction to Quality | 4 |
| 0684-320 Basic SQC Techniques | 4 |
| 0684-330 Leadership Skills for Quality | 4 |
| **Certificate Total** | **12** |

| Certificate in Quality Implementation | Qtr. Cr. Hrs. |
|---|---|
| 0684-340 Statistics for Total Quality | 4 |
| 0684-410 Costing for Quality | 4 |
| 0684-430 Implementing Total Quality | 4 |
| **Certificate Total** | **12** |

## Public Relations Communications

Public relations communications are vital to virtually every business endeavor. Almost every organization employs individuals, either in house or by contract 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.

Underlying successful public relations are skills in two key areas: writing and graphic communication. The center offers a certificate program in each of these specialties. Both programs share a core of courses that provides an introduction to public relations and teaches widely used principles and techniques of advertising, project management, and persuasion. The professional writing program provides specialized instruction in writing marketing materials, inbound and outbound publications, corporate-level communications, and speeches and scripts. The graphic communication program (designed specifically to accommodate non artists) focuses on understanding the components of the advertising process, the use of effective design principles in the preparation of layouts, and combining creative and technical skills to achieve design success.

These programs are intended for individuals who wish to enter the field of public relations or take on PR responsibilities, those who have been working in a particular aspect of public relations and wish to upgrade or broaden their skill, or those who have been performing PR tasks for which they have had little formal preparation.

Prerequisite for the core courses is demonstration (by examination, portfolio, or transcript) of a command of standard written English.

Courses are scheduled so that the core and one or both of the certificate options may be completed in four quarters of part-time study. Students may earn one or both certificates, and students not wishing to take an entire certificate program may take specific individual courses.

For advising and further information about this program, call Thomas Moran at (585) 475-4936. The professional writing option can be completed online.

| Core Courses | Qtr. Cr. Hrs. |
|---|---|
| 0688-350 Introduction to Public Relations | 2 |
| 0688-356 Strategic Communications | 2 |
| 0681-264 Advertising Evaluation and Techniques | 4 |
| 0688-348 Managing the Project | 2 |
| **Core Total** | **10** |

| Certificate in Professional Writing | Qtr. Cr. Hrs. |
|---|---|
| Core Courses | 10 |
| 0688-352 Writing for the Organization | 2 |
| 0688-357 Media Relations | 2 |
| 0688-347 Promotional Writing | 2 |
| 0688-353 Scripting and Audio Video Presentations | 2 |
| 0688-354 Speechwriting | 2 |
| **Certificate Total** | **20** |

| Certificate in Graphic Communication | Qtr. Cr. Hrs. |
|---|---|
| **Core Courses** | **10** |
| 0688-355 Coordinating Publication Production | 2 |
| and any three of the following courses*: | |
| 0688-371 Designing with Computers I | 3 |
| 0688-372 Designing with Computers II | 3 |
| 0688-373 Electronic Presentation Design | 3 |
| 0688-381 Photographic Imaging with Computers I | 3 |
| 0688-382 Photographic Imaging with Computers II | 3 |
| 0688-383 Introduction to Internet Design | 3 |
| 0688-374 Designing with Corel | 3 |
| 0688-384 Designing with QuarkXPress | 3 |
| **Certificate Total** | **27** |

**With adviser's approval*

## International Logistics and Transportation

Logistics deals with managing the flow of goods from an organization's suppliers through its facilities and on to its customers. Successful logistics require 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 can involve carefully planning the arrival of raw materials; premanufactured assemblies or labor and other resources to a manufacturing or assembly point; the warehousing and dispatch of product for sales; and the deployment of training, spare parts, support equipment, documentation, maintenance, and upgrades for equipment that is in the field. Independent providers of logistics services, called third party logistics service suppliers, have emerged to create a new and important service sector in the last decade.

Proper performance of an organization's logistical operations is critical to success in today's highly competitive and global environment. Skill and understanding of logistics technology, strategies, and management can lead to jobs and responsibilities with global and regional employers, including both the private and government sectors.

| Certificate in international logistics and transportation | Qtr. Cr. Hrs. |
|---|---|
| 0681-451 Introduction to Logistics and Transportation | 4 |
| 0681-525 Strategic Logistics Management | 4 |
| 0681-526 Logistic Law and Economics | 4 |
| **Certificate Total** | **12** |

## Human Resource Development

The human resource development certificate blends the traditional HR elements, interviewing and compensation/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, human resource skills are used by the HR department and all management-bound professionals.

| Certificate in human resource development | Qtr. Cr. Hrs. |
|---|---|
| 0697-442 The Learning Organization | 4 |
| 0697-431 Understanding Corporate Culture | 4 |
| 0626-234 Interviewing Techniques | 4 |
| 0619-480 Human Resource Administration | 4 |
| 0626-390 Compensation and Benefits | 4 |
| **Certificate Total** | **24** |

## Technical Communication

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 the technologies grow, so does the need for communicators skilled in conveying many kinds of information in many different forms to many 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, among others—is a highly valued asset in the workplace today.

The following sequence of courses, designed to be completed in three quarters of part-time study, provides a strong, practical foundation in technical communication skills for those wanting to work in the profession or those whose advancement in other careers is directly related to their ability to communicate clearly, correctly, and concisely.

| Certificate in basic technical communication | Qtr. Cr. Hrs. |
|---|---|
| 0688-333 Technical Writing and Editing | 4 |
| 0688-363 Technical Document Design | 4 |
| Plus one of the following courses: | |
| 0688-361 Research Techniques | 4 |
| 0688-476 Instructional Design Principles | 4 |
| **Certificate Total** | **12** |

The prerequisite for the basic sequence is demonstration (by examination, portfolio, or transcript) of a command of standard written English.

For those interested in further professional development and instruction in more specialized topics, the following sequence of courses, designed to be completed in three quarters of study, is offered. Students may take courses in the advanced sequence simultaneously with those in the basic sequence.

| Certificate in advanced technical communication | Qtr. Cr. Hrs. |
|---|---|
| 0688-544 Writing in the Sciences | 4 |
| 0688-477 Managing Media Presentations | 4 |
| 0688-475 Writing Software User Documentation | 4 |
| **Certificate Total** | **12** |

Technical Information Design (0688-510), Technical Proposals (0688-514), Technical Procedures (0688-512), and Document Usability (0688-511) may be substituted for one of the required advanced courses, with the permission of the program chair. In addition, various special topics courses (0688-398) 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 a course used to fulfill the requirements of the certificate in basic technical communication. Students must achieve a program GPA of at least 2.0 to be certified for completion/graduation.

Courses in these sequences were developed with the assistance of working technical communicators and are taught by experienced professionals. For advising and further information about this program, call Thomas Moran at (585) 475-4936. Both certificates programs can be completed online.

## Computer Graphics

Today's graphic communicators rely on the computer for nearly every step of the creative process. The computer screen has replaced the sketch pad, the drawing table, the layout board, and other tools traditionally used to develop graphic artwork. With the ever-widening use of the Internet, graphics not only are created on the computer, but also are distributed and displayed to huge online audiences via the computer.

The courses within this program develop and enhance the computer graphic skills of students who find that, with increased access to desktop publishing tools and corporate emphasis on multitasking, 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 communications 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 skill 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 computer design work.

| **Certificate in computer graphics** | **Qtr. Cr. Hrs.** |
|---|---|
| 0688-271 Basic Computer Graphics | 2 |
| 0688-371 Designing with Computers I | 3 |
| 0688-372 Designing with Computers II | 3 |
| 0688-373 Electronic Presentation Design | 3 |
| 0688-381 Photo-imaging with Computers I | 3 |
| 0688-382 Photo-imaging with Computers II | 3 |
| 0688-383 Introduction to Internet Design | 3 |
| **Certificate Total** | **20** |

Elective courses offered through the program, such as Designing with Quark (0688-384), Designing with Corel Draw (0688-374), and Advanced Internet Design (0688-410) along with special topics classes (0688-398) such as Advanced Photoshop Tech and Introduction to XML also may be substituted with the permission of the program chair. For advising or further information about this program, call Thomas Moran at (585) 475-4936.

Students may earn one or more of the certificates. 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/graduation.

## Manufacturing Technology certificates

| **Certificate in computer-aided drafting** | **Qtr. Cr. Hrs.** |
|---|---|
| 0608-211 Engineering Graphics w/ 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 |
| Prerequisite: Computer Literacy | |
| **Certificate Total** | **16** |

| **Certificate in fundamentals of manufacturing management** | **Qtr. Cr. Hrs.** |
|---|---|
| 0617-436 Engineering Economics | 4 |
| 0617-440 Production and Operations Management I* | 4 |
| 0617-441 Production and Operations Management II* | 4 |
| Prerequisites: College Algebra, Statistics, Computer Literacy | |
| **Certificate Total** | **12** |

**Courses available online*

| **Certificate in manufacturing processes** | **Qtr. Cr. Hrs.** |
|---|---|
| 0617-220 Manufacturing Processes I | 4 |
| 0617-420 Manufacturing Processes II | 4 |
| 0617-471 Computer Numerical Control | 4 |
| Prerequisites: Engineering Drawing, Computer Literacy | |
| **Certificate Total** | **12** |

| **Certificate in robotics** | **Qtr. Cr. Hrs.** |
|---|---|
| 0618-231 Technical Programming I | 4 |
| 0617-470 Controls for Manufacturing Automation | 4 |
| 0617-485 Robots in Manufacturing | 4 |
| **Certificate Total** | **12** |

# Department of Military Science

***Reserve Officer Training Corps (ROTC) – ARMY***
***Lt. Col. Dale Watson, Professor of Military Science***

*www.armyrotc.rit.edu/*

The Army Reserve Officer Training Corps (ROTC) program prepares students for leadership in a civilian or military career. ROTC is a campus-based program that assists students in developing their full potential—intellectually, physically, and emotionally. The program consists of classroom instruction, physical training, and practical-application laboratories designed to enhance organizational leadership, decision making, and problem-solving skills.

ROTC classes are open to everyone, with no military obligations unless a student has received an ROTC scholarship or contract during the beginning of their junior year. Upon graduation from RIT, and the successful completion of Army ROTC, cadets are commissioned as second lieutenants and may serve in the active army, the Army Reserve, or Army National Guard. Veterans, members of the Army Reserve or National Guard, and junior ROTC graduates 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, we offer a variety of fun activities that reinforce leadership skills, teamwork, and confidence. Our cadets enjoy unique events such as the formal Military Ball. They also have the opportunity to participate in high-adventure training weekends on U.S. military installations, where they learn skills such as navigating with a map and compass, or rappelling as part of mountaineering instruction. Our clubs and activities also include the Ranger Challenge Team, the ROTC varsity sport. This team competes in military skills and physical stamina competitions with other colleges throughout the Northeast. We also may sponsor a team to compete in the prestigious Sandhurst Competition, a military skills and endurance event at which teams from the U.S. Military Academy at West Point, the British Military Academy at Sandhurst, and select ROTC teams from across the nation gather at West Point to determine who is the best. No other program on campus offers

the same level of adventure and practical leadership experience that we offer through our many diverse activities. Our cadets receive hands-on training from skilled military professionals that aids them in opening doors they never knew existed. The Army ROTC program builds skills that will last a lifetime.

### Scholarship opportunities

Army ROTC awards two-, three-, and four-year scholarships. A four-year ROTC scholarship is presently valued at $100,000. Students who have two or three years of college remaining are encouraged to compete for campus-based full-tuition and fees scholarships, which are worth $25,000 per year. University incentives are tied to three- and four-year Advanced Designee scholarships. In previous years, those scholarship winners received a room and board incentive, bringing the total value of their four-year scholarship to over $130,000. Please consult with the Office of Financial Aid and Scholarships for information on the Advanced Designee scholarship. In addition to the tuition award, $900 annually for books and a monthly cash stipend of $350-500 is also provided.

Scholarship competition is based on academic achievement coupled with an assessment of the applicant's leadership potential. Both enrolled and non-enrolled students may compete for a scholarship. Students preparing to enter graduate studies also may be eligible. Visit our office at Ross Building 10, Room A220, located 16 Lomb Memorial Drive, 3161 Eastman Building for more information, or visit the Cadet Command website at www-rotc. monroe.army.mil/scholarships/. Using the online application, incoming freshmen should apply during the fall semester of their senior year of high school for four-year scholarships.

### Financial benefits

A subsistence allowance of $350 to $500 per month is provided tax free directly to each contracted ROTC cadet throughout the school year. RIT also offers incentives to all Army ROTC scholarship winners, ranging from flat-rate monetary assistance to full room and board or the equivalent. To qualify for these incentives, file a Free Application for Federal Student Aid (FAFSA) form by March 15 of each year. For additional information, please contact the Office of Financial Aid and Scholarships at (585) 475-2186.

### Basic course

The Army ROTC program is normally a four-year program and is divided into two components, the Basic Course and the Advanced Course. The Basic Course consists of the first two years of the Army ROTC program. This would normally be the freshman and sophomore years of college. During the Basic Course, *non-scholarship students have absolutely no military obligation.* Basic Course classes emphasize the development of academic and life skills necessary to ensure that cadets become better students and to increase their 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 history, small-unit leadership, and problem solving. Students in the Basic Course register for a class and lab, and if they also register for the Army Conditioning Drills, they will receive physical education credit from RIT 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 (the last two years of the program). Eligible Basic Course cadets also can compete to attend off-campus Army training opportunities such as the Army Airborne or Air Assault schools.

### Leader Training Course

The Leader Training Course (LTC) is a two-year 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). At this paid 28-day Leader Training Course, students obtain the necessary skills and training to qualify for entry into the last two years of the Army ROTC program. LTC teaches basic military skills while emphasizing leadership development. Participants who successfully complete the camp 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 as soon as possible but no later than the spring quarter.

### Veterans

Qualified students with prior military service and members of the Army National Guard and Army Reserve who have attended Basic Training may enroll directly into the Advanced Course. However, they must be academically aligned (i.e., 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.

### Advanced Course

The Advanced Course is for students entering their last two academic years (co-op excluded) of college. The Advanced Course is similar to the Basic Course in organization and style, but the course content focuses more heavily 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 the focus. Upon entering their last year in the program, Advanced Course cadets are ranked against their peers in academics, performance at Advanced Camp (the required summer program after year three), and general on-campus performance. Based on these factors, the Army makes duty placement and job selections. Advanced Course cadets also have the opportunity to participate in a myriad of off-campus Army training opportunities such as Airborne, Air Assault, 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 a leader in an Active Army unit in the United States or elsewhere around the world.

## Leader Development and Assessment Course (LDAC)

The Advanced Course includes attendance at the ROTC Leader Development and Assessment Course (LDAC) at Fort Lewis, Washington, which normally occurs between the third and fourth years of college. At LDAC, 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 are paid travel expenses and a salary for participating in this challenging and greatly rewarding experience.

## For more information

To learn more about career opportunities through Army ROTC, visit or call the department of military science, Room A220, Ross Building. You also may contact us by e-mail at armyrotc@rit.edu or by telephone at (585) 475-2881. Visit our website at www.rit.edu/~armyrotc.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year, MS I | Introduction to Military Science 0640-201* | 2 |
| | Applied Military Dynamics 0640-202* | 2 |
| | Military Heritage 0640-203* | 2 |
| Second Year, MS II | Military Geography 0640-301* | 2 |
| | Psychology and Leadership 0640-302* | 2 |
| | The Military and American Society 0640-303* | 2 |
| Third Year, MS III | Military Tactics 0640-401* | 3 |
| | Military Communications 0640-402* | 3 |
| | Military Operations 0640-403* | 3 |
| Fourth Year, MS IV | Army Training Systems 0640-501* | 3 |
| | Military Administration and Logistics Management 0640-502* | 3 |
| | Military Law and Ethics 0640-503* | 3 |
| | *Total Quarter Credit Hours* | *30* |

** A leadership lab, which is conducted on a weekly basis for two hours, is an integral part of each course offered throughout the year. Class 1, Lab 1 = Credit 2, or Class 2, Lab 1 = Credit 3.*

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| Third Year, MS III | Military Tactics 0640-401 * | 3 |
| | Military Communications 0640-402 * | 3 |
| | Military Operations 0640-403 * | 3 |
| Fourth Year, MS IV | Army Training Systems 0640-501 * | 3 |
| | Military Administration and Logistics Management 0640-502 * | 3 |
| | Military Law and Ethics 0640-503 * | 3 |
| | *Total Quarter Credit Hours* | *18* |

** A leadership lab, which is conducted on a weekly basis for two hours, is an integral part of each course offered throughout the year. Class 1, Lab 1 = Credit 2, or Class 2, Lab 1 = Credit 3.*

# Reserve Officer Training Corps (AFROTC) – Air Force

***Lt. Col. David Easley, Professor of Aerospace Studies***

*www.rit.edu/~712www/*

Participation in Air Force Reserve Officer Training Corps (AFROTC) provides college students 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.

## Characteristics

The department of aerospace studies has designed a curriculum compatible with the four- and five-year cooperative education programs at RIT. The program 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

This program has three distinct parts: the General Military Course (GMC), the Professional Officer Course (POC), and Summer Field Training.

The GMC is for students entering the program directly from high school. As freshmen and sophomores, they will study Air Force Doctrine, Mission and Organization, the nature of conflict, and the development and evolution of air and space power.

The POC is the advanced aerospace studies curriculum and is conducted during the junior and senor years. This curriculum prepares cadets for entry into the Air Force as second lieutenants by studying the fundamentals of leadership and management, ethics, staff planning and coordination, national security affairs, and foreign policy.

Every cadet must complete a four-week Summer Field Training, normally between the sophomore and junior years. The field training curriculum includes leadership training, drill and ceremony, officer training, confidence course, and physical fitness training. Field training evaluates a student's leadership potential and qualifies the cadet for entry into the POC.

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.

## Two-year program

This program allows students to join the cadet corps with as little as two years remaining in college. Cadets receive all GMC academics and leadership laboratory experience in a six-week summer field training exercise, usually conducted between their junior and senior years. Successful completion of the summer camp qualifies cadets for entry into the POC (see "Four-year program").

## Other programs

Several other professional development programs are offered to cadets in both the two- and four-year programs to further develop the "whole person" concept. The programs include Army airborne training, survival school, foreign language immersion, drill team, honor guard, base visits, and Arnold Air Society (a community service organization).

## Physical education graduation requirements

RIT physical education requirements can be satisfied by completion of the leadership lab. Students must be enrolled in AFROTC to participate in the lab.

## Qualifications and selection procedure

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

## Scholarships

Air Force ROTC offers a variety of scholarships to qualified students in many academic disciplines. Two-, three-, and four-year scholarships are available in technical and non-technical fields. Competition is very keen 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 to compete for four-year scholarships through a national board process.

## Financial assistance

Every scholarship cadet and all POC cadets receive an allowance between $250-400 monthly. RIT selectively augments four-year high school scholarships with free room and board. In order to receive RIT's scholarship assistance, students must file a Free Application for Federal Student Aid (FAFSA) form by March 15. Contact the Office of Financial Aid and Scholarships for further information.

## For more AFROTC information

Call the department at (585) 475-5197 or visit us on campus in the Ross Building (Bldg. 10), Room A250.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Air Force Today I, II, III 0650-210, 211, 212 | 3 |
| | Leadership Lab I 0650-201, 202, 203 | 3 |
| Second Year | History of Air Power I, II, III 0519-201, 202, 203 | 4 |
| | Leadership Lab II 0650-301, 302, 303 | 3 |
| Third Year | Air Force Leadership and Management I, II 0102-310, 311 | 10 |
| | Leadership Lab III 0650-401, 402, 403 | 3 |
| Fourth Year | Leadership Lab IV 0650-404, 405, 406 | 3 |
| Fifth Year | National Security Affairs I, II 0513-401, 402 | 9 |
| | Leadership Lab V 0650-501, 502, 503 | 3 |
| | *Total Quarter Credit Hours* | *41* |

** NOTE:*
*1. This is a typical flow, but junior- and senior-level academic courses can be taken in years 3 and 5 or years 4 and 5.*
*2. Five year students enrolled at RIT but not taking Air Force junior- or senior-level courses, must be enrolled in Leadership Lab.*

# E. Philip Saunders College of Business

***Wayne Morse, Interim Dean***
*www.cob.rit.edu*

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 our educational aims, the college's academic programs consist of four components: liberal arts and sciences, business core, major, and cooperative work experience. The liberal arts and sciences component includes courses in humanities, mathematics, science, and social science. The student is also expected to display proficiency in both oral and written forms of communication, and choose a liberal arts concentration or minor.

Integrated throughout the business core are themes of global competitiveness, technology management, information systems, ethics, diversity, and problem solving. Courses in economics, mathematics, data analysis, computer skills, and organizational behavior provide the fundamental knowledge and interpersonal analytical skills necessary for advanced study in the student's chosen major. They also provide the foundation to consider career alternatives.

In the third component, the major, students concentrate their study in a specific business career field*. The College of Business offers the following majors:

**Accounting**
**Finance**
**International Business (requires co-major)**
**Management**
**Management Information Systems**
**Marketing**
**Graphic Media Marketing**

**An undeclared business option is available to students during their first and second years to allow them to explore different offerings prior to formalizing their career focus.*

By building on the liberal arts and sciences and business core components, the major will provide mastery of marketable skills. Students also can pursue an additional business focus area by completing one of the seven business minors offered by the College of Business. Advisers are available to assist students in choosing a minor that complements their area of study or personal interests.

All students in the College of Business are required to take the courses outlined below. These courses provide students with an understanding of all facets of business and serve as a foundation for advanced study in a specific area of interest.
Required courses:

| | |
|---|---|
| 0102-250 | World of Business |
| 0112-270 | Business Software Applications |
| 0101-301 | Financial Accounting |
| 0101-301 | Management Accounting* |
| 0112-315 | Business Information Systems Processes |
| 0104-350 | Corporate Finance |
| 0102-360 | Global Business: An Introduction |
| 0105-363 | Principles of Marketing |
| 0102-430 | Organizational Behavior |
| 0106-401 | Operations Management |
| 0102-551 | Strategy and Policy |
| 0511-211 | Principles of Microeconomics |
| 0511-402 | Principles of Macroeconomics |
| 1016-226 | Calculus for Management Science |
| 0106-319 | Data Analysis I |
| 1016-320, 379 | Data Analysis II and Lab |
| 0535-352 | Professional Communication for Business |

*Note: An ethics course is a required component for all business majors.*
**Replaced in the accounting major with Cost and Managerial Accounting.*

**Additional requirements:**
two laboratory science courses
nine liberal arts courses
two quarters of cooperative education
proof of writing competency
wellness education and a wellness activity course
two First-Year Enrichment courses

## Admission requirements

Transfer programs: The College of Business integrates transfer students into its baccalaureate degree programs. It is the policy of the college to recognize as fully as possible the past academic accomplishments of each student. Students who have earned an associate degree in a business program prior to enrollment at RIT may normally expect to complete the requirements for the BS degree in two years, which includes six academic quarters and two required quarters of cooperative work experience.

Part-time studies: The college offers evening classes for students who wish to pursue a baccalaureate degree with a major in management. RIT's Center for Multidisciplinary Studies offers lower-division business courses for those students who are just beginning their college studies. Upon successful completion of the associate degree, students may apply for transfer into the College of Business to continue their studies.

## Faculty

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

## Facilities

RIT is a national leader in incorporating computer technology into the classroom. College of Business students have access to extensive resources and utilize the same business software used at Fortune 1000 companies worldwide. Many classrooms and study areas feature wireless access. The college has a hands-on network technology lab where students gain experience in networking systems and administering information in a networked environment.

## 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. This practical work is part of the student's career exploration and helps students relate their classroom studies to the world of business.

College of Business students are required to complete two successful cooperative education experiences. These "work blocks" take place during the junior or senior year. While RIT and the College of Business cannot guarantee cooperative employment, RIT's Office of Cooperative Education and Career Services is a resource available to assist students in their job search efforts.

## Accreditation

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

## Special options

Advising: The College of Business is committed to providing advising services throughout a student's academic program. In the Student Services Office, all students are assured administrative support to effectively deal with registration, records, and scheduling. In addition, the administrative staff is prepared to provide students with information about other support areas within RIT. Students are assigned an individual faculty adviser. Faculty advisers are an integral part of the student's advising network and are available for advice on cooperative education and careers options.

Honors Program: Students who demonstrate a high level of achievement at the high school level may be invited to join the College of Business Honors Program. These students will participate in honors coursework 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: The College of Business 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. RIT's Study Abroad Office has information about numerous options. International business majors may use a study abroad experience to replace one of their required cooperative education work blocks.

Minors: To broaden a student's experience and professional opportunities, the College of Business offers minors. Students may complete a minor by taking courses in one of the following areas: accounting, entrepreneurship, finance, international business, management, management information systems, or marketing. This option is available to business students as well as to students from other colleges. For further information, contact a College of Business adviser.

## Graduate programs

The College of Business offers the following graduate degree programs: master of business administration, master of business administration–accounting (which meets the New York State education requirements for CPA examination candidacy), master of science in finance, and master of science in management. These programs are available on a full- or part-time basis. The programs are professional in nature and prepare the student in all aspects of business management as well as offering a concentration in a field of specialization. Details are contained in the *Graduate Bulletin*, available from the Office of Graduate Enrollment Services. An executive master of business administration degree is also offered.

Undergraduate business students may want to consider the 4+1 program or the dual-admit program, which allows completion of both the BS and MBA degrees in five years. For more information about these programs contact the College of Business at (585) 475-6221.

## Accounting

*www.cob.rit.edu/academics/accounting.html*

The accounting curriculum provides broad exposure to liberal arts, 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 coursework preparing them to enter RIT's MBA-Accounting program. Completion of both the BS and MBA-Accounting degree satisfies the New York State CPA education requirements (see Electives). Other students may tailor their major to meet diverse commercial, government, and not-for-profit opportunities. Another option is to select coursework with a goal of obtaining a graduate degree in law.

**Accounting, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I, II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Liberal Arts* | 12 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial Accounting 0101-301 | 4 |
| | Cost and Managerial Accounting 0101-335 | 4 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Accounting Information Systems 0101-345 | 4 |
| | Legal Environment of Business 0110-319 | 4 |
| | Liberal Arts* | 12 |
| | Corporate Finance 0104-350 | 4 |
| | General Education Electives | 8 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Financial Reporting and Analysis I 0101-408 | 4 |
| | Financial Reporting and Analysis II 0101-409 | 4 |
| | Personal and Small Business Taxation 0101-522 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Liberal Arts* | 12 |
| | Free Electives | 8 |
| | General Education Electives | 8 |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |
| Fourth Year | Strategy and Policy 0102-551 | 4 |
| | Operations Management 0106-401 | 4 |
| | Financial Accounting and Reporting Issues 0101-550 | 4 |
| | Managing Corporate Assets and Liabilities 0104-452 | 4 |
| | Auditing 0101-530 | 4 |
| | Free Electives | 8 |
| | General Education Elective | 4 |
| | ***Total Quarter Credit Hours*** | ***182*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

Electives: The program contains four free electives. Students planning to obtain an MBA-Accounting degree and a career in public accounting should use these electives as follows:

- 0101-523 Advanced Taxation (4 credits)
- Three liberal arts and science electives (12 credits)

Other options available for students seeking careers outside of public accounting include:

- Utilizing the four free electives to obtain a minor in management information systems
- Utilizing the four free electives to strengthen communications skills and other coursework (such as 0110-350 Business Legal Research and Writing), that prepares them for a legal co-op and law school with a career goal in corporate law
- Utilizing the four free electives to complete accounting, business, and liberal arts electives to prepare for a career in government service

## Finance

*www.cob.rit.edu/academics/finance.html*

The finance major prepares students for management positions in financial, commercial, industrial, and governmental organizations. Students are taught the principles of financial decision making and given 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.

**Finance, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I, II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Liberal Arts* | 12 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial and Management Accounting 0101-301, 302 | 8 |
| | Corporate Finance 0104-350 | 4 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Legal Environment of Business 0110-319 | 4 |
| | Liberal Arts* | 12 |
| | Free Electives | 8 |
| | General Education Elective | 4 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Managing Corporate Assets and Liabilities 0104-452 | 4 |
| | Intermediate Investments 0104-453 | 4 |
| | Liberal Arts* | 12 |
| | Free Electives | 8 |
| | General Education Electives | 12 |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |
| Fourth Year | Operations Management 0106-401 | 4 |
| | Strategy and Policy 0102-551 | 4 |
| | Financial Analysis and Modeling 0104-460 | 4 |
| | Finance Electives | 8 |
| | Finance in a Global Environment 0104-504 | 4 |
| | Free Elective | 4 |
| | General Education Elective | 4 |
| | ***Total Quarter Credit Hours*** | ***182*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## International Business

*www.cob.rit.edu/academics/ib.html*

Students in the international business major develop the business and liberal arts foundations necessary to understand business and 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 functional areas: accounting, finance, management, management information systems, or marketing. The co-major provides the student with the functional tools needed in his or her career.

International business positions include substantial personal and professional benefits. Today's 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.

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I, II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Liberal Arts* | 12 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial and Management Accounting 0101-301, 302 | 8 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Corporate Finance 0104-350 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Foreign Language | 12 |
| | Liberal Arts* | 12 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Co-Major Courses | 8 |
| | Liberal Arts* | 12 |
| | Free electives | 8 |
| | General Education Elective | 4 |
| | Choose three of the following: | 12 |
| | Managing in the Global Environment 0102-432 | |
| | Global Business: Special Issues 0102-575 | |
| | Finance in the Global Environment 0104-504 | |
| | Marketing in the Global Environment 0105-555 | |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |
| Fourth Year | Operations Management 0106-401 | 4 |
| | Strategy and Policy 0102-551 | 4 |
| | Strategy in Global Environment 0102-465 | 4 |
| | Co-Major Courses | 8 |
| | Free Elective | 4 |
| | General Education Elective | 4 |
| | Choose one of the following: | 4 |
| | Legal Environment of Business 0110-319 | |
| | Business Government and Society 0102-507 | |
| | *Total Credit Hours* | *182* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*Language credit may be used as liberal arts upper-division credit.*

*Note: Fluency is required in a foreign language in which RIT offers instruction. The fluency requirement will be met by satisfactory completion of three quarters of language instruction or by passing a language department examination in one of the languages offered. It is strongly recommended that students take an additional three quarters of instruction in the language. Entering students, already fluent in one foreign language, are encouraged to take at least three quarters of instruction in another foreign language.*

## Management

*www.cob.rit.edu/academics/management.html*

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

**Management, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I, II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Liberal Arts* | 12 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial and Management Accounting 0101-301, 302 | 8 |
| | Corporate Finance 0104-350 | 4 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Liberal Arts* | 12 |
| | Free Electives | 8 |
| | General Education Elective | 4 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Entrepreneurship 0102-490 | 4 |
| | Human Resource Management 0102-455 | 4 |
| | Business Ethics 0102-438 | 4 |
| | Liberal Arts* | 12 |
| | Free Electives | 8 |
| | General Education Electives | 12 |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |
| Fourth Year | Business, Government and Society 0102-507 | 4 |
| | Operations Management 0106-401 | 4 |
| | Strategy and Policy 0102-551 | 4 |
| | Management Elective | 4 |
| | Leadership in Organizations 0102-460 | 4 |
| | Managing Innovation and Technology 0102-530 | 4 |
| | Free Elective | 4 |
| | General Education Elective | 4 |
| | *Total Quarter Credit Hours* | *182* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

## Management Information Systems

*www.cob.rit.edu/academics/mis.html*

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 a thorough understanding of business processes, leading enterprise system technologies, and the tools for analysis, design, and implementation of computer information systems.

After completing the core MIS courses, students have a choice of two paths: enterprise systems or systems analysis. In the enterprise systems path, students gain valuable experience by learning to use enterprise system technologies. In the systems analysis path, students develop an expertise in integrated systems including analysis, design, programming, and testing of various computer information systems.

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

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I, II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Liberal Arts* | 12 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial and Management Accounting 0101-301, 302 | 8 |
| | Corporate Finance 0104-350 | 4 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Business Programming 0112-330 | 4 |
| | Systems Analysis and Design 0112-370 | 4 |
| | Database Management Systems 0112-340 | 4 |
| | Liberal Arts* | 12 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Legal Environment of Business 0110-319 | 4 |
| | MIS Elective | 4 |
| | Network Technologies 0112-380 | 4 |
| | Liberal Arts* | 12 |
| | Free Electives | 8 |
| | General Education Electives | 12 |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |
| Fourth Year | Operations Management 0106-401 | 4 |
| | Strategy and Policy 0102-551 | 4 |
| | Project Management and Practice 0112-520 | 4 |
| | MIS Elective | 4 |
| | Free Electives | 8 |
| | General Education Electives | 8 |
| | ***Total Quarter Credit Hours*** | ***182*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## Marketing

*www.cob.rit.edu/academics/marketing.html*

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

In the marketing major, students will learn theory and gain practical experience in creating tactically enabled strategic marketing plans. Through projects, they will learn to work independently and in teams to achieve organizational objectives. RIT marketing majors develop leadership and communications skills from classroom experiences and from working on real and/or simulated business challenges. Upon completing their program, all marketing majors will have demonstrated proficiency in analyzing and understanding buyers, and developing and delivering professional sales presentations, designing and implementing marketing research projects. Students will graduate with the ability to create and critically evaluate strategic marketing plans.

**Marketing, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I and II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Liberal Arts* | 12 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial and Management Accounting 0101-301, 302 | 8 |
| | Corporate Finance 0104-350 | 4 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Liberal Arts* | 12 |
| | Free Elective | 4 |
| | General Education Electives | 8 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Buyer Behavior 0105-505 | 4 |
| | Professional Selling 0105-559 | 4 |
| | Marketing Elective | 4 |
| | Business Ethics 0102-438 | 4 |
| | Liberal Arts* | 12 |
| | Free Elective | 4 |
| | General Education Electives | 12 |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |

| | | |
|---|---|---|
| Fourth Year | Business, Government, and Society 0102-507 | 4 |
| | Operations Management 0106-401 | 4 |
| | Strategy and Policy 0102-551 | 4 |
| | Marketing Elective | 4 |
| | Marketing Research 0105-551 | 4 |
| | Marketing Management 0105-550 | 4 |
| | Free Electives | 8 |
| | *Total Quarter Credit Hours* | *182* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## Graphic Media Marketing

*www.cob.rit.edu/academics/gmm.html*

The program in graphic media marketing is an interdisciplinary major with requirements in marketing, imaging, graphic arts, information systems, and management. The program provides an overall assessment of the current and future state of the graphic communications industry. This program is designed to meet the graphic imaging industry need for broadly educated marketing and management professionals. This is a joint program between the College of Business and the College of Imaging Arts and Science.

**Graphic media marketing, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment 1105-051, 052 | 2 |
| | World of Business 0102-250 | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Data Analysis I and II 1016-319, 320 | 8 |
| | Data Analysis Lab 1016-379 | 2 |
| | Graphic Media Workflow I 2082-207 | 4 |
| | Liberal Arts* | 8 |
| | Laboratory Sciences | 8 |
| | Wellness Education† | 0 |
| Second Year | Business Software Applications 0112-270 | 2 |
| | Financial and Management Accounting 0101-301, 302 | 8 |
| | Principles of Printing 2082-371 | 4 |
| | Graphic Media Perspectives 2082-201 | 2 |
| | Business Information Systems Processes 0112-315 | 4 |
| | Global Business: An Introduction 0102-360 | 4 |
| | Principles of Marketing 0105-363 | 4 |
| | Corporate Finance 0104-350 | 4 |
| | Liberal Arts* | 16 |
| | Completion of College Writing Competency Requirements | |
| Third Year | Organizational Behavior 0102-430 | 4 |
| | Professional Selling 0105-559 | 4 |
| | Internet Marketing 0105-440 | 4 |
| | Marketing Research 0105-551 | 4 |
| | Graphic Media Electives | 6 or 8** |
| | Liberal Arts* | 12 |
| | Free Elective | 4 |
| | General Education Electives | 12 |
| | Cooperative Education (2 quarters required; must complete within third and fourth years) | Co-op |
| Fourth Year | Business Government and Society 0102-507 | 4 |
| | Marketing Management 0105-550 | 4 |
| | Operations Management 0106-401 | 4 |
| | Strategy and Policy 0102-551 | 4 |
| | Free Electives | 8 |
| | General Education Electives | 8 |
| | *Total Quarter Credit Hours* | *182 or 184*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
***Graphic Media electives are 3 or 4 credit hours.*

# B. Thomas Golisano College of Computing and Information Sciences

***Jorge L. Diaz-Herrera, Dean***
*www.rit.edu/~gccis*

The B. Thomas Golisano College of Computing and Information Sciences (GCCIS) includes the departments of computer science; information technology; software engineering; and networking, security, and systems administration. These departments offer the most current computing technology as well as extensive laboratory facilities. The Center for Advancing the Study of CyberInfrastructure (CASCI) is also part of the college and offers a common meeting ground where students from various disciplines can do research or work on cutting edge projects supplied by industrial partners.

GCCIS is the newest college at RIT, having been formed in the summer of 2001. It focuses on the computing disciplines in the broadest sense. Interdepartmental and intercollege cooperation are basic to its function. The college has more than 90 faculty, 2,700 students, 46 technical and support staff, and extensive facilities dedicated to learning, teaching, research, and development.

The computer science (CS) and information technology (IT) departments have degree programs at the associate, baccalaureate, and master's levels. Both offer evening courses that allow these degrees to be earned full- or part-time. The networking, security, and systems administration department (NSSA) and the software engineering (SE) department offer the bachelor of science degree. All departments require an extensive cooperative education experience.

## Faculty

Any academic department or program can only be as strong as its faculty. In GCCIS, the faculty is dedicated to teaching, applied research, and professional development, with an emphasis on student involvement and career preparation. Most have significant industrial experience in addition to outstanding academic credentials. Faculty members provide leadership in implementing innovative teaching techniques and anticipating and meeting the needs of students and industrial partners.

## Facilities and resources

The highly technical nature of our GCCIS programs demands excellent facilities and equipment. The college prides itself in having the very best for our students. In order to provide our students with the tools they will need to be successful, the college is equipped with over 1,500 computer work stations housed in 56 labs, studios labs, and classrooms, all with the latest technology. Each department has extensive laboratories dedicated to undergraduate education. These labs contain powerful PCs and workstations and appropriate, up-to-date software. The labs are available to students 16–18 hours a day, except when they are being used for designated course sections. 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.

To provide space for students and equipment, a 126,500-square-foot wireless building was completed in January 2003 and is the new home of GCCIS. This building allows for general use as well as specialized labs, such as those dedicated to wireless networking and computer vision. The close proximity of the college's departments and labs encourages joint projects as well as interaction among students in different programs outside the college.

## Advising

GCCIS is committed to providing academic advising and career counseling. Students have access to the department chair of the program they are enrolled in, a faculty adviser, a professional 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, the department office staff will provide support for registration and help with records and scheduling. Part-time and evening students can arrange for these services at night by appointment.

## Cooperative education

All programs in GCCIS have an extensive 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 certain program requirements. Please refer to each program for specific information regarding cooperative education requirements.

## Transfer programs

All departments within GCCIS encourage transfer students. Those with an approved associate degree will obtain full junior standing and are eligible to graduate from RIT in two years, plus the required co-op. Students with a less appropriate academic background may have to complete additional course work. Each transfer student (with or without a degree) is considered individually, and an appropriate course of study is designed for him or her. The AS, AAS, and BS degrees in CS and IT may be taken part time in the evening, as may the BS from NSSA.

## Computer Science

***Walter A. Wolf, Chair***

*www.cs.rit.edu*

The department of computer science offers programs leading to associate, bachelor, and master of science degrees in computer science. At the undergraduate level, the program is offered to high school and two-year college graduates, as first-year and upper-division students, respectively. In addition, the computer science program is offered to part-time students in an evening format.

The demands of industry and government require college graduates to have a mastery of both the fundamentals and the applied aspects of their profession. To meet this requirement, two applied educational experiences are woven into the program. Each student is required to complete a well-defined cooperative educational experience as well as an extensive set of "hands-on" laboratory experiences, many as members of a team. The laboratories that support these experiences are limited to 16 students each and provide an effective means of student-faculty interaction.

The bachelor of science program, which is fully accredited by the Computing Accreditation Commission of the Association Board of Engineering and Technology, 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, then, 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, including significant course work in mathematics and science.

Computer science covers a wide spectrum of the field of computing. A computer scientist can specialize in areas such as data communications and networking, security, minirobotics, software engineering, parallel computation, digital systems design and computer architecture, systems software, computing theory, computer graphics, vision, and artificial intelligence. It is important to note that programming is a necessary tool but is only a part of the vast field of computer science.

An undergraduate computer science student takes a core of computer science courses that provides a solid foundation for advanced work. Building on this base, students can explore a variety of specializations in their junior and senior 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.

**Computer science, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year** | Computer Science 1, 2, 3 4003-231, 232, 233 | 12 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | University Physics I, II, Lab 1017-311, 312, 375, 376 or | |
| | Chemical Principles I, II, Lab 1011-211, 212, 205, 206 | 8–10 |
| | Liberal Arts * [1] | 12-20 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| **Second Year** | Computer Science 4 4003-334 | 4 |
| | Software Engineering 4010-361 | 4 |
| | Computer Organization 4003-345 | 4 |
| | Ethics in the Information Age 0509-217 | 4 |
| | Professional Communication 4003-341 | 4 |
| | University Physics III, Lab 1017-313, 377 or | |
| | Organic Chemistry and Lab 1011-213, 207 or | 4–12 |
| | General Biology and Lab 1001-201, 202, 203, 205, 206, 207 | |
| | Discrete Mathematics I, II 1016-265, 366 | 8 |
| | Probability and Statistics 1016-351 | 4 |
| | Liberal Arts * [1] | 0–8 |
| | Free Elective [5] | 4 |
| | Wellness Education† | 0 |
| **Third, Fourth, and Fifth Years** | Introduction to Computer Science Theory 4003-380 | 4 |
| | Operating Systems I 4003-440 | 4 |
| | Data Communications and Networks I 4003-420 | 4 |
| | Programming Language Concepts 4003-450 | 4 |
| | Computer Science Related Electives [2] | 8 |
| | Computer Science Electives [4] | 16 |
| | Related Electives [4] | 12 |
| | Liberal Arts * | 24 |
| | Science Electives | 8 |
| | Free Elective [5] | 8 |
| | Cooperative Education (4 quarters required) | Co-op |
| | ***Total Quarter Credit Hours*** | ***192*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*[1] Students electing physics or chemistry should take 16 credits of liberal arts the first year and eight the second. Those choosing biology should take 20 credits of liberal arts the first year and none the second year.*
*[2] The computer science-related electives requirement requires 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.*
*[3] Computer science and software engineering courses may be taken as computer science electives, except as noted in the course descriptions.*
*[4] Related electives are courses given by the same department; or see the undergraduate coordinator.*
*[5] Any course open to computer science majors may be taken as a free elective.*

## Evening programs

The AS and BS programs may be taken on a part-time basis during the evening hours. The typical evening student requires approximately 13 quarters to complete all the course requirements for the associate degree and 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 13 quarters.

**Computer science, AS degree, evening program, typical course work**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| Computer Science | Computer Science 1, 2, 3, 4 4003-231, 232, 233, 334 | 16 |
| | Professional Communication 4003-341 | 4 |
| | Software Engineering 4010-361 | 4 |
| | Computer Organization 4003-345 | 4 |
| Mathematics and Science: | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Probability and Statistics 1016-351 | 4 |
| | Discrete Mathematics 1016-265, 366 | 8 |
| | Physics I, II, III 1017-311, 312, 313, 375, 376, 377 | 12 |
| | or | |
| | Chemistry I, II, III 1011-211, 212, 213, 205, 206, 207 | 12 |
| | or | |
| | Biology I, II, III 1001-201, 202, 203, 205, 206, 207 | 12 |
| Liberal Arts: | Writing and Literature | 4 |
| | Electives | 24 |
| | *Total Quarter Credit Hours* | *92* |

**Computer Science, BS degree, evening program, typical course work**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| Computer Science | Computer Science 1, 2, 3, 4 4003-231, 232, 233, 334 | 16 |
| | Professional Communication 4003-341 | 4 |
| | Software Engineering 4010-361 | 4 |
| | Computer Organization 4003-345 | 4 |
| | Introduction to CS Theory 4003-380 | 4 |
| | Programming Language Concepts 4003-450 | 4 |
| | Data Communications and Networks I 4003-420 | 4 |
| | Operating Systems I 4003-440 | 4 |
| | Computer Science Related Electives [1] | 8 |
| | Computer Science Electives [2] | 16 |
| Liberal Arts* | | 52 |
| Mathematics and Science: | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Probability and Statistics 1016-351 | 4 |
| | Discrete Mathematics 1016-265, 366 | 8 |
| | Science Electives | 8 |
| | Physics I, II, III 1017-311, 312, 313, 375, 376, 377 | 12 |
| | or | |
| | Chemistry I, II, III 1011-211, 212, 213, 205, 206, 207 | 12 |
| | or | |
| | Biology I, II, III 1001-201, 202, 203, 205, 206, 207 | 12 |
| Other: | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Free Electives | 12 |
| | Related Electives [2] | 12 |
| | Cooperative Education (4 quarters) | Co-op |
| | *Total Quarter Credit Hours* | *192* |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*[1] The computer science-related electives requirement requires 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.*
*[2] Related electives are courses given by the same department or see the undergraduate coordinator.*

## Information Technology

***James Leone, Chair***

*www.it.rit.edu*

Information technology has emerged over the last decade as a unique academic discipline, distinct from computer science, software engineering, and computer engineering. While those disciplines focus on creating new technology, information technology focuses on selecting, integrating, and deploying technology to meet the needs of end users. In other words, information technologists are "users advocates," whose primary mission is to make things work for end users in all sectors of society. Since every organization, enterprise, and individual in society needs to make effective use of computing and information technology, the demand for competent IT professionals far exceeds the supply, and the gap only widens as computing environments become more powerful and more complex.

RIT's BS degree program in information technology was the first such program in the world in 1992, and the only undergraduate IT program in the United States for at least four years thereafter. Since the program's inception, our faculty members have worked to define IT as a distinct computing discipline and to establish accreditation standards and model curricula as a founding member of the Association for Computing Machinery's Special Interest Group for IT Education. In 2005, these efforts came to fruition when RIT's IT program became the first information technology program to earn accreditation from the Accreditation Board of Engineering and Technology. In short, RIT has been the leader in defining IT as an academic discipline, and our IT program provides students with unrivaled depth in IT education.

The role of a users advocate is diverse and multifaceted as well. In order to "make things work" for people in today's (and tomorrow's) sophisticated computing environments, information technologists need core competencies in four essential areas: networking and system administration, which includes the design, deployment, and security of computing infrastructure;

Web and multimedia content development, which we refer to as interactive media; programming and application development, including database management systems and Web-deployed applications; and technology integration and deployment in a user community, including needs assessment, user-centered design, technology transfer, and ongoing support.

This fourth competency area, which we euphemistically refer to as "the human stuff," is in some sense the defining competency for IT professionals. To be successful users advocates, IT professionals must see the world through the users' eyes, and must learn enough about the tasks users perform and the skills they possess to be able to select, integrate, and deploy technology that enhances users' lives. This requires skills in information gathering, user-centered design, and effective deployment in the users' environment or culture. These skills, in turn, are built on a foundation of strong communication and people skills.

The core competencies that every IT professional must possess also provide a foundation on which to build greater depth in selected areas. Many IT students choose to focus on one or two technical aspects of IT to prepare for careers as specialists in a variety of market niches such as game design and development, network administration, or Web-database integration, to name a few of the many possibilities. Other students choose a broader path to prepare for "general practitioner" jobs, which are prevalent in virtually every enterprise in society. In short, RIT's IT program offers the opportunity to specialize, but does not require that a student choose a specialization.

Information technology continues to expand into many domains. Medical informatics is advancing the medical field by applying information technology to medical practice, research, and education. The medical informatics curriculum is grounded in basic science, yet emphasizes the clinical and laboratory applications of computer technology. The program's computer science track suits those interested in developing computer software for medical applications, while the information technology track focuses on computing support for databases, networks, and Web applications.

## Information technology

The program of study in information technology consists of a core of computing courses, followed by advanced study in two concentration areas chosen by the student and approved by his or her academic adviser. The concentrations are intended to prepare students for advanced IT specialties. Predefined concentration areas include game design and development, website development, interactive multimedia development, network administration, system administration, wireless data networking, database, learning and performance technology, and advanced application development. In addition, students can elect to create a special topics sequence for one of their two concentrations. A special topics concentration can include a mix of upper-division IT courses and/or courses outside the IT department in areas such as graphic arts, computer animation, telecommunications, or computer science.

All of the components of this program, including cooperative education, are uniquely designed to produce an individual of value to industry in the Information Age.

## Cooperative education

The BS in information technology requires that students complete three quarters of cooperative education prior to graduation. Students may schedule cooperative education after completing the second-year academic requirements. A typical schedule might include cooperative education in the summer quarter following the second year and in spring and summer quarters of the third year.

## Part-time study

The AAS and the BS in information technology are available on a part-time basis. Courses in these programs are available both during the day and in the evening to accommodate those who work, regardless of their schedules. The typical evening student requires approximately 12 quarters to complete all the course requirements for an associate-level degree and 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 BS degree requirements in 12 quarters.

**Information technology, BS degree, typical full-time course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 4002-201 | 1 |
| | Introduction to Multimedia: The Internet and the Web 4002-320 | 4 |
| | Programming for Information Technology I, II, III 4002-217, 218, 219 | 12 |
| | Foundations of Data Communication 4050-341 | 4 |
| | Algebra and Trigonometry 1016-204 | 4 |
| | Discrete Math for Technologists I, II 1016-205, 206 | 8 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Platform Fundamentals 4050-340 | 4 |
| | Introduction to Networking 4050-342 | 4 |
| | Interactive Digital Media 4002-330 | 4 |
| | Introduction to Database and Data Modeling 4002-360 | 4 |
| | HCI 1: Human Factors 4002-425 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Liberal Arts* | 12 |
| | Lab Science Elective | 8 |
| | Free Elective | 4 |
| Third and Fourth Years | Cooperative Education (3 quarters required after year two) | Co-op |
| | Needs Assessment 4002-455 | 4 |
| | HCI 2: Interface Design and Development 4002-426 | 4 |
| | Technology Transfer 4002-460 | 4 |
| | IT Concentration Courses§ | 24 |
| | Liberal Arts* | 12 |
| | Free Electives | 20 |
| | General Education Electives | 18 |
| | ***Total Quarter Credit Hours*** | ***181*** |

** 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 website development, interactive multimedia development, game development, network administration, system administration, wireless data networking, database, learning and performance technology, advanced application development and special topics. A six-course Web-database integration track is also available.*

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

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Multimedia: The Internet and the Web 4002-320 | 4 |
| | Programming for Info. Technology I, II, III 4002-217, 218, 219 | 12 |
| | Foundations of Data Communication 4050-341 | 4 |
| | Algebra and Trigonometry 1016-204 | 4 |
| | Discrete Math for Technologists I, II 1016-205, 206 | 8 |
| | Liberal Arts* | 12 |
| Second Year | Interactive Digital Media 4002-330 | 4 |
| | Platform Fundamentals 4050-340 | 4 |
| | Introduction to Networking 4050-342 | 4 |
| | Introduction to Database and Data Modeling 4002-360 | 4 |
| | Technology Transfer 4002-460 | 4 |
| | IT Electives | 8 |
| | Lab Science Electives | 8 |
| | Liberal Arts* | 8 |
| | Free Elective | 4 |
| | Wellness Education† | 0 |
| | *Total Quarter Credit Hours* | *92* |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

## New Media Information Technology

***James Leone, Chair***

Since the mid-1990s, we have witnessed the emergence of a major new communications medium built upon the foundations of computing and the Internet. For many years, the Internet was the semiprivate domain of academics and researchers who exchanged text-based messages and software without fanfare or commercial interest. These pioneers of the Internet could not have realized that the simple addition of a graphical user interface to the Internet would launch a major communications revolution. In the years following the creation of the World Wide Web, billions of ordinary people all over the world have become regular users of the Internet, and Internet-based business has become a significant economic force in the marketplace.

The term "new media" encompasses Internet-based media, interactive television, and nonnetwork-based digital media such as CD-ROM and DVD. Publishers, manufacturers, direct marketers, and information service providers use new media technologies to reach targeted audiences for the purposes of teaching, advertising, marketing, information gathering, transacting business, and expressing creative ideas.

The successful deployment of new media requires the close collaboration of designers, information technologists, and business planners. Even more so than with traditional media, collaboration between professionals with these different skill sets has become the norm. To successfully navigate the waters of the new media marketplace, practitioners must have the ability to work and understand the needs of professionals from other disciplines.

### Program overview

RIT offers three closely related programs that together offer a unique approach to new media education:

- BS in new media information technology
- BFA in new media design (from the College of Imaging Arts and Sciences)
- BS in new media publishing (from the College of Imaging Arts and Sciences)

This trio of programs enables students to learn and practice their respective disciplines in close collaboration with one another. Although each program has a unique emphasis, all of them share a common core of courses that introduce our new media students to technical, aesthetic, and business issues relevant across a broad range of professional career paths. The curriculum of the common core includes course work in graphic design, photographic imaging, video, publishing, programming, and information technology.

Students in the new media IT program will complete most of their advanced course work in information technology, where they have the opportunity to pursue cutting-edge skills in interactive media and Web technologies.

As new media environments become richer and more complex, the industry has moved away from displaying "one-size-fits-all" Web pages and CD-ROMS and toward new media that must:

- reformat itself for display on computers, television sets, PDAs, and cell phones;
- configure itself to the interests of the individual viewer/subscriber;
- mix broadcast media information with computer-based media;
- allow multiple users to view/work on the same material at the same time;
- create interactive entertainment spaces able to support thousands of simultaneous users;
- drive the economy of the information age with financial and product databases;
- support the computer-based, network-backed training and education programs just emerging; and
- create a new marketplace of ideas.

It is the IT/new media student who will create and program the database-backed, networked information spaces to support the content created by his or her peers in the imaging arts disciplines.

In their senior year, the new media IT student will rejoin those from the other two new media programs to complete a two-quarter, eight-credit new media team project that will tackle real world new media projects. This culminating experience provides an opportunity for each student to hone his or her skills in collaboration with students from different disciplines in a setting much like that found in industry.

## Cooperative education

In addition to the senior project, new media IT students will complete three quarters of cooperative education. IT co-op students have found work in Web design, electronic commerce, human factors labs, and other related businesses both in and outside of Rochester. These experiences have given our students a "real-world experience" edge when applying for jobs after graduation.

The design of this program had considerable input from new media industry leaders. These leaders want employees who can work in interdisciplinary teams, and they are intrigued by the senior project and cooperative education portions of the program.

**New media information technology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 4002-201 | 1 |
| | 2D Design 2013-231 | 3 |
| | Time-Based Imaging 2009-411 | 3 |
| | Introduction to Multimedia: The Internet and the Web 4002-320 | 4 |
| | New Media Perspectives 4002-211 | 3 |
| | Imaging for New Media 2083-206 | 4 |
| | Elements of Graphic Design 2009-213 | 3 |
| | Introduction to Programming for New Media 4002-230 | 4 |
| | Programming II for New Media 4002-231 | 4 |
| | Algebra and Trigonometry 1016-204 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | | 0 |
| Second Year | Website Design and Implementation 4002-409 | 4 |
| | Design of Graphical User Interface 2009-323 | 4 |
| | Java for Programmers 4002-414 | 4 |
| | Introduction to Structured Markup | 4 |
| | Introduction to Database and Data Modeling 4002-360 | 4 |
| | New Media Restricted Elective ** | 3-4 |
| | Discrete Math for Technologists I, II 1016-204,205 | 8 |
| | Data Analysis 1016-319 | 4 |
| | Liberal Arts* | 12 |
| Third/ Fourth Years | Cooperative Education (3 quarters required after year two) | Co-op |
| | New Media Restricted Elective ** | 3-4 |
| | Networking Essentials | 4 |
| | Technology Transfer 4002-460 | 4 |
| | New Media IT Advanced Electives† | 20 |
| | New Media Team Project I, II 4002-560, 565 | 8 |
| | Lab Science Electives | 8 |
| | Liberal Arts* | 12 |
| | General Education Electives | 18 |
| | Free Electives | 12-14 |
| **Total Quarter Credit Hours** | | ***184*** |

** Please see Liberal Arts General Education Requirements for more information.*
*** Two of the following four courses are required: Digital Video, Introduction to Digital Animation, Typography for New Media, or a New Media Publishing elective*
*†Five of the following 10 courses are required: Web Client-Side Programming, Web Server Programming, Web Client-Server Programming, Writing for Interactive Media, Network-Based Multimedia, Digital Audio and Computer Music, Introduction to VRML, Programming for Digital Media, and Multi-User Media Spaces.*

# Medical Informatics

***Nicolas A. Thireos, Program Director***

RIT's BS degree curriculum in medical informatics is one of only a few programs in the United States. The program was developed by the College of Science and the departments of computer science and information technology to respond to the increasing use of computers in every aspect of heath care, as well as biomedical research and education. Students receive training in the basic and medical sciences and computer science/information technology, with emphasis on clinical and laboratory applications. This array of courses provides graduates with the ability to communicate with medical personnel and trains them to develop computer applications for the solution of clinical problems, laboratory analyses, medical information systems, medical research, and education. It also trains them to provide computing support to medical professionals in the above areas.

Students can choose one of two tracks in this program: computer science, for those students 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 are strongly encouraged to obtain an experiential medical informatics education by participating in the cooperative education program (co-op). Co-op allows them to alternate quarters of academic study with quarters of paid employment, starting with the summer at the end of the second year. Co-op provides the opportunity to practice new skills in real-life situations for the student to test a chosen field before making a lifelong commitment. The experiences students acquire not only make their education more relevant, but also make them more valuable to prospective employers.

Students consult with faculty advisers in order to tailor their academic programs to individual career goals. Upper-level electives are used to 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.

## Optional premedical track

Medical informatics can optionally function as a premedical program. Those medical informatics students interested in applying to medical, dental, or veterinary school after graduation follow the computer science track, but replace some of the computing courses with physics and organic chemistry. For more information, contact the program director, Nicolas Thireos, at (585) 475-6511, or e-mail nat@it.rit.edu.

## BS/MS option in medical informatics and computer science

The BS degree in medical informatics can be obtained in four years. With one additional year (four quarters) of study, students also can earn an MS degree in computer science. Students must declare their intention to pursue the MS degree by their third year of undergraduate study. Some assistantships and scholarships for graduate study are available to deserving students.

## Requirements for the BS in medical informatics

The student 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 attended at their previous school. Specific requirements will be determined by the department for each transfer student.

**Medical informatics, BS degree, typical course sequence, computer science (CS) and information technology (IT) Tracks**

| CS Track | | IT Track | |
|---|---|---|---|
| **First Year** | **Credit** | | **Credit** |
| Computers in Medicine 4006- | 4 | Computers in Medicine 4006- | 4 |
| Introduction to Medical Informatics 4006-240 | 3 | Introduction to Medical Informatics 4006-240 | 3 |
| Computer Science 4003-231, 232, 233 | 12 | Programming for Information Technology 4002-217, 218, 219 | 12 |
| Introduction to Multimedia: Web 4002-320 | 4 | Introduction to Multimedia: Web 4002-320 | 4 |
| | | Foundations of Data Communications 4050-341 | 4 |
| Medical Terminology 1026-301 | 3 | Medical Terminology 1026-301 | 3 |
| Project-Based Calculus 1016-281, 282 | 8 | Algebra for Management 1016-225 | 4 |
| Discrete Mathematics 1016-265 | 4 | Discrete Math for Tech 1016-205, 206 | 8 |
| Liberal Arts* | 8 | Liberal Arts* | 4 |
| Freshman Seminar 4002-201 | 1 | Freshman Seminar 4002-201 | 1 |
| First-Year Enrichment 1105-051, 052 | 2 | First-Year Enrichment 1105-051, 052 | 2 |
| Wellness Education† | 0 | Wellness Education† | 0 |
| **Second Year** | | | |
| Medical Informatics I 4006-310 | 4 | Medical Informatics I 4006-310 | 4 |
| Medical Informatics II 4006-410 | 4 | Medical Informatics II 4006-410 | 4 |
| Medical Informatics Seminar 4006-345 | 1 | Medical Informatics Seminar 4006-345 | 1 |
| Computer Science 4 4003-334 | 4 | Information Technology Elective | 4 |
| Computer Organization 4003-345 | 4 | Computer Platform Fundamentals 4050-340 | 4 |
| Database Concepts 4003-485 | 4 | Database and Data Modeling 4002-360 | 4 |
| General Biology 1001-201, 202, 203 | 9 | General Biology 1001-201, 202, 203 | 9 |
| General Biology Lab 1001-205, 206, 207 | 3 | General Biology Lab 1001-205, 206, 207 | 3 |
| Probability and Statistics 1016-351 | 4 | Data Analysis 1016-319 | 4 |
| Liberal Arts* | 4 | Liberal Arts* | 4 |
| Free Elective | 4 | Free Elective | 4 |
| **Third Year** | | | |
| Medical Database Architectures 4006-420 | 4 | Medical Database Architectures 4006-420 | 4 |
| Medical Application Integration 4006-430 | 4 | Medical Application Integration 4006-430 | 4 |
| Data Communication and Networks 4003-420 | 4 | | |
| Software Engineering 4010-361 | 4 | Fundamental Data Modeling 4002-461 | 4 |
| Computing Elective | 4 | Information Technology Elective | 4 |
| Anatomy and Physiology 1026-350, 360 | 10 | Anatomy and Physiology 1026-350, 360 | 10 |
| Diagnostic Medical Imaging 1026-205 | 2 | Diagnostic Medical Imaging 1026-205 | 2 |
| Liberal Arts* | 8 | Liberal Arts* | 12 |
| Free Elective | 4 | Free Elective | 4 |
| Wellness Education† | 0 | Wellness Education† | 0 |
| **Fourth Year** | | | |
| Computing Electives | 12 | Information Technology Electives | 12 |
| General and Analytical Chemistry 1011-215, 216, 217 | 10 | General and Analytical Chemistry 1011-215, 216, 217 | 10 |
| General and Analytical Chemistry Lab 1011-205, 206, 227 | 4 | General and Analytical Chemistry Lab 1011-205, 206, 227 | 4 |
| Liberal Arts* | 16 | Liberal Arts* | 16 |
| Free Elective | *4* | *Free Elective* | *4* |
| Cooperative Education 4002-499 | *Co-op* | *Cooperative Education 4002-499* | *Co-op* |
| **Total Quarter Credit Hours** | | | **184** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## Networking, Security, and Systems Administration

***Luther Troell, Chair***

*www.nssa.rit.edu*

Almost all business enterprises employ and depend on the flow of information. In today's society, nearly all information flow depends on networks. Servers within the networks act as the repositories of this information and provide it to end-users when needed.

The advent of the World Wide Web elevated the importance of computer networking and system administration. At the same time, it exposed networks and servers, and the enterprises that depend on them, to a new level of security threat. Being able to balance the need for instant information and the security of that information is a critical capability of any business, regardless of size.

- Students preparing to enter careers as providers of this technology, or as watchdogs of the information it contains, need skills in many areas, including:
  Computer construction and maintenance
- Operating system installation and configuration
- Data communications and networking
- Local area network (LAN) design and construction
- Routing and switching
- Network service installation and configuration
- Server installation and configuration
- Network and server security
- Computer forensics
- Unix and Windows operating systems
- Programming and scripting

## Applied Networking and System Administration

Networking is the technology of interconnecting multiple computers so that 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. As the scope of the network spans organizations (as with the Internet), security becomes an increasing concern, keeping information and computing assets safe from attack.

Applied networking refers to the design, construction, and operation 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. System administration refers to the installation, configuration, and operation of a computer system. This includes the specification and implementation of server hardware and software. Both areas are concerned with the security and privacy of the information that the server maintains. In today's information-rich environment, servers exist in a network and often work together to perform a common function.

The BS degree program in applied networking and system administration is designed to teach students how to be the designers, implementers, and operators of computing networks and networked systems (both clients and servers). Graduates of the program will be able to evaluate existing networks and computing systems, suggest improvements, monitor such systems for faults, and plan for growth. They will work in small- to large-scale companies. Any organization that uses computers and networks will need graduates from this program.

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. This is accomplished by focusing specifically on the network or computing system and forsaking the application domain that such programs address, that is, the program favors depth over breadth. It is this depth that allows the faculty to impart the appropriate level of detail to the student.

## Program overview

To graduate with a BS in applied networking and system administration, you must complete 181 credit hours. Entering freshmen will earn most (if not all) of those credits at RIT. For transfer students, some of those credits will be transferred from prior schools attended.

The 181 credits needed to graduate are broken down as follows:

- 80 credits of networking and system administration (60 credits core, 20 credits advanced work)
- 36 credits of liberal arts
- 24 credits of math and science
- 18 credits of general education electives
- 20 credits of free electives
- three credits for Freshman Seminar and First-Year Enrichment

The networking and system administration courses are of two types: required core courses and the advanced track. The core includes a programming sequence, a competency course in multimedia, a competency course in 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, you will select 20 credits of advanced work.

## Cooperative education

Applied networking and system administration students will complete three quarters of cooperative education. Co-op students have found work in nearly every business that requires a computer network or server. These vary from small- or medium-sized businesses to large international companies. The business area ranges from computing-centric businesses (such as manufacturers of network hardware or providers of software services) to those that are users of information technology (such as manufacturing companies, school districts, or the health care industry). Co-op gives our students "real-world experience" and provides them with an edge when applying for jobs after graduation. Typically, one co-op occurs during the summer following the second year and the other two occur in the spring and summer of the third year.

## Part-time study

The BS in applied networking and system administration is available on a part-time basis. Courses are available both during the day and in the evening to accommodate those who work, regardless of their schedules. The typical evening student requires 25 quarters to complete the BS degree.

**Applied networking and system administration, BS degree, typical full-time course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 4050-201 | 1 |
| | Programming for Information Technology I, II, III 4002-217, 218, 219 | 12 |
| | Foundations of Data Communication 4050-341 | 4 |
| | Cyber Self Defense 4050-220, 221 | 4 |
| | Introduction to Multimedia: The Internet and the Web 4002-320 | 4 |
| | Algebra and Trigonometry 1016-204 | 4 |
| | Discrete Math for Technologists I, II 1016-205, 206 | 8 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Platform Fundamentals 4050-340 | 4 |
| | OS Scripting 4050-402 | 4 |
| | Principles of Networking 4050-342 | 4 |
| | Introduction to Routing and Switching 4050-515 | 4 |
| | Introduction to Network Administration 4050-516 | 4 |
| | Concepts of Wireless Networking 4050-403 | 4 |
| | Introduction to Database and Data Modeling 4002-360 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Lab Science Electives | 8 |
| | Liberal Arts* | 8 |
| Third, Fourth, and Fifth Years | Cooperative Education (3 quarters required after year 2) | Co-op |
| | System Administration I 4050-421 | 4 |
| | Needs Assessment 4002-455 | 4 |
| | Technology Transfer 4002-460 | 4 |
| | Advanced Track Courses† | 20 |
| | Liberal Arts* | 16 |
| | Free Electives | 20 |
| | General Education Electives | 14 |
| | Wellness Education† | 0 |
| | *Total Quarter Credit Hours* | *181* |

** 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. Suggested tracks include network administration, system administration, wireless networking, and information assurance. Suggested course sequences for each track follow.*

## Advanced study

The advanced track of study for the BS in applied networking and system administration requires students to choose five of the following courses:

4050-413 Applications of Wireless Data Networking
4050-422 System Administration II
4050-423 System Administration III
4050-517 Data Network Management and Security
4050-519 Network Troubleshooting
4050-520 Advanced Switching in Data Communications
4050-523 Security of Wireless Data Networking
4050-540 Network Design and Performance
4050-545 Advanced Routing and Switching
4050-580 Computer System Security
4050-581 Computer Forensics

*Groupings to consider include:*

***Information Assurance***
4050-422 System Administration II
4050-523 Security of Wireless Data Networking
4050-517 Data Network Management and Security*
4050-540 Network Design and Performance
4050-580 Computer System Security*

***Network Administration***
4050-517 Data Network Management and Security*
4050-519 Network Troubleshooting
4050-522 Introduction to Network Programming
4050-540 Network Design and Performance
*And one of the following:*
4050-545 Advanced Routing and Switching
4050-520 Advanced Switching in Data Communications

***System Administration***
4050-422 System Administration II
4050-423 System Administration III
4050-540 Network Design and Performance
4050-580 Computer System Security*
4050-581 Computer Forensics

***Wireless Networking***
4050-413 Application of Wireless Data Networking
4050-517 Data Network Management and Security*
4050-523 Security of Wireless Data Networking
4050-540 Network Design and Performance
*And one of the following:*
4050-545 Advanced Routing and Switching
4050-520 Advanced Switching in Data Comm.

** Requires 0501-507 Computer Crime or equivalent as a prerequisite.*

## Software Engineering

***J. Fernando Naveda, Chair***
*www.se.rit.edu*

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. RIT has created a unique program that combines traditional computer science and engineering with specialized course work in software engineering. Graduates of this program receive a bachelor of science degree 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.

An important component of the curriculum is complementary course work in related disciplines. As with other engineering fields, mathematics and natural science 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. The course Engineering Methods for Software Usability introduces students to modeling, analysis, design, and evaluation of interactive software systems. A required course in economics or finance bridges software engineering with the realities of the business environment.

The liberal arts component of the software engineering 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. In the third year, all students must demonstrate writing competency in the English language by successfully completing a departmental writing exercise evaluated by faculty from the Institute Writing Committee. For some students, this may require work with the Academic Support Center or additional course work in the College of Liberal Arts.

### 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 quarter just 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.

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. The following section describes activities that are commonly performed as part of the course.

**Winter quarter:** At the start of the winter quarter, students enrolled in the senior projects course organize themselves into teams, based on the number and complexity of the projects available. Assignment of teams to projects is handled in many ways, one of the most popular being "contract bidding." In this approach, each team bids on one or more projects by outlining the project's requirement, sketching a conceptual design for the solution, and assessing the risks involved in pursuing the project. On the basis of this work, teams are awarded "contracts" by the project sponsors.

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 organizing their efforts and assigning specific roles

to team members, as well as developing a project plan (including scheduled, concrete milestones). Typically, the plan evolves along with the project, as teams learn more about the problem and aspects of its solution.

**Spring quarter:** While the winter quarter typically addresses strategic issues of requirements, specification, design, and planning, most of spring 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.

**Sponsors:** Companies and organizations that have sponsored senior projects include Nortel Networks, IBM Thomas Watson Research, PaeTec Communications, Alstom Signaling Inc., Eastman Kodak Co., RIT's Information and Technology Services, RIT's Co-op and Career Services, Harris Corporation (RF Communications Division), the Air Force Research Laboratory, Excellus Blue Cross Blue Shield, Telecom Consulting Group NE Corp. (TCN), and Videk.

## Laboratories

Students in software engineering have access to specialized facilities within the department, as well as campus-wide facilities. Equipped with the latest technology, the 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 can use any of the department's 11 team rooms. Equipped with Ethernet connections, a meeting table, comfortable seating for six, and generous whiteboard space, these rooms support our department's commitment to teamwork, both inside and outside the classroom. Six of the team rooms are furnished with state-of-the-art projection equipment.

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

## Cooperative education

All students in the software engineering program 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.

**Software engineering, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year** | Freshman Seminar 4010-101 | 1 |
| | Computer Science 1, 2, 3 4003-231, 232, 233 | 12 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Discrete Mathematics I, II 1016-265, 366 | 8 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| | First-Year Enrichment I, II 1105-051, 052 | 2 |
| **Second Year** | Personal Software Engineering 4010-350 | 4 |
| | Software Engineering 4010-361 | 4 |
| | Engineering of Software Subsystems 4010-362 | 4 |
| | Professional Communications 0535-351 | 4 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | or | |
| | Chemical Principles I, II, III, Lab 1011-211, 212, 213, 205,206, 207 | |
| | or | |
| | General Biology and Lab 1001-201, 202. 203, 205, 206, 207 | |
| | Engineering and Statistics 1016-314 | 4 |
| | Engineering Fundamentals of Computer Systems 0306-340 | 4 |
| | Introduction to Computer Science Theory 4003-380 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| **Third, Fourth, and Fifth Years** | Math/Science Elective** | 4 |
| | Software Engineering Process 4010-456 | 4 |
| | Engineering Methods for Software Usability 4010-444 | 4 |
| | Principles of Concurrent Systems 4010-441 | 4 |
| | Principles of Software Architecture 4010-540 | 4 |
| | Formal Methods of Specification and Design 4010-420 | 4 |
| | Software Requirements and Specification 4010-555 | 4 |
| | Software Engineering Project 1, 2 4010-561, 562 | 8 |
| | Software Engineering Electives‡ | 12 |
| | Application Domain Electives§ | 12 |
| | Engineering Electives# | 12 |
| | Free Electives | 12 |
| | Liberal Arts* | 18 |
| | Cooperative Education (4 quarters required) | Co-op |
| | ***Total Quarter Credit Hours*** | ***193*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ Students must choose three of the following four courses:*
*4010-442 Principles of Distributed Software Systems*
*4010-443 Principles of Information Systems Design*
*4010-450 Software Process and Product Metrics*
*4010-452 Software Verification and Validation*
*§ Each student must complete a three-course sequence in an application domain related to software engineering. Current domains include industrial and systems engineering, mechanical engineering, computer graphics, computer engineering, artificial intelligence, scientific and engineering computing, communications and networking, commercial applications, computer gaming, embedded systems and imaging and publishing technology.*
*# Each student must complete three separate or related engineering electives. Choices can be made from: software engineering, industrial and systems engineering, mechanical engineering, microelectronic engineering, computer engineering and quality and applied statistics. Prerequisites apply.*
***Software engineering majors are required to take one 4-credit math/science elective from the following list. The elected course must be taken during or after the year given in parenthesis. Course may include:*
*1011-208 College Chemistry (First Year)*
*1011-201 General Biology (First Year)*
*1016-331 Matrix Algebra (Second Year)*
*1016-365 Combinatorial Mathematics (Second Year)*
*or*
*1016-306 Differential Equations (Second Year)*
*1016-467 Theory of Graphs and Networks (Third Year)*

# College of Engineering

***Harvey Palmer, Dean***
*www.rit.edu/~630www/*

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 humanistic-social subjects, the physical sciences, and professional studies. The college offers programs leading to the bachelor of science degree in electrical, computer, 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 work experience.

Our engineering programs are strongly oriented toward mathematics and the physical sciences. Emphasis is placed on these subjects in the first two years to provide a foundation for the applied sciences and engineering subjects that follow later in the programs. Engineering fundamentals are introduced as early as possible into the curriculum, helping students develop a strong appreciation for the discipline and to prepare them for meaningful work experience in their first co-op job, which occurs sometime during the third 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 to allow students to tailor their educational experiences to address special interests and career goals.

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 liberal arts 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 who 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 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 liberal studies and technical courses,
- establishing an appropriate balance between the engineering design and engineering science components of the program,
- incorporating a strong laboratory component in the program with outstanding laboratory facilities, and
- having a diverse faculty committed to engineering education.

Advances in engineering and technology are occurring at an ever-increasing rate. The career orientation of all our programs encourages us to respond quickly to these changes and strive to develop in all students an appreciation and desire for lifelong learning.

## Admission requirements

Applicants for the engineering programs must be high school graduates who have completed four years of high school mathematics (through pre-calculus, including elementary and intermediate algebra, plane geometry, trigonometry) and have taken both physics and chemistry. Applicants should demonstrate proficiency in these prerequisite subjects since they provide the basis for the first two years of foundation courses students will take in engineering and science.

## Transfer programs

The college admits graduates with degrees from two-year community colleges in engineering science and engineering technology. A significant number of transfer students join the regular undergraduate program and give RIT's engineering programs a unique academic atmosphere.

The student who has earned an associate science (AS) degree in engineering science, with above-average scholastic achievement, usually can enter one of the five BS programs as a regular third-year student. It may be necessary to adjust a few courses to accommodate program differences in the first two years. Transfer credits are granted based on a course-by-course evaluation.

The student who has earned an associate applied science (AAS) degree in technology, and has demonstrated outstanding achievement, should consider transferring to a BS program in engineering as one alternative for continuing formal education. The exact number of transfer credits for which he or she may qualify varies widely, and the student should contact each program's department head for transfer credit evaluation.

## Faculty

The KGCOE faculty is dedicated to teaching, research, and professional development with an emphasis on student involvement and success. Many 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 departments of computer, electrical, industrial and systems, mechanical, and microelectronic engineering occupy the James E. Gleason Building and the Center for Microelectronic and Computer Engineering, an adjoining building with an integrated circuit design center and more than 10,000 square feet of cleanroom laboratory space for the fabrication of integrated circuits. Additional lab space is located in the Center for Integrated Manufacturing Studies. All departments have laboratories with excellent facilities that include state-of-the-art computer workstations for discipline-specific engineering design. In addition, two general purpose computer centers housed in the engineering buildings are available to all engineering students. The laboratories are used for both instruction and research and are available to students at all levels of the program. The faculty takes pride in the effectiveness with which engineering practice is integrated into the academic programs. The overall program incorporates classroom and laboratory instruction, engineering research projects, and special student 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 classroom and laboratory with on-the-job experience. The exposure is invaluable in bringing the engineering discipline to life for the students, providing a meaningful context for the abstract concepts that are scrutinized in the classroom. Co-op experiences also acquaint students with the constraints imposed by the industrial environment on the solution of real-life engineering problems, as well as help students decide which career path would be most rewarding. Each student makes co-op employment arrangements, with expert assistance from his or her co-op coordinator in the Office of Cooperative Education and Career Services.

Students typically begin co-op in their third year of study, at a time when their educational background qualifies them for jobs that require meaningful engineering expertise.

| 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 |
| 5 | A | RIT | Co-op | RIT | |
| | B | Co-op | RIT | RIT | |

## Accreditation

All of the college's programs of study leading to the bachelor of science degree are accredited by the Accreditation Board for Engineering and Technology (ABET). All graduating seniors are eligible and encouraged to sit for the fundamentals of engineering portion of the New York State Professional Engineering examination during their final quarter.

## Academic advising

Upon entry into the college, each student is assigned an adviser. The adviser is available for both academic advising and career counseling. In addition, the college's Academic Support Center provides specialized co-curricular programs and individual counseling to meet students' needs.

## Honors program

The Honors program is designed to enrich the academic and professional experiences of some of the best students who apply to RIT. In addition to participating in the Honors general education curriculum, students have access to special courses, projects, and advising in the College of Engineering. A curriculum focused on product innovation for a global economy stimulates and challenges students to achieve their greatest potential. Highlights include two week-long, all-expense-paid trips to key industry centers to expose students to "best practices" in the development and engineering of new products and the international dimensions of engineering practice. Students visit a domestic city (e.g., San Francisco, Seattle, etc.) in their second year, and an international location (e.g., Milan, Munich, etc.) in the third year. In the fourth or fifth years, students may choose to take advantage of a growing number of opportunities for study abroad, co-op placement outside the U.S., or a design project partnership with students in an international university. Seminars and social events with engineering faculty and advisers round out the program.

## Careers

Graduates are well-prepared to enter the workforce and provide immediate value to their employer in the full spectrum of engineering-related jobs; including applied research, product and process development, engineering design, systems engineering, project management, technical marketing, and sales. In addition, an engineering education provides an excellent foundation for continued study in business, law, and medicine. Many of our graduates continue their education, pursuing the master of science, master of engineering, or doctor of philosophy degree.

## Women and minorities in engineering

The Kate Gleason College of Engineering is proud of its many co-curricular programs that have helped to 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. In addition, student sections of professional organizations such as the Society of Women Engineers, the National Society of Black Engineers, and the Society of Hispanic Professional Engineers offer students opportunities for personal and professional growth.

## Writing competency

All College of Engineering 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 the individual departments. A passing grade on the college's writing test, administered in the third, fourth, or fifth year, is required for graduation.

## Graduate degrees

Programs leading to the master of science degree are offered in computer, electrical, industrial, mechanical, and microelectronic engineering, and applied statistics. With many of the courses offered in the late afternoon and early evening, these programs may be pursued on a full- or part-time basis. In addition, the college offers post-baccalaureate professional programs leading to the master of engineering degree, the emphasis being on engineering practice and leadership. Study may be pursued in areas such as industrial engineering, mechanical engineering, engineering management, microelectronic manufacturing engineering, and systems engineering. With many of the courses offered in the late afternoon and early evening, these masters-level programs may be pursued on a full- or part-time basis.

In addition, the College of Engineering offers a program leading to the master of science degree in materials science and engineering, in conjunction with the College of Science. The college also offers two MS degree programs that incorporate significant study in the E. Philip Saunders College of Business—one in manufacturing leadership and the other in product development.

## Engineering science and part-time study

An increasing number of students desire to pursue engineering degrees part-time while maintaining full-time employment. In response to their needs, the college offers an associate degree in engineering science. The mathematics, science, liberal arts, and core engineering science courses included in this program prepare graduates for transfer into the third-year level of most ABET-accredited engineering programs. Students who have been away from school for a while may want to take advantage of the Academic Support Center which can provide advice on the appropriate math/science courses needed to bring the student up to the academic level associated with incoming engineering freshmen.

Engineering science graduates with appropriate professional elective courses will be considered for acceptance as third-year students in either the mechanical or electrical engineering departments. They will generally be required to take upper-division courses during the normal day schedule. For transfer to other engineering departments, students are advised to contact the respective department head and arrange the appropriate course schedule before they complete 45 credits of the engineering science program.

As with full-time students, part-time students seeking a bachelor's degree are required to complete the equivalent of five quarters of approved cooperative work experience. Arrangements can be made for part-time students to use approved portions of their regular employment to satisfy some or all of the co-op requirements. Those wishing further information on part-time study in engineering should contact the Kate Gleason College of Engineering Office of Student Services at (585) 475-7994.

**Engineering science, AS degree, typical course work***

| | | Qtr. Cr. Hrs. |
|---|---|---|
| Liberal Arts | Writing 0502-227 | 4 |
| | Arts of Expression 0504-319 | 4 |
| | Two of five social sciences courses in different areas | 8 |
| | Principles of Microeconomics 0511-211 | |
| | American Politics 0513-211 | |
| | Or | |
| | Introduction to International Relations 0513-214 | |
| | Foundations of Sociology 0515-210 | |
| | Cultural Anthropology 0510-210 | |
| | Introduction to Psychology 0514-210 | |
| | Two Humanities courses (must be different disciplines) | 8 |
| History | Modern American History 0507-301 | |
| | Special Topics: American History 0507-305 | |
| | Modern European History 0507-302 | |
| | Special Topics: European History 0507-306 | |
| Fine Arts | Visual Arts 0505-213 | |
| | Musical Arts 0505-214 | |
| | Film Arts 0505-215 | |
| | Theater Arts 0505-216 | |
| Philosophy | Introduction to Philosophy 0509-210 | |
| | Ethics 0509-211 | |
| | Critical Thinking 0509-213 | |
| | Ethics in the Information Age 0509-217 | |
| | Science, Technology and Values 0508-211 | |
| Literature | Literacy and Cultural Studies 0504-210 | |
| Math and Science, Electrical Option | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Engineering Mathematics 1016-328 | 4 |
| | College Chemistry 1011-208 | 4 |
| Math and Science, Mechanical Option | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Matrices and Boundary Value Problems 1016-318 | 4 |
| | Two Science Electives | 8 |
| Physics, Electrical Option | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Restricted Science Elective | 4 |
| Physics, Mechanical Option | University Physics I, II, III 1017-311, 312, 313 | 12 |

| | | |
|---|---|---|
| **Professional, Electrical Option** | Statics 0304-336 | 4 |
| | Dynamics 0304-359 | 5 |
| | Digital Systems 0301-240 | 4 |
| | Introduction to Programming Using C 4002-211 | 4 |
| | Microcomputer Systems 0301-365 | 4 |
| | Circuits I with Lab 0301-381 | 4 |
| **Professional, Mechanical Option** | Statics 0304-336 | 4 |
| | Dynamics 0305-359 | 5 |
| | Engineering Design Graphics 0304-214 | 2 |
| | Problem Solving with Computers 0304-342 | 3 |
| | Mechanics of Materials 0304-347 | 4 |
| | Mechanics of Materials Laboratory 0304-348 | 1 |
| | Circuit Analysis I with Lab 0301-381 | 4 |
| | *Total Quarter Credit Hours* | *91–93* |

** For suggested quarterly schedule, consult with your academic adviser.*

## Engineering Exploration

The engineering exploration program is an option for students who prefer additional time in which to decide their major in engineering. Students may choose a major at the end of fall, winter, or spring quarter of their first year.

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. This course provides an overview of all five 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 program, typical first-year schedule****

| | | Credit |
|---|---|---|
| **Fall** | Calculus I 1016-281 | 4 |
| | College Chemistry 1011-208 | 4 |
| | Computing for Engineers 0303-302§ | 4 |
| | Introduction to Engineering 0302-210 | 1 |
| | Liberal Arts* | 4/8 |
| | First-Year Enrichment 1105-051 | 1 |
| **Winter** | Calculus II 1016-282 | 4 |
| | Science Elective | 4 |
| | University Physics I 1017-311 | 4 |
| | Liberal Arts* | 4 |
| | First Year Enrichment 1105-052 | 1 |
| **Spring** | Calculus III 1016-283 | 4 |
| | Multivariable Calculus 1016-305 | 4 |
| | University Physics II 1017-312 | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |
| | *Total Quarter Credit Hours* | *49* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirements for more information.*
*** For suggested quarterly schedule, consult with your academic adviser.*
*§Students who choose to take Computing for Engineers in the fall quarter will take 4 liberal arts credits rather than eight.*

## Computer Engineering

***Andreas E. Savakis, Head***

*www.ce.rit.edu*

### Educational objectives

The computer engineering program has established the following educational objectives:

• **Career focus**—Graduates are prepared to contribute to the professional workforce after establishing fundamental knowledge in computer engineering, which includes mathematical, scientific, and computing principles; modern tools, engineering analysis and design; and experiential learning.

• **Scope**—Graduates are prepared to be effective integrators of hardware and software in the design and development of digital and computer systems and can apply these skills in their chosen careers.

• **Depth and graduate study**—Graduates have gained further understanding of specialized elective areas such as software engineering, architectures, networking, and Very Large Scale Integrated (VLSI) design, and many are prepared to pursue graduate study in computer engineering or a related discipline.

• **Independent learning**—Graduates have the foundation necessary for independent learning, which is necessary in order to continuously update their skills and have the ability for career renewal in a changing workplace and economy.

• **Professionalism**—Graduates are acquainted with the practices and responsibilities required in a professional environment, including professional and ethical responsibility and awareness of socioeconomic and contemporary issues.

### Program

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 strives to interweave and span 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 the graduate of 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.

## Principal field of study

For students matriculated in the interdisciplinary computer engineering program, the principal field of study is defined to be all courses taken in the College of Engineering and the departments of computer science and software engineering.

**Computer engineering, BS degree, typical course sequence****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Computer Engineering 0306-200 | 1 |
| | Freshman Seminar 0306-201 | 1 |
| | Introduction to Digital Systems 0306-341 | 4 |
| | Computer Science I 4003-231 | 4 |
| | Computer Science II 4003-232 | 4 |
| | Computer Science III 4003-233 | 4 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | University Physics I 1017-311 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Assembly Language Programming 0306-250 | 4 |
| | Hardware Description Languages 0306-351 | 4 |
| | Circuits I with Lab 0301-381 | 4 |
| | Computer Science IV 4003-334 | 4 |
| | Software Engineering 4010-361 | 4 |
| | Foundations of Discrete Math 1016-265 | 4 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Matrix Algebra 1016-331 | 4 |
| | University Physics II, III 1017-312, 313 | 8 |
| | Science Elective | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |
| Third Year | Computer Organization 0306-550 | 4 |
| | Digital Systems Design 0306-561 | 4 |
| | Circuits II 0301-382 | 4 |
| | Electronics for Computer Engineers 0306-460 | 4 |
| | Applied Programming 0306-381 | 4 |
| | Operating Systems 4003-440 | 4 |
| | Liberal Arts * | 4 |
| | Free Elective | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Digital Signal Processing 0306-451 | 4 |
| | Data and Computer Communications 0306-694 | 4 |
| | Interface and Digital Electronics 0306-560 | 4 |
| | Introduction to VLSI Design 0306-630 | 4 |
| | Probability and Statistics I 1016-351 | 4 |
| | Computer Engineering Design Projects I 0306-654 | 4 |
| | Liberal Arts* | 4 |
| | Free Elective | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Computer Architecture 0306-551 | 4 |
| | Computer Engineering Design Projects II 0306-657 | 4 |
| | Professional Electives | 8 |
| | Free Elective | 4 |
| | Liberal Arts * | 12 |
| | Cooperative Education (1 quarter) | Co-op |
| | *Total Quarter Credit Hours* | *196* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*** For suggested quarterly schedule, consult with your academic adviser.*

**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
0306-663 Real Time and Embedded Systems
0306-672 Special Topics in Computer Engineering
Computational Intelligence
Wireless Communications
Performance Engineering of Real-Time and Embedded Systems
Real-Time Operating Systems
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

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 in computer engineering

Students in the computer engineering program may pursue one of the following optional concentrations by selecting the specified courses as electives:

a) VLSI Design Concentration Elective Choices:
i) 0301-481 Electronics I and 0301-482 Electronics II (replace 0306-460 Electronics for CE and one free elective)
ii) Two of the following courses as professional electives:
0306-620 Design Automation of Digital Systems
0306-631 Advanced VLSI Design
0301-726 Mixed Signal IC Design

b) Embedded Systems Concentration Elective Choices:
i) 0306-663 Real-Time and Embedded Systems
ii) 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
0306-672 Special Topics: Real-Time Operating Systems

c) Networking Concentration Elective Choices:
0306-710 Network Modeling, Design and Simulation
0306-615 Wireless Networks
or
Wireless Communications

d) Robotics Concentration Elective Choices:
i) 0306-553 Digital Control Systems
ii) The following courses as professional electives:
0306-675 Robotics
0306-685 Computer Vision
or
0306-663 Real-Time and Embedded Systems

e) Image Processing Concentration Elective Choices:
i) The following courses as professional electives:
0306-684 Digital Image Processing Algorithms
0306-685 Computer Vision
ii) One of the following courses as a free elective:
0306-672 Special Topics: Computational Intelligence
0301-770 Pattern Recognition
0301-803 Digital Video Processing

*Additional information on the computer engineering department is available online at www.ce.rit.edu.*

## Electrical Engineering

***Vincent Amuso, Head***
*www.ee.rit.edu*

### Educational objectives

The electrical engineering faculty, in conjunction with its constituents, has established the following educational objectives for each of its students:

• **A strong foundation in the core electrical engineering fundamentals**—The bachelor of science in electrical engineering curriculum provides all students with the fundamental knowledge and abilities necessary for specialization in all areas of electrical engineering.

• **A firm foundation in mathematics and the basic sciences—**A firm foundation in mathematics and the basic sciences is necessary for the understanding, application, and development of engineering principles.

• **Knowledge of relevant technologies—**The student will be well informed about current technologies important to electrical engineering, as well as future technological advances.

• **Problem solving and design capability—**The student will develop skills for devising and evaluating solutions to both closed-end (simple solution) and open-ended (multiple solution) problems. This includes the design of components, systems, and experiments.

• **Creativity and enthusiasm for life-long learning—**The program will foster an environment that encourages creativity and an excitement-driven outlook among its students and faculty.

• **Schooling in professional attributes—**Professional attributes include communication skills, the art of self-learning, teamwork, ethics, and the essentials of quality management.

• **Breadth of knowledge—**In addition to a thorough understanding of electrical engineering, the well-rounded student must have an appreciation for other disciplines, both technical and non-technical, in order to deal with the impact of technology in a global and societal context.

### Program

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 from RIT is your stepping stone to entering and changing the future.

The electrical engineering department 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 problems of design in a number of courses beginning with the first hands-on course, Electrical Engineering Practicum, 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 by the student. Many of our alumni report that the College of Engineering 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 to 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. Courses introduce 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.

The third and fourth years 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. Students complete their capstone engineering project, the senior design project, as part of the graduation requirements.

**Electrical engineering, BS degree, typical course sequence****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Electrical Engineering Freshman Practicum 0301-205 | 1 |
| | Digital Systems 0301-240 | 4 |
| | College Chemistry I 1011-208 | 4 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | University Physics I, II 1017-311, 312 | 8 |
| | Liberal Arts* | 20 |
| | Wellness Education† | 2 |
| Second Year | Electrical Engineering Sophomore Practicum 0301-305 | 1 |
| | Semiconductor Devices 0301-360 | 4 |
| | Microcomputer Systems 0301-365 | 4 |
| | Circuits I, II with Lab 0301-381, 382 | 8 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Engineering Mathematics 1016-328 | 4 |
| | University Physics III 1017-313 | 4 |
| | Restricted Science Elective 0301-370 or 1017-314 | 4 |
| | Programming Using C 4001-211 | 4 |
| | Liberal Arts* | 4 |
| | Free Elective | 4 |
| Third Year | Linear Systems I, II 0301-453, 554 | 8 |
| | Electromagnetic Fields I, II 0301-473, 474 | 9 |
| | Electronics I, II with Lab 0301-481, 482 | 8 |
| | Complex Variables 1016-420 | 4 |
| | Free Elective | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Engineering Statistics 1016-314 | 4 |
| | Computer Architecture 0301-347 | 4 |
| | Control Systems Design 0301-514 | 5 |
| | Communication Systems 0301-534 | 5 |
| | Digital Electronics 0301-545 | 4 |
| | Optional Free Elective | |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Mechatronics 0301-531 | 4 |
| | Professional Electives | 12 |
| | Senior Design Project I, II 0301-697, 698 | 8 |
| | Liberal Arts* | 4 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***191*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*** For suggested quarterly schedule, consult with your academic adviser.*

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.

## Professional electives

**Electromagnetic Fields and Optics**
- 0301-621 Microwave Engineering
- 0301-622 Antenna Design

**Control Systems**
- 0301-615 State Space Control
- 0301-636 Biorobotics/Cybernetics
- 0301-647 Artificial Intelligence
- 0301-685 Principles of Robotics

**Communications**
- 0301-677 Digital Signal Processing
- 0301-692 Communication Networks
- 0301-693 Digital Data Communications
- 0301-694 Information Theory and Coding

**Signal Processing**
- 0301-662 Neutral Networks
- 0301-677 Digital 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
- 0301-611 Semiconductor Devices II
- 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

## BS in electrical engineering with computer engineering option

The department of electrical engineering offers a bachelor of science degree in electrical engineering with a computer engineering concentration. This is ideal for those who want to be educated within the framework of the traditional electrical engineering program but would also like to incorporate the skills required in designing modern computing systems. Students in this option meet all the requirements for the BSEE degree 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 BSEE program with computer engineering option must meet all the requirements of the BSEE degree with certain specifications.**

The BSEE 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 has played, and will continue to play, a crucial role in understanding the fundamental principles of human life sciences, especially those related to health care and clinical medicine. The real advances in actually incorporating these findings and principles into practical medical systems and devices will require the expertise of professionals trained in the core engineering disciplines such as electrical engineering. The biomedical engineering option in electrical engineering 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 now expanding into the nano level of tissue, cell, molecule, and gene studies, and nanotechnology research. RIT provides the environment to address these studies. 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 biomedical engineering option have a strong design emphasis and incorporate project-oriented assignments to allow the student an opportunity to investigate and demonstrate concepts discussed in class. Students pursuing this option will culminate their design experience 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 colleges of Engineering, Science, Imaging Arts and Science, and Computing and Information Sciences as well as close affiliation with Rochester area hospitals.

**Students pursuing a BSEE program with biomedical engineering option must meet all the requirements of the BSEE degree with certain specifications.**

The BSEE program includes the following biomedical-specific courses:

| | |
|---|---|
| 0301-630 | Biomedical Instrumentation |
| 0301-632 | Fundamental Electrophysiology |
| 1026-350 | Anatomy and Physiology I |
| 1026-360 | Anatomy and Physiology II (or equivalent) |

One of the two required professional electives must be chosen from the following:

| | |
|---|---|
| 0301-631 | Biomedical Sensors and Transducers I |
| 0301-633 | Biomedical Signal Processing |

## Combined five-year BS/MS degree program

In addition to the bachelor of science and master of science degree programs, a combined BS/MS degree program is also available for the electrical engineering student. Enrollment in this program requires successful completion of at least 232 quarter credit hours. After completing this requirement, the student is awarded the BS and MS degrees simultaneously. A student may apply to this program in the second quarter of his or her 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 co-op credit. Further information can be obtained from the department of electrical engineering at (585) 475-2165. A typical fourth- and fifth-year program sequence follows.

**Electrical engineering, combined BS/MS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year-Third Year | | 133 |
| Fourth Year | Engineering Statistics 1016-314 | 4 |
| | Computer Architecture 0301-347 | 4 |
| | Liberal Arts* | 4 |
| | Communication Systems 0301-534 | 5 |
| | Matrix Methods in Electrical Engineering 0301-703 | 4 |
| | Control Systems Design 0301-514 | 5 |
| | Digital Electronics 0301-545 | 4 |
| | Random Signals and Noise 0301-702 | 4 |
| | Professional Electives | 12 |
| | Thesis | 2 |
| | Cooperative Education (1 quarter) | Co-op |
| Fifth Year | Graduate Courses | 16–20 |
| | Mechatronics 0301-531 | 4 |
| | Professional Electives | 4 |
| | Senior Design I, II 0301-697, 698 | 8 |
| | Liberal Arts* | 8 |
| | Thesis | 7 |
| | Cooperative Education (1 quarter) | Co-op |
| | *Total Quarter Credit Hours* | *232* |

** Please see Liberal Arts General Education Requirements for more information.*
*Note: Two of the professional electives will be counted twice—once toward the BS and once toward the MS. The free elective will be replaced by a graduate course for the BSEE.*
*For suggested quarterly schedule, consult with your academic adviser.*

## BS/MS premedical/biomedical program

This program prepares the student for a career in electrical engineering and/or medical science. Upon successful completion of this program of study the student will receive a BS and MS degree in electrical engineering and be prepared to apply to medical school. This is a rigorous program and the student must maintain a 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 program

The analog and mixed-signal (AMX) BS/MS dual degree program 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.

### Part-time students

Part-time students must fulfill the same academic requirements for graduation as full-time students. In order to be accepted, they must have third-year status. Those who enter these programs must be employed full time in a technical position. Such work assignment will satisfy the co-op requirements in the department. Students should plan to take two courses each quarter during the day.

## Industrial and Systems Engineering

***Jacqueline R. Mozrall, Head***

*www.rit.edu/ise*

### 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 knowledge—**Produce graduates who are able to design, develop, optimize, implement, and manage systems that integrate people, materials, information, equipment, and energy.
- **Immediate contributors—**Produce graduates, with at least one year of experiential education, who are able to immediately contribute to industrial, service, and/or government organizations.
- **Graduate preparation—**Produce graduates who are well prepared for graduate education.
- **Life-long learners—**Produce graduates who value professional development through life-long learning.
- **Broad knowledge—**Produce graduates with a broad base of knowledge to draw upon in providing engineering solutions within the appropriate global, societal, and organizational context.

### Program

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 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 graduates a significant opportunity for a flexible long-term career. Employers have consistently praised the quality of RIT industrial engineering graduates, noting that the range of their abilities includes both strong technological knowledge and communication skills. RIT industrial engineering graduates have used their technical base as a springboard to careers in management, consulting, medicine, law, sales, manufacturing, computer programming, and teaching.

Because of the flexible nature of the program, the industrial and systems engineering student can gain breadth in many different areas of industrial engineering—information systems, manufacturing, quality, distribution/logistics, etc. Students may choose free and professional electives for this purpose. The industrial and systems engineering faculty are committed to high-quality engineering education as well as the program's educational objectives.

The industrial engineering curriculum covers the principal concepts of project management, human performance, mathematical modeling, applied statistics and quality, information management systems, and contemporary manufacturing 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.

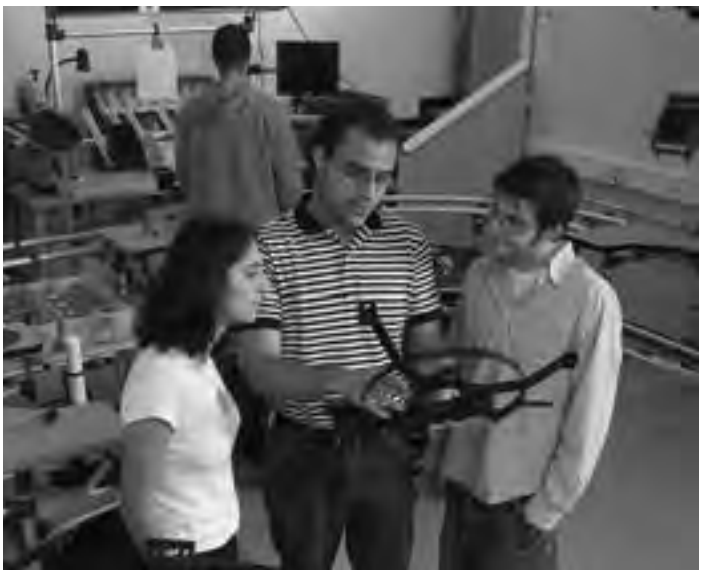
As described by the Institute of Industrial Engineers on the organization's website:

"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, distributing products worldwide, or manufacturing superior automobiles …

"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.



## Combined five-year BS/MS degree program

The ISE department offers honors-accelerated BS/MS and BS/MEng degree programs where select students may complete a BS and an MS or MEng in industrial engineering in five years plus an additional quarter. An arrangement with the E. Philip Saunders College of Business allows for an accelerated BS/MBA option. For more information, contact the ISE department at (585) 475-2598, or visit their website at www.rit.edu/ise.

## Facilities

The ISE department is located in the James E. Gleason building, within the Kate Gleason College of Engineering. The department houses several state-of-the-art laboratories, including the Brinkman Machine Tools and Manufacturing Lab, the Human Performance Lab, the Advanced Systems Integration Lab, the Product and Process Development Lab, and a general computer lab. These labs are fully accessible to all ISE students.

Along with ample computing facilities, these labs offer an extensive library of software to support industrial engineering project work, including conventional word processing, spreadsheet, and presentation applications (e.g., Microsoft Office); database management (e.g., Microsoft ACCESS, FoxPro); and data acquisition (e.g., Lab View), statistical analysis (e.g., Minitab, SAS), facilities layout (e.g., AutoCAD, Factory Flow, Factory Plan), manufacturing (e.g., MasterCam, material selection software), and optimization and systems simulation software (e.g., ProModel, Arena).

## 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 gradation, our students work for a wide array of companies, including IBM, Toyota, Kodak, Xerox, Intel, General Mills, Walt Disney World, Ortho-McNeil Pharmaceutical, and Lockheed Martin.

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 new and improve existing work areas
- design production processes to improve productivity
- investigate and analyze the costs 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 design process of new 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 facilities' projects to ensure they are completed on time, on budget
- conduct cost analysis of procedures to support decision making
- schedule operations, information flow
- design supply-ordering systems
- manage operations services at hospitals
- evaluate waiting time and space utilization in amusement parks

**Industrial engineering, BS degree, typical course sequence ****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Fundamentals of Industrial Engineering 0303-201 | 4 |
| | Computer Tools for Increased Productivity 0303-204 | 2 |
| | College Chemistry 1011-208 | 4 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | University Physics I, II 1017-311, 312 | 8 |
| | Materials Processing 0303-343 | 3 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 0303-051, 052 | 2 |
| | Wellness Education† | |
| Second Year | Mechanics I 0304-331 | 3 |
| | Mechanics II 0304-332 | 3 |
| | Multivariable Calculus 1016-305 | 4 |
| | Computing for Industrial Engineers 0303-302 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Matrix Algebra 1016-331 | 4 |
| | University Physics III 1017-313 | 4 |
| | Human Biology II 1004-212 | 3 |
| | Materials Science 0304-344 | 4 |
| | Free Elective | 4 |
| | Liberal Arts* | 12 |
| | Wellness Education† | |
| Third Year | Manufacturing Engineering 0303-525 | 4 |
| | Engineering Economy 0303-520 | 4 |
| | Introduction to Operations Research 0303-401 | 4 |
| | Probability and Statistics I, II 0307-361, 362 | 8 |
| | Ergonomics 0303-415 | 4 |
| | Engineering Management 0303-481 | 4 |
| | Systems and Facilities Planning 0303-422 | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Applied Statistical Quality Control 0303-510 | 4 |
| | Applied Linear Regression Analysis 0303-511 | 4 |
| | Production Control 0303-402 | 4 |
| | Systems Simulation 0303-503 | 4 |
| | Human Factors 0303-516 | 4 |
| | Professional Elective | 4 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| Fifth Year | Advanced Systems Integration 0303-630 | 4 |
| | Multidisciplinary Senior Design I, II 0303-560, 561 | 8 |
| | Professional Electives (see list below) | 12 |
| | Free Elective | 8 |
| | Cooperative Education (1 quarter) | Co-op |
| | *Total Quarter Credit Hours* | *196* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*** For suggested quarterly schedule, consult webpage (www.rit.edu/ise).*

**Professional Electives (partial list)**
0303-726 Contemporary Production Systems
0303-703 Supply Chain Management
0303-734 Safety Engineering
0303-765 Databases for Information Systems
0303-766 Manufacturing Systems
0303-790 Fundamentals of Sustainable Design

A full listing of electives can be found at www.rit.edu/ise. Graduate-level courses from ISE as well as the other engineering disciplines may be used as professional electives with the permission of the adviser and course instructor (see *Graduate Bulletin* for descriptions).

## Mechanical Engineering

***Edward C. Hensel, Head***
*www.rit.edu/~mecheng0/*

### Educational objectives

The objectives of the bachelor of science degree program in mechanical engineering are to prepare all of our graduates to:

- apply fundamental knowledge, skills, and tools of mechanical engineering;
- practice mechanical engineering in support of the design of engineered systems;
- accept the professional and ethical responsibilities to function as an engineer;
- contribute and communicate effectively within and across teams;
- continue their development as lifelong learners;
- possess a broad education and knowledge of contemporary issues;
- work as engineers in a variety of industries; and
- prepare students to enter graduate programs and succeed in obtaining graduate degrees at the master's and/or doctorate levels, if they choose.

### Program

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. 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 are often 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 (PIV) laser system for flow visualization, advanced heat transfer systems, robotics, state-of-the-art studio laboratories, a proton exchange membrane fuel cell, engine dynamometers, fluid flow loops, refrigeration systems, tensile testers, compression testers, torsion testers, hardness testers, an aero-structures laboratory, X-ray diffractometer, atomic force microscope, dynamic system simulators, a spectrum analyzer, and a well-equipped student accessible machine shop.

Students have an opportunity to participate in regional and national design competitions such as the Formula SAE Auto-sports Competition team, the SAE Aerodesign Club, the Micro-Air Vehicle Club, and the Human Powered Vehicle Competition Team. They are also encouraged to participate in the student chapters of professional societies such as the American Society of Mechanical Engineers, the Society of Women Engineers, the American Institute of Aeronautics and Astronautics, and the Society of Automotive Engineers.

The 195-quarter-credit-hour program provides students with a broad academic base complemented by hands-on laboratory activities and cooperative work experience. Students devote the first two years to the study of mathematics, physics, chemistry, and engineering mechanics, while the third and fourth years emphasize engineering science in solid body mechanics, thermal fluid sciences, and electrical engineering. A student may then specialize by choosing appropriate technical and free elective courses in his or her 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. The liberal arts component of the mechanical engineering program consists of 36 credit hours of study in accordance with the university's general education requirements. In the third year, all students must demonstrate writing competency in the English language by successfully completing a departmental 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.

The faculty in the mechanical engineering department is committed to providing high-quality, state-of-the-art engineering education. The goals of this program are stated in the introduction to the Kate Gleason College of Engineering in this bulletin.

Students must maintain a GPA of at least 2.0 within the option sequence of courses to remain in the option. Participation in an option is not required, and many students elect to complete the bachelor of science degree without an option, so that they can further customize their academic study in support of their career plans. The ME program is relatively flexible and allows students to pursue options, minors, and even multiple degrees.

### The aerospace engineering option

The mechanical engineering department offers a concentration in aerospace engineering for students majoring in mechanical engineering. This option is offered to extend aerospace career opportunities to our graduates.

The aerospace engineering option allows for specialized study in the upper-level undergraduate curriculum focusing on engineering aspects of air- and space-borne vehicles. The option starts with a course introducing students to the aerospace field. Then, building on the courses completed by all mechanical engineering students, a balanced exposure to the aerospace field

is gained through a sequence of four technical elective courses in the areas of aerodynamics, aerospace structures, propulsion, composite materials, fatigue and fractive mechanics, and flight dynamics. In addition, students choosing this option are expected to work on an aerospace engineering design project in Senior Design I and II.

### The automotive engineering option

The mechanical engineering department offers an automotive engineering concentration for students majoring in mechanical engineering. This concentration is intended to increase the opportunities for students who want to work for the automotive industry both in co-op and upon graduation. This concentration builds upon the course work all mechanical engineering students take in mechanics, thermodynamics, heat transfer, and system dynamics by offering a series of specialized technical and free elective courses during the fourth and fifth years. These specialized courses provide an introduction to vehicle power plants, dynamics, and control systems. The sequence starts in the fourth year with an introductory course acquainting the student with the general field of automotive design and manufacturing. This is followed in the fourth and fifth years with advanced technical electives such as vehicle dynamics, internal combustion engines, tribology and lubrication, fuel cell technology, and automotive control applications. In addition, students choosing this concentration are expected to work on an approved automotive senior design project in Senior Design I and II.

### The bioengineering option

The bioengineering option consists of one or more biological science electives, a free elective on Contemporary Issues in Bioengineering, and three technical electives chosen from a wide variety of offerings, such as Aerosol Mechanics in Biological Systems, Biomechanics, Biomaterials, Artificial Organs, biosensors, and bio-transport phenomena. Students choosing this option are expected to work on a bioengineering design project in the Senior Design I and II capstone design courses taken by all mechanical engineering students in the fifth year of study. Students are also expected to pursue co-op employment in a related field. This concentration is intended to increase the opportunities for students who want to work in the emerging field of bioengineering, both in co-op and upon graduation.

### The energy and environment option

This option consists of a series of electives that provides students with exposure to a wide range of opportunities and careers associated with energy intensive systems, and how they relate to the environment. Students in this option will complete a free elective on Contemporary Issues in Energy and the Environment, and select three technical electives chosen from a variety of offerings such as Advanced Thermodynamics, Direct Energy Conversion, Fuel Cell Technology, and Heating Refrigeration and Air Conditioning. Students choosing this option are expected to work on an energy systems design project in the Senior Design I and II capstone design courses taken by all mechanical engineering students in the fifth year of study, and to pursue co-op employment in a related field. This concentration is intended to increase the opportunities for students who want to work in the fields of building energy systems, alternative and renewable energy, and direct energy conversion both in co-op and upon graduation.

### Combined BS/MS degree programs

In addition to the bachelor of science and master of science degree programs, two dual degree programs are available to exemplary mechanical engineering students. These programs offer outstanding students an opportunity to earn both a bachelor's and a master's degree within approximately five years. Two dual degree programs are available—one leading to a bachelor of science and a master of engineering degree (BS/MEng), and one leading to a bachelor of science and a master of science degree (BS/MS). The BS/MEng program has a strong career-oriented focus and is primarily directed toward students who do not plan to consider graduate study at the doctoral level. The BS/MS program has a strong research-oriented focus and is primarily directed toward students planning on completing a doctoral degree. All students enrolled in the BS/MS program are required to complete a graduate thesis and conduct scholarly research.

A student enrolled in the dual degree program is required to successfully complete 230-235 quarter credit hours, after which he or she is awarded the bachelor's and master's degrees 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 at RIT. Admission is based on the student's cumulative 3.4 grade point average, letters of recommendation from the faculty, and a letter of application from the student. Students are admitted first to the BS/MEng program, and may change to the BS/MS program upon approval of a thesis proposal. All students in the program are required to maintain a cumulative grade point average of at least 3.2.

**Mechanical engineering, BS degree, typical course sequence****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | First-Year Enrichment/Freshman Seminar 0304-051, 052 | 2 |
| | Calculus I 1016-281 | |
| | Or | |
| | Calculus A 1016-271 | 4 |
| | Chemistry I 1011-208 | 4 |
| | Materials Processing 0304-343 | 3 |
| | Liberal Arts* | 4 |
| | Calculus II 1016-282 | |
| | Or | |
| | Calculus B 1016-272 | 4 |
| | University Physics I 1017-311 | 4 |
| | Engineering Design Graphics 0304-214 | 2 |
| | Meas., Instrumentation, Controls Lab 0304-280 | 2 |
| | Liberal Arts* | 4 |
| | Calculus III 1016-243 | |
| | Or | |
| | Calculus C 1016-273 | 4 |
| | University Physics II 1017-312 | 4 |
| | Problem Solving with Computers 0304-342 | 3 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |
| Second Year | Free Elective 1 or Calculus D 1016-274 | 4 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Matrices and Boundary Value Problems 1016-318 | 4 |
| | University Physics III 1017-313 | 4 |
| | Science Elective 1 | 4 |
| | Thermodynamics 0304-413 | 4 |
| | Fluid Mechanics 0304-415 | 4 |
| | Statics 0304-336 | 4 |
| | Mechanics of Materials 0304-347 | 4 |
| | Mechanics of Materials Lab 0304-348 | 1 |
| | Dynamics 0304-359 | 5 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |

| | | |
|---|---|---|
| Third Year | Engineering Statistics 1016-314 | 4 |
| | Materials Science 0304-344 | 4 |
| | Cornerstone Design Projects Lab 0304-261 | 2 |
| | Design of Machine Elements 0304-437 | 4 |
| | Numerical Methods 0304-440 | 4 |
| | Transport Phenomena 0304-550 | 4 |
| | Thermal Fluids Lab I 0304-416 | 1 |
| | Introduction to Electrical Engineering 0301-362 | 4 |
| | Liberal Arts* | 4 |
| | Cooperative Education (2 quarters) | Co-op |
| Fourth Year | Advanced Computational Techniques 0304-518 | 4 |
| | Liberal Arts* | 8 |
| | Systems Dynamics 0304-543 | 5 |
| | Thermal Fluids Lab II 0304-551 | 1 |
| | Cooperative Education (3 quarters) | Co-op |
| Fifth Year | Technical Elective 1, 2, 3, 4 | 16 |
| | Free Elective 2, 3 | 8 |
| | Science Elective 2 | 4 |
| | Liberal Arts* | 8 |
| | Heat Transfer 0304-514 | 4 |
| | Senior Design I, II 0304-630, 631 | 8 |
| | *Total Quarter Credit Hours* | *195* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*** For suggested quarterly schedule, consult with your academic adviser.*

## Elective courses

**Technical/Graduate Electives**

0304-701 Research Methods (Primarily for BS/MS Students)
0304-730 Design Project Management
(Primarily for BS/MEng Students)

**General Technical Electives**

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
0304-743 Control Systems
0304-758 Engineering Vibrations

**Aerospace Technical Electives**

0304-644 Introduction to Composite Materials
0304-671 Aerospace Structures
0304-575 Aerodynamics
0304-678 Propulsion
0304-682 Flight Dynamics
0304-754 Fundamentals of Fatigue and Fracture Mechanics

**Automotive Technical Electives**

0304-624 Vehicle Dynamics
0304-626 Automotive Control Applications
0304-640 Internal Combustion Engines
0304-710 Fuel Cell Technology
0304-752 Fundamentals of Tribology and Lubrication

**Bioengineering Technical Electives**

0304-645 Biomaterials
0304-756 Aerosols in the Respiratory Tract
0303-732 Biomechanics
Energy and Environment Technical Electives
0304-660 Refrigeration and Air Conditioning
0304-680 Advanced Thermodynamics
0304-710 Fuel Cell Technology

**Free electives**—These courses may NOT be used as technical electives, but may be used as free 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

*Out-of-Department Technical Electives—Students must insure that they meet the prerequisites for the courses listed here.*

301-686 MEMS (Micro-Electro-Mechanical Systems) Design
00305-TBD MEMS (Micro-Electro-Mechanical Systems)
Fabrication
0305-TBD MEMS (Micro-Electro-Mechanical Systems)
System Evaluation
0610-516 Plastics Product Design and Materials Selection

Additional technical electives are available outside of the department. Students wishing to complete external technical courses may request departmental approval. As of press time for this bulletin, a sequence of technical electives in microelectromechanical systems is under development.

# Microelectronic Engineering

***Santosh K. Kurinec, Head***

*www.microe.rit.edu*

## Educational objectives

In order to meet the needs of all constituents (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 firm foundation in the fundamentals—A sound knowledge of the scientific principles involved in the operation, design, and fabrication of integrated circuits.
- A knowledge of relevant technologies—A comprehensive understanding of integrated circuit process integration and manufacturing, including microlithography and the application of engineering principles to the design and development of current and future semiconductor technologies.
- A professional approach to problem solving—An ability to use one's analytical, academic, and communication skills effectively, with special emphasis on working in teams.
- An enthusiasm for learning—An interest in continuous improvement of skills throughout one's career by learning about emerging technologies and adapting to and accepting change. A desire to achieve leadership positions in industry or academia.
- A breadth of knowledge—A knowledge of the "larger picture" of engineering, including the multidisciplinary nature of microelectronic engineering, as well as the broad social, ethical, safety, and environmental issues within which engineering is practiced.

## Program

Semiconductor technology has advanced into the deep submicron era (entering nanoscale regime) and there is a critical need for an engineering workforce to meet these new challenges. The

Kate Gleason College of Engineering offers a bachelor of science degree program in microelectronic engineering, the first program of its kind in the United States, and one that provides highly educated and skilled engineers, current in knowledge for the semiconductor industry.

One of the great challenges in integrated circuit manufacturing is the need to draw on scientific principles and engineering developments from such an extraordinary wide range of disciplines. Scientists and engineers, who work in the semiconductor field, need broad understanding and the ability to seek out, integrate, and use ideas from many fields. This ABET-accredited, five-year 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 entry into the semiconductor industry.

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 IC technology are covered in the second year—preparing students for their first co-op experience. The third year constitutes the electrical engineering coursework 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 within this unique interdisciplinary program, such as advanced CMOS, VLSI chip design, analog circuit design, electronic materials science, microelectromechanical (MEM) devices, and nanotechnology. Three free elective courses are built into the program to allow students to take a minor program in any other discipline.

The design of microelectronic circuits requires a sound knowledge of electronics and circuit analysis. The 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. Computing skills are necessary to design, model, simulate, and predict processes and device behavior, extremely vital to manufacturing. A comprehensive knowledge of statistics is required to manipulate data and process control. As the devices are shrinking in size approaching nanoscale regime where molecular and atomic scale phenomena come into play, elements of quantum mechanics become important.

Important issues such as the technology roadmap, ethics, societal impact, and global perspectives are built into the program beginning with the freshmen courses in the first year. 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. Of the undergraduate microelectronics engineering laboratories, which include modern IC fabrication (cleanroom) and test facilities, RIT's are the best in the nation. At present, the program is supported by a complete CMOS line equipped with diffusion, ion implantation, plasma and CVD processes, chemical mechanical planarization (CMP), and device design, modeling, and test laboratories. The microlithography facilities include ASML deep UV, Canon i-line, GCA g-line wafer steppers, and Perkin Elmer MEBES III electron beam mask writer. The teamwork emphasized in laboratories and technical presentation opportunities in seminars prepare students for building team spirit and effective communication skills.

Students participate in the required co-op portion of the program after completing their second year of school. Microelectronic engineering co-op students work for many of the major integrated circuits manufacturers across the United States. Upon graduation, students are well prepared to enter the industry or pursue advanced study in graduate school. This program also prepares students to work in emerging technologies such as nanotechnology, microelectromechanical (MEM) devices, and microsystems.

With the worldwide semiconductor industry growing at an astounding pace, RIT graduates will continue to be 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. The faculty are committed to quality engineering education that provides a sound foundation, creative and analytical thinking, with vision to the semiconductor roadmap and beyond. State-of-the-art laboratories, strong industrial support, double quarter alternating co-op blocks with nationwide opportunities, and smaller class sizes make this one of the most value added programs in the nation.

**Microelectronic engineering, BS degree, typical course sequence ****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Microelectronics 0305-201 | 4 |
| | Introduction to Microlithography 0305-221 | 4 |
| | College Chemistry I 1011-208 | 4 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | University Physics I, II 1017-311, 312 | 8 |
| | Introduction to Digital Systems 0301-240 | 4 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| | First-Year Enrichment 1105-051, 052 | 2 |

| | | |
|---|---|---|
| **Second Year** | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Engineering Mathematics 1016-328 | 4 |
| | University Physics III 1017-313 | 4 |
| | Modern Physics 1017-314 | 4 |
| | Introduction to Programming 4002-208 | 4 |
| | Semiconductor Devices I 0305-460 | 4 |
| | Statistics for Engineers 0307-315 | 4 |
| | Design of Experiments 0305-320 | 4 |
| | IC Technology 0305-350 | 4 |
| | Circuits 0301-381 | 4 |
| | Free Elective | 4 |
| | Wellness Education† | 0 |
| **Third Year** | Circuit Analysis II 0301-382 | 4 |
| | Principles of Electromagnetic Fields 0305-515 | 4 |
| | Linear Systems 0301-453 | 4 |
| | Electronics I, II with Labs 0301-481, 482 | 8 |
| | Semiconductor Devices II 0305-560 | 4 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| **Fourth Year** | Optics for Microelectronics 0305-525 | 4 |
| | Silicon Processes 0305-632 | 4 |
| | Microlithography Systems 0305-563 | 3 |
| | Microlithography Systems Lab 0305-573 | 1 |
| | VLSI Design 0305-520 | 4 |
| | Thin Film Processes 0305-643 | 4 |
| | Free Elective | 4 |
| | Liberal Arts* | 8 |
| | Cooperative Education (2 quarters) | Co-op |
| **Fifth Year** | CMOS Processing Lab 0305-650 | 4 |
| | Microlithography Materials and Processes 0305-666 | 3 |
| | Microlithography Materials and Processes Lab 0305-676 | 1 |
| | Senior Design Project I 0305-681 | 4 |
| | Senior Design Project II 0305-691 | 2 |
| | Two Professional Electives | 8 |
| | Free Elective | 4 |
| | Liberal Arts * | 8 |
| | Cooperative Education (1 quarter) | Co-op |
| | ***Total Quarter Credit Hours*** | ***196*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*** For suggested quarterly schedule, consult with your academic adviser.*

Two alternative cooperative education plans for the microelectronic engineering program

| Year | Fall | Winter | Spring | Summer |
|---|---|---|---|---|
| 1 | RIT | RIT | RIT | — |
| 2 | RIT | RIT | RIT | Vacation |
| 3 | Co-op | RIT | RIT | Co-op |
| 4 | Co-op | RIT | RIT | Co-op |
| 5 | Co-op | RIT | RIT | — |

| Year | Fall | Winter | Spring | Summer |
|---|---|---|---|---|
| 1 | RIT | RIT | RIT | — |
| 2 | RIT | RIT | RIT | Vacation |
| 3 | RIT | Co-op | Co-op | RIT |
| 4 | RIT | Co-op | Co-op | RIT |
| 5 | Co-op/RIT | RIT | RIT | — |

**Professional electives (partial list)**

0305-704 Semiconductor Process and Device Modeling
0305-705 Quantum and Solid State Physics Fundamentals
0305-706 SiGe and SOI Devices and Technology
0305-707 Nanoscale CMOS
0305-714 Micro/Nano Characterization
0305-732 Microelectronics Manufacturing II
0305-830 Metrology 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 *Graduate Bulletin* for descriptions).

## Combined BS/MS degree program

A cross-disciplinary combined BS/MS degree program between two colleges is available in the microelectronic engineering program. Students may work to earn a BS in microelectronic engineering from the College of Engineering and a MS in material science and engineering from the College of Science. This unique program has been envisioned based on trends involving convergence of advanced materials with nanofabrication and microelectronics in modern micro devices and systems. This five-year program 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 coursework to make it an accelerated five-year program requiring a minimum of thirteen quarters of academic coursework. A student may apply for admission to this program 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 and material science and engineering, BS/MS degree, typical course sequence ****

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year** | Same as BS (Microelectronic Engineering) | 52 |
| **Second Year** | Same as BS (Microelectronic Engineering) | 49 |
| **Third Year** | Same as BS (Microelectronic Engineering) | 32 |
| **Fourth Year** | Optics for Microelectronics 0305-525 | 4 |
| | Microlithography Systems 0305-563 | 3 |
| | Microlithography Systems Lab 0305-573 | 1 |
| | Silicon Processes 0305-632 | 4 |
| | Thin Film Processes 0305-703 | 4 |
| | VLSI Design 0305-520 | 4 |
| | Free Elective | 4 |
| | Liberal Arts * | 8 |
| | Cooperative Education (1 quarter) | Co-op |
| | Introduction to Material Science 1028-701 | 4 |
| | Introduction to Theoretical Methods 1028-704 | 4 |
| | Introduction to Experimental Techniques 1028-705 | 4 |
| | MSE Graduate elective | 4 |
| **Fifth Year** | CMOS Processing Lab 0305-650 | 4 |
| | Microlithography Materials and Processes 0305-666 | 3 |
| | Microlithography Materials and Processes Lab 0305-721 | |
| | Senior Design Project I 0305-381 | 4 |
| | Senior Design Project II 0305-691 | 2 |
| | Free Elective | 4 |
| | Liberal Arts * | 8 |
| | Solid State Science 1028-703 | 4 |
| | Introduction to Polymer Science 1028-702 | 4 |
| | MSE Graduate Elective | 4 |
| | MSE-Research 1028-879 | 8 |
| | MSE-Seminar/Defense 1028-890 | 1 |
| | ***Total Quarter Credit Hours*** | ***225*** |

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

# College of Imaging Arts and Sciences

***Joan Stone, Dean***
*www.rit.edu/~660www/*

The College of Imaging Arts and Sciences encompasses the School of Art, the School of Design, the School for American Crafts, the School of Film and Animation, the School of Photographic Arts and Sciences, and the School of Print Media. Students from nearly every state and many foreign countries are enrolled in the six schools. 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.

Visits to the campus and the college are encouraged. Students are invited to attend open houses held by the Office of Undergraduate Admissions, which may be reached at (585) 475-6631 or http://admissions.rit.edu for additional information.

### The School of Art

The School of Art enrolls approximately 250 students in programs leading to the following degrees:
**Associate in applied science (AAS):** illustration and fine arts studio (painting, print making, sculpture, new forms)
**Bachelor of fine arts (BFA):** illustration, medical illustration, and fine arts studio (painting, printmaking, sculpture, new forms)
**Master of science for teachers (MST):** art education and fine arts studio (painting, printmaking, sculpture, new forms)
**Master of fine arts (MFA):** medical illustration and fine arts studio (painting, printmaking, sculpture, new forms)

### The School of Design

The School of Design enrolls more than 650 students in programs leading to the following degrees:
**Associate in applied science (AAS):** graphic design, interior design, and industrial design

**Bachelor of fine arts (BFA):** graphic design, interior design, industrial design, and new media design and imaging
**Master of fine arts (MFA):** computer graphics design, graphic design, and industrial design

### The School for American Crafts

The School for American Crafts enrolls more than 120 students in programs leading to the following degrees:
**Associate in occupational studies (AOS):** wood
**Bachelor of fine arts (BFA):** ceramics, glass, metals, wood
**Master of fine arts (MFA):** ceramics, glass, metals, wood

### The School of Film and Animation

The School of Film and Animation enrolls more than 250 students in programs leading to the following degrees:
**Bachelor of science (BS):** digital cinema
**Bachelor of fine arts (BFA):** film/video production, animation, scriptwriting, film/video craft, and performance/stagecraft
**Master of fine arts (MFA):** imaging arts, with concentrations in animation and film/video production

### The School of Photographic Arts and Sciences

More than 800 students are enrolled in the School of Photographic Arts and Sciences, which offers programs leading to the following degrees:
**Bachelor of science (BS):** biomedical photographic communications, imaging, and photographic technology
**Bachelor of fine arts (BFA):** advertising photography, photojournalism, fine art photography, and visual media
**Master of fine arts (MFA):** imaging arts, with concentrations in photography and museum studies

### The School of Print Media

The School of Print Media has approximately 300 students enrolled in the following degree programs:
**Bachelor of science (BS):** graphic media, new media publishing
**Master of science (MS):** print media

### Admission requirements

Guidelines for portfolio submission:
Admission to the School of Art, School for American Crafts, and School of Design requires a combination of academic and creative visual skills that is evaluated by the submission of a portfolio. Faculty will review the work to evaluate creative visual skills as well as potential for likely success in the major of choice.

The School of Photographic Arts and Sciences does not require portfolio submission for acceptance into the programs. A portfolio is required if you are requesting the transfer of photography credits to satisfy program requirements.

1. Portfolios will be evaluated on the basis of drawing and design ability, original ideas, and craftsmanship. Portfolios should consist of 10 to 20 slides or digital files of your best artwork, submitted as 35mm slides or as a work saved in jpeg file format on a CD. There should be a minimum of five (5) samples of drawings made from direct observation. These would include figure, perspective, still life, and object drawing (not copied from photographs, comics, or "fantasy"). Other work may include painting, photography, page layout designs, two-dimensional design, sculpture, models, mechanical drawings, and marker renderings.

2. All slides, digital files, and documents submitted should be clearly labeled. Each slide should be numbered in order in the slide page. Each digital file should be submitted with your last name and a number beginning with two zeros (smith001.jpg, smith002.jpg) with no spaces between them. The compact disk with all your files for portfolio review must be labeled with your full name, address, phone number, and e-mail address (if available). Please write legibly directly on the face of the compact disk with a black or blue permanent marker. Package the finished compact disk in a plastic case for protection.

3. The slide page or compact disk 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 your full name, address, phone number, and e-mail address (if available) are included on this list.

4. Portfolios will be evaluated on the basis of drawing and design ability, original ideas, and craftsmanship. The clarity of the slide images is of utmost importance.

5. Medical illustration applicants should include at least six samples of natural forms such as shells, figures, or animals rendered in a single medium.

6. School for American Crafts applicants are encouraged, where possible, to include samples of work done in the medium of their intended major.

7. Transfer students 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 will always assist in transfer credit evaluation.

8. Slide portfolios can be returned only if proper postage is included with the application. A padded, self-addressed, stamped envelope is recommended. Digital portfolios submitted will not be returned. It is recommended that you make additional copies of the compact disk for your own records at the time of production of your materials.

9. While every precaution is taken to ensure proper handling, the university assumes no responsibility for loss or damage to slides.

10. The schools participate in RIT Open House programs and selected National Portfolio Days. These events allow for the presentation and review of original work and, for the exceptional portfolio, a means of getting the portfolio accepted on site. For information on National Portfolio Days, call the Foundation department at (585) 475-2647. For dates of RIT Open Houses and general admission information, call RIT Office of Undergraduate Admissions at (585) 475-6631.

11. For further information on submitting a digital portfolio or a guide to shooting slides for your portfolio, please visit our website at: http://www.rit.edu/~960www/applyonline.php3.

**Send your portfolio and completed application to:**
Rochester Institute of Technology
Office of Undergraduate Admissions
60 Lomb Memorial Drive
Rochester, NY 14623-5604
(585) 475-6631

## Facilities

The College of Imaging Arts and Sciences provides students with specialized laboratories, studios, advanced computer facilities, and a wide range of equipment, placing our college on the cutting edge of the technological developments in the career fields of photography, printing, art, design, and crafts.

The college houses a number of photographic archives and a comprehensive art library, as well as instructional films and other aids that students may utilize for reference. Exhibitions regularly feature the work of contemporary painters, designers, photographers, illustrators, and graphic artists, as well as faculty and student work. Opening receptions provide students with the opportunity to meet and learn from the artists and photographers.

Major resources available to students include:

- More than 100 fully ventilated darkrooms
- 50 studios
- Extensive 16mm film and digital video field production equipment, 40 editing stations
- Studio and sound facilities, (two- and three-dimensional)
- More than $50 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; the Amico Library of online image collections; electronic reserve course material
- Cooperative efforts with George Eastman House International Museum of Photography
- Library of the Kodak Research Laboratories
- The Melbert B. Cary Jr. Graphic Arts Collection, which contains more than 20,000 volumes of rare books illustrating fine printing as well as other materials detailing the history of printing, book design and illustrations, papermaking, binding, and other aspects of the graphic arts
- Bevier Gallery
- SPAS Gallery
- Gallery r, RIT's student-managed metropolitan showcase
- Graphic design archives
- Numerous computer labs

## Cooperative education

Students in the college may participate in cooperative education experiences or internships. As part of the student's career exploration, this work experience provides 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 BS programs in the School of Photographic Arts and Sciences.

Although co-op is not required in the BFA programs in the School of Art, the School of Design, the School for American Crafts, or the School of Photographic Arts and Sciences, many students choose to co-op during the summer quarter as a way to gain valuable experience.

Students are responsible for finding their co-op positions and for performing productively. RIT's Office of Cooperative Education and Career Services offers many services and resources to assist students, from one-on-one job search advisement to a Web-based employment database. Co-op allows students the opportunity to evaluate career goals before making employment decisions, develop insight into their chosen fields, gain professional experience for their résumés, and increase their potential for placement and rapid career advancement after graduation.

### 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 accredit the BFA and MFA programs in the School of Art, the School of Design, the School for American Crafts, and the School of Photographic Arts and Sciences. The School of Design's interior design program is accredited by the Foundation for Interior Design Education Research (FIDER).

### Additional information

RIT maintains the following policy regarding student work: RIT assumes the right to make a record of student work for use in the classroom or for promotion. This may entail photography, slides, or a variety of electronic imaging/recording.

Attendance regulations: Some of the programs in the college utilize experiential learning as an essential part of the educational program. Therefore, it is imperative that the student regularly attend all classes unless specifically excused for special projects or activities by the instructor. Failure to attend classes or to complete assignments will be taken into consideration in grading.

## School of Art

***Don Arday, Administrative Chair***

The mission of the School of Art is to educate 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. To this end, 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; to develop the skills essential for professional competence; to relate the various arts and help students find the means to enjoy them; and to 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

Major studies are offered in illustration, medical illustration, and fine arts studio. Beginning in the second year, electives may be pursued in painting, printmaking, sculpture, illustration, computer applications, industrial design, interior design, graphic design, and the crafts. The first year forms the foundation for the major concentration with courses required in drawing, two- and three-dimensional design, and creative sources.

**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.

**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.

**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.

### Credit requirements

The credit requirements for students admitted in the School of Art (medical illustration, illustration, and fine arts studio) programs are as follows:

| Requirements | Qtr. Cr. Hrs. |
|---|---|
| Required Major | 93–94 |
| Professional Electives | 15 |
| Open Electives | 21 |
| Liberal Arts | 36 |
| General Education | 12 |
| Art History | 9 |
| Art History/General Education | 9 |
| **Total Quarter Credit Hours** | **183–184** |

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*

Graphic Design
Illustration (all sophomore-level courses)
Graphic Visualization
Industrial Design Elective
Interior Design Elective
Fine Arts Studio (all sophomore-level courses)
Environmental Design Elective
Ceramics Elective
Glass Elective
Metals Elective
Textiles Elective
Woodworking Elective
Introduction to Filmmaking
Still Photography I, II, III
Imaging Technology

**Art History (select three)**
2039-306, 307, 308 Architecture, Interiors, and Furniture Design History I, II, III†
2039-300 History of Design
2039-310 History of Crafts
2039-315 Pre-Columbian Art
2039-320 History of Art Criticism
2039-330 Philosophy in 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
2039-368 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
2039-425 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

** Electives prerequisite: Completion of foundation program or permission of instructor. Additional selections offered as special topics.*
*† Required for interior design majors, and School for American Crafts wood majorsw.*

**Illustration, medical illustration, fine arts studio, BFA degree, typical course sequences**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year (Foundation Studies)** | Foundation Vector Imaging 2013-215 | 1 |
| | Foundation Rastor Imaging 2013-216 | 1 |
| | Freshman Elective | 4 |
| | Creative Sources 2013-205, 206, 207 | 3 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| **Second Year** | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | ***Choose one major (prerequisite: completion of Foundation Studies)*** | |
| | Illustration majors must take the following courses: | |
| | Illustration I 2019-301 | 3 |
| | Digital Illustration I 2019-311 | 3 |
| | Head, Hands, Facial Expressions 2019-306 | 3 |
| | Dimensional Illustration I 2019-361 | 3 |
| | Illustration Techniques I 2019-345 | 3 |
| | Three studio electives | 9 |
| | Fine Arts studio majors must take the following courses: | |
| | Introduction to Fine Arts Drawing 2021-xxx | 3 |
| | Introduction to Painting 2021-xxx | 3 |
| | Intermediate Painting 2021-xxx | 3 |
| | Figure in Motion 2021-xxx | 3 |
| | Introduction to Non-Toxic Printmaking 2021-315 | 3 |
| | Intermediate Non-Toxic Printmaking 2021-xxx | 3 |
| | Introduction to Sculptural Forms 2021-xxx | 3 |
| | Intermediate Sculpture 2021-xxx | 3 |
| | One studio elective | 3 |
| | Medical Illustration majors must take: | |
| | Digital Illustration I 2019-311 | 3 |
| | Choose three of the following courses: | 9 |
| | Illustration Techniques I 2019-345 | |
| | Illustration I 2019-301 | |
| | Head, Hands, Facial Expressions 2019-306 | |
| | Figure in Motion 2021-xxx | |
| | Zoological and Botanical Illustration 2019-323 | |
| | General Biology 1001-201 | 4 |
| | Human Biology II, III 1004-212, 259 | 8 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| **Third Year** | Art History Elective | 9 |
| | Studio Electives | 6 |
| | Open Elective | 3–4 |
| | Choose one major (prerequisite: completion sophomore core) | |
| | Illustration majors must take the following courses: | |
| | Four junior-level courses from major concentration | 12 |
| | Two Program Electives 2019-xxx | 6 |
| | Fine arts studio majors must take the following studio courses: | |
| | Three junior-level courses Fine Arts Studio I | 9 |
| | Sculpture Ideation and Series 2021-xxx | 3 |
| | Figure Studies course | 3 |
| | Medical illustration majors must take the following courses: | |
| | Human Gross Anatomy 2020-431, 432 | 8 |
| | Six junior-level courses from major concentration | 18 |
| | Liberal Arts* | 12 |
| **Fourth Year** | Studio Elective | 3 |
| | Open Electives | 18-24 |
| | Choose one major (prerequisite: completion of junior core) | |
| | Illustration majors must take the following courses: | |
| | Portfolio Preparation 2019-563 | 3 |
| | Illustration Marketing and Business 2019-513 | 3 |
| | Five senior-level courses from major concentration | 15 |
| | Fine arts studio majors must take the following courses: | |
| | Business Practices for the Fine Arts 2021-572 | 3 |
| | Five senior-level courses from Fine Arts Studio II | 15 |
| | Medical illustration majors must take the following courses: | |
| | Six senior-level courses from major concentration | 18 |
| | ***Total Quarter Credit Hours*** | ***182–186*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## School of Design

***Patti Lachance, Administrative Chair***
*www.rit.edu/~651www/*

The mission of the School of Design is to provide 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.

### Programs

The School of Design offers BFA degree programs in graphic design, interior design, industrial design, and new media design and imaging. All of these programs integrate major courses, studio and open electives, 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.

Our faculty members offer a variety of experiences and expertise to the curriculum. Students have the opportunity to supplement their academic experience with participation in internships, guest speaker presentations, seminars, field trips, and student chapters of professional organizations.

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.

**Contact information**
Additional information can be requested from the School of Design through the following sources:
E-mail: design@rit.edu
Website: www.rit.edu/design
Phone: (585) 475-2668

## Transfer admission

Transfer credits from accredited institutions are evaluated on a course-by-course basis. These credits are awarded on the basis of a required portfolio review and courses related to the major with a grade of "C" or better (see portfolio guidelines). A summer transfer program or series of summer courses and workshops may be required.

## Electives

Students can take a variety of electives at the university. Studio/professional electives are offered within the college. Open electives are university-wide, including within this college.

## Credit requirements

The credit requirements for students admitted to School of Design programs are as follows:

| Graphic Design | Qtr. Cr. Hrs. |
|---|---|
| Major (including freshman core) | 90 |
| Professional Electives | 18 |
| Open Electives | 9 |
| Liberal Arts | 36 |
| General Education Electives | 9 |
| Design and Art History | 18 |
| **Total Quarter Credit Hours** | **180** |

| Industrial Design | Qtr. Cr. Hrs. |
|---|---|
| Major (including freshman core) | 90 |
| Professional Electives | 18 |
| Open Electives | 9 |
| Liberal Arts | 36 |
| General Education Electives | 9 |
| Design and Art History | 18 |
| **Total Quarter Credit Hours** | **180** |

| Interior Design | Qtr. Cr. Hrs. |
|---|---|
| Major (including freshman core) | 93 |
| Professional Electives | 18 |
| Open Electives | 9 |
| Liberal Arts | 36 |
| General Education Electives | 9 |
| Design and Art History | 18 |
| **Total Quarter Credit Hours** | **183** |

| New Media Design and Imaging | Qtr. Cr. Hrs. |
|---|---|
| Major (including freshman core) | 107 |
| Professional Electives | 6 |
| Open Electives | 6 |
| General Education Electives | 9 |
| Liberal Arts | 36 |
| Design and Art History | 18 |
| **Total Quarter Credit Hours** | **183** |

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.

## Graphic Design

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, and information design.

**Graphic design, BFA degree, typical course sequence**

| | Foundation Studies | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Electives | 6 |
| | Freshman offerings of Computer Skills: Vector Imaging (2010-216) and Computer Skills: Raster (2010-211) are required | |
| | **Creative Sources 2013-205** | **1** |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232 | 6 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Elements of Graphic Design 2010-301 | 3 |
| | Design Survey 2015-222 | 2 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Majors must take of the following courses in sequence to complete the sophomore year (prerequisite: Completion of Foundation Studies) | |
| | Typography I 2010-302 | 3 |
| | Type and Image 2010-303 | 3 |
| | Introduction to Time-Based Design 2010-313 | 3 |
| | Studio electives (one each quarter) | 9–12 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | History of Graphic Design 2010-471 | 3 |
| | Art History Electives** | 6 |
| | Majors must take each of these courses in sequence to complete the junior year in graphic design (prerequisite: completion of sophomore year): | |
| | Typography II 2010-401 | 3 |
| | Imagery in Design 2010-402 | 3 |
| | Symbol and Icon Design 2010-403 | 3 |
| | Design for Publications 2010-404 or | |
| | Introduction to Interactive Media Design 2010-512 | 3 |
| | Environmental Design 2010-406 | or |
| | Introduction to Interactive Media Design 2010-512 | 3 |
| | Information Design 2010-405 | 3 |
| | Studio Electives (average of one each quarter) | 9 |
| | Liberal Arts* | 12 |

| | | |
|---|---|---|
| Fourth Year | Career Skills and Professional Practice 2010-501 | 3 |
| | Open Electives | 18-24 |
| | Majors must take an additional eight senior-level courses from the list below (prerequisite: completion of junior year): | |
| | Corporate Design 2010-502 | 3 |
| | Design Systems 2010-504 | 3 |
| | Advertising Design 2010-505 | 3 |
| | Concept and Symbolism 2010-506 | 3 |
| | Design for Marketing 2010-507 | 3 |
| | Advanced Information Design 2010-511 | 3 |
| | Introduction to Interactive Media Design 2010-512 | 3 |
| | Editorial Design 2010-514 | 3 |
| | Senior Project 2010-513 | 3 |
| | Senior Internship 2010-523 | 3 |
| | Portfolio Development and Presentation 2010-524 | 3 |
| | Introduction to Web Design 2010-561 | 3 |
| | Advanced Web Design 2010-562 | 3 |
| | *Total Quarter Credit Hours* | *182* |

**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.*
*# Additional special topics courses may be required.*

## Interior Design

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. This program is accredited by the Foundation for Interior Design Education Research.

The mission of the interior design program is "to educate students to be designers who contribute to their professions, communicate effectively within their discipline, have a lifelong attitude of inquiry, and make a positive impact on society. To this end, we promote an innovative educational community that balances expression, imaginative problem-solving, aesthetic understanding, professional responsibility, and creativity."

**Interior design, BFA degree, typical course sequence**

| | Foundation Studies | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Electives | 6 |
| | Freshman offerings of Computer Skills: Vector Imaging 2010-216; Computer Skills: Raster 2010-211 are required | |
| | Creative Sources 2013-205 | 1 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Design Survey 2015-222 | 2 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Majors must take of the following courses to complete the sophomore year (prerequisite: completion of Foundation Studies): | |
| | Architectural Drawing 2015-305 | 3 |
| | Perspective Drawing 2015-306 | 3 |
| | Introduction to Interior Design 2015-307 | 3 |
| | Computer-Aided Design Applications # 2015-308 | 3 |
| | Model-Building and Human Dimension 2015-311 | 3 |
| | Studio electives (one each quarter) | 9-12 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | History of Architecture and Furniture 2039-306, 307, 308 | 9 |
| | Majors must take each of these courses in sequence to complete junior year in interior design (pre-requisite: completion of sophomore year):# | |
| | Hospitality Design 2015-404 | 3 |
| | Application of Color and Light 2015-405 | 3 |
| | Retail Design 2015-406 | 3 |
| | Building Construction Systems 2015-407 | 3 |
| | Office Design and Planning 2015-408 | 3 |
| | Interior Specifications 2015-409 | 3 |
| | Studio electives (average of one each quarter) | 9 |
| | Liberal Arts* | 12 |
| Fourth Year | Majors must take these courses to complete senior year in interior design (pre requisite: completion of junior year): # | |
| | Multipurpose/Multistory Design 2015-504 | 4 |
| | Building Codes and Regulations 2015-505 | 2 |
| | Environmental Control Application 2015-506 | 3 |
| | Healthcare Design 2015-507 | 4 |
| | Interior Design Business Practices 2015-508 | 2 |
| | Career Planning 2015-509 | 2 |
| | Working Drawings 2015-510 | 4 |
| | Special Projects 2015-511 | 3 |
| | Open Elective | 18-24 |
| | *Total Quarter Credit Hours* | *185* |

** Please see Liberal Arts General Education Requirement for more information.*
*† Please see Wellness Education Requirement for more information.*
*# Additional special topics courses may be required.*

## Industrial Design

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.

**Industrial design, BFA degree, typical course sequence**

| | Foundation Studies | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Electives | 6 |
| | Freshman offerings of Computer Skills: Vector Imaging 2010-216; Computer Skills: Raster 2010-211 are required | |
| | Creative Sources 2013-205 | 1 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Design Survey 2015-222 | 2 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Majors must take of the following courses to complete the sophomore year (prerequisite: completion of Foundation Studies): | |
| | Technical Drawing 2035-306 | 2 |
| | Model Making 2035-311 | 2 |
| | Graphic Visualization I, II, III 2035-321, 322, 323 | 6 |
| | Form I, II 2035-331, 332 | 4 |
| | Sophomore Design Studio 2035-348 | 4 |
| | Studio Electives (one each quarter) | 9-12 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |

| | | |
|---|---|---|
| Third Year | History of Industrial Design 2035-442 | 3 |
| | Art History | 3 |
| | Art History Electives** | 3 |
| | Majors must take each of these courses in sequence to complete junior year in industrial design (pre-requisite: completion of sophomore year): # | |
| | Materials and Process Applications 2035-405 | 3 |
| | Consumer Product Design I 2035-406 | 3 |
| | Human Factors Applications 2035-407 | 3 |
| | Equipment Design 2035-408 | 3 |
| | Consumer Product Design II 2035-410 | 3 |
| | CAD Applications III 2035-418 | 3 |
| | Studio Electives (one each quarter) | 9 |
| | Liberal Arts* | 12 |
| Fourth Year | Professional Practice 2035-510 | 3 |
| | Career Planning 2035-513 | 3 |
| | Majors must take four of the following courses to complete senior year (pre-requisite: completion of junior year): | |
| | Design Collaborative 2035-506 or Internship 2035-498 | 3 |
| | Package Design 2035-527 or Furniture Design 2035-508 or | 9 |
| | Advanced Product Design 2035-512 or Toy Design 2035-522 | |
| | Open Electives | 18–24 |
| | *Total Quarter Credit Hours* | *182* |

** 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.*
*# Additional special topics courses may be required.*
***Please refer to the list of art history electives.*

## New Media Design and Imaging

This bachelor of fine arts degree was created in response to a growing demand for college graduates with strong digital imaging skills, highly refined design sensitivities, and the ability to visualize concepts. 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, 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, including CD-ROM, DVD, and the Web. This program shares courses with two other bachelor's degree programs: the BS in new media publishing, through the School of Print Media; and the BS new media option in information technology, through the B. Thomas Golisano College of Computing and Information Sciences. This is an exciting, dynamic interdisciplinary curriculum in step with cutting edge technology and ready to grow with it.

**New media design, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Drawing 2013-211, 212 | 6 |
| | 2-D Design 2013-231, 232 | 6 |
| | New Media Perspectives 2009-xxx | 3 |
| | Elements of Graphic Design for New Media 2009-213 | 3 |
| | Typography 2009-311 | 3 |
| | Time-Based Imaging 2009-411 | 4 |
| | Digital Video for New Media 2065-217 or 2009-xxx | 4 |
| | Imaging for New Media 2083-206 | 4 |
| | Introduction to Multimedia 4002-320 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | 3-D Form and Space 2009-212 | 3 |
| | Information Design for New Media 2009-312 | 3 |
| | Introduction to Computer Imaging 2009-313 | 3 |
| | Design of Graphical User Interface 2009-323 | 4 |
| | Introduction to Digital Animation 2065-382 or 2009-xxx | 4 |
| | Website Design and Implementation 4002-409 | 4 |
| | Introduction to Programming for Digital Media 4002-230 | 4 |
| | Programming for New Media II 4002-231 | 4 |
| | Studio Elective | 3 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Art History Electives** | 9 |
| | Advanced Design for Networking 2009-401 | 3 |
| | Emerging Multimedia Design and Imaging Tools 2009-402 | 3 |
| | Dynamic Information Design 2009-403 | 3 |
| | Dynamic Typography 2009-412 | 3 |
| | Advanced 3-D Techniques 2009-413 | 3 |
| | New Media Elective 2009-xxx | 3 |
| | Open Elective | 3–4 |
| | Liberal Arts* | 12 |
| Fourth Year | Dynamic Persuasion 2009-501 | 3 |
| | Virtual Entertainment 2009-502 or Experimental New Media 2009-522 or Studio Elective | 6 |
| | QTVR and Multimedia Design 2009-511 | 3 |
| | Career Skills 2009-516 | 3 |
| | New Media Team Project I, II 2009-542, 543 | 8 |
| | Studio Elective | 3 |
| | Open Electives | 12-16 |
| | *Total Quarter Credit Hours* | *182* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
***Please refer to the list of art history electives.*

## School for American Crafts

***Julia Galloway, Administrative Chair***

As an internationally recognized school that merges art with craft, the School for American Crafts is a leader in crafts education and provides an educational experience that balances technical expertise with aesthetic expression in the creative and technical 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.

### Programs of study

The School for American Crafts offers a full-time program of study with opportunity to major in one of four craft fields: ceramics and ceramic sculpture, glass and glass sculpture, metals and jewelry design, and woodworking and furniture design. After satisfactory completion of two years of study, the associate in applied science is granted. After successful completion of the four-year program, the bachelor of fine arts is awarded. The credit requirements for the bachelor of fine arts are:

| Courses | Qtr. Cr. Hrs. |
|---|---|
| Required Craft Major Studio | 90 |
| Required Electives | 9 |
| Business Practices | 9 |
| Liberal Arts* | 36 |
| General Education | 9 |
| Art History | 18 |
| Creative Sources | 3 |
| Freshman Elective | 6 |
| **Total Quarter Credit Hours** | **182–185** |

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

A two-year associate degree in occupational studies also is offered in woodworking and furniture design. The credit requirements are:

| Courses | Qtr. Cr. Hrs. |
|---|---|
| Required Wood Major | 36 |
| Creative Sources | 3 |
| Drawing | 9 |
| 2-D Design | 9 |
| 3-D Design | 9 |
| Advanced Drawing | 6 |
| Art History Elective† | 9 |
| Studio Elective | 3 |
| Professional Business Practices | 9 |
| **Total Quarter Credit Hours** | **93** |

**Please see Liberal Arts General Education Requirements for more information.*
*† Please refer to the list of art history electives.*

The School for American Crafts offers a crafts residence program, with participants accepted in the ceramics, glass, metals, and wood studios disciplines. Residence positions are limited and will be awarded on the basis of the submission of an application that consists of a portfolio, transcripts, and references. An interview is required. Accepted studio residents are required to register for at least two (2) 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 major faculty in the area. In exchange, the school will provide workspace, access to the facilities, and supportive instruction. The resident is 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 major faculty in the area will make decisions concerning appropriate candidates.

**Ceramics, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year** | Freshmen Elective | 6 |
| | Creative Sources 2013-205, 206, 207 | 3 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| **Second Year** | Materials and Processes Ceramics, Sophomore 2040-301, 302, 303 | 18 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Concept Drawing 2045-311 | 3 |
| | Craft Technical Drawing 2045-312 | 3 |
| | Studio Elective | 3 |
| | Wellness Education† | 0 |
| **Third Year** | Materials and Processes Ceramics, Junior 2040-401, 402, 403 | 18 |
| | Art History** | 9 |
| | Studio Elective | 9 |
| | Liberal Arts* | 12 |
| **Fourth Year** | Materials and Processes Ceramics, Senior 2040-501, 502, 503 | 18 |
| | Planning a Career in the Crafts 2045-511 | 3 |
| | Crafts Promotional Package 2045-512 | 3 |
| | Operating a Business in the Crafts 2045-513 | 3 |
| | Open Elective | 9–12 |
| | *Total Quarter Credit Hours* | *182-188* |

**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.*
*Upon completion of second year, the associate in applied science degree is awarded.*

## Glass, BFA degree, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshmen Elective | 6 |
| | Creative Sources 2013-205, 206, 207 | 3 |
| | Drawing 2013-211, 212, 213 | 9 |
| | Two-dimensional 2-D Design 2013-231, 232, 233 | 9 |
| | Three-dimensional 3-D Design 2013-241, 242, 243 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Materials and Processes Glass, Sophomore 2041-301, 302, 303 | 18 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Concept Drawing 2045-311 | 3 |
| | Craft Technical Drawing 2045-312 | 3 |
| | Studio Elective | 3 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Materials and Processes Glass, Junior 2041-401, 402, 403 | 18 |
| | Art History Electives** | 9 |
| | Open Elective | 9–12 |
| | Liberal Arts* | 12 |
| Fourth Year | Materials and Processes Glass, Senior 2041-501, 502, 503 | 18 |
| | Planning a Career in the Crafts 2045-511 | 3 |
| | Crafts Promotional Package 2045-512 | 3 |
| | Operating a Business in the Crafts 2045-513 | 3 |
| | Open Elective | 9–12 |
| | ***Total Quarter Credit Hours*** | ***182-188*** |

**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.*
*Upon completion of second year, the associate in applied science degree is awarded.*

## Metals, BFA degree, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshmen Elective | 6 |
| | Creative Sources 2013-205, 206, 207 | 3 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Materials and Processes Metals, Sophomore 2042-301, 302, 303 | 18 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Concept Drawing 2045-311 | 3 |
| | Craft Technical Drawing 2045-312 | 3 |
| | Studio Elective | 3 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Materials and Processes Metals, Junior 2042-401, 402, 403 | 18 |
| | Art History Electives** | 9 |
| | Studio Elective | 9 |
| | Liberal Arts* | 12 |
| Fourth Year | Materials and Processes Metals, Senior 2042-501, 502, 503 | 18 |
| | Planning a Career in the Crafts 2045-511 | 3 |
| | Crafts Promotional Package 2045-512 | 3 |
| | Operating a Business in the Crafts 2045-513 | 3 |
| | Open Elective | 9–12 |
| | ***Total Quarter Credit Hours*** | ***182-188*** |

**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.*
*Upon completion of second year, the associate in applied science degree is awarded.*

## Wood, BFA degree, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshmen Elective | 6 |
| | Creative Sources 2013-205, 206, 207 | 3 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Materials and Processes Wood, Sophomore 2044-301, 302, 303 | 18 |
| | Survey of Western Art and Architecture. 2039-225, 226, 227 | 9 |
| | Concept Drawing 2045-311 | 3 |
| | Craft Technical Drawing 2045-312 | 3 |
| | Studio Elective | 3 |
| | Liberal Arts* | 12 |
| Third Year | Materials and Processes Wood, Junior 2044-401, 402, 403 | 18 |
| | Architecture, Int. Furn. Design History 2039-306, 307, 308 | 9 |
| | Studio Elective | 9 |
| | Liberal Arts* | 12 |
| Fourth Year | Materials and Processes Wood, Senior 2044-501, 502, 503 | 18 |
| | Planning a Career in the Crafts 2045-511 | 3 |
| | Crafts Promotional Package 2045-512 | 3 |
| | Operating a Business in the Crafts 2045-513 | 3 |
| | General Education Elective | 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.*

## Wood, AOS degree, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Materials and Processes Wood, Sophomore 2044-301, 302, 303 | 18 |
| | Creative Sources 2013-205, 206, 207 | 3 |
| | Drawing 2013-211, 212, 213 | 9 |
| | 3-D Design 2013-241, 242, 243 | 9 |
| | Concept Drawing 2045-311 | 3 |
| | Craft Technical Drawing 2045-312 | 3 |
| | Studio Elective | 3 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Materials and Processes Wood, Junior 2044-401, 402, 403 | 18 |
| | 2-D Design 2013-231, 232, 233 | 9 |
| | Architecture, Interior Design, and Furniture Design History 2039-306, 307, 308 | 9 |
| | Planning a Career in the Crafts 2045-511 | 3 |
| | Crafts Promotional Package 2045-512 | 3 |
| | Operating a Business in the Crafts 2045-513 | 3 |
| | Wellness Education† | 0 |
| | ***Total Quarter Credit Hours*** | ***93*** |

*†Please see Wellness Education Requirement for more information.*

## Extended Studies for the Schools of Art & Design

### Fine and Applied Arts

***Zerbe Sodervick, Administrative Chair***

Fine and applied arts courses are designed to fulfill two overriding objectives—personal growth and cultural enrichment. A menu of individual courses as well as a diploma program is offered through the Office of Extended Studies.

Options begin with introductory courses that provide a basic exploration of the creative process and help students develop visual organization skills. After taking these courses, the student will be able to earn a fine and applied arts diploma. Some courses are only offered in alternate years.

Students should consult with an adviser to plan their course of study and to clarify goals. The chairperson can be consulted for course substitution. Students must achieve a program GPA of at least 2.0 in order to be certified.

Extended studies for fall 2006 will offer new special topics courses in art gallery/museum studies, business skills for artists, and electronic tools and concepts for teaching secondary high school art.

For more information on evening electives, call the chairperson at (585) 475-4977.

| Diploma requirements | Qtr. Cr. Hrs. |
|---|---|
| Basic Drawing and Media 2012-211, 212, 213 | 6 |
| Basic Design 2012-201, 202, 203 | 6 |
| Fine Arts: Visual Arts 0505-213 | 4 |
| Basic Figure Drawing 2012-215 | 2 |
| Figure Drawing 2012-225 | 2 |
| Rendering Techniques I, II 2012-266,227 | 4 |
| Introduction to Painting 2012-286 | 2 |
| or Painting 2012-288 | |
| or Watercolor 2012-293 | |
| Introduction to Non-toxic Printmaking 2012-296 | 2 |
| or Printmaking Workshop 2012-396 | |
| or Printing Relief | |
| or Introduction to Screen Printing | |
| Introduction to Sculpture | 2 |
| or Introduction to Figure Sculpture | |
| or Found Object Sculpture | |
| or Mixed Media | |
| or Mixed Media Rendering Techniques II | |
| 2012-267 | |
| Electives (with adviser's approval) | 18 |
| **Diploma Total** | **48** |

## School of Film and Animation

***Howard Lester, Administrative Chair***

The degree program in film/video production 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.

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. Our goal is for all our graduates be able to produce, creatively and practically, their own independent work or fulfill any production responsibility, 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. The curriculum also recognizes the growing interrelationship between the technologies of film, video, animation, and computers.

Students in the film/video/animation program produce several short films or animations by working through all phases of production: scripting, production planning, budgeting, shooting, sound editing, and working with a laboratory. Students further their learning of visual and sound artistry through hands-on experience with camera and sound equipment. Because film, video, and animation projects are designed by individual students, a wide variety of styles and intentions is expressed in the department's work.

The BS degree program in digital cinema is a collaborative effort between the faculties of the School of Film and Animation and the Center for Imaging Science. It is designed for those students interested in the creative challenges of technological development for motion media production.

Graduates from the BS degree program will be trained to work in post production facilities in such areas as color and gamma correction of digital intermediates, CG element and match move composting, format conversions, and other issues concerned with preserving the cinematographers' and directors' intents. Additionally, graduates will be prepared to pursue other emerging career choices. The technology is changing rapidly and there are new opportunities in the design, use, and understanding of imaging hardware and software algorithms that support production workflow, effects, distribution, and presentation of electronic and traditional cinema.

### Graduate programs

The School of Film and Animation offers the MFA degree in three areas of concentration: film/video production, and in two- and three-dimensional animation. The MFA degree is described in the *Graduate Bulletin*, available from the Office of Graduate Enrollment Services.

### 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 detailed information, write the school. For information on summer courses, please contact Mary Barnard, staff assistant, mqbpph@rit.edu, (585) 475-6175.

## Online contacts

Additional information can be requested via e-mail at 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 is also a certified Apple Training Center for Professional Applications.

## Transfer admission

Transfer credits from accredited institutions are evaluated on a course-by-course basis. Transfer credits for film animation courses are awarded on the basis of a portfolio in addition to course work with a grade of "C" or better. The portfolio will be reviewed by the department chair.

## 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.

**Film/video/animation, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Production I, II, III 2065-201, 202, 203 | 12 |
| | Materials and Processes of Moving Image 2065-221 | 2 |
| | Film Language 2065-222 | 4 |
| | Introduction to Animation 2065-331 | 4 |
| | Story and Structure 2065-206 | 2 |
| | Single Frame Motion 2065-263 | 2 |
| | Scriptwriting I 2065-342 | 3 |
| | Fundamentals of Computer Imaging 2065-216 | 3 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Video Tools and Technology 2065-311 | 5 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| | **Production Emphasis:** | |
| | Introduction to 16mm Sync Sound 2065-431 | 5 |
| | Scriptwriting II 2065-343 | 3 |
| | Film/Video Production Workshop | 4 |
| | Film Animation History and Aesthetics | 12 |
| | Film/Animation Electives | 9-12 |
| | **Animation Emphasis:** | |
| | Animation Pre-Production 2065-352 | 4 |
| | 2-D Computer Animation 2065-427 | 4 |
| | Introduction to 3-D Modeling Animation 2065-457 | 4 |
| | Animation Production Workshop 2065-333 | 4 |
| | or Experimental Animation Workshop 2065-447 | |
| | Foundation Drawing 2013-211, 212 | 6 |
| | Foundation Drawing 2013-213 or 2-D Design 2013-231 | 3 |
| | or 3-D Design 2013-241 | |
| | Film/Animation History and Aesthetics | 6-8 |
| | Film/Animation Elective | 3-4 |
| Third Year | Senior Project Seminar 2065-413 | 1 |
| | Open Elective | 8 |
| | Liberal Arts* | 12 |
| | **Production Emphasis:** | |
| | Writing the Short Film 2065-387 | 3-4 |
| | or Dramatic Structure for Film/TV 2065-376 | |
| | (Craft track) | |
| | Advanced Production Workshop I, II | 8 |
| | or Script Workshops I, II | |
| | Film/Animation History and Aesthetics | 6-8 |
| | Film/Animation Elective | 8 |
| | **Animation Emphasis:** | |
| | 3-D Computer Animation I 2065-361 | 4 |
| | or 3-D Computer Animation II | |
| | or Advanced Animation Tools | |
| | Scriptwriting for Animation 2065-363 | 3 |
| | Advanced Animation Workshop I 2065-437 | 4 |
| | Advanced Animation Workshop II 2065-438 | 4 |
| | Film/Animation History and Aesthetics | 3-4 |
| | Film/Animation Elective | 6-8 |
| Fourth Year | Open Elective | 4 |
| | Math/Science/Liberal Arts Electives | 9-12 |
| | Production Emphasis and Animation Emphasis: | |
| | Senior Project 1, 2, 3 2065-507, 508, 509 | 12 |
| | Senior Forum 2065-512 | 2 |
| | Senior Forum III 2065-513 | 2 |
| | Film/Animation History and Aesthetics | 3-4 |
| | Film/Animation Elective | 9-12 |
| | ***Total Quarter Credit Hours*** | ***180–191*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

**Digital cinema, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Project Based Calculus I, II, III 1016-281, 282, 28 | 12 |
| | University Physics I, II 1017-311, 312 | 8 |
| | Imaging Physical Science 1051-204 | 4 |
| | Production I, II 2065-201, 202 | 8 |
| | Materials and Processes of Moving Image I 2065-221 | 2 |
| | Film Language 2065-222 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| Second Year | Multivariable Calculus 1016-305 | 4 |
| | Digital Image Process For Motion Media | 4 |
| | Programming for Imaging Science 1051-211 | 4 |
| | Introducton to Imaging Systems 1051-300 | 4 |
| | Vision and Psychophysics 1051-350 | 4 |
| | Video Tools and Technology 2065-311 | 5 |
| | Introduction to Animation I 2065-331 | 4 |
| | Introduction to 16mm Sync Sound 2065-431 | 5 |
| | Sound Recording 2065-452 | 3 |
| | Film/Animation History and Aesthetics | 3 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| Third Year | Color Science 1051-402 | 4 |
| | Digital Imaging Processing II 1051-462 | 4 |
| | Introduction to 3-D Computer Animation 2065-361 | 4 |
| | Color/Gamma Correction | 4 |
| | Control Special Effects in Digital Workplace | 4 |
| | Film Projection and Electronic Cinema | 4 |
| | Film/Animation Elective | 6-8 |
| | Free Elective | 3-4 |
| | Liberal Arts* | 12 |
| Fourth Year | Senior Project 1, 2, 3 2065-507, 508, 509 | 12 |
| | Film/Animation Electives | 8 |
| | Free Electives | 16-20 |
| | Liberal Arts* | 8 |
| | ***Total Quarter Credit Hours*** | ***185-192*** |

** Please see Liberal Arts General Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## School of Photographic Arts and Sciences

***William W. DuBois, Administrative Chair, BFA/MFA programs***
***Andrew Davidhazy, Administrative Chair, BS program***

The programs of the School of Photographic Arts and Sciences are designed to prepare students for a wide range of careers in photographic and other imaging fields. Studies in photographic arts involve both technical and creative experiences for visual problem solving. The science and technology division of the school emphasizes the physical principles of imaging through studies in image evaluation, unconventional imaging applications, and computer applications, as well as other high-technology areas. All first-year BFA students in photography and students in biomedical photographic communications and technical photography are required to have their own handheld small- or medium-format camera and a professional light meter. A digital SLR camera is required at the start of the third academic quarter in the first year.

Students have the opportunity to supplement their course work with participation in internships, field trips, presentations by guest speakers, departmental student organizations, and related activities.

We urge students 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.

### Degrees offered

- BFA degree in **advertising photography—**Douglas Manchee, program chair
- BFA degree in **fine art photography**—Ken White, program chair
- BFA degree in **photojournalism—**Douglas Ford Rea, program chair
- BFA degree in **visual media**—William DuBois, program chair
- BS degree in **imaging and photographic technology—**Andrew Davidhazy, administrative chair
- BS degree in **biomedical photographic communications—**Michael Peres, program chair

### Graduate programs

The School of Photographic Arts and Sciences offers the MFA in imaging arts, as well as graduate-level courses of study in photographic preservation and archival practice. The MFA degree is described in the *Graduate Bulletin*, available from the Office of Graduate Enrollment Services.

### Summer session

The School of Photographic Arts and Sciences offers photographic courses in the Summer Session. These range from beginning photography courses to those requiring a substantial photographic background. For detailed information, write the appropriate department of the school.

### Internet address

Additional information can be requested through the website of the School of Photographic Arts and Sciences: photography.rit.edu.

### Memberships

The school maintains memberships in a number of professional organizations: American Management Association, American Society of Training and Development, Photomarketing Association, Photo Imaging Educators Association, Association of Professional Color Laboratories, College Art Association, Bio Communications Association, National Microfilm Association, National Press Photographer Association Student Chapter, Ophthalmic Photographers Society, Society for Imaging Science and Technology, Society for Photographic Education, International Society for Optical Engineering, International Panoramic Photographers Association, and American Society of Media Photography.

### Cooperative education

Cooperative education is a program through which students gain work experience. It is recognized that co-op experiences not only provide participating students with valuable insight into potential career opportunities, but also open up newly discovered career paths. Co-ops are work situations in which students are employed as full-time or temporary salaried employees. The College of Imaging Arts and Sciences does not award academic credit for co-op experiences.

Co-op placement opportunities are supported by the Office of Cooperative Employment and Career Services, which helps students arrange on-campus employer visitations, interviews, and promotes the cooperative employment program to industries nationwide.

Periods of co-op employment are required in the bachelor of science programs in the School of Photographic Arts and Sciences and although not required in the bachelor of fine arts programs, they are possible.

### Internships

Internships are experiential learning opportunities of many kinds, typically arranged under the supervision of a faculty member or a department. Internships may be paid, salaried, or volunteer work experiences for which a student may earn academic credit. Internship experiences are evaluated by a member of the academic staff and a student is assigned a merit grade based on his or her achievement of pre-established requirements. Internships are not required by any program in the School of Photographic Arts and Sciences but are strongly suggested based on the recognition that a work experience prior to graduation is a positive addition to every student's background.

### Transfer admission

Transfer credits from accredited institutions are evaluated on a course-by-course basis. Transfer credits for photography courses are awarded on the basis of a portfolio in addition to course work with a grade of "C" or better. The portfolio will be reviewed by the program chair. (Portfolio guidelines are available from the Office of Undergraduate Admissions.)

## Summer transfer programs

Students who meet the requirements for course work and portfolio work may be accepted into one of several summer transfer programs. These 10-week sessions of intensive study bring students to a second- or third-year technical and aesthetic level in their photography programs. Descriptions of the requirements for each program and year level follow.

## Second-year transfer credit requirements

**Imaging and photographic technology—**To become a fall transfer into the sophomore year, candidates must complete a summer transfer program and should have previously completed the following college-level course work: at least one year of mathematics, including an introductory calculus course; at least four liberal arts courses; and two courses in black-and-white photography. Additional photography courses may exempt a student from Photography I. Credit for this is evaluated by transcript and submission of a portfolio. Other credits earned also may be accepted for transfer to upper years. These include college physics, liberal arts, technical writing, computer programming, chemistry, and additional mathematics.

**Biomedical photographic communications—**To become a fall transfer into the sophomore year, it is suggested that candidates previously complete the following college-level course work: 12 credit hours of liberal arts, eight of science, and 12 of photography.

Applicants may submit a transcript of college courses completed and request a transfer credit audit. Transfer credit for Photography I is based on acceptable comprehensive portfolio review, satisfactory completion of an appropriate college photography course, and/or evidence of appropriate work experience.

**Advertising photography, fine art photography, or photojournalism—**Normally a minimum of 30 quarter credits, of which there are 12 in liberal arts; and 18 in photography, studio art, or an accepted equivalent. The student may be required to complete the 10-week intensive summer course Photo Arts 1, 2, and 3.

## Third-year transfer credit requirements

**Advertising photography, fine art photography, or photojournalism—**Normally an applicant must have completed an associate degree or the equivalent of two years of college with a major in photography (a minimum of 25 quarter credits of photography) plus studio art courses for a minimum of nine quarter credits, liberal arts for 24 quarter credits, and art history for nine quarter credits. The student also must complete the 10-week intensive summer course, BFA Photographic Arts 4, 5, and 6, and must make up the courses Materials and Processes of Photography and History and Aesthetics of Photography. A portfolio is required.

**Advanced entry into advertising photography, fine art photography, or photojournalism requires a portfolio review as well as evaluation of transfer credit.**

If a student has completed two or more years of intensive study in photography at an accredited school, he or she may submit a portfolio for evaluation by the BFA faculty. A list of the requirements for submission of the portfolio may be obtained from the Office of Undergraduate Admissions, Bausch & Lomb Center, 60 Lomb Memorial Drive, Rochester, NY 14623-5604.

## Biomedical Photographic Communications

***Michael Peres, Program Chair***

RIT has the only program in the nation that grants a bachelor of science degree in biomedical photographic communications, an exciting area of visual communications that combines photography and science. The program prepares students for photographic and imaging careers in various institutions such as forensic labs, pharmaceutical companies, and military bases, as well as in the area of ophthalmic photography, which is the only form of photography that is diagnostic. In addition, because of the unique blend of courses, recent graduates have been very successful finding positions in the electronic imaging field as technical service representatives or producers of multimedia and Web publishing.

During the first two years of the program, students receive a solid foundation in exploring digital photography, desktop, and Web publishing, as well as biology and general science courses. Included in these classes are topics such as close-up and high-magnification photography, studio lighting, ethics, ophthalmic photography, and imaging technologies.

By the end of their second year, students will have knowledge of a wide variety of career options through the program's interactive lecture series with professional biomedical and new media experts. This knowledge will help them identify and secure a summer co-op position. At least one co-op 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. Most co-ops are paid positions and are typically eight to 10 weeks long for 20 to 40 hours per week.

In the third and fourth years, the curriculum becomes 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, or the College of Computing and Information Sciences. This flexibility, coupled with the personal attention of faculty advising, 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.

Since 1968, most of the program's nearly 500 graduates have been actively recruited by various visual communication companies. Many of these 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.

For more information, visit the department webpage at biomed.rit.edu.

**Biomedical photographic communications, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Biomedical Photography I | 15 |
| | Materials and Process of Photography 2076-211, 212, 213 | 9 |
| | Survey of Biomedical Photography 2061-213 | 1 |
| | Preparation of Biomedical Visuals I 2061-311 | 3 |
| | Math or Science# | 8 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Biomedical Photography II | 12 |
| | Preparation of Biomedical Visuals III 2061-313 | 3 |
| | Digital Photography I, II 2061-316, 318 | 8 |
| | Web Publishing 2061-361 | 4 |
| | Math or Science# | 3-4 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| | Cooperative Education | Co-op |
| Third Year | AV Production I 2061-401 | 4 |
| | Advanced Photography in Biomedical Communication 2061-402, 403 | 8 |
| | Open Electives | 10-12 |
| | Math or Science# | 6-8 |
| | Liberal Arts* | 12 |
| | Cooperative Education (optional) | Co-op |
| Fourth Year | Photographic Concentration 2061-501, 502, 503 | 12 |
| | Math/Science/Liberal Arts Elective | 26 |
| | Open Electives | 10 |
| | ***Total Quarter Credit Hours*** | ***191*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*# Math or Science requirement includes:*
*1004-211, 212, or 213, Human Biology I, II, or III (8 credits)*
*1026-301, Medical Terminology (3 credits)*
*or*
*1004-211, 212 or 213, Human Biology I, II, III*
*General Science Elective (6 credits)*
*In addition choose two of the following three courses:*
*1016-319 Data Analysis (4 credits)*
*1016-225 Algebra for Management Science (4 credits)*
*1016-226 Calculus for Management Science (4 credits)*
*Total math or science (24-25 credits)*

## Imaging and Photographic Technology

***Andrew Davidhazy, Administrative Chair***

The imaging and photographic technology curriculum blends a contemporary professional photography program with specialized education in technical, industrial, and scientific imaging applications. It prepares students for entry into a variety of picture-making and non-picture-making positions by providing them with a background adaptable to a number of fields. Students' technical skills are complemented by academic course work in mathematics, computers, science, and liberal arts, including technical writing.

At the same time, students develop an expertise in a professional or technical field of their choice by taking at least six free electives in a concentration area. These concentrations include: technical photography photoinstrumentation, imaging chemistry, electronic imaging and computing, still photography, graphic arts, optics, imaging systems, business, science, and engineering.

The picture-making aspects of photography are included in all four years of the program, with a transition from a comprehensive course in black-and-white photography, through color photography, and color printing and architectural or nature photography. The required technical courses cover photographic sensitometry, optics and chemistry, as well as color measurement and high-speed photography. Also available are a variety of technical and photographic electives such as Holography, Photonics, Scanning Electron Microscopy, and Photoinstrumentation Applications. Computing and electronic imaging are emphasized from the first year in such courses as JAVA Programming, Digital Image Processing, and Introduction to Multimedia. In their last two years, students may choose a field of concentration. While every student's core program is similar, each graduate's background varies with his or her choice of concentration area.

Cooperative education is another unique feature of the program. At least two required cooperative education work blocks are required before graduation.

An employment survey conducted by the School of Photographic Arts and Sciences shows the need for graduates with imaging and photographic technology backgrounds well into the future. Recent graduates of this program are employed as photographic technicians, technologists, or research associates in various industrial, scientific, or business enterprises; as photographic engineers or junior engineers in a number of imaging-related disciplines; as technical and sales representatives; as technical illustrators; as high-speed photographers; and as corporate, industrial, advertising, and commercial photographers. The department chairperson has a comprehensive list of careers available in which graduates would qualify.

The Technical Photography Student Association promotes professionalism among students and encourages interaction with the imaging and photographic technology industry. The association regularly invites professionals to campus for lectures and demonstrations.

If you would like specific information, a personal interview, tour, or an opportunity to visit classes and talk with some of our students, contact the administrative chair, Andrew Davidhazy, at (585) 475-2592 or by e-mail at andpph@rit.edu. For additional information, including portfolio requirements for this program, visit the department's website at phototech.rit.edu.

**Imaging and photographic technology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Photo I 2076-201, 202, 203 | 12 |
| | Materials and Process of Photography 2076-211, 212, 213 | 9 |
| | Applied Computing for Tech Photo 2076-321 | 3 |
| | System Design/Graphic Presentations 2076-401 | 3 |
| | Calculus for Engineering Tech I 1016-231** | 4 |
| | Data Analysis 1016-319 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Photographic Sensitometry 2076-301 | 4 |
| | Technical Photographic Chemistry 2076-302 | 4 |
| | Photographic Optics 2076-303 | 4 |
| | Color Photo Design 2076-311 | 4 |
| | Color Printing Theory 2076-312 | 4 |
| | Color Measurement 2076-313 | 4 |
| | College Physics 1017-211, 212, 213 | 9 |
| | College Physics lab 1017-271, 272, 273 | 3 |
| | Nature Photography 2076-471 | |
| | or Architectural Photography 2067-478 | 4 |
| | or Special Effects 2076-487 | |
| | Liberal Arts* | 12 |
| | Cooperative Education (summer quarter) | Co-op |
| Third Year | Imaging Systems 2076-411 | 4 |
| | Color Management for Photographers 2076-412 | 4 |
| | Imaging Workflows 2076-413 | 4 |
| | Nature Photography 2076-471 or | 1 |
| | Architectural Photography 2076-478 or | 4-5 |
| | Photo Elective | 1 |
| | Technical Writing 0502-444 | 4 |
| | Math/Science/Liberal Arts Electives | 8 |
| | Liberal Arts* | 12 |
| | Open Elective | 10 |
| | Cooperative Education (summer quarter) | Co-op |
| Fourth Year | Introduction to Research 2076-501 | 3 |
| | Survey of Nonconventional Imaging 2076-503 | 3 |
| | High-Speed/Time Lapse 2076-511 | 3 |
| | Math/Science/Liberal Arts Electives | 24 |
| | Open Elective | 10 |
| | *Total Quarter Credit Hours* | *188* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*#Professional concentration electives—minimum of 25 credits; includes any university course with a professional concentration—24 credits*
***Calculus I and II can be substituted for Calculus for Engineering Tech I and Data Analysis.*
****College Physics can be substituted for University Physics if the prerequisites have been meet.*

## Advertising Photography

***Douglas Manchee, Program Chair***

RIT's advertising photography program prepares students to utilize their skill and creativity in the challenging world of commercial photography. Whether creating images for advertising agencies, editorial magazines, or designer's 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 advertising photography 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, fashion, portraiture, architectural, and studio 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.

**Professional photographic illustration, advertising photography option, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Photo Arts 1, 2, 3 | 15 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Materials and Process of Photography 2076-211, 212, 213 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Photo Arts 4, 5, 6 | 15 |
| | History and Aesthetics of Photography 2060-301, 302, 303 | 9 |
| | 2-D Design 2013-231, 232 | 6 |
| | Drawing 2013-211 | |
| | Career Seminar | 1 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Advertising Photography 2067-411, 412 | 10 |
| | Advertising Core‡ | 5 |
| | Minor or CIAS Elective§ | 8 |
| | Photo Electives | 9-15 |
| | Liberal Arts* | 12 |
| Fourth Year | Advertising Core‡ | 10 |
| | Portfolio Development 2067-473 | 5 |
| | Photo Business Management 2067-431 | 3 |
| | Photo Elective# | 4-5 |
| | Minor or CIAS Elective#§ | 12 |
| | Open Elective¶ | 12-15 |
| | *Total Quarter Credit Hours* | *183* |

** 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*
*# Photo electives, minimum of 13 credits required in programs 2060, 2061, 2067 or 2076*
*¶ Open electives, minimum of 12 credits required*

## Fine Art Photography

***Ken White, Program Chair***

The fine art photography program is designed to encourage and facilitate a student's artistic development, sensitivity, and uniqueness as a visual artist. The department's objective is not to train students for a specific job in photography, but rather to provide each individual with a rich potential for growth and change, 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.

### Career opportunities

Graduates of the program find careers in a variety of areas: exhibiting artists, teachers, picture editors, art directors, photographer's 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.

### Transfer students

College students who wish to transfer to the program can do so no matter what academic field they are involved in, however more rapid advancement to the degree is facilitated if they are studying photography or related imaging arts areas such as painting, graphic design, communication arts, multimedia, film, or art history.

**Professional photographic illustration, fine art photography option, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Photo Arts 1, 2, 3 | 15 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Materials and Process of Photography 2076-211, 212, 213 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Photo Arts 4, 5, 6 | 15 |
| | History and Aesthetics of Photography 2060-301, 302, 303 | 9 |
| | 2-D Design 2013-231, 232 | 6 |
| | Drawing 2013-211 | 3 |
| | Career Seminar | 1 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Photography as a Fine Art I 2060-401, 402, 403 | 12 |
| | Contemporary Issues 2060-411, 413 | 8 |
| | Modern Art History Elective | 3 |
| | Art History/Critical Study or Open Elective¶ | 3-4 |
| | CIAS Elective | 3-4 |
| | Minor or CIAS Elective§ | 3-5 |
| | Liberal Arts* | 12 |
| Fourth Year | Photography as a Fine Art II 2060-501, 502, 503 | 12 |
| | Art History/Criticism Elective¶ | 3-4 |
| | Art History/CIAS Elective | 3 |
| | Minor or CIAS Electives§ | 12-16 |
| | Open Electives | 9-12 |
| | *Total Quarter Credit Hours* | *181* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*¶Art history/critical study courses, minimum of six credits required*
*§ RIT-approved minor and/or CIAS elective, minimum 26 credits required*

## Photojournalism

***Douglas Ford Rea, Program Chair***

World events today are often etched in the public's mind not by words, but by photographs. RIT's photojournalism program, which leads to a bachelor of fine arts degree in professional photographic illustration, provides an education in both photographic techniques and craft. Graduates of this program are well respected. Since 1979 our alumni have won 10 Pulitzer Prizes. Students have the opportunity to explore related disciplines such as electronic publishing, video documentary, multimedia for photojournalists, sound gathering and editing, and other related topics within the college.

### Internships

Most of our students apply for internships with today's best newspapers and magazines. Our students take on internships at newspaper corporations of various size and locations across the country. They work behind the camera on stories that touch their readers lives and also learn a great deal from staff photographers, editors, and others in the newsroom. Students receive assistance from their professors and RIT's Office of Cooperative Education and Career Services in identifying and applying for internships. Internships provide our students real world work experience, an invaluable part of their educational experience.

### NPPA student chapter

RIT photojournalism students are the driving force in our National Press Photographers Associate (NPPA) student chapter. RIT's chapter was named 2004 Chapter of the Year by the National Press Photographers Association. Students regularly attend Northern Short Course activities sponsored by the NPPA. The membership also hosts guest speakers and alumni on photojournalism topics and portfolio reviews. 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 either initially as interns or as full-time employees. A significant number of our students also become self-employed as freelance photographers. They seek freelance assignments with news organizations, picture agencies, stock photo agencies, and editorial photographers.

**Professional photographic illustration, photojournalism option, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Photo Arts 1, 2, 3 | 15 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Materials and Process of Photography 2076 211, 212, 213 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Photo Arts 4, 5, 6 | 15 |
| | History and Aesthetics of Photography 2060-301, 302, 303 | 9 |
| | 2-D Design 2013-231, 232 | 6 |
| | Drawing 2013-211 | 3 |
| | Career Seminar | 1 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Photojournalism I 2067-401, 402, 403 | 15 |
| | Photojournalism Core‡ | 4–5 |
| | Photojournalism Ethics | 4 |
| | Professional Writing for Photojournalism | 4 |
| | Fundamental Sound Recording 2061-xxx | 3 |
| | Minor or CIAS Electives§ | 8 |
| | Liberal Arts * | 12 |
| Fourth Year | Photojournalism II | 15 |
| | Photojournalism Core‡ | 8–10 |
| | Minor or CIAS Elective§ | 12 |
| | Open Elective# | 12–15 |
| | *Total Quarter Credit Hours* | *188* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ Photojournalism core, minimum of 12 credits required*
*§ RIT-approved minor and/or CIAS elective, minimum 20 credits required*
*# Open electives, minimum of 12 credits required*

## Visual Media

***William DuBois, Program Chair***

The computer has brought the industries of photography, graphic design, and print media into the same arena. All three of these career fields are using the same tools for communication and production. As a result, employers are searching for graduates with a strong base in photography and the ability to work efficiently with graphic designers, print media specialists, and multimedia specialists.

The visual media program prepares students in photography to broaden their skill base to include graphic design or print media, if not both. Graduates will work with these three areas of visualization and production efficiently, and will coordinate, drive, and direct the production of visual projects.

Students choose a focus in either graphic design or print media to enhance their skills. The flexibility of the electives and management courses allows for an even broader skill set in the

field. Students will be prepared for careers in the industries of photographic studio management, graphic design production management, and printing management.

**Professional photographic illustration, visual media option, BFA degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Photo Arts 1, 2, 3 | 15 |
| | Survey of Western Art and Architecture 2039-225, 226, 227 | 9 |
| | Materials and Process of Photography 2076-211, 212, 213 | 9 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Photo Arts 4,5,6 | 15 |
| | History and Aesthetics of Photography 2060-301, 302, 303 | 9 |
| | 2-D Design 2013-231, 232 | 6 |
| | Drawing 2013-211 | 3 |
| | Career Seminar | 1 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 0 |
| Third Year | Visual Media Focus§ (graphic design or print media) | 9–12 |
| | Management Process I, II, III 0681-200, 201, 203 | 12 |
| | Minor or CIAS Elective | 12 |
| | Liberal Arts* | 12 |
| Fourth Year | Visual Media Capstone Project 2067-512 | 4 |
| | Visual Media Focus or Elective§ | 4 |
| | Minor or CIAS Elective¶ | 8 |
| | Photo Electives‡ | 16 |
| | Open Elective# | 16–20 |
| | *Total Quarter Credit Hours* | *181* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*§ Visual media focus, minimum of 12 credits required*
*¶ RIT-approved minor and/or CIAS elective, minimum 20 credits required*
*‡ Photo electives, minimum of 16 credits required in programs 2060, 2061, 2067, or 2076*
*# Open electives, minimum of 12 credits required*

## School of Print Media

***Patricia Sorce, Administrative Chair***

The rapid deployment of digital technology has blurred the roles that traditionally differentiated printers, publishers, advertising agencies, graphic designers, website developers, and mail and fulfillment houses. The School of Print Media offers graphic and new media programs based on the concepts required for both electronic and printed media outlets. The programs encourage customized study in other course areas in order to develop individual talents and interests. The ability to tailor programs in the School of Print Media differentiates RIT from other universities. Another primary differentiating factor is the school's facilities. They are unsurpassed: students access more than $40 million of state-of-the-art equipment in 17 laboratories.

### Scholarships and financial aid

The number of successful graduates from the School of Print Media's testifies to the value of RIT's graphic media and new media programs. The school enjoys substantial support from alumni who contribute scholarships for students in need. Students interested in attending the School of Print Media should discuss financial questions with an expert from RIT's Financial Aid or Admissions offices.

The Education Council of the Graphic Arts Industry also offers scholarships. Applications should be submitted by high school students early in their senior year. If information about these scholarships is not available through the high school guidance office, candidates may write to:

National Scholarship Trust Fund
200 Deer Run Rd.
Sewickly, PA 15143

In addition to scholarships, students frequently find part-time employment in various positions on campus. The school employs students as laboratory assistants. These positions are filled on the basis of merit, but many of them are restricted to students needing financial aid. Also, part-time work may be available in the printing applications lab. Finally, in addition to its educational benefits, cooperative education provides students with a paid work experience, giving many students the income to pay for a portion of their college expenses.

### Cooperative education

The cooperative education (co-op) program is a key educational feature required in the school's two programs. Co-op work enhances a college education by complementing formal classroom learning with practical work experience. The Office of Cooperative Education and Career Services helps students find co-op, as well as permanent placement upon gradation, with a large number of firms in the United States and throughout the world.

Co-op students have been employed by a variety of organizations, including advertising agencies, Web design firms, federal agencies, industrial organizations, commercial printers, publishing companies, and service industries. A few students each year co-op as printing specialists on Cunard's Queen Elizabeth II and Queen Mary II cruise ships.

### Transfer credits

The School of Print Media encourages transfer students from other colleges and programs by granting transfer credit. Call the school at (585) 475-2889 for information about transfer credit.

## Graphic Media

***Barbara Birkett, Program Chair***

Within its core course requirements, the graphic media program recognizes that students need a solid foundation in both the electronic and print delivery of information. Students also take a significant number of management-oriented courses in preparation for managerial responsibilities in the graphic media industry. In their sophomore year, students begin a graphic media concentration that allows them to focus in one of six areas: workflows, enterprises, print processes, new media, and three-dimensional computer graphics. Through four professional elective and five free elective courses, students have the flexibility to customize their program and to complete a minor in an area of specific interest to them.

**Graphic media, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Graphic Media Perspectives 2082-201 | 2 |
| | Graphic Media Workflow I, II 2082-207, 208 | 8 |
| | Materials and Processes I, II 2082-321, 322 | 6 |
| | Algebra for Management Science 1016-225 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Lab Science I | 4 |
| | Liberal Arts* | 12 |
| | Math/Science/Liberal Arts Electives | 4 |
| | First-Year Enrichment I, II 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Graphic Media Financial Controls 2080-301 | 4 |
| | Economics of Production Management 2080-383 | 3 |
| | Marketing and Sales 2080-592 | 4 |
| | Professional and Technical Writing, 2082-383 † | 4 |
| | School of Print Media Concentration | 6-8 |
| | Data Analysis I and II 1016-319, 320 | 8 |
| | Data Analysis I Lab 1016-379 | 2 |
| | Lab Science II | 4 |
| | Liberal Arts* | 4 |
| | Math/Science/Liberal Arts Electives | 8 |
| | Wellness Education† | 0 |
| | Cooperative Education Orientation, 2080-010 | Co-op |
| Third Year | Leadership and Interpersonal Communication 2082-218 | 4 |
| | Operations Management for Graphic Media 2082-413 | 4 |
| | Media Law 2083-402 | 3 |
| | Process Course | 3–4 |
| | School of Print Media Concentration | 4 |
| | Professional Elective | 6–8 |
| | Liberal Arts* | 4 |
| | Math/Science/Liberal Arts Electives | 12 |
| | Open Elective | 4 |
| Fourth Year | Capstone Seminar 2082-502 | 2 |
| | Professional Electives | 6–8 |
| | Liberal Arts* | 16 |
| | Math/Science/Liberal Arts Electives | 4 |
| | Open Electives | 16 |
| | *Total Quarter Credit Hours* | *181–188* |

** 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 "B" in Technical Writing.*

**New media publishing, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Elements of Graphic Design for New Media 2009-213 | 3 |
| | Typography for New Media 2009-311 | 3 |
| | Time-based Imaging 2009-411 | 4 |
| | New Media Perspectives 2083-201 | 3 |
| | Imaging for New Media 2083-206 | 4 |
| | Introduction to Multimedia 4002-320 | 4 |
| | Algebra for Management Science 1016-225 | 4 |
| | Liberal Arts* | 12 |
| | Math/Science/Liberal Arts Electives | 8 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Multimedia Publishing 2082-228 | 3 |
| | New Media Publishing 2083-211 | 4 |
| | Introduction to Programming for New Media 4002-230 | 4 |
| | Programming II for New Media 4002-231 | 4 |
| | Lab Science I, II | 8 |
| | Liberal Arts* | 8 |
| | Technical Writing 0502-444** | 4 |
| | Math/Science/Liberal Arts Electives | 8 |
| | Open Elective | 4 |
| | Wellness Education† | 0 |
| | Cooperative Education Orientation 2080-010 | Co-op |
| Third Year | Principles of Printing 2082-371 | 4 |
| | Digital Workflow Fundamentals 2083-346 | 4 |
| | New Media Choice | 6–8 |
| | School of Print Media Concentration | 7–8 |
| | Data Analysis I, II 1016-319, 320 | 8 |
| | Data Analysis I Lab 1016-379 | 2 |
| | Liberal Arts* | 8 |
| | Math/Science/Liberal Arts Electives | 4 |
| Fourth Year | New Media Team Project I and II 2083-542, 543 | 8 |
| | New Media Choice | 4 |
| | School of Print Media Concentration | 3–4 |
| | Liberal Arts* | 8 |
| | Math/Science/Liberal Arts Electives | 8 |
| | Open Electives | 16 |
| | *Total Quarter Credit Hours* | *184–188* |

** 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.*

## New Media Publishing

***Barbara Birkett, Program Chair***

New media publishing is a cross-disciplinary program in which students take courses from the Schools of Print Media and Design, as well as courses from the information technology program. This academic model reflects the convergence of technologies that allows content to be created and shared via computer-based publications, printed material, online services, and other forms of interactive media. This approach requires students to build skills in both traditional publishing as well as database management, new media production, networking, and telecommunications. This program is designed to provide students with the ability to use the same content across multiple output media. During a typical quarter, new media students may take classes in design, programming, and publishing simultaneously.

In their junior year, students complete a School of Print Media concentration, which consists of three courses. The concentrations give students an opportunity to gain greater in-depth knowledge in an area of particular interest. Students may choose from among six concentrations: news media, enterprises, workflows, print sciences, print processes, and three-dimensional computer graphics.

## Accelerated BS/MBA Dual Degree Program

***Twyla Cummings, Coordinator***

A joint program between the School of Print Media and the E. Philip Saunders College of Business, the accelerated BS/MS dual degree program enables students to earn a BS degree in the School of Print Media and an MBA in five years. Students who qualify for this program 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 program 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 (GMAT) 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.

# College of Liberal Arts

***Andrew M. T. Moore, Dean***
*www.rit.edu/~690www/*

The College of Liberal Arts serves RIT in three ways: It provides a required curriculum in general education for all candidates of baccalaureate and associate degrees; the college offers several undergraduate and graduate degree programs; the college provides opportunities for students and the RIT community to participate in cultural experiences such as theater, music, creative writing, public speaking, and lectures.

The Liberal Arts General Education requirements for undergraduate students include introductory and upper-level courses in the humanities and social and behavioral sciences designed to provide educational opportunities for comprehensive links between career education, leadership, professional ethics, intercultural understanding, citizenship, and culture.

RIT degree programs distinguished by the requirement that students must select one of two options for advanced study in the liberal arts. Most students can choose to pursue either a minor or a concentration of advanced course work.

The College of Liberal Arts curriculum seeks to help students develop specific kinds of knowledge, understanding, and critical awareness, such as:

- understanding the connections among humanistic, professional, and technological studies;
- critical awareness of the interactions among society, culture, science, and technology;
- understanding and appreciating diverse social and cultural perspectives;
- understanding local, national, international, and global forms of citizenship and community;
- knowledge and critical understanding of the responsibilities and rights of living in a participatory democracy;
- understanding human development and behavior;
- critical awareness of the interactions between society and the environment;
- the ability to create, interpret, and evaluate artistic expression, and to understand the aesthetic dimension of other forms of expression and experience;
- understanding the nature and implications of work and career;
- the ability to reason critically and creatively;
- the ability to reason about ethical and value issues, and to relate that reasoning to the student's judgments and practice;
- understanding and proficiency in written, oral, visual, and nonverbal forms of communication; and
- proficiency in the analysis and interpretation of quantitative and qualitative data.

The college offers undergraduate degree programs in advertising and public relations, communications, criminal justice, economics, international studies psychology, public policy, and urban and community studies. The college also offers a one-year RIT Exploration program for students who are undecided about their choice of major at RIT.

The college also provides opportunities for students to engage activities and classes in theater, music, and creative writing. Faculty members offer extracurricular leadership for student groups, recitals, and productions, as well as for *Signatures,* the student literary magazine. In addition, the college sponsors a lecture series that brings speakers, poets, writers, and civic leaders to campus.

## Faculty

The faculty of the college is selected nationally from candidates with advanced degrees in the social sciences and humanities. These men and women are dedicated to providing their students with rich and meaningful teaching and learning experiences, and to continuing their own engagement in their scholarly fields.

## Liberal arts degree program advising

The college is committed to providing faculty academic advisers for students in the college's degree programs. They are available throughout the student's academic program. Upon arrival at RIT, each student is assigned a faculty adviser, who helps formulate career goals in the related field of study and offers support in dealing with registration and scheduling. In addition, the administrative staff of the college can provide referrals to other support areas within RIT.

## Liberal arts general education advising

The advising staff in the Office of Student Services within the college offers support to all RIT students in the selection of the liberal arts courses required for their degrees. The staff provides advising that is consistent with the general education policies of the college.

## Part-time and evening programs

In the evening, the college offers many of the upper-division humanities and social science courses, as well as the core courses required in the baccalaureate programs of part-time evening students. These courses are part of the liberal arts curriculum expected of all RIT students pursuing a bachelor's degree.

Courses are scheduled one or two nights a week, Monday through Thursday, or on Saturday. Each course is four academic quarter credits. Part-time students may register for liberal arts courses offered during daytime hours if their schedules permit. Diploma or certificate courses will normally may not be used toward completion of liberal arts requirements. It is not necessary to be enrolled in an RIT degree program to register for liberal arts courses on a part-time basis. Part-time and evening students are strongly encouraged to contact the Liberal Arts Office of Student Services at (585) 475-2444 for assistance in

selecting and registering for courses. The office is located on the second floor of the Liberal Arts Building.

### Summer courses

The college offers a number of courses each summer in language and literature, science and humanities, and social sciences, as well as degree program courses in communication, criminal justice, economics, psychology, advertising and public relations, public policy, and international studies.

Information concerning summer courses can be obtained by contacting the college scheduling officer or by requesting information from the Office of Part-time Enrollment Services at (585) 475-2229, located in the Bausch & Lomb Center on campus.

## Advertising & Public Relations

***Bruce A. Austin, Department Chairperson***

*www.rit.edu/apr*

The bachelor of science degree in advertising and public relations (APR) prepares students to create persuasive messages for a variety of media. Students will 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 prospects have never been better as the number of professional positions in public relations and advertising is expected to increase by more than one-third by 2010 (U.S. Bureau of Labor Statistics).

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, and no one is better prepared to succeed than RIT graduates. RIT's program 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 department of communication in the College of Liberal Arts and the department of marketing in the College of Business. The senior thesis requirement and 20 weeks of work experience through internships/cooperative education further distinguish the program.

### Professional core

As part of the program's degree requirements, students take a professional core of four courses (16 credit hours) focusing on a professional area of interest. These courses must come from the department of marketing. All students are required to take Principles of Marketing, as well as three other courses, such as Internet Marketing, Business to Business e-Commerce, Buyer Behavior, Database Marketing, Marketing in the Global Environment, Professional Selling, or Integrated Marketing Communications.

### Senior thesis

As part of the APR degree program, students conduct original research on a subject of their choosing. Two faculty members advise students on how to investigate their subject, select a method, and present their results. Department of communication students often present their research at conferences and draw praise from students and faculty alike.

### Curriculum

**Required communication courses (60 credit hours)**
0535-461 Principles of Advertising
0535-421 Public Relations
0535-464 Public Relations Writing
0535-462 Digital Design
0535-463 Campaign Management and Planning
0535-315 Quantitative Research Methods
0535-316 Qualitative Research Methods
0535-460 Copywriting and Visualization
0535-482 Mass Communications
0535-481 Persuasion
0535-200 Foundations of Communication
0535-501 Public Speaking
0535-445 Theories of Communication
0535-450 Visual Communication
0535-595 Senior Thesis in Communication

**University-wide Electives (20 credit hours)**
Five courses (chosen as electives)

**Professional Core (16 credit hours)**
0105-363 Principles of Marketing
Plus any *three* of the following:
0105-440 Internet Marketing
0105-560 Integrated Marketing Communication
0105-445 Business to Business e-Commerce
0105-555 Marketing in the Global Environment
0105-763 Buyer Behavior
0105-770 Professional Selling
0105-773 Database Marketing

**Advertising & Public Relations, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Foundations of Communication 0535-200 | 4 |
| | Public Relations 0535-421 | 4 |
| | Public Speaking 0535-501 | 4 |
| | Digital Design 0535-462 | 4 |
| | Introduction to Multimedia 4002-320 | 4 |
| | Liberal Arts* | 8 |
| | Mathematics Requirements** | 8 |
| | Lab Science Requirements** | 8 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Persuasion 0535-481 | 4 |
| | Principles of Advertising 0535-461 | 4 |
| | Visual Communication 0535-450 | 4 |
| | Mass Communications 0535-482 | 4 |
| | APR Elective | 4 |
| | Professional Core | 12 |
| | Liberal Arts* | 16 |
| | Wellness Education† | 0 |
| Third Year | Quantitative Research Methods 0535-315 | 4 |
| | Qualitative Research Methods 0535-316 | 4 |
| | Campaign Management and Planning 0535-463 | 4 |
| | Professional Core | 4 |
| | General Education Electives | 8 |
| | Liberal Arts* | 8 |
| | Science Requirement** | 4 |
| | Mathematics Requirement** | 4 |
| | Cooperative Education (two quarters) | Co-op |

| | | |
|---|---|---|
| Fourth Year | Theories of Communication 0535-445 | 4 |
| | Public Relations Writing 0535-464 | 4 |
| | Copywriting and Visualization 0535-460 | 4 |
| | Senior Thesis in Communication 0535-595 | 4 |
| | Liberal Arts* | 12 |
| | Institute-wide Electives | 20 |
| | ***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 are required to complete two quarters of cooperative education (co-op) or 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 advertising agencies and public relations firms, as well as businesses and nonprofit sectors. RIT's Office of Cooperative Education and Career Services can assist students in identifying co-ops and internships positions, as well as permanent placement upon graduation.

## Advisers

A faculty adviser assists each student with academic and career counseling. It is important for students to consult with their adviser to successfully plan course scheduling, co-ops and internships, professional core courses, graduate degrees, and career objectives. In addition to faculty, students will be assigned a peer mentor, an undergraduate or graduate student in the APR program. Peer mentors help guide students through their academic program.

## Faculty

All 16 faculty members in the department of communication hold the highest degree in their fields. Many have won awards for teaching and all have been published within their areas of expertise.

## Transfer admission

Many students transfer into APR from other colleges and universities and from a wide variety of programs, including business, science, computer science, and literature. Most who transfer with associate degrees can complete the APR degree in two years. Transfer credit is evaluated course by course and is assigned where it is most appropriate. Students also can transfer into APR from within RIT, many have changed majors and found a new home in the department of communication.

## Careers

Upon graduation, APR students will be well qualified for positions in business, government, and the not-for-profit sectors.

Graduate work also is an option, especially since the department of communication has a master of science degree in communication and media technologies.

Students also may earn a master of business administration at RIT. The department has an agreement with the E. Philip Saunders College of Business that allows students to earn a BS and an MBA in five years. For further information, contact an adviser.

# Communication

***Bruce A. Austin, Department Chairperson***

*www.rit.edu/ptc*

The BS in professional and technical communication (PTC) unites advanced education in the theory and practice of spoken, written, and visual communication with extensive instruction in one of RIT's professional or technical programs. This unique combination fosters an understanding of the central concepts and processes associated with the field of communication and a working familiarity with the central concepts and practices of a particular professional/technical field. PTC prepares its graduates to perform as communication specialists within numerous areas of personal interest.

PTC 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.

## The professional core

As part of their degree requirements, students enroll in a professional core—normally composed of five courses (for a total of 20 credit hours)—focused on a professional or technical area of interest. These courses may be taken from the College of Science, the College of Imaging Arts and Sciences, the E. Philip Saunders College of Business, or another RIT program. Alternatively, an individually designed professional core, one tailored to students with specific study and career interests, is available with the approval of an academic adviser and the program chairperson.

## Curriculum

PTC's challenging curriculum, including its exciting co-op and professional core opportunities, provides students with a superior level of professional competence and the foundation of lifelong intellectual and career growth. The following list displays the PTC course distribution by academic area. The accompanying chart provides a suggested plan of study.

**Required communication courses (60 total credit hours)**

| |
|---|
| 0535-412 Communications Law and Ethics |
| 0535-462 Digital Design |
| 0535-200 Foundations of Communications |
| 0535-482 Mass Communications |
| 0535-481 Persuasion |
| 0535-532 Professional Writing |
| 0535-501 Public Speaking |
| 0535-315 Qualitative Research Methods |
| 0535-316 Quantitative Research Methods |
| 0535-311 Rhetoric and Public Discourse |
| 0535-595 Senior Thesis in Communication |
| 0502-444 Technical Writing |
| 0535-445 Theories of Communication |
| 0535-450 Visual Communications |
| 0535-446 Writing the Technical Manual |

**Communication and general education electives (42 total credit hours)**

| Other required courses | Quarter Credit Hours |
|---|---|
| Professional Core | 20 |
| Science | 8 |
| Math | 8 |
| Computer Science | 4 |
| Statistics or Math or Science | 4 |

| Liberal Arts Courses | 36 |
|---|---|

### Communication electives

| **Communication electives include:** |
|---|
| 0502-453 Advanced Creative Writing |
| 0535-426 Archival Research |
| 0535-420 Argument and Discourse |
| 0502-452 Creative Writing—Prose Fiction |
| 0535-524 Documentary Film |
| 0535-422 Ethics in Technical Communication |
| 0535-550 Film and Society |
| 0535-520 Intercultural Communication |
| 0535-525 International media, mediation |
| 0535-416 Newswriting |
| 0535-415 Organizational Communication |
| 0535-490 Persuasion and Social Change |
| 0535-421 Public Relations |
| 0535-448 Rhetoric of Free Speech |
| 0535-483 Small Group Communication |
| **Special Topics in Communication:** |
| 0535-502 Speechwriting |
| 0535-452 Uses and Effects of Mass Media |
| *0502-455 Writing for the Self and Others* |
| 0535-484 Rhetoric of Race Relations |

**Professional and technical communication, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Communications Law and Ethics | 4 |
| | Computer Science Requirement | 4 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Foundations of Communication | 4 |
| | Humanities Requirement (2*) | 8 |
| | Mathematics Requirement** | 4 |
| | Rhetoric and Public Discourse | 4 |
| | Science Requirement** | 4 |
| | Social Science Requirement (2)* | 8 |
| | Wellness Education† | 0 |
| | Writing* | 4 |
| | Writing the Technical Manual | 4 |
| Second Year | Communication/General Education Electives (3) | 12 |
| | Digital Design | 4 |
| | Mass Communications | 4 |
| | Math, Science, or Statistics Requirement** | 4 |
| | Mathematics Requirement** | 4 |
| | Persuasion | 4 |
| | Public Speaking | 4 |
| | Science Requirement** | 4 |
| | Technical Writing | 4 |
| | Visual Communication | 4 |
| | Wellness Education† | 0 |
| Third Year | Arts of Expression* | 4 |
| | Communication/General Education Electives (3) | 12 |
| | Cooperative Education (2 quarters) | Co-op |
| | Liberal Arts* | 12 |
| | Professional Core (2) | 8 |
| | Professional Writing | 4 |
| | PTC Elective | 4 |
| | Theories of Communication | 4 |
| Fourth Year | Communication/General Education Electives | 20 |
| | Professional Core (3) | 12 |
| | Qualitative Research Methods | 4 |
| | Quantitative Research Methods | 4 |
| | Senior Thesis in Communication | 4 |
| | *Total Quarter Credit Hours* | *182* |

** 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.*

## Cooperative education

PTC students complete two quarters of cooperative education (co-op) 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 to help offset college expenses.

A broad range of co-op opportunities are available. There is no restriction on geographic location as long as the co-op position is related to communication. RIT's Office of Cooperative Education and Career Services helps students find co-op and permanent placements with a large and diverse number of employers. PTC students have held co-ops across the United States at such organizations as Greenpeace, Bausch & Lomb, the Memorial Art Gallery, Eastman Kodak Co., and the U.S. House of Representatives.

## Students

The size of the PTC program, averaging about 100 students, ensures close contact with the program's faculty and other students. Every PTC student has a mail folder and an e-mail account to increase communication between the college and the student. PTC attracts energetic students who are actively involved in numerous communications-related extracurricular activities, including the FM radio station, WITR; the college's newsletter, *Liberal Smarts;* and RIT's national weekly magazine, *Reporter.* Many PTC students have served as residence hall advisers, as well as representatives to, and leaders of, student government.

## Advisers

Every PTC 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, professional core areas, and post-graduation work. In addition to their faculty adviser, PTC students are assigned a co-op and placement adviser, who is located in the Office of Cooperative Education and Career Services.

## Faculty

All members of the PTC faculty hold doctoral degrees, 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 every PTC student. The department also offers students the opportunity to participate in specialized course work and research with faculty members.

## Transfer admission

Many students transfer to PTC from other colleges and universities. PTC attracts transfer students from diverse liberal arts degree programs as well as other professional programs such as business, science, and computer science. Transfer students from most associate degree programs normally can expect to complete their requirements for the PTC BS degree in two years.

Transfer credit is evaluated on a course-by-course basis; that is, each course completed as part of a previous degree program is compared to a specific PTC program requirement. Transfer credit is assigned where most appropriate.

## Careers

Upon graduation, PTC 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. PTC

graduates 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.

The PTC program prepares students for graduate study in law, public relations, communication, health services, and management. In September 2001, the department of communication launched its master of science degree program in communication and media technologies. CMT is an interdisciplinary advanced program of study combining courses in communication with course work in an applied or professional program. Visit the website www.rit.edu/cmt or consult the RIT *Graduate Bulletin* for more information.

## Criminal Justice

***Thomas C. Castellano, Department Chairperson***

The bachelor of science degree program in criminal justice offers students a broad education. The curriculum prepares students for a wide range of careers in criminal justice, provides continuing education for professionals already employed in criminal justice positions, and offers a strong academic foundation for graduate or law school.

RIT's approach to the study of criminal justice combines theoretical perspectives with practical experience. As students study within the areas of crime, criminal behavior, social control mechanisms, administration, planning, and management, the emphasis is on problem-solving techniques based on the growing body of research in the field as well as students' own guided research.

The 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 classrooom with a career-oriented internship.

### 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.

During the junior and senior years, with faculty guidance, students select professional electives in a specific area of interest from courses offered within the program, within the college, or in any of RIT's seven other colleges. The criminal justice program offers concentrations in criminology, law enforcement, law corrections, and security. Other concentrations, planned according to individual career goals, may include courses in computer science, management, photography, liberal studies, and social work.

### 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. The Rochester Police Department, the Monroe County Sheriff's Department, and suburban departments throughout the area employ a substantial number of our graduates. At the state and federal level, graduates are pursuing careers in agencies such as the Federal Bureau of Investigation, Secret Service, Marshall's Service, Naval Intelligence Service, Customs, Border Patrol, Immigration and Naturalization Service, Centers for Disease Control, Department of the Interior, and National Park Service, among others. 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, while some have advanced to administrative positions. A significant number have completed law school and entered the legal profession as prosecutors, public defenders, and private practice lawyers, or in the state and U.S. Attorney General's 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 and rape crisis counselors. Some have completed advanced degrees in business, public policy, public administration, criminology, and criminal justice.

### Technology information and computer crime

This program of study prepares students for employment in the emerging field of criminal justice technology development and administration, and for numerous generalist and specialty positions within the criminal justice system, the managed security industry, and the federal intelligence community for which a background in information technology is preferred. Courses in this concentration include Criminal Justice Technology, Computer Crime, and Investigative Techniques. And because theories of crime and management—as well as independent research, critical thinking, and scholarly writing—are emphasized, students are well prepared to undertake graduate study in a variety of fields including, but not limited to, information technology, criminology, public policy, and public or business administration.

### Pre-law 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 in selecting appropriate professional and liberal arts electives. During their senior year, pre-law students spend 10 weeks (30 hours a week) as interns working with attorneys in the office of the district attorney, public defender or state attorney general; private law firms; or in any number of public or private organizations dealing with litigation. The Prelaw Association, comprising interested RIT students, publishes student research papers each year in *Legal Research at RIT.*

## 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 30 hours a week under an agency field supervisor, as well as 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 have the opportunity to participate in co-op 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.

## 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.

## The 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 non-teaching 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.

## Professional elective options

One of the program's strengths is the professional electives students may take from other designated colleges at RIT, and are thus able to develop a concentration in a professional area related to their career goals. The following courses illustrate those offered periodically within the program. A student selects professional elective courses with the advice of a faculty adviser.

**Corrections**
Constitutional Law
Legal Rights of Convicted Offenders
Correctional Administration
Social Control of Deviant Behavior
Counseling in the Criminal Justice System
Alternatives to Incarceration
Sentencing Process

**Criminology**
Organized Crime
Social Control of Deviant Behavior
White-Collar Crime
Victimless Crime
Computer Crime
Women and Crime
Victimology

**Law**
Fundamentals of Legal Research
Constitutional Law
Legal Rights of Convicted Offenders
Social Control of Deviant Behavior
Evidence
Court Administration
Comparative Criminal Law
Sentencing Process
Victimless Crime
Seminar in Law

**Law Enforcement**
Administrative Concepts of Law Enforcement
Organized Crime
Investigative Techniques
Constitutional Law
Civil Disobedience and Criminal Justice
White-Collar Crime
Evidence
Police Community Relations
Victimless Crime
Hostage Taking and Terrorism
Substance Abuse
Management in Criminal Justice
Computer Crime

**Security**
Organized Crime
Investigative Techniques
Physical Security and Safety
Computer Crime
Seminar in Security

## Related professional areas

With the approval of the faculty adviser, a student may select an additional professional elective concentration from courses offered within the College of Liberal Arts or in any of the other colleges of the university. Many students develop special concentrations in accounting, computer science, management, or social work.

**Criminal justice, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Criminology 0501-400 | 4 |
| | Seminar in Criminal Justice 0501-201 | 4 |
| | Liberal Arts* | 12 |
| | Technology in Criminal Justice 0501-406 | 4 |
| | Courts 0501-456 | 4 |
| | Corrections 0501-441 | 4 |
| | Law Enforcement in Society 0501-443 | 4 |
| | Mathematics/Science‡ | 8 |
| | Current Issues in Criminal Justice 0501-460 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education (Optional) | Co-op |
| Second Year | Juvenile Justice 0501-440 | 4 |
| | Approved Electives | 8 |
| | Concepts in Criminal Law 0501-444 | 4 |
| | Professional Elective | 4 |
| | Liberal Arts * | 8 |
| | Arts of Expression | 4 |
| | Mathematics/Science‡ | 12 |
| | Current Issues in Criminal Justice 0501-460 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education (Optional) | Co-op |

| | | |
|---|---|---|
| Third Year | Theories of Crime and Criminality 0501-528 | 4 |
| | Management in Criminal Justice 0501-410 | 4 |
| | Research Methods I, II 0501-401, 541 | 8 |
| | Professional Elective | 4 |
| | Approved Electives | 16 |
| | Liberal Arts* | 12 |
| | Cooperative Education (Optional) | Co-op |
| Fourth Year | Field Experience 0501-403 | 8 |
| | Interviewing and Counseling in Criminal Justice 0501-510 | 4 |
| | Professional Elective | 4 |
| | Seminar in Criminal Justice and Public Policy 0501-526 | 4 |
| | Liberal Arts* | 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 see Mathematics and Science Requirements for more information.*

## Economics

***Michael J. Vernarelli, Department Chairperson***

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. The distinguishing feature of RIT's economics program is our curriculum: we prepare 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.

### Curriculum

Students take rigorous and challenging required courses 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. The faculty advisers help students develop professional options that will assist them in attaining their career goals.

### Study environment

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. Students 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.

### Cooperative education

Students in the economics program who participate in co-op may be placed with financial and brokerage institutions, government offices, and large corporations. Co-op can be taken during any quarter after the sophomore year, including summer.

### International program in Croatia

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

### Opportunities for graduates

Graduates with a BS degree in economics are prepared for entry-level positions in management and quantitative analysis, as well as for graduate study in economics, business, or law. Students can take advantage of a 4+1 program for the MBA in the E. Philip Saunders College of Business and a 4+1 program in public policy in the College of Liberal Arts. Students who follow one of these programs will receive a bachelor's degree in economics and a master's degree in either public policy or business administration in five years.

**Economics, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Foundational Seminar in Economics 0511-200 | 1 |
| | Principles of Microeconomics 0511-211 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | Managerial Economics 0511-459 | 4 |
| | Algebra and Calculus for Management Science 1016-225, 226 or Calculus I, II 1016-251, 252 | 8 |
| | Computer Science Elective | 4 |
| | Liberal Arts * | 20 |
| | Wellness Education † | |
| Second Year | Monetary Analysis and Policy 0511-452 | 4 |
| | Applied Econometrics 0511-457 | 4 |
| | Economic Forecasting 0511-458 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Financial and Managerial Accounting 0101-301, 302 | 8 |
| | Liberal Arts * | 4 |
| | Laboratory Science | 8 |
| | Liberal Arts and Science Electives | 12 |
| | Wellness Education † | |
| Third Year | Intermediate Microeconomic Theory 0511-453 | 4 |
| | Intermediate Macroeconomic Theory 0511-455 | 4 |
| | Mathematical Methods for Economics 0511-460 | 4 |
| | Corporate Finance 0104-441 | 4 |
| | Free Electives | 8 |
| | Computer Science Elective | 4 |
| | Liberal Arts * | 12 |
| | Programming Elective | 4 |
| Fourth Year | International Trade and Finance 0511-454 | 4 |
| | Industrial Organization 0511-456 | 4 |
| | Benefit Cost Analysis 0511-450 | 4 |
| | Free Electives | 19 |
| | Math Elective | 4 |
| | Liberal Arts* | 8 |
| | *Total Quarter Credit Hours* | *180* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## International Studies

***Murli M. Sinha, Department Chairperson***

The bachelor of science degree in international studies is designed for those whose careers demand an understanding of global issues, how these issues play out in different regions of the world, and how we can promote equitable and sustainable

development in the future. This program was established with one overriding conceptual notion: the need for cross-disciplinary approaches to the challenges of global problems. The focus is on issues of scientific and technological change worldwide. The international studies program tries to bridge the gaps between disciplines, and brings RIT's faculty together to explain the sources and remedies for global problems and the social, economic, and environmental circumstances that surround them.

## Curriculum

The international studies program permits students to choose a field of specialization that is organized either in terms of region or function. The regional fields are East Asia, Latin America, and Europe, and the two functional programs are international business, and science, technology, and society.

It is expected that students with a regional specialization will study Chinese or Japanese in the East Asia field, Portuguese or Spanish in the Latin American field, or a European language (French, German, Portuguese, Russian, or Spanish) in the European field.

In cooperation with the E. Philip Saunders College of Business, the international business field offers an accelerated BS/MBA option that permits qualified students to obtain a BS degree in four years and the MBA degree after one additional year of study. Similarly, in cooperation with the public policy program, the science, technology, and society studies program offers an accelerated BS/MS option that allows qualified students to obtain a BS degree in four years and the MS degree in public policy after one additional year of study.

## Cooperative education

The program requires students to participate in an international experience. Such experiences includes, but are not limited to, approved study abroad programs, cooperative education in foreign countries, internships in foreign countries, employment in international organizations, or employment in the international division of U.S. firms with foreign operations.

## Career opportunities

Graduates with a BS degree in international studies are prepared for a range of careers in the private, governmental, and nonprofit sectors. There is increased demand by companies with foreign operations in East Asia, Latin America, and Europe for graduates who comprehend science and technology policy issues, are cognizant of the international dimensions of business operations, and who are able to communicate in the language commonly spoken in these three important regions of the world. In addition, the international studies program prepares students for graduate study in public and international affairs, business, law, and science, technology, and society studies.

**International studies, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Liberal Arts* | 12 |
| | Math and Science General Education Requirement | 8 |
| | International Studies Language Requirement | 12 |
| | International Studies Requirement: | |
| | Introduction to International Studies | 4 |
| | Data Analysis I 1016-319 | 4 |
| | Data Analysis II 1016-320 | 4 |
| | Wellness Education† | 0 |
| Second Year | Liberal Arts* | 12 |
| | Mathematics and Science Requirements | 12 |
| | International Studies Language Requirement | 12 |
| | Web Foundations 4002-200 | 4 |
| | Open Electives | 8 |
| | Wellness Education† | 0 |
| Third Year | International Studies Language Requirement | 12 |
| | International Studies Requirement: | |
| | Introduction to International Relations 0513-214 | 4 |
| | International Studies Requirement: | |
| | 20th Century American Diplomatic History 0507-441 | 4 |
| | Liberal Arts* | 12 |
| | International Study Field Course (either geographic area or functional area) | 12 |
| Fourth Year | International Studies Requirement: | |
| | International Trade and Finance 0511-454 | 4 |
| | International Studies Requirement: | |
| | Cultures and Globalization 0510-440 | 4 |
| | International Study Field Course (either geographic area or functional area) | 4 |
| | Liberal Arts* | 8 |
| | International Studies Capstone Seminar | 4 |
| | Open Electives | 20 |
| | *Total Quarter Credit Hours* | *180* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

# Psychology

***Kathleen C. Chen, Department Chairperson***

*www.rit.edu/%7E689www/*

The bachelor of science degree program in psychology provides students with a strong grounding in the discipline of psychology, integrated with a technological focus. Upon entry, each student is assigned a faculty adviser to mentor his or her progress throughout the duration of the program. Students are also provided with academic advising, discipline awareness, curriculum planning strategies, and career counseling through the program's Freshman Seminar.

## Curriculum

The BS degree in psychology is unique and encompasses three key elements: the technical/professional concentration requirement, a choice of four interdisciplinary tracks, and a cooperative education requirement.

## Technical/professional concentration requirement

The program seeks students with an aptitude for technical and quantitative reasoning as well as an interest in psychology. Students are required to complete a technical concentration and may choose from the following areas: science, mathematics and statistics, information technology, imaging science, business, criminal justice, or an individualized concentration developed with an adviser's assistance.

## Four interdisciplinary tracks

Students choose one of the following interdisciplinary tracks: visual perception, information processing, biopsychology, or clinical psychology. Technology is integrated with psychology in these tracks to produce a nontraditional and career-oriented psychology major.

The visual perception track focuses on the human perceptual systems. Vision is presented as an integration of anatomy, physiology, and psychophysics. The track covers rapidly developing topics

such as the retinal mosaic and the sensory system's amazing plasticity. It stresses the most recent work 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 and problem solving, attention, and perception. The track explores the interaction of human factors, psychology, and technology.

The biopsychology track studies the brain as the biological basis of behavior. It focuses on topics such as the right and left brain with their specific functions, brain injury, and neuropsychological testing. 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 problems. This track prepares students for future graduate programs in mental health.

### Cooperative education

The program requires that students complete a cooperative education experience 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.

### Transferability

The psychology program provides excellent transfer opportunities for students from other institutions, as it requires a core of psychology courses for which transfer students may receive credit. The point of entry into the program is highly flexible, since there is only one fixed sequence: Introduction to Psychology, Statistics, and Experimental Psychology. The technical concentration component shares a number of common courses with other programs, providing internal flexibility for students from other RIT programs who may retain credits from some of the technical courses they have completed previously.

### Career opportunities

The unique requirements of this program ensure that each student should be well-prepared for advanced study in psychology, employment in industry, or in a human service agency, or other career opportunities.

**Psychology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0514-201 | 1 |
| | Introduction to Psychology 0514-210 | 4 |
| | Scientific Writing 0514-315 | 4 |
| | Psychological Statistics 0514-350 | 4 |
| | Childhood and Adolescence 0514-440 | 4 |
| | Social Psychology 0514-444 | 4 |
| | Human Biology I, II with lab | 8 |
| | Algebra for Management Science 1016-225 | 4 |
| | Web Foundations or Higher 4002-xxx | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment I, II 1105-051, 052 | 2 |
| | Wellness Education† | |
| Second Year | Experimental Psychology 0514-400 | 4 |
| | Psychology of Personality 0514-446 | 4 |
| | Abnormal Psychology 0514-447 | 4 |
| | Industrial/Organizational Psychology 0514-448 | 4 |
| | Data Analysis I 1016-319 | 4 |
| | Data Analysis II 1016-320 | 4 |
| | Liberal Arts* | 12 |
| | Technical/Professional Concentration | 4 |
| | Liberal Arts Elective I | 4 |
| | Institute Elective | 4 |
| | Cooperative Education (summer quarter) | Co-op |
| Third Year | Interdisciplinary Courses | 12 |
| | Technical/Professional Concentration | 8 |
| | Liberal Arts* | 12 |
| | Liberal Arts Elective II | 4 |
| | Institute Elective | 12 |
| | Cooperative Education (summer quarter) | Co-op |
| Fourth Year | Interdisciplinary Course | 4 |
| | Institute Elective | 16 |
| | Senior Project in Psychology 0514-597 | 4 |
| | Liberal Arts* | 12 |
| | *Total Credit Hours* | *183* |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

## Public Policy

***James J. Winebrake, Department Chairperson***

The public policy 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 placed on analyzing policies that emerge in a technology-based society. The program's key features include:

**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 student's interests. Students also have an option of "tailoring" a track to their interests.

**Interdisciplinarity—**To ensure interdisciplinarity, the program provides integration of diverse disciplines through a sequence of eight public policy courses. 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 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.

The strategy of the curriculum design is 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.

## Accelerated degree options

Students can choose a four-year BS degree or an accelerated five-year program leading to a bachelor of science in public policy and a master of science in science, technology, and public policy. The five-year BS/MS option provides students a considerable advantage for many policy analyst careers.

## Cooperative education

Students complete a co-op or internship within the private, public, or nonprofit sector making our students attractive to a wide range of agencies, businesses, and organizations.

## 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 are offered through other programs and colleges of the university and include courses that provide a firm grounding in the science and technology aspects of the chosen track. This gives students an opportunity to interact and study with researchers and faculty from a broad range of disciplines.

## Public policy colloquium

This required, non-credit-bearing colloquium meets twice per quarter and is used to bring in policy practitioners and academics to talk about careers, research, and special topics. The series builds and sustains a sense of community among policy majors by providing a context for their coursework and research.

## Employment opportunities

Exciting career opportunities await professionals who can integrate an understanding of science and technology with public policy decision making. RIT graduates will be 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.

## The faculty

The public policy faculty have extensive experience in the classroom and as practitioners in their respective fields. Faculty have a broad range of backgrounds in addition to public policy, including physics, engineering, law, environmental science, energy management, and information technology.

**Public policy, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Public Policy Core | |
| | Foundations in Public Policy 0521-400 | 4 |
| | Science, Technology, and Policy 0508-441 | 4 |
| | Foundations | |
| | Principles of Microeconomics 0511-221 | 4 |
| | Principles of Macroeconomics 0511-402 | 4 |
| | American Politics 0513-211 | 4 |
| | Math Requirements * | 12 |
| | Science Requirements * | 8 |
| | Liberal Arts * | 4 |
| | Free Elective | 4 |
| | Policy Colloquium | 0 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Public Policy Core | |
| | Values in Public Policy 521-301 | 4 |
| | Qualitative Analysis in Public Policy 521-406 | 4 |
| | Foundations | |
| | Benefit-Cost Analysis 0511-450 | 4 |
| | Data Analysis I 1016-319 | 4 |
| | Applied Econometrics 0511-457 or Data Analysis II 1016-320 | 4 |
| | American Political Thought 0513-458 | 4 |
| | Environment and Society 0508-460 | 4 |
| | Writing 0504-227 | 4 |
| | Liberal Arts * | 8 |
| | Free Electives | 8 |
| | Policy Colloquium | 0 |
| | Wellness Education ‡ | 0 |
| Third Year | Public Policy Core | |
| | Policy Analysis I 0521-402 | 4 |
| | Policy Analysis II 0521-403 | 4 |
| | Policy Analysis III 0521-404 | 4 |
| | Public Policy Track Courses | 12 |
| | Liberal Arts Concentration* | 12 |
| | Free Electives | 12 |
| | Cooperative Education (Summer) | Co-op |
| | Policy Colloquium | 0 |
| Fourth Year | Public Policy Core | |
| | Senior Project I 0521-405 | 4 |
| | Technological Innovation and Public Policy 0521-408 | |
| | Public Policy Track Courses | 12 |
| | Liberal Arts Electives or Minor* | 12 |
| | Free Electives | 12 |
| | *Total Quarter Credit Hours* | *186* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirements 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 MS classes in their fourth year if they are enrolled in the BS/MS program. This increases total quarter credit hours to 198.*

# Urban and Community Studies*

***Murli Sinha, Chair***

Eighty percent of United States residents work, learn, and raise families in metropolitan areas. Reaching beyond borders, the urban communities of the world are increasingly linked in a global economic and cultural system.

The prominence and interdependence of today's urban landscape has created a pressing need for individuals with the ability to create sustainable cities. Those who also have experience using advanced technology such as SPSS analytics software and geographic information systems can virtually assure their success in this field. With this in mind, RIT's urban and community studies program has been designed to give students the knowledge and technological skills needed to address the issues facing our rapidly urbanizing world.

The bachelor of science program in urban and community studies provides an awareness of the institutional and structural forces that influence the development of urban and rural areas, as well as the lives of their residents. The program's interdisciplinary combination of classes in the sciences, computing, and the liberal arts gives students a broad knowledge base that lets them approach urban issues from a number of perspectives. After graduation, students will be ready to take on positions in many different specialized fields, including health care, environmental consulting, city government, social services, local or international development and, of course, urban planning.

## Curriculum

**Program core courses**

Students will complete nine core courses that provide a foundation of knowledge in urban and communities studies.

0515-442 The Urban Experience
0515-413 Urban Planning and Policy
0515-406 Qualitative Methods
Quantitative Methods
0515-444 Social Change
0510-445 Global Cities
0515-485 Diversity in the City
GIS (Geographic Information Systems) 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. 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, public health, land use, and transportation. A unique feature of this program is the *communities in global perspective* track, which 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 affect neighborhoods and entire regions. It will pay special attention to such issues as urban poverty, racial segregation, gender inequalities, educational challenges and urban family life.

## Cooperative education and field experience

RIT has a long-standing tradition of providing students with hands-on training, particularly with the paid, professional experience gained through our cooperative education program. In addition to performing field work with local agencies and organizations through summer- or quarter-long internships and co-op assignments, urban and community studies students will have an active lab in Rochester—the third-largest city in New York state.

## Advanced degree options

Those who wish to pursue an advanced degree may take advantage of a 4 + 1 program, where they receive a bachelor's in urban and community studies and master's in public policy at RIT in five years. The university also is initiating cooperative programs that would allow RIT urban and community studies graduates to work toward a master's degree or doctorate through either Cornell University or the University of Buffalo at Amherst.

**Urban and community studies, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| **First Year** | Urban and Community Studies Core: | |
| | Foundations of Sociology or Cultural Anthropology | 4 |
| | The Urban Experience 0515-442 | 4 |
| | Urban Planning and Policy 0515-413 | 4 |
| | Math and Science Requirements | 22 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| **Second Year** | Urban and Community Studies Core: | |
| | Quantitative Methods | 4 |
| | Qualitative Methods 0515-406 | 4 |
| | Social Change 0515-444 | 4 |
| | Global Cities 0510-445 | 4 |
| | GIS Applications in Urban and Community Studies | 4 |
| | Introduction to Multimedia 4002-320 | 4 |
| | Liberal Arts* | 24 |
| | Wellness Education† | 0 |
| **Third Year** | Urban and Community Studies Core: | |
| | Diversity in the City | 4 |
| | UCS Track | 24 |
| | General Education Elective | 20 |
| | Co-op or Internship (Summer) | 0 |
| **Fourth Year** | UCS Track | 4 |
| | General Education Electives | 12 |
| | Senior Thesis | 4 |
| | Free Electives | 20 |
| | ***Total Quarter Credit Hours*** | ***184*** |

**Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*

**Pending NYS approval.*

# RIT Exploration Program

***Andrea C. Walter, Program Director***

Students are attracted to RIT for the opportunity to specialize in a career-oriented or technical program, but many freshmen and transfer students have not chosen a career area by the time they have been accepted for admission. They want an opportunity to explore different fields before making a decision. The RIT Exploration program gives students a chance to formulate an educational and career plan during their first quarters at RIT.

Students in the RIT Exploration program can enroll in liberal arts courses in the humanities and social sciences, as well as courses in art, mathematics, science, and computer science. They also take a one-credit Career Exploration Seminar, in which they explore their own abilities and interests, and the array of programs offered at RIT.

As students identify a major suitable to their backgrounds, abilities, and interests, they take introductory courses in that area to ensure that the major is appropriate for them. They may take courses in most major areas represented by RIT departments. Once a student identifies a major in their first year, they apply for a transfer to the new department.

Students who select the RIT Exploration program must meet the standards and requirements of the RIT schools and colleges to which they eventually apply. Occasionally, some additional time may be necessary to complete degree requirements because the student has spent time in preliminary exploration.

Each student is assisted by a faculty adviser who assists the choice courses and the selection of a career path and degree program.

After one to three quarters in the RIT Exploration program, each student may reasonably anticipate:

- a clearer basis for making a decision regarding long-range career plans,
- credit for courses that would apply to RIT degree programs or to programs at other colleges, and
- assistance in matriculating into the curriculum of the student's choice at RIT, provided that relevant standards and requirements are met and that space in the program is available.

# College of Science

***Ian Gatley, Dean***
*www.science.rit.edu*

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.

Our emphasis is on the practical aspects of science and mathematics as found in science and computer laboratories. We are career-oriented. At the same time 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 are also required by employers for promotion and career advancement.

## Admission requirements

Transfer admission: Students with associate degrees in a comparable program from other educational institutions normally can expect to transfer at the third-year level. Transfer credit is granted for studies that run parallel to university courses in the curriculum for which admission is sought.

## Faculty and research

The College of Science has an ideal size and philosophy to provide a quality education. We have more than 100 faculty members in the sciences, health professions, and mathematics. All are committed to the education of undergraduate students, and most hold a doctoral degree. They provide a variety of faculty expertise, so students are likely to find a faculty member with similar interests to act as mentor.

Our faculty members are dedicated teachers who also practice their professions outside of the classroom through research and professional activities. Our undergraduates 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 in the College of Science is conducted in campus laboratories and through field studies. Opportunities for research across disciplines result 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.

## Facilities

College of Science programs are conducted in three major facilities on campus: the Gosnell Building, the Chester F. Carlson Center for Imaging Science, and the Center for Bioscience Education and Technology.

The Gosnell Building 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 the science building have specialized purposes. For example, we have a thin films laboratory, an animal care facility, a diagnostic medical imaging laboratory, a plasma etching laboratory, an electronics laboratory, and a nuclear magnetic resonance laboratory. The Bates Science Study Center is equipped for wireless computing and provides a comfortable environment for study groups and individual tutoring sessions with faculty. The 60,000-square-foot south wing of the Gosnell Building—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, as well as 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, microdensitometry, optics, and remote sensing. The Munsell Color Science Building 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 sciences. The facility consists of multipurpose, 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 the computer as a tool in the applications of mathematics, health-related work, and science. The College of Science also operates an observatory on campus.

## Cooperative education

In our cooperative education plan (co-op), a student alternates quarters of paid work with quarters on campus in academic study. Co-op employment experience has many advantages.

Through co-op, students often gain insight that helps them with classroom work. Co-op gives them a chance to find out what working in their field is really like while acquiring practical experience that is valuable in obtaining employment or applying to a graduate program. Income from this work-study program enables students to obtain a high-quality education at a cost often comparable to that of a public education.

Co-op is not required in most of our programs. Full participation in co-op means a student will graduate in five years. The Office of Cooperative Education and Career Services aids stu-

dents in obtaining co-op positions. The following tables outline the co-op options.

**Cooperative education schedule for five-year programs in biology, biotechnology, computational and 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, chemistry (environmental option), biochemistry, and polymer chemistry 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.

### Internships

Students in the diagnostic medical sonography (ultrasound) and physician assistant programs do not participate in co-op. Instead, they spend three years on campus in academic work and then gain invaluable clinical experience during the fourth year at a clinical training site.

### Accreditation

Programs are offered in chemistry, chemistry with an environmental option, biochemistry, and polymer chemistry that are approved by the Committee on Professional Training of the American Chemical Society. The diagnostic medical sonography program is accredited by the Joint Review Committee on Education in Diagnostic Medical Sonography of the Commission on Accreditation of Allied Health Education Programs. The physician assistant program has full accreditation from the Accreditation Review Committee on Physician Assistant Education.

### Additional information

**Academic advising:** Each College of Science student is assigned an academic adviser who provides counsel on course selection, advice about careers, and information about RIT services. It is common for a science major to have several friends among the faculty who help with academic, career, and personal questions.

**Our graduates:** We believe that the best way to evaluate a college program is to look at the success of its graduates. In recent surveys of our graduates, more than 90 percent responded that they are employed in a field related to their degree, and the same percentage expressed satisfaction with their work.

Employers report that our graduates have good preparation for employment in business and industry and, because of their work experience, immediately fit into their jobs with a high degree of initiative and purpose.

About one-fourth of our graduates enter graduate or professional school directly after graduation from RIT. More will return for further education at the graduate level as part of their career development. We have found that they do exceedingly well. Many find that, because of their laboratory and co-op experience, they can move into their graduate research projects more easily than their classmates.

**Minors:** In addition to offering a variety of majors, the College of Science offers minors in astronomy, physics, optical sciences, imaging science, mathematics, statistics, and exercise science. A minor provides a student with a secondary area of expertise to complement their major program of study. Students interested in pursuing a minor are advised to consult with their faculty adviser and the College of Science department offering the minor. For more information, see www.science.rit.edu.

**Graduate degrees:** The College of Science offers master of science degrees in applied mathematics, bioinformatics, chemistry, clinical chemistry, color science, environmental science, and imaging science. A master of science degree in materials science and engineering is offered jointly by the College of Science and the College of Engineering, and the nation's only doctoral program in imaging science is offered through the college's Center for Imaging Science.

## Premedical Studies Advisory Program

***Kay G. Turner, Director***
***Kristen M. Waterstram-Rich, Associate Director***
*www.premed.rit.edu*

Premedical studies in the College of Science is an advisory program designed to provide guidance and assistance to all RIT students who want to become physicians, dentists, optometrists, podiatrists, and veterinarians. Faculty members who participate in this program provide personalized advice on course selection, health-related experiences, and extracurricular activities, and they provide assistance with the medical school application process. Although admission to medical school is a highly competitive process, 85 percent of our graduates have been admitted in the past decade, some into the most prestigious schools in the United States.

### Enrollment in premedical studies

The premedical studies advisory program exists only to assist students who have been admitted to any one of the degree granting programs offered at RIT, or who are enrolled as nonmatriculated students to take the premedical core courses. To enroll in the program, students must visit the premedical studies office, Room 2102, in the College of Science or call 585-475-7105 for an appointment.

## 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 in the College of Science 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 include all of the premedical core courses. Others require few, if any, so students in these programs will 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 medical school. Careful planning and scheduling, with the guidance of the premedical studies advisers, are crucial to success.

| | | |
|---|---|---|
| **Biology** | **1 year** | With Laboratory |
| **Chemistry** | **2 years** | General chemistry, 1 year Organic chemistry, 1 year (both years with laboratory) |
| **Physics** | 1 year | With laboratory |
| **English** | 1 year | |

*Note: In addition to these core courses, which are required by virtually all medical schools, courses in mathematics, psychology/behavioral sciences, or biology electives may be required by specific schools. The admissions 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 your program's requirements with the 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 | Elect one year of physics and one year of organic chemistry |
| Biology | None |
| Biomedical Sciences | None |
| Biotechnology | Elect one year of physics |
| Chemistry | Elect one year of biology |
| Computational mathematics | † |
| Diagnostic medical sonography | Elect one year of organic chemistry |
| Environmental science | None |
| Imaging science | † |
| Physician assistant | Elect one year of physics and one year of organic chemistry laboratory |
| Physics | Elect one year of biology and one year of organic chemistry |
| Polymer chemistry | Elect one year of biology |

** 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 their chosen field of medicine. This may take the form of volunteer activities, internships (already existing within medical sciences programs), shadowing practitioners in the field, or actual employment in a health care setting. To help, RIT's Office of Cooperative Education and Career Services can help students identify co-op or employment opportunities, including an exclusive nursing assistant position at a local hospital for those who want direct patient care experience.

We believe very strongly that all premedical students should commit themselves to developing the greatest competency possible in the discipline in which they are enrolled. It is important, therefore, that students interested in premedical studies realize that, while their career objectives may include a professional school after graduation, they should select an academic program to which they are prepared to make a sincere and major commitment as an undergraduate. This approach will increase their career options after graduation.

# General science exploration option

***Eileen D. Marron, Director***

*www.science.rit.edu*

Many high school students do not know which major they prefer. We encourage such students to come to RIT if they have a strong interest in science, mathematics and statistics, or medical sciences careers. A student with multiple interests may apply to the college's general science exploration program without designating a specific major. The program encourages students to explore their options before deciding which degree to pursue.

A customized schedule of courses in science and mathematics is developed for each student based on the student's ability, interests, and goals. A team of academic advisers, representing each department in the college, assists the student in selecting courses and identifying a major in which to enroll. In addition to the traditional science options of biology, chemistry, physics, and math, a student may explore courses in environmental science, imaging science, or the medical sciences.

Before the end of the first year, most students are ready to choose a major. Some students find the decision is easily made after only a quarter of course work. Others are still deciding in their second year and may find that choosing a major and a minor is the best path for them. With proper advising, students are able to delay their choice of a major without losing time toward completion of a degree.

**General science exploration option, typical course sequence**

| | | Qtr. Cr. Hrs |
|---|---|---|
| **First Year** | Freshman Seminar | 2 |
| | Mathematics or calculus sequence | 10–12 |
| | Choice of two laboratory sciences: | |
| | Biology | 12 |
| | Chemistry | 13 |
| | Physics | 8–12 |
| | Imaging Science | 4 |
| | Additional course choices: | |
| | Computer Science | 4–8 |
| | Liberal Arts* | 4–12 |
| | First-Year Enrichment | 2 |
| | Wellness Education† | 0 |
| | ***Total Credit Hours Per Quarter*** | ***16–18*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

# Biological Sciences

***Richard L. Doolittle, Department Head***

*www.biology.rit.edu*

## Biology

The department of biological sciences offers programs leading to the AS and BS degrees in biology. Graduates receiving the BS degree find 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 to enter schools of medicine, dentistry, veterinary medicine, optometry, podiatry, and chiropractic medicine.

With proper scheduling of courses, biology majors also can earn a master of business administration degree in as little as one year after receiving their degree in biology. This combination (biology BS + MBA) prepares graduates to enter exciting and rewarding management positions in a wide range of scientific organizations.

Graduates also are well prepared to pursue a master's or doctoral degree in a wide variety of fields in the life sciences.

### Requirements for the BS degree in biology

The student must meet the minimum graduation requirements of the university as described 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 week), 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, but may need to extend the date of graduation beyond the traditional four years.

**Biology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | General and Analytical Chemistry I, II, III 1011-215, 216, 217 | 10 |
| | Chemical Principles Lab I, II 1011-205, 206 | 2 |
| | General and Analytical Chemistry Lab 1011-227 | 1 |
| | Elementary Calculus I, II 1016-214, 215 | 6 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Cell Biology 1001-311 | 4 |
| | Molecular Biology 1001-350 | 4 |
| | Evolutionary Biology 1001-365 | 4 |
| | Organic Chemistry I, II, III 1013-231, 232, 233 | 9 |
| | Organic Chemistry Lab I, II, III 1013-235, 236, 237 | 3 |
| | Data Analysis I 1016-319 | 4 |
| | Biology Elective‡ | 4 |
| | Liberal Arts* | 12 |
| Third/ Fourth Years§ | General Ecology 1001-340 | 4 |
| | Comparative Physiology 1001-413 | 4 |
| | Genetics 1001-421 | 4 |
| | Developmental Biology 1001-422 | 4 |
| | Biology Seminar 1001-550 | 2 |
| | College Physics I, II, III 1017-211, 212, 213 | 12 |
| | Biology Electives‡ | 20 |
| | Liberal Arts* | 12 |
| | General Education courses | 7 |
| | University Electives | 20 |
| | Cooperative Education 1001-499 (Optional) | Co-op |
| | ***Total Quarter Credit Hours*** | ***180*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ Biology electives: minimum of 12 credits must be 400 level or above*
*§ If a student elects to participate in our optional 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.*

## Biotechnology

The department of biological sciences' BS in biotechnology program was the first of its kind when it was introduced in 1983. A graduate who earns this degree is prepared to immediately assume challenging positions in research, development, and management in biomedical research, human genetics, agriculture, food products, pharmaceuticals and vaccine development, environment and energy, forensic science, and genetic counseling.

The advanced nature of the senior-year courses and the opportunity to participate in faculty-sponsored undergraduate research provide a sound foundation to those graduates wishing to pursue a master's or doctoral degree.

With proper scheduling of courses, biotechnology majors also can earn a master of business administration degree in as little as one year after receiving their degree in biotechnology. This combination (biotechnology BS + MBA) prepares graduates to enter exciting and rewarding management positions in a wide range of biotechnology organizations.

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, 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.

### Requirements for the BS degree in biotechnology

The student 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

The biotechnology degree provides opportunities for students to participate in our optional cooperative education program. More than 65 organizations in industry, government, and academia employ our students in short-term (10 to 20 week), 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, but may need to extend the date of graduation beyond the traditional four years.

**Biotechnology, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | General and Analytical Chemistry I, II, III 1011-215, 216, 217 | 10 |
| | Chemical Principles Lab I, II 1011-205, 206 | 2 |
| | General and Analytical Chemistry Lab 1011-227 | 1 |
| | Elementary Calculus I, II 1016-214, 215 | 6 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Cell Biology 1001-311 | 4 |
| | Immunology 1001-312 | 3 |
| | Tissue Culture 1001-314 | 5 |
| | Molecular Biology 1001-350 | 4 |
| | Organic Chemistry I, II, III 1013-231, 232, 233 | 9 |
| | Organic Chemistry Lab I, II, III 1013-235, 236, 237 | 3 |
| | Data Analysis I 1016-319 | 4 |
| | Liberal Arts* | 12 |
| Third and Fourth Years‡ | Introductory Microbiology 1001-404 | 5 |
| | Genetics 1001-421 | 4 |
| | Analytical Chemistry: Separations 1008-312 | 3 |
| | Analytical Chemistry: Separations Lab 1008-319 | 1 |
| | Biochemistry: Conformation and Dynamics 1009-502 | 3 |
| | Biochemistry: Metabolism 1009-503 | 3 |
| | Biotechnology Electives | 24 |
| | Liberal Arts* | 12 |
| | General Education courses | 9 |
| | Institute Electives | 25 |
| | Cooperative Education 1001-499 (Optional)‡ | Co-op |
| | *Total Quarter Credit Hours* | *180* |

** 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 optional 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.*

**Biotechnology, bioinformatics option, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | General and Analytical Chemistry I, II, III 1011-215, 216, 217 | 10 |
| | Chemical Principles Lab I, II 1011-205, 206 | 2 |
| | General and Analytical Chemistry Lab 1011-227 | 1 |
| | Computer Science 1, 2 4003-231, 232 | 8 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Elementary Calculus I, II 1016-214, 215 | 6 |
| | Cell Biology 1001-311 | 4 |
| | Molecular Biology 1001-350 | 4 |
| | Immunology 1001-312 | 3 |
| | Tissue Culture 1001-314 | 5 |
| | Computer Science 3 4003-233 | 4 |
| | Organic Chemistry Lecture I, II, III 1013-231, 232, 233 | 9 |
| | Organic Chemistry Lab I, II, III 1013-235, 236, 237 | 3 |
| | Liberal Arts* | 8 |
| Third and Fourth Years‡ | Introduction to Microbiology 1001-404 | 5 |
| | Genetics 1001-421 | 4 |
| | Genomics 1001-492 | 4 |
| | Bioinformatics 1001-493 | 4 |
| | Genetic Engineering 1001-450 | 5 |
| | Biotechnology Electives | 12 |
| | Analytical Chemical Separations 1008-312, 319 | 4 |
| | Biochemistry: Confirmation and Dynamics 1009-502 | 3 |
| | Biochemistry: Metabolism 1009-503 | 3 |
| | Introduction to Databases and Data Modeling 4002-360 | 4 |
| | Programming Language Concepts 4003-450 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Liberal Arts* | 16 |
| | Institute Electives | 13 |
| | Cooperative Education 1001-499 (Optional) ‡ | Co-op |
| | *Total Quarter Credit Hours* | *180* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

# Bioinformatics

***Gary Skuse, Program Director***

The BS program in bioinformatics represents a truly interdisciplinary degree: the 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. This curriculum was designed with the needs of the prospective employer in mind, specifically for this challenging and rapidly changing field.

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 will be 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.

## Requirements for the BS degree in bioinformatics

The student 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 any co-op participation. If a student elects to pursue a co-op during the regular academic year, he or she will take the same number of academic class terms, but may need to extend the date of graduation beyond the traditional four years.

## Combined BS/MS program

The existing BS program may be combined with the MS program in bioinformatics, allowing undergraduate students to acquire both degrees in as little as five years. Undergraduate students with an overall GPA of 3.2 and a GPA in their professional field of study of 3.4 may apply to the bioinformatics committee for entry before the completion of their third year of study. Students in the combined program will be required to take graduate level courses during their fourth year and complete an approved MS thesis during their final year of study. Those who select this program will complete the undergraduate degree requirements and 50 quarter credit hours toward the bioinformatics MS degree.

**Bioinformatics, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | Introduction to Bioinformatics 1001-260 | 2 |
| | Computer Science 1, 2 4003-231, 232 | 8 |
| | Calculus I, II 1016-281, 282 | 8 |
| | Liberal Arts* | 12 |
| | First Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Cell Biology 1001-311 | 4 |
| | Molecular Biology 1001-350 | 4 |
| | Bioinformatics 1001-493 | 4 |
| | Computer Science 3 4003-233 | 4 |
| | General and Analytical Chemistry I, II 1011-215, 216 | 7 |
| | Chemical Principles Lab I, II 1011-205, 206 | 2 |
| | Introduction to Organic Chemistry 1011-213 | 3 |
| | Introduction to Organic Chemistry Lab 1011-207 | 1 |
| | Discrete Math I, II 1016-265, 366 | 8 |
| | Liberal Arts* | 12 |
| Third and Fourth Years | Introduction to Microbiology 1001-404 | 5 |
| | Introduction to Bioinformatics Computing 4002-462 | 4 |
| | Genetic Engineering 1001-450 | 5 |
| | Genetics 1001-421 | 4 |
| | Genomics 1001-492 | 4 |
| | Molecular Modeling and Proteomics 1001-494 | 4 |
| | Advanced Bioinformatics Computing 4002-563 | 4 |
| | Parallel Computing I 4003-531 | 4 |
| | Biochemistry: Conformation and Dynamics 1009-502 | 3 |
| | Biochemistry: Metabolism 1009-503 | 3 |
| | Introduction to Databases and Data Modeling 4002-360 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Computer Science 4 | 4 |
| | Statistical Analysis for Bioinformatics 1016-415 | 4 |
| | Liberal Arts* | 12 |
| | Institute Electives | 17 |
| | Cooperative Education (required) 1001-499 | Co-op |
| | ***Total Quarter Credit Hours*** | ***180*** |

** Please see Liberal Arts General Education Requirements for more information.*
*†Please see Wellness Education Requirement for more information.*
*‡ Students participating in our optional co-op program 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, BS/MS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | Introduction to Bioinformatics 1001-260 | 2 |
| | Computer Science 1, 2 4003-231, 232 | 8 |
| | Calculus I, II 1016-281, 282 | 8 |
| | Liberal Arts * | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Cell Biology 1001-311 | 4 |
| | Molecular Biology 1001-350 | 4 |
| | Bioinformatics 1001-493 | 4 |
| | Computer Science 3 4003-233 | 4 |
| | General and Analytical Chemistry I, II 1011-215, 216 | 7 |
| | Chemical Principles Lab I, II 1011-205, 206 | 2 |
| | Introduction to Organic Chemistry Lecture 1011-213 | 3 |
| | Introduction to Organic Chemistry Lab 1011-207 | 1 |
| | Discrete Math I, II 1016-265, 366 | 8 |
| | Liberal Arts* | 8 |
| Third Year | Introduction to Microbiology 1001-404 | 5 |
| | Introduction to Bioinformatics Computing 4002-462 | 4 |
| | Genetic Engineering 1001-450 | 5 |
| | Advanced Bioinformatics Computing 4002-563 | 4 |
| | Introduction to Databases and Data Modeling 4002-360 | 4 |
| | Data Analysis 1016-319 | 4 |
| | Statistical Analysis for Bioinformatics 1016-415 | 4 |
| | Liberal Arts* | 12 |
| | Institute Electives | 12 |
| | Cooperative Education (required) 1001-499 | Co-op |
| Fourth Year | Genetics 1001-421 | 4 |
| | Genomics 1001-492 | 4 |
| | Ethics in Bioinformatics 1001-725 | 3 |
| | Molecular Modeling and Proteomics 1001-494 | 4 |
| | Parallel Computing I 4003-531 | 4 |
| | Computer Science 4 4003-450 | 4 |
| | Biochemistry I, II, II 1009-702, 703, 704 | 9 |
| | Institute Electives | 6 |
| Fifth Year | Advanced Database Topics 1001-759 | 2 |
| | Bioinformatics Seminar 1001-722 | 2 |
| | Thesis 1001-890 | 10 |
| | Graduate Electives** | 20 |
| | ***Total Quarter Credit Hours*** | ***221*** |

**Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ Students participating in our optional co-op program may be scheduling courses in a fifth year but will be using the same number of academic quarters of classes to complete the degree.*
*** 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 personal interests and professional goals.*

## Environmental Science

***Elizabeth N. Hane, Program Director***

The 21st century promises to be both an exciting time and a challenging one in which to live. Many of the most complex challenges will be environmental. Meeting these challenges will require problem-solving abilities based in science, mathematics, the social sciences, and other disciplines. The BS and BS/MS environmental science programs will provide you with the education and experiences you need to be successful in meeting these challenges.

Environmental scientists solve problems relating to power generation, waste reduction, recycling, land use, manufacturing, packaging, transportation, forestry, agriculture, economics, and a wide range of other areas. They study our relationship to nature and to each other. Using the tools of science and mathematics, as well as principles from other disciplines, they develop solutions that prevent or reverse environmental deterioration and result in sustainability.

### Innovative features and accelerated degree options

The environmental science program is unique because it is designed and implemented jointly by the College of Science and College of Liberal Arts. You can choose a four-year BS degree or an accelerated five-year program leading to both a bachelor of science and a master of science degree. The five-year BS/MS option is strongly recommended because it provides you 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 your education meets the 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. In fact, the BS/MS program at RIT is one of the strongest programs available with respect to mathematics and science.

An environmental scientist must be able to communicate effectively and must understand economics and the law. The liberal arts portion of the curriculum provides this key group of skills.

We are flooded with information in every aspect of our lives. Successful environmental scientists must be able to assess the validity of information and to evaluate the design of experiments found in the literature. These critical thinking skills are woven into the environmental science curriculum.

Due to the interdisciplinary nature of environmental science, it is essential that environmental science professionals have a solid foundation of knowledge from a variety of academic fields. This foundation supports the understanding of interrelation-

ships among the various disciplines with respect to environmental issues. The courses in our core curriculum teach you how environmental science fits into the "big picture." In a single class meeting, for example, faculty from several disciplines may present different aspects of one environmental topic. Environmental professionals from the community may also bring the latest "real-world" information directly into the classroom.

Environmental science is an action-oriented, problem-solving profession. In order to learn and understand environmental science, you must do environmental science. Our program incorporates extensive fieldwork, research, and meaningful long-term problem-solving exercises. You and your professors will work closely with members of the environmental community (government, private organizations, and industry) to develop and implement workable solutions.

## Environmental science concentration/track requirement

The practice of environmental science demands that you be a well-rounded specialist. To accomplish this, each student is required to select an aspect of environmental science in which he or she specializes. Students in the BS program are required to take a minimum of 20 quarter credit hours in a specified concentration. Assistance in selecting an appropriate concentration can be obtained from the program director. The available concentrations are: digital imaging, environmental biology, environmental chemistry, environmental economics, environmental public policy, mathematics and statistics, and remote sensing.

## Cooperative education

Although co-op is optional for environmental science majors, it is a great way to get a head start on your career with paid professional work experience. You can participate in cooperative education as soon as the summer quarter of your second year. Assignments are typically with governmental regulatory agencies, private environmental organizations, and a host of engineering and manufacturing firms.

## Employment opportunities

Today, there is a great need for individuals who have both a strong background in environmental science and the ability to participate in an interdisciplinary problem-solving team. Upon graduation, you'll be valued for your broad understanding of environmental science, for your depth of knowledge in a particular aspect of environmental science, and for your ability to attack and solve tough environmental problems.

## Transfer admission

Specific requirements will be determined for each transfer student by the program director. For more information on the BS or BS/MS degree requirements, contact the program director for environmental science or visit our website: www.rit.edu/~envsci/.

## Requirements for the BS degree

The student must meet the minimum requirements of the university as described in this bulletin. In addition, the program requires successful completion of all of the courses listed in the typical course schedule below.

**Environmental science, BS degree, typical course sequence**

| | | Qtr. Crt. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | General and Analytic Chemistry I, II 1011-215, 216 | 7 |
| | Chemistry Labs 1001-205, 206 | 2 |
| | Introduction to Organic Chemistry and Lab 1001-213, 207 | 4 |
| | Elementary Calculus I, II 1016-214, 215 | 6 |
| | or | |
| | Project Based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Environment and Society 0508-460 | 4 |
| | Liberal Arts* | 8 |
| | First-Year Enrichment I, II 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Concepts in Environmental Science 1006-202 | 4 |
| | Environmental Science Field Studies 1006-203 | 4 |
| | Applications of GIS 1006-350 | 4 |
| | College Physics 1017-211, 212, 213 | 12 |
| | or | |
| | University Physics 1017-311, 312, 313 | 12 |
| | Data Analysis I, II and Lab 1016-319, 320, 379 | 10 |
| | Environmental Geology and Lab 0630-370, 372 | 4 |
| | Liberal Arts* | 8 |
| Third Year | General Ecology 1001-340 | 4 |
| | Conservation Biology 1001- 475 | 4 |
| | Capstone in Environmental Science 1006-503 | 4 |
| | Great Lakes I, II 0508-463, 0508-464 | 8 |
| | Introduction to Hydrology and Lab 0630-380, 382 | 4 |
| | Environmental Science Concentration | 8 |
| | Liberal Arts* | 12 |
| | General Education Elective | 0–3 |
| Fourth Year | Environmental Applications of Remote Sensing 1051-420 | 4 |
| | Environmental Science Concentration | 12 |
| | Free Electives | 13-16 |
| | Liberal Arts* | 8 |
| | ***Total Quarter Credit hours*** | ***180*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*§ 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.*

## Requirements for the BS/MS degree

The student 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**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Symposium 1001-200, 259 | 2 |
| | Introduction to Biology I, II, III 1001-251, 252, 253 | 12 |
| | General and Analytic Chemistry I, II 1011-215, 216 | 7 |
| | Chemistry Labs 1001-205, 206 | 2 |
| | Introduction to Organic Chemistry and Lab 1011-213, 207 | 4 |
| | Elementary Calculus I, II 1016-214, 215 | 6 |
| | or | |
| | Project Based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Environment and Society 0508-460 | 4 |
| | Liberal Arts* | 8 |
| | First-Year Enrichment I, II 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Concepts in Environmental Science 1006-202 | 4 |
| | Environmental Science Field Studies 1006-203 | 4 |
| | Applications of GIS 1006-350 | 4 |
| | College Physics 1017-211, 212, 213 | 12 |
| | or | |
| | University Physics 1017-311, 312, 313 | 12 |
| | Data Analysis I, II and Lab 1016-319, 320, 379 | 10 |
| | Environmental Geology and Lab 0630-370, 372 | 4 |
| | Liberal Arts* | 8 |
| Third Year | General Ecology 1001-340 | 4 |
| | Conservation Biology 1001- 475 | 4 |
| | Capstone in Environmental Science 1006-503 | 4 |
| | Great Lakes I, II 0508-463, 0508-464 | 8 |
| | Introduction to Hydrology and Lab 0630-380, 382 | 4 |
| | Environmental Science Concentration | 8 |
| | Liberal Arts* | 12 |
| | General Education Elective | 0–3 |
| Fourth Year | Environmental Science | |
| | Problem Solving I, II, III 1006-701, 702, 703 | 12 |
| | Graduate Readings Seminar 1006-759 | 3 |
| | Environmental Chemistry 1015-720 | 3 |
| | Environmental Applications of Remote Sensing 1051-420 | 4 |
| | Environmental Science Concentration | 8 |
| | Free Electives (undergraduate) | 12 |
| | Liberal Arts* | 4 |
| Fifth Year | Graduate Research 1006-879 | 5 |
| | Environmental Science Graduate Elective | 4 |
| | Environmental Public Policy Graduate Elective | 4 |
| | Environment and Society Graduate Elective | 4 |
| | Fundamentals of Statistics II 0307-712 | 4 |
| | Professional Electives | 12 |
| | Environmental Science Concentration | 4 |
| | Liberal Arts* | 4 |
| | Free Elective (undergraduate) | 1-4 |
| | ***Total Quarter Credit Hours*** | ***231*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*§ Please see environmental science concentrations.*
*Note: The articulation of the BS and the MS curriculum is accomplished by the inclusion of 18 quarter credit hours of graduate work in the fourth year of the curriculum (courses in italics).*

## Chemistry

***Terence C. Morrill, Head***

*www.rit.edu/~chemwww*

The department of chemistry offers degree programs leading to the AS and BS degrees in chemistry, the BS degree in chemistry with an environmental chemistry option, the BS degree in biochemistry, and the BS degree in polymer chemistry.

The department also offers the MS degree in chemistry and a five-year combined BS/MS in chemistry, BS chemistry with an environmental chemistry option/MS chemistry, BS biochemistry/MS chemistry, BS polymer chemistry/MS chemistry, and a BS chemistry/MS materials science and engineering programs.

### Requirements for the BS degree

Students must meet the minimum graduation requirements of the university, as described in this bulletin. In addition they must complete particular program requirements, or the equivalent, as determined and approved by the department of chemistry.

To meet the requirements leading to the BS degrees in chemistry, chemistry with an environmental chemistry option, biochemistry, and polymer chemistry–all of which are approved by the Committee on Professional Training of the American Chemical Society–the student must take specifically designated courses in chemistry and related sciences.

All students must meet the requirements for the university's writing policy, as specified by the department of chemistry.

### Extended-day and part-time studies in chemistry

All BS degree options in chemistry, biochemistry, and polymer chemistry are designed to accommodate part-time students, beyond the associate degree, during day or evening (extended day) hours. Academic advising is available throughout, and the American Chemical Society-approved chemistry degrees are offered at extended-day hours.

The chemistry department also offers a generous array of both general chemistry and biochemistry courses in a distance learning format. These courses include all lectures available on videotape and quick contact with the instructor by computer. In some cases the course is augmented by a webpage. This mode of presentation allows for complete schedule flexibility. For available online courses, please consult the quarterly schedule or RIT's online learning website at http://online.rit.edu/.

### Five-year combined BS/MS programs

The existing BS programs 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 the combined programs 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. There is also an option for a BS/MS in chemistry/materials science and engineering.

## Chemistry

The BS degree in chemistry, which has been approved by the Committee on Professional Training of the American Chemical Society, may be completed in four or five years, depending on the amount of cooperative (co-op) 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 cooperative 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. For example, it is highly recommended that students take the undergraduate chemistry research courses as university-wide electives. The program also provides students with the option of planning an elective concentration in complementary fields such as imaging science, business, graphic arts, audiovisual communications, biology, criminal justice, computer science, engineering, environmental science, forensics, mathematics, packaging science, physics, and printing.

**Chemistry (ACS certified), BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Separations Techniques 1008-312 | 3 |
| | Separations Techniques Lab 1008-319 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic ID of Organic Compounds III Lab 1013-437 | 2 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Third Year | Differential Equations 1016-306 | 4 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Organic Chemistry II, III 1013-432, 433 | 6 |
| | Preparative Organic Chemistry II Lab 1013-436 | 1 |
| | Introduction to Biochemistry 1009-300# | 1 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Liberal Arts*§ | 12 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fourth Year | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Chemical Literature 1010-401 | 2 |
| | Inorganic Chemistry I, II 1012-562, 563# | 8 |
| | Biochemistry 1009-502# | 3 |
| | Institute-wide Electives‡ | |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fifth Year | Preparative Inorganic Chemistry Lab 1012-565# | 3 |
| | Advanced Instrumental Analysis 1008-511# | 3 |
| | Advanced Instrumental Analysis Lab 1008-621# | 2 |
| | Chemistry Electives§ | |
| | Institute-wide Electives‡ | |
| | Cooperative Education 1010-499 (optional) | Co-op |
| | *Total Quarter Credit Hours* | *181* |

** 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 university-wide electives and are 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 (American Chemical Society) requirements highly recommend a foreign language (preferably German).*
*# Required only for ACS certification*

**Chemistry, combined BS/MS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Separations Techniques 1008-312 | 3 |
| | Separations Techniques Lab 1008-319 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | |
| | Systematic ID of Organic Compounds III Lab 1013-437 | 2 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Third Year | Chemical Literature 1010-401 | 2 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Introduction to Biochemistry 1009-300# | 1 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Liberal Arts*‡ | 12 |
| | Chemistry Electives§ | |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Fourth Year | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Biochemistry 1009-702# | 3 |
| | Advanced Instrumental Analysis 1008-711# | 3 |
| | Advanced Instrumental Analysis Lab 1008-621# | 2 |
| | Inorganic Chemistry I, II 1012-562, 563# | 8 |
| | Preparative Inorganic Chemistry Lab 1012-765# | 3 |
| | Chemistry Electives§ | |
| | Research and Thesis Guidance 1010-879** | 3 |
| Fifth Year*** | Chemistry Seminar 1012-870 | 2 |
| | Research and Thesis Guidance 1010-879** | 6–13 |
| | Course work in this year will be determined by the graduate committee and will need to fulfill the requirement of 225 total credit hours§ | |
| | *Total Quarter Credit Hours* | *225* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ ACS requirements highly recommend a foreign language (preferably German).*
*** A student will normally have nine–16 credit hours of Research and Thesis Guidance.*
*§ 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*

## Environmental chemistry option (ACS certified)

The environmental chemistry option in the BS chemistry program requires the following courses: Biology (1001-201 and 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 interest 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**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | General Biology 1001-201 | 3 |
| | General Biology Lab 1001-205 | 1 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Separations Techniques 1008-312 | 3 |
| | Separations Techniques Lab 1008-319 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic Identification of Organic Compounds Lab 1013-437 | 2 |
| | Microbiology in Health and Disease 1004-210 | 4 |
| | Liberal Arts* | 12 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Third Year | Introduction to Biochemistry 1009-300 | 1 |
| | Liberal Arts*‡ | 12 |
| | Differential Equations 1016-306 | 4 |
| | Advanced Instrumental Analysis 1008-511 | 3 |
| | Advanced Instrumental Analysis Lab 1008-621 | 2 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Aquatic Toxicology and Chemistry 1015-522 | 3 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Fourth Year | Biochemistry 1009-702 | 3 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Environmental Chemistry 1015-720 | 3 |
| | Inorganic Chemistry I 1012-562 | 4 |
| | Preparative Inorganic Chemistry Lab 1012-565 | 3 |
| | Chemistry Electives§‡ | |
| | Research and Thesis Guidance 1010-879# | 3 |
| | Chemical Literature 1010-401 | 2 |
| Fifth Year | Atmospheric Chemistry 1015-721 | 3 |
| | Chemistry Seminar 1010-870 | 2 |
| | Research and Thesis Guidance 1010-879# | 6–13 |
| | Course work in this year will be determined by the graduate committee and will need to fulfill the requirement of 225 credit hours§ | |
| | *Total Quarter Credit Hours* | *225* |

** 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) requirements highly recommend 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 nine–16 credit hours of Research and Thesis Guidance.*

## BS chemistry/MS materials science and engineering option

The combined BS chemistry/MS materials science and engineering program 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, combined BS/MS materials science and engineering degree, typical course sequence (BS is ACS certified)**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Separations Techniques 1008-312 | 3 |
| | Separations Techniques Lab 1008-319 | 1 |
| | Organic Chemistry I 1013-431,432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic Identification of Organic Compounds Lab 1013-437 | 2 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Liberal Arts*‡ | 4 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Third Year | Introduction to Biochemistry 1009-300** | 1 |
| | Chemical Literature 1010-401 | 2 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Liberal Arts*‡ | 16 |
| | University-wide elective | 4 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Fourth Year | Advanced Instrumental Analysis 1008-511 (or 711)** | 3 |
| | Advanced Instrumental Analysis Lab 1008-621** | 2 |
| | Biochemistry: Conformation and Dynamics 1009-502** | 3 |
| | Inorganic Chemistry I, II 1012-562, 563** | 8 |
| | Preparative Inorganic Chemistry Lab 1012-565** | 3 |
| | Advanced Chemistry Electives§ | |
| | Introduction to Materials Science 1028-701 | 4 |
| | Introduction to Polymer Science 1028-702 | 4 |
| | Introduction to Experimental Techniques 1028-705 | 4 |
| | Research and Thesis Guidance 1028-879# | |
| | Materials Science Electives§ | |
| Fifth Year | Atmospheric Chemistry 1015-721 | 3 |
| | Solid State Science 1028-703 | 4 |
| | Introduction to Theoretical Methods 1028-704 | 4 |
| | Materials Properties and Selection 1028-710 | 4 |
| | Sensors and Actuators 1028-780 | 4 |
| | Sensors and Actuators Lab 1028-785 | 2 |
| | Materials Science Electives§ | |
| | Research and Thesis Guidance 1028-879# | |
| | Seminar 1028-890 | 1 |
| | *Total Quarter Credit Hours* | *225* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ ACS (American Chemical Society) requirements highly recommend 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.*
*# A student will be required to have nine–16 credit hours of Research and Thesis Guidance.*
*** Required only for ACS certification.*

## Biochemistry

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, and elective courses in biology, biotechnology, and clinical sciences. Students must take a minimum of two upper-division biology electives (300-level or higher) that include laboratory work, for the biochemistry major. 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 the one offered by RIT.

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.

**Biochemistry, BS degree, typical course sequence (Follows ASBMB guidelines)**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | General Biology 1001-201, 202, 203 | 9 |
| | General Biology Lab 1001-205, 206, 207 | 3 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 4 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic ID of Organic Compounds III Lab 1013-437 | 2 |
| | Liberal Arts* | 8 |
| | University-wide Electives‡ | |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Third Year | Introduction to Biochemistry 1009-300 | 1 |
| | Differential Equations 1016-306 | 4 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | or | |
| | College Physics I, II, III 1017-211, 212, 213 | 12 |
| | Systematic Identification of Organic Compounds III Lab 1013-437 | 2 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fourth Year | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Chemical Literature 1010-401 | 2 |
| | Biochemistry 1009-502 | 3 |
| | Biochemistry: Nucleic Acids 1009-504 | 3 |
| | Biochemistry: Experimental Techniques Lab 1009-505 | 3 |
| | Liberal Arts* | 8 |
| | University-wide Electives‡ | |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fifth Year | Biochemistry: Metabolism 1009-503 | 3 |
| | Science Electives‡ | |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| | *Total Quarter Credit Hours* | *180* |

**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 science electives and are 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 180 for graduation.*

**Biochemistry, BS degree, typical course sequence (ACS certified)**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | General Biology 1001-201, 202, 203 | 9 |
| | General Biology Lab 1001-205, 206, 207 | 3 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 4 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic Identification of Organic Compounds III Lab 1013-437 | 2 |
| | Liberal Arts* | 8 |
| | Science Electives‡ | |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Third Year | Introduction to Biochemistry 1009-300 | 1 |
| | Differential Equations 1016-306 | 4 |
| | University Physics I, II, III 1017-311, 312,313 | 12 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fourth Year | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Chemical Literature 1010-401 | 2 |
| | Biochemistry 1009-502 | 3 |
| | Biochemistry: Nucleic Acids 1009-504 | 3 |
| | Biochemistry: Experimental Techniques Lab 1009-505 | 3 |
| | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fifth Year | Biochemistry: Metabolism 1009-503 | 3 |
| | Inorganic Chemistry I 1012-562 | 4 |
| | Preparative Inorganic Chemistry Lab 1011-565 | 3 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| | *Total Quarter Credit Hours* | *183* |

** 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 science electives and are highly recommended. Two electives must be upper-division biology courses (300 or higher) that include laboratory, for a minimum of eight credit hours. Biology electives may be either Cell Biology (1001-311), Molecular Biology (1001-350), Genetics (1001-421), or Genetic Engineering (1001-450). Electives are necessary to bring the total quarter credit hours to 182 for graduation.*

**Biochemistry, combined BS/MS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | General Biology 1001-201, 202, 203 | 9 |
| | General Biology Lab 1001-205, 206, 207 | 3 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 4 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic ID of Organic Compounds III Lab 1013-437 | 2 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Liberal Arts* | 16 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |

| | | |
|---|---|---|
| Third Year | Introduction to Biochemistry 1009-300 | 1 |
| | Systematic Identification of Organic Compounds III Lab 1013-437 | 2 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Chemical Literature 1010-401 | 2 |
| | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Liberal Arts* | 16 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Fourth Year | Biochemistry 1009-702 | 3 |
| | Inorganic Chemistry I 1012-562 | 4 |
| | Advanced Instrumental Analysis 1008-711 | 3 |
| | Preparative Inorganic Chemistry Lab 1011-765 | 3 |
| | Biochemistry: Metabolism 1009-703 | 3 |
| | Biochemistry: Nucleic Acids 1009-704 | 3 |
| | Biochemistry: Experimental Techniques Lab 1009-705 | 3 |
| | Biology Electives‡ | |
| | Chemistry Electives§ | |
| | Research and Thesis Guidance 1010-879# | |
| Fifth Year | Chemistry Seminar 1010-870 | 2 |
| | Advanced Instrumental Analysis Lab 1008-621 | 2 |
| | Advanced Organic Chemistry 1013-737 | 4 |
| | Advanced Physical Chemistry 1014-741 or 1014-743 | 4 |
| | Chemistry Electives§ | |
| | Research and Thesis Guidance 1010-879# | |
| | *Total Quarter Credit Hours* | *225* |

**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.*
*‡ Two upper-division biology electives with laboratory. Biology electives may be either Cell Biology (1001-311), Molecular Biology (1001-350), Genetics (1001-421), or Genetic Engineering (1001-450).*
*§ A minimum of 36 hours of 700-level or higher chemistry courses is required to graduate with a BS and MS degree.*
*# A student will be required to have nine–16 hours of Research and Thesis Guidance.*

## Polymer Chemistry

Polymer science is one of the increasingly important areas of modern science. When the program includes the Preparative Inorganic Chemistry Lab (1012-765), the polymer chemistry program 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 amount of cooperative education, 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.

**Polymer chemistry, BS degree, typical course sequence (ACS certified)**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Separations Techniques 1008-312 | 3 |
| | Separations Techniques Lab 1008-319 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic Identification of Organic Compounds III Lab 1013-437 | 2 |
| | Liberal Arts* | 8 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Third Year | Introduction to Biochemistry 1009-300 | 1 |
| | Introduction to Polymer Technology 1029-301 | 2 |
| | Differential Equations 1016-306 | 4 |
| | University Physics I, II, III 1017-311, 312. 313 | 12 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Literature 1010-401 | 2 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Liberal Arts*‡ | 4 |
| | Cooperative Education 1010-499 (optional) | Co-op |
| Fourth Year | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Organic Chemistry of Polymers 1029-501 | 4 |
| | Synthesis of High Polymers Lab 1029-505 | 2 |
| | Inorganic Chemistry I 1012-562 | 4 |
| | Polymer Chemistry: Chains and Solutions 1029-502 | 4 |
| | Liberal Arts*‡ | 8 |
| | Cooperative Education 1010-499 (optional)§ | Co-op |
| Fifth Year | Biochemistry 1009-502# | 3 |
| | Polymer Chemistry: Properties of Bulk Materials 1029-503 | 4 |
| | Polymer Characterization Lab 1029-504 | 2 |
| | Preparative Inorganic Chemistry Lab 1012-765# | 3 |
| | Chemistry Electives# | 4 |
| | University-wide Electives** | |
| | Cooperative Education 1010-499 (optional)§ | Co-op |
| | *Total Quarter Credit Hours* | *180* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ ACS requirements highly recommend 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 university-wide electives and are highly recommended. Electives are necessary to bring the total quarter credit hours to 180 for graduation. Twelve credits are necessary for full-time status.*

**Polymer chemistry, combined BS/MS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Chemical Safety 1010-200 | 1 |
| | Introduction to Co-op and Chemical Careers 1010-230 | 1 |
| | General Chemistry I, II 1010-251, 252 | 7 |
| | General Chemistry I Lab 1010-255 | 1 |
| | Quantitative Analysis I, II 1008-261, 262 | 7 |
| | Quantitative Analysis Lab I, II 1008-265, 266 | 3 |
| | Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Computer Programming Language 4002-208 | 4 |
| | Liberal Arts * | 20 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Second Year | Instrumental Analysis 1008-311 | 3 |
| | Instrumental Analysis Lab 1008-318 | 1 |
| | Separations Techniques 1008-312 | 3 |
| | Separations Techniques Lab 1008-319 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Organic Chemistry I, II, III 1013-431, 432, 433 | 9 |
| | Preparative Organic Chemistry Lab I, II 1013-435, 436 | 2 |
| | Systematic Identification of Organic Compounds III Lab 1013-437 | 2 |
| | Liberal Arts* | 12 |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Third Year | Introduction to Biochemistry 1009-300# | 1 |
| | Introduction to Polymer Technology 1029-301 | 1 |
| | Chemical Literature 1010-401 | 2 |
| | University Physics I, II, III 1017-311, 312, 313 | 12 |
| | Chemical Thermodynamics 1014-441 | 4 |
| | Chemical Thermodynamics Lab 1014-445 | 1 |
| | Liberal Arts*‡ | 4 |
| | Chemistry Electives§ | |
| | Cooperative Education 1010-499 (optional, summer) | Co-op |
| Fourth Year | Quantum Chemistry 1014-442 | 4 |
| | Quantum Chemistry Lab 1014-446 | 1 |
| | Organic Chemistry of Polymers 1029-701 | 4 |
| | Polymer Chemistry: Chains and Solutions 1029-702 | 4 |
| | Polymer Characterization Lab 1029-704 | 2 |
| | Preparative Polymer Chemistry 1029-705 | 4 |
| | Chemical Kinetics 1014-443 | 4 |
| | Chemical Kinetics Lab 1014-447 | 1 |
| | Advanced Instrumental Analysis 1008-711# | 3 |
| | Advanced Instrumental Analysis Lab 1008-621# | 2 |
| | Inorganic Chemistry I 1012-562 | 4 |
| | Preparative Inorganic Chemistry Lab 1012-765# | 3 |
| | Chemistry Electives§ | |
| | Research and Thesis Guidance 1010-879** | 3 |
| Fifth Year | Biochemistry 1009-702# | 3 |
| | Polymer Chemistry: Properties of Bulk Materials 1029-703 | 4 |
| | Chemistry Seminar 1010-870 | 2 |
| | Research and Thesis Guidance 1010-879** | 6–13 |
| | Course work in this year will be determined by the graduate committee and will need to fulfill the requirement of 225 total credit hours.§ | |
| | ***Total Quarter Credit Hours*** | ***225*** |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*
*‡ ACS requirements highly recommend 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 in chemistry.*
*# Required only for ACS certification*
*** A student will normally have nine–16 credit hours of Research and Thesis Guidance.*

## Mathematics and Statistics

***Sophia A. Maggelakis, Head***

*www.math.rit.edu*

Over the past several years a growing demand has developed for mathematicians and statisticians with broad-based quantitative backgrounds and extensive computer skills. Mathematical and statistical theory is the basis for many fields of practical application, and employers need people whose education merges mathematics with another field of study–computer science, statistics, chemistry, physics, engineering, or business, to name a few.

The department of mathematics and statistics has established three BS degree programs in response to these long-term industry needs: applied mathematics, applied statistics, and computational mathematics. Each has been carefully designed to meet the needs of both students and their potential employers. Constant feedback from industry has enabled the department to update its courses, programs, and equipment in order to make sure students are well-trained in current techniques, equipment, and applications. Students utilize symbolic computation software in many of their courses. Our specially equipped classrooms for multimedia presentations and symbolic computation, as well as our statistics labs lend support to all of our programs. Industrial needs and trends are carefully discussed with employers in order to update the curricula, and graduates find that their RIT backgrounds are tailor-made for their professional careers.

Many exciting career opportunities exist for mathematics majors. Students typically become involved in research, consulting, or use computers for statistical analysis or to analyze complex mathematically modeled physical problems. Examples of co-op and permanent jobs typically obtained by mathematics and statistics majors include the following: actuary, analyst for mathematical modeling, statistician, mathematical statistician, demographics analyst, software designer, scientific programmer, systems analyst, cryptographic mathematician, manufacturing engineering consultant, biological systems analyst, computer modeling consultant, graphic modeling consultant, simulations programmer, reliability analyst, statistical forecaster, robotics software specialist, database programmer, data analyst, telecommunications analyst, software engineer, marketing analyst, and aerospace systems analyst.

Students in all three programs enjoy small classes and opportunities to get to know their professors outside the classroom. Job prospects for graduates are plentiful, and the department is proud of its outstanding record of placing students in both co-op and permanent jobs.

### Actuarial studies

A plan of study has been designed to assist students seeking a career in the actuarial sciences. These courses not only provide a foundation for students who will work as actuaries, but also prepare students to take the first actuarial exams. These courses may count for credit in any of the three major programs in the department of mathematics and statistics or may be taken independently.

### BS/MS programs

Each of the three BS degree programs has a complementary master's degree program that can be completed in one additional year. Students in all three BS programs also are eligible for the combined BS/MS in applied mathematics.

### Minors

Students majoring in other programs at RIT may choose to pursue a minor in mathematics or statistics to complement their primary area of interest.

### Transfer programs

Transfer programs are arranged on an individual basis.

### 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 one of the particular programs listed here, or its equivalent, as determined and approved by the department of mathematics and statistics. In conjunction with a faculty adviser, individual student programs will be established to meet particular needs, interests, and goals.

**Applied mathematics, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Mathematics and Statistics Seminar 1016-210, 211 | 2 |
| | Project-based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Discrete Math I 1016-265 | 4 |
| | Computer Science 1 4003-231 | 4 |
| | Computer Science 2 4003-232 | 4 |
| | Science Electives | 12 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations I 1016-306 | 4 |
| | Probability and Statistics I, II 1016-351, 352 | 8 |
| | Cooperative Education Seminar 1016-399 | 0 |
| | Mathematics Elective | 4 |
| | Matrix Algebra 1016-331 | 4 |
| | Liberal Arts* | 12 |
| | Vector Calculus 1016-410 | 4 |
| | University-wide Electives | 8 |
| | Technical Writing 0502-444 | 4 |
| Third Year | Numerical Analysis 1016-511 | 4 |
| | or | |
| | Numerical Linear Algebra 1016-512 | 4 |
| | Linear Algebra 1016-432 | 4 |
| | Mathematical Modeling 1016-461 | 4 |
| | Mathematics Electives | 8 |
| | Liberal Arts* | 12 |
| | General Education Electives | 8 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| Fourth Year | Real Variables I, II 1016-411, 412 | 8 |
| | Mathematics Electives | 8 |
| | Application Area | 4 |
| | General Education Electives | 10 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| Fifth Year‡ | Abstract Algebra I, II 1016-531, 532 | 8 |
| | Application Area | 8 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| | *Total Quarter Credit Hours* | *188* |

** 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 co-op option is omitted.*

## Applied Mathematics

The applied mathematics program focuses upon the study and solution of problems that can be mathematically analyzed. Industry has 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 are typically employed in scientific, engineering, and business environments, applying their mathematics background to the analysis and solution of real-world problems.

Applied mathematics students who minor in business can accelerate the MBA degree from RIT through careful choice of undergraduate courses. With one year of additional study, a student can earn the MBA degree.

## Applied Statistics

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 effectively and solved using statistical methodology.

Graduates of the program collaborate with specialists in both scientific and nontechnical areas to design, experiment, and interpret the results. Application areas include product designs, quality control, marketing, customer satisfaction, and actuarial sciences.

The BS in applied statistics may be combined with an MS in applied and mathematical statistics. An accelerated program of study allows students who choose this option to receive both the BS and MS degrees following one year of graduate study.

**Applied statistics, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Mathematics and Statistics Seminar 1016-210, 211 | 2 |
| | Project-based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Discrete Math I 1016-265 | 4 |
| | Computer Science I 4003-231 | 4 |
| | Statistical Computing with Excel and Minitab 1016-260 | 2 |
| | University-wide Elective | 2 |
| | Science Electives | 12 |
| | Liberal Arts* | 8 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations 1016-306 | 4 |
| | Probability and Statistics I, II 1016-351, 352 | 8 |
| | Co-op Seminar 1016-399 | 0 |
| | Applied Statistics 1016-353 | 4 |
| | Statistical Computing 0307-442 | 4 |
| | Matrix Algebra 1016-331 | 4 |
| | Technical Writing 0502-444 | 4 |
| | Statistical Quality Control 1016-358 | |
| | or | |
| | Research Sampling Techniques 1016-457 | 4 |
| | Liberal Arts* | 16 |
| Third Year | Linear Algebra 1016-432 | 4 |
| | Regression Analysis 1016-354 | 4 |
| | Design of Experiments 1016-355 | 4 |
| | Mathematics Elective‡ | 4 |
| | Liberal Arts* | 8 |
| | General Education Electives | 8 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| Fourth Year | Nonparametric Statistics 1016-454 | 4 |
| | Mathematics Electives‡ | 12 |
| | University-wide Electives | 6 |
| | General Education Electives | 6 |
| | Liberal Arts* | 4 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| Fifth Year§ | Mathematical Statistics I, II 1016-451, 452 | 8 |
| | Statistics Seminar 1016-555 | 4 |
| | Mathematics Elective‡ | 4 |
| | General Education Electives | 8 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| | *Total Quarter Credit Hours* | *188* |

** 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 co-op option is omitted.*

**Computational mathematics, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Mathematics and Statistics Seminar 1016-210, 211 | 2 |
| | Project-based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Discrete Math I 1016-265 | 4 |
| | Computer Science 1 4003-231 | 4 |
| | Computer Science 2 4003-232 | 4 |
| | Computer Science 3 4003-233 | 4 |
| | Science Electives | 12 |
| | Liberal Arts* | 8 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations I 1016-306 | 4 |
| | Probability and Statistics I, II 1016-351, 352 | 8 |
| | Co-op Seminar 1016-399 | 0 |
| | Matrix Algebra 1016-331 | 4 |
| | Computer Science 4 4003-334 | 4 |
| | Software Engineering 3010-361 | 4 |
| | Technical Writing 0502-444 | 4 |
| | Computational Math Concentration | 4 |
| | University-wide Elective | 4 |
| | Liberal Arts* | 12 |
| Third Year | Linear Algebra 1016-432 | 4 |
| | Graph Theory 1016-467 | 4 |
| | Mathematical Modeling 1016-461 | 4 |
| | Computational Math Concentration | 8 |
| | University-wide Elective | 4 |
| | Liberal Arts* | 4 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| Fourth Year | Real Variables I 1016-411 | 4 |
| | Numerical Analysis 1016-511 | 4 |
| | Numerical Linear Algebra 1016-512 | 4 |
| | Computational Math Concentration | 4 |
| | University-wide Elective | 4 |
| | General Education Electives | 8 |
| | Liberal Arts* | 12 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| Fifth Year‡ | Abstract Algebra I, II 1016-531, 532 | 8 |
| | Computational Math Concentration | 4 |
| | General Education Electives | 6 |
| | Cooperative Education 1016-499 (optional) | Co-op |
| | *Total Quarter Credit Hours* | *188* |

** 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 co-op option is omitted.*

## Computational Mathematics

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 literally abound in this field.

The BS in computational mathematics can be joined with the MS in computer science. An accelerated program of study allows students who choose this option to receive both the BS and MS degrees following one year of graduate study.

## Physics

***David J. Axon, Head***

*www.physics.rit.edu*

The department of physics offers programs leading to the AS and BS degrees in physics, as well as minors in physics and astronomy. The BS degree can be completed in either four or five years, depending on how many co-op experiences a student chooses to complete. Graduates find employment opportunities with industrial, academic, and governmental agencies or continue their education in master's or doctorate 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 schools.

### 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 will 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.

Students may elect to take a concentration in optical physics as part of their BS degree. The concentration includes, in part, three courses: Optical Physics II, Laser Physics, and Experimental Optics. These can be taken as physics, technical, or free electives during the fourth and fifth years with no additional credit hours to obtain a BS degree. For additional information on AS and 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**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Special Relativity 1017-200 | 2 |
| | University Physics I, II 1017-311, 312 | 8 |
| | Project-Based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | Chemical Principles I, II 1011-211, 212 and Chemistry Lab I, II 1011-205, 206 or Introduction to Biology I, II 1001-251, 252 | 8 |
| | Introduction to Computational Physics and Programming 1017-317 | 4 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | University Physics III 1017-313 | 4 |
| | Modern Physics I, II 1017-314, 315 | 8 |
| | Electronic Measurements 1017-431 | 4 |
| | Modern Physics Lab I 1017-374 | 2 |
| | Vibrations and Waves 1017-318 | 4 |
| | Sophomore Physics Seminar 1017-350 | 1 |
| | Multivariable Calculus 1016-305 | 4 |
| | Differential Equations I 1016-306 | 4 |
| | Free Elective | 4 |
| | Liberal Arts* | 12 |
| Third Year | Intermediate Mechanics I, II 1017-401, 402 | 8 |
| | Electricity and Magnetism I, II 1017-411, 412 | 8 |
| | Optical Physics I 1017-455 | 4 |
| | Introduction to Laboratory Techniques 1017-321 | 4 |
| | Mathematical Methods in Physics I 1017-480 | 4 |
| | Modern Physics Lab II 1017-378 | 2 |
| | Capstone Preparation 1017-420 | 1 |
| | Liberal Arts* | 8 |
| | Free Elective | 4 |
| | General Education Elective# | 4 |
| Fourth Year | Thermal Physics 1017-415 | 4 |
| | Capstone Project I, II 1017-423, 424 | 7 |
| | Quantum Mechanics I, II 1017-522, 523 | 8 |
| | Physics Electives | 8 |
| | Free Elective | 4 |
| | General Education Elective# | 10 |
| | *Total Quarter Credit Hours* | *187* |

** 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 COS (excluding physics) and COLA; certain courses to be defined later. There are exceptions. Check with your academic adviser for approval.*

## Medical Sciences

***Richard Doolittle, Chair***

The department of medical sciences includes the physician assistant and diagnostic medical sonography (ultrasound) programs. Both are designed to prepare students for entry into careers in the health sciences. Graduates find employment opportunities in hospitals and clinics, research facilities, and industry, and with many governmental agencies. Some continue their education in graduate and professional schools. The BS programs offered by the department can serve as preprofessional programs for schools of medicine, veterinary medicine, or dentistry.

In addition to the BS programs, there is a certificate option in diagnostic medical sonography and exercise science, as well as an MS degree program in clinical chemistry.

## Biomedical Sciences

***Richard L. Doolittle, Program Director***

Biomedical sciences is an academic program designed to prepare students for advanced study in medical, dental, veterinary, or graduate schools, as they pursue careers in health care or biomedical research. Faculty from across the basic science disciplines both 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 a myriad of scientific professionals and educational experiences.

For the past twenty years, researchers in the biomedical fields enjoyed rapid gains in employment due, in part, to the advances in biotechnology and to 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 career.

### 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, with a complement of liberal arts in preparation for a particular career path, e.g., entry into medical/dental/vet school graduate studies, or a research position in an applied area of biomedical science. Upon completion of the life science core, a series of concentration areas are 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, professional studies (pre-medical, pre-dental, or pre-veterinary), exercise science, and pathology. It is anticipated that new program concentrations will become available in the coming years. Students may also choose to use elective credits to engage in undergraduate research with a faculty mentor and/or pursue a secondary field of study through declaration of a minor, e.g., in the liberal arts (communications, psychology, public policy, foreign language) or sciences (statistics, biochemistry, or imaging science), or possibly a second major.

**Biomedical sciences, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introductory Biology 1001-251, 252, 253 | 12 |
| | General and Analytical Chemistry I, II, III 1011-215, 216, 217 | 10 |
| | Chemical Principles I, II, III Lab 1011-205, 206, 207 | 3 |
| | Calculus A, B 1016-271, 272 | 8 |
| | Wellness Education† | 0 |
| | Institute Electives | 4 |
| | Liberal Arts* | 8 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| Second Year | Anatomy and Physiology 1026-350, 360 | 10 |
| | Organic Chemistry 1013-231, 232, 233 | 9 |
| | Organic Chemistry Lab 1013-235, 236, 237 | 3 |
| | Data Analysis I 1016-319 | 4 |
| | Science/Track Elective | 8 |
| | Liberal Arts* | 16 |
| Third Year | College Physics 1017-211, 212, 213 | 9 |
| | College Physics Lab 1017-271, 272, 273 | 3 |
| | Molecular Biology 1001-350 | 4 |
| | Liberal Arts* | 8 |
| Fourth Year | Science/Track Electives | 36 |
| | Institute Electives | 24 |
| | Liberal Arts* | 4 |
| | *Total Quarter Credit Hours* | *185* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

**Program Concentrations**
Forensic science
Premedical/Predental
Exercise science
Pathology
Preveterinary

**Available Science/Track Electives**

Computers in Medicine
Radiation Health Safety
Introduction to Forensic Science
Genetics Diagnostic
Cell Biology
Biochemistry
Sports Physiology and Life Fitness
Undergraduate Research*
Comparative Vertebrate Anatomy
Comparative Physiology
Medical Pathophysiology
Human Gross Anatomy
Developmental Biology
Fitness Programming and Prescription
Immunology
Premedical Studies
Medical Imaging
Patient Care
Introduction to Microbiology
Microbial Pathogenesis
Sports Nutrition
Histology
Evolutionary Biology
Animal Behavior
Vertebrate Zoology
Virology

**Variable credit; requires at least two sequential quarters of participation*

## Physician Assistant

***Heidi Miller, Program Director***

The physician assistant program is a four-year curriculum focusing on primary care that awards a bachelor of science degree upon completion. The first two years involve core courses in basic sciences, mathematics, and the liberal arts. The third and fourth years, considered the upper division of the program, encompass 21 months. Students participate in the program during the summer between these years. The last two years of the program also include nine months of clinical course work and 12 months of clinical rotations. Qualified transfer students are accepted into any one of the first three years of the program.

Physician assistants (PAs) provide diagnostic and therapeutic health care in conjunction with a supervising physician. They perform tasks that have, in the past, been performed by physicians, such as: 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 assistants' duties vary depending on the state and specialty in which they practice. In most states, PAs also prescribe medication. Specialties include internal medicine, family medicine, emergency medicine, geriatrics, pediatrics, obstetrics/gynecology, general surgery, orthopedic surgery, neurosurgery, and neonatology. Clinical rotations during the senior year provide the student with an opportunity to explore these specialty areas.

In addition to RIT's general admission procedures, the physician assistant program requires completion of a supplemental data packet, application, and successful completion of an admission interview (by invitation). For details of the admission procedure utilized by the physician assistant program, please contact the RIT Office of Admissions at (585) 475-6631. 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.

### Clinical internship

The 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/PA) and are exposed to a wide variety of acute and chronic medical problems. Emphasis is placed on data gathering, differential diagnosis, patient management, maintenance of medical records, performance of diagnostic and therapeutic procedures, and the provision of medical education and counseling at the patient level of comprehension. 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 individualize their experiences according to their own areas of interest.

### Accreditation

The physician assistant program is fully accredited by the Accreditation Review Commission on Education for the Physician Assistant.

**Physician assistant, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | General Biology 1001-201, 202, 203 | 9 |
| | General Biology Lab 1001-205, 206, 207 | 3 |
| | Calculus for Management Science 1016-226 | 4 |
| | General and Analytical Chemistry I, II, III 1011-215, 216, 217 | 10 |
| | Chemical Principles I, II Lab 1011-205, 206 | 2 |
| | General and Analytical Chemistry III Lab 1011-227 | 1 |
| | Computers in Medicine 4006-230 | 4 |
| | Early Clinical Experience 1032-201, 202 | 2 |
| | Liberal Arts* | 16 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | Anatomy and Physiology 1026-350, 360 | 10 |
| | Data Analysis I 1016-319 | 4 |
| | Early Clinical Experience 1032-203 | 1 |
| | Physician Assistant Seminar 1032-210 | 1 |
| | Medical Microbiology 1032-406 | 4 |
| | Institute Electives | 12 |
| | Liberal Arts* | 20 |
| Third Year | Medical Pathophysiology 1026-415 | 4 |
| | Medical Lab Testing 1024-450 | 2 |
| | Law and Medicine 1032-330 | 2 |
| | Behavioral Medicine 1032-200 | 2 |
| | Patient History and Physical Exam I, II, III 1032-401, 402, 403 | 6 |
| | Clinical Skills 1032-410 | 1 |
| | Clinical Pharmacology I, II, III 1032-420, 421, 422 | 8 |
| | Clinical Diagnostic Imaging 1032-430 | 1 |
| | Clinical Medicine I, II, III 1032-440, 441, 442 | 12 |
| | Clinical Rotation I 1032-490 | 12 |
| Fourth Year | Fourth year clinical rotations are completed at various hospitals and ambulatory healthcare settings approved for training physician assistants. | |
| | Clinical Rotation II, III, IV 1032-491, 492, 493 | 36 |
| | *Total Quarter Credit Hours* | *192* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## Diagnostic Medical Sonography (Ultrasound)

***Hamad Ghazle, Program Director***

Diagnostic medical sonography, one of the fastest-growing areas in diagnostic medicine, 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 the strong demand for well-trained sonographers and echocardiographers.

RIT's program is one of only a few such degree programs in the nation. It offers both a bachelor of science degree in general ultrasound and two certificate options. The certificate options include a general track (abdomen/small parts and obstetrics and genecology, with an introduction to vascular) and an echocardiography track. The program prepares students for application to schools of medicine, dentistry, veterinary medicine, podiatry, and chiropractic medicine. Students can also 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 number 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 in medical, industrial, and educational settings both nationally and internationally. Our graduates can be found in a wide range of positions, including supervisory or administrative positions in hospitals, clinics, private physician's offices, teaching, research, sales, and industry. Graduates also can choose to work as freelance sonographers, or for mobile services.

### Requirements for the BS degree in general ultrasound

The student 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. Associate degree holders may be able to complete a BS degree in two years; additional course work may be required. Contact the program director or the head of the department of medical sciences for further information on BS degree requirements.

### Requirements for the certificate options

Each certificate option is a one-year course of study that includes lectures integrated with the 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 options are available to all registered allied health practitioners, as well as to those holding an associate or bachelor's degree in a relevant discipline.

### Clinical internship

The clinical internship year (completed with a 20 percent tuition discount) provides hands-on experience in two or more medical facilities in upstate New York and other 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 and echocardiographic examinations, as well as 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, echocardiographers, physicians, and other health care professionals to learn, develop, apply, and sharpen the necessary skills to perform general ultrasound and echocardiographic examinations. The students' clinical progress and performance are monitored by the RIT program 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**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | General Biology 1001-201, 202, 203 | 9 |
| | General Biology Lab 1001-205, 206, 207 | 3 |
| | General and Analytical Chemistry 1011-215, 216, 217 | 10 |
| | Chemistry I, II, III Labs 1011-205, 206, 207 | 3 |
| | Computers in Medicine 4006-230 | 4 |
| | Calculus for Management Science 1016-226 | 4 |
| | Liberal Arts* | 12 |
| | First-Year Enrichment 1105-051, 052 | 2 |
| | Wellness Education† | 0 |
| Second Year | College Physics 1017-211, 212, 213 | 9 |
| | College Physics Lab 1017-271, 272, 273 | 3 |
| | Introduction to Diagnostic Medical Imaging 1026-205 | 2 |
| | Medical Terminology 1026-301 | 3 |
| | Anatomy and Physiology 1026-350, 360 | 10 |
| | Data Analysis I 1016-319 | 4 |
| | Liberal Arts* | 12 |
| Third Year | Cross-Sectional Anatomy 1030-412 | 4 |
| | Ultrasound Instrumentation I, II 1030-409, 410 | 8 |
| | Pathophysiology 1026-415 | 4 |
| | Medical Genetics 1004-315 | 2 |
| | Patient Care 1026-333 | 2 |
| | Ultrasound Scanning 1030-XXX | 4 |
| | University Electives | 12 |
| | Liberal Arts* | 12 |
| Fourth Year (Internship) | Introduction to Obstetrical Ultrasound 1030-552 | 3 |
| | Gynecologic Ultrasound 1030-553 | 3 |
| | Abdominal Ultrasound I 1030-556 | 3 |
| | Clinical Ultrasound I 1030-570 | 7 |
| | Advanced Obstetrical Ultrasound 1030-554 | 4 |
| | Abdominal Ultrasound II 1030-557 | 3 |
| | Ultrasound Seminar 1030-560 | 2 |
| | Clinical Ultrasound II 1030-571 | 7 |
| | Small Parts Ultrasound 1030-558 | 3 |
| | General Vascular Evaluation 1030-414 | 4 |
| | Research Seminar 1030-561 | 2 |
| | Clinical Ultrasound III 1030-572 | 7 |
| | ***Total Quarter Credit Hours*** | ***184*** |

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

**Diagnostic medical sonography (general track), certificate program, typical course sequence**

*Must be completed before entering clinical internship**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| | Introduction to Diagnostic Medical Imaging 1026-205 | 2 |
| | Cross-Sectional Anatomy 1030-412 | 4 |
| | Ultrasound Instrumentation I, II 1030-409, 410 | 8 |
| | Pathophysiology 1026-415 | 4 |
| | Ultrasound Scanning 1030-xxx | 4 |
| Internship | Introduction to Obstetrical Ultrasound 1030-552 | 3 |
| | Gynecologic Ultrasound 1030-553 | 3 |
| | Abdominal Ultrasound I 1030-556 | 3 |
| | Clinical Ultrasound I 1030-570 | 7 |
| | Advanced Obstetrical Ultrasound 1030-554 | 4 |
| | Abdominal Ultrasound II 1030-557 | 3 |
| | Ultrasound Seminar 1030-560 | 2 |
| | Clinical Ultrasound II 1030-571 | 7 |
| | Small Parts Ultrasound 1030-558 | 3 |
| | General Vascular Evaluation 1030-414 | 4 |
| | Research Seminar 1030-561 | 2 |
| | Clinical Ultrasound III 1030-572 | 7 |
| | ***Total Quarter Credit Hours*** | ***70*** |

** Other prerequisites may apply.*

**Diagnostic medical sonography (echocardiography track), certificate program, typical course sequence**

*Must be completed before entering clinical internship **

| | | Qtr. Cr. Hrs. |
|---|---|---|
| | Cardiac Anatomy and Physiology 1030-501 | 3 |
| | Echocardiography Scanning 1030-408 | 2 |
| | Electrophysiology and Cardiac Pharmacology 1030-420 | 3 |
| | Pathophysiology 1026-415 | 4 |
| | Ultrasound Instrumentation I 1030-409 | 4 |
| | Ultrasound Instrumentation II 1030-410 | 4 |
| Internship | Echocardiography I 1030-501 | 3 |
| | Ischemic Heart Disease: Stress Echo 1030-510 | 2 |
| | Cardiac M-Mode 1030-515 | 2 |
| | Clinical Echocardiography I 1030-520 | 7 |
| | Echocardiography II 1030-502 | 3 |
| | Congenital Heart Disease I 1030-530 | 2 |
| | Seminar in Echocardiography 1030-525 | 2 |
| | Clinical Echocardiography II 1030-521 | 7 |
| | Echocardiography III 1030-503 | 3 |
| | Congenital Heart Disease II 1030-565 | 2 |
| | Echocardiography Special Topics 1030-531 | 2 |
| | Clinical Echocardiography III 1030-522 | 7 |
| | ***Total Quarter Credit Hours*** | ***62*** |

** Other prerequisites may apply.*

## Exercise Science

***Richard L. Doolittle, Program Director***

College-level knowledge and professional certification are increasingly required for those who wish to work in the fitness industry, whether on a full-time or part-time basis, 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.

**Exercise science, certificate program, typical course sequence**

| | Qtr. Cr. Hrs. |
|---|---|
| 1026-305 Sports Physiology and Life Fitness | 4 |
| 1026-306 Fitness Prescription and Programming | 4 |
| 1026-307 Exercise Prescription for Special Populations | 4 |
| **Certificate Total** | **12** |

## Center for Imaging Science

***Stefi A. Baum, Director***

*www.cis.rit.edu*

Imaging science is a multidisciplinary field based on physics, mathematics, computer science, systems engineering, and chemistry. 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 scientific information is extracted.

Concepts presented in the classroom are reinforced through laboratory experiments and by an optional 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. In place of the research capstone, students may choose additional professional electives in areas such as optics, sensor technology, mathematics, statistics, medical imaging systems, astronomy, and applications of digital imaging processing. They also 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.

The faculty, staff, and students conduct research sponsored by both industry and government. The research support ensures that students are exposed to the latest developments in a rapidly expanding field.

Undergraduate minors and graduate programs are offered in imaging science leading to MS and doctoral degrees, as well as the MS degree in color science.

### 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 imaging science faculty. Cooperative work experience is not required but is recommended for the summers following the second and third year 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 summer quarter.

**Imaging science, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Imaging Science First-Year Seminar 1051-200 | 1 |
| | Imaging in the Physical Sciences 1051-204 | 4 |
| | Science Electives** | 8 |
| | Project-based Calculus I, II, III 1016-281, 282, 283 | 12 |
| | University Physics I, II 1017-311, 312 | 8 |
| | General Education Elective | 4 |
| | Liberal Arts* | 12 |
| | Wellness Education† | 2 |
| Second Year | Programming for Imaging Science 1051-211 | 4 |
| | Introduction to Imaging Systems 1051-300 | 4 |
| | Geometrical Optics 1051-303 | 4 |
| | Physical Optics 1051-455 | 4 |
| | Linear Mathematics for Imaging 1051-320 | 4 |
| | Vision and Psychophysics 1051-350 | 4 |
| | Radiometry 1051-370 | 4 |
| | Multivariable Calculus 1016-305 | 4 |
| | University Physics III 1017-313 | 4 |
| | Modern Physics I 1017-314 | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education† | 0 |
| Third Year | Imaging Systems Analysis I, II, III 1051-451, 452, 453 | 12 |
| | Color Science 1051-402 | 4 |
| | Digital Image Processing I, II 1051-361, 462 | 8 |
| | Engineering Statistics 1016-314 | 4 |
| | Interactions Between Light and Matter 1051-313 | 4 |
| | Detectors 1051-465 | 4 |
| | Research Practices 1051-501 | 3 |
| | Liberal Arts* | 12 |
| Fourth Year | Senior Project 1051-502 or Professional Elective | 4 |
| | Senior Project 1051-503 or Professional Elective | 4 |
| | Institute Electives | 12 |
| | Professional Electives | 8 |
| | Liberal Arts* | 8 |
| | ***Total Quarter Credit Hours*** | ***182*** |

** 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*

# National Technical Institute for the Deaf

***T. Alan Hurwitz, Vice President and Dean***
*www.ntid.rit.edu*

The National Technical Institute for the Deaf (NTID), one of RIT's eight colleges, 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. Nearly 1,100 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 RIT's deaf and hard-of-hearing students with technical and pre-professional training in more than twenty programs. An NTID education prepares students for technical careers in areas such as accounting technology, administrative support technology, applied computer technology, applied optical technology, automation technologies, art and computer design, business occupations, computer aided drafting technology, computer integrated machining technology, digital imaging and publishing technology, and laboratory science technology. NTID also offers associate and baccalaureate degrees in ASL-English interpretation. Traditionally, 92 percent of NTID graduates who enter the work force find employment in their fields of study.

Deaf and hard-of-hearing students who take courses or matriculate into one of RIT's seven other colleges may request educational access services, which may include sign language interpreting in classrooms and laboratories, speech-to-text services, and notetaking. 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. This area 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 offers a master of science in secondary education of students who are deaf or hard-of-hearing.

## NTID's academic programs

NTID provides student-oriented academic programming to ensure a rich, coherent set of educational experiences for students. NTID offers career-focused associate degrees and transfer programs as well as general education coursework in a variety of disciplines.

**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, applied optical technology, art and computer design, automation technologies, business technology, computer aided drafting technology, computer integrated machining technology, digital imaging and publishing technology, and laboratory science technology. Program 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 an associate degree in occupational studies (AOS) and an associate degree in applied science (AAS). All AOS and AAS programs require at least one 10-week external cooperative education experience.

**Transfer programs:** NTID also offers transfer associate degrees and pre-baccalaureate programs. Associate of science (AS) degrees in business, and information technology and computing provide optimal transferability to baccalaureate programs in RIT's E. Philip Saunders College of Business and the B. Thomas Golisano College of Computing and Information Sciences, respectively. In addition, several of our AAS degrees provide students with the necessary skills to transfer to 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.

**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 underprepared for, matriculation into a program of study. In addition, NTID offers associate and baccalaureate degrees 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 programs 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, tutoring, audiological, speech, 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, speech-to-text services, and notetaking services. Through support and access services, students who are deaf are able to participate in all aspects of the RIT community.

## Educational opportunities through NTID

### Career-focused programs

Career-focused programs offered through NTID lead to a diploma, an associate in occupational studies, or an associate in applied science degree from RIT. These programs permit students to enter their careers directly.

**Diploma:** Certification at this level requires 36–45 total credit hours of technical instruction. Students attain a maximum level of technical competency for entry-level positions. In addition to satisfactorily completing technical courses, students must complete a specific number of credit hours—determined by the program of study—in the NTID general education curriculum.

**Associate in occupational studies degree (AOS):** Certification at this level requires 57–69 credit hours of technical instruction. In addition to satisfactorily completing technical courses, students must complete a specific number of credit hours—determined by the program of study—in the NTID general education curriculum.

**Associate in science degree (AS):** Certification at this level requires the completion of 45–50 credit hours of technical course work and 40–45 credit hours in general education courses offered through RIT's College of Liberal Arts, mathematics and science courses offered through RIT's College of Science, and other courses as appropriate to the degree. This degree prepares students to enter and complete a bachelor's program in RIT's E. Philip Saunders College of Business or the B. Thomas Golisano College of Computing and Information Sciences.

**Associate in applied science degree (AAS):** Certification at this level requires 57–69 credit hours of technical instruction. In addition to satisfactorily completing technical courses, students must complete 20 credit hours in general education courses, offered through RIT's College of Liberal Arts, and other required credit hours as determined by the program of study. This degree prepares students to apply for entry to several bachelor's degree programs in other colleges of RIT.

### Transfer programs

Transfer programs offered through NTID prepare qualified students for transfer into baccalaureate degree programs in other colleges of RIT.

### Pre-baccalaureate studies

The pre-baccalaureate studies program is available as a bridge into 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. 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 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 studies/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 assist students in evaluating the information and making a career decision. 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 coordinator.

## Educational opportunities in other RIT colleges

In addition to NTID's programs, qualified deaf and hard-of-hearing students also may enroll as baccalaureate or master's degree students in one of the more than 200 professional programs offered through RIT's other seven colleges: Applied Science and Technology, Business, Computing and Information Sciences, Engineering, Imaging Arts and Sciences, Liberal Arts, and Science. Students may also simply take classes in the other RIT colleges.

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, speech-to-text, and notetaking services for deaf and hard-of-hearing students taking courses in the other seven colleges of RIT and for campus activities outside of the classroom.

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, and submit an audiological record completed by a certified audiologist (CCC-A), and complete standard RIT admission forms. See Admissions section for more information.

Qualified students may choose to enroll in courses taught through the other seven 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 so that they may transfer directly into a program in one of RIT's colleges from another postsecondary program.

| CAREER-FOCUSED AND TRANSFER PROGRAMS OF NTID | RELATED EDUCATIONAL PROGRAMS OF OTHER RIT COLLEGES | |
|---|---|---|
| (Leading to diploma or 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, speech-to-text, and notetaking) | |
| **NTID PROGRAMS** | **OTHER RIT COLLEGES** | **OTHER RIT PROGRAMS** |
| Applied Computer Technology<br>Concentrations<br>• PC Technical Support<br>• Networking and Cyber Security<br>• Web Development and Database<br>• AS Transfer Program | College of Computing and Information Sciences | • Computer Science<br>• Information Technology |
| | College of Business | • Business Administration– Management Information Systems |
| | College of Computing and Information Sciences | • Information Technology |
| Applied Optical Technology | College of Applied Science and Technology | • Manufacturing Engineering Technology |
| Art and Computer Design | College of Imaging Arts and Sciences | • Art Education<br>• Ceramics/Ceramic Sculpture<br>• Computer Graphics Design<br>• Fine Arts (Illustration, Medical Illustration and Fine Arts Studio)<br>• Glass/Glass Sculpture<br>• Graphic Design<br>• Industrial and Interior Design<br>• Metal and Jewelry Design<br>• New Media Design and Imaging<br>• Woodworking and Furniture Design |
| Automation Technologies<br>• Applied Robotics | College of Applied Science and Technology | • Computer Integrated Manufacturing Engineering |
| • Semiconductor Technology | College of Engineering | • Microelectronic Engineering |
| Business Careers<br>• Accounting Technology<br>• Business<br>• Business Technology<br>• Administrative Support Technology | College of Business | • Business Administration<br>• Accounting<br>• Finance<br>• Graphic Media Marketing<br>• International Business<br>• Management<br>• Management Information Systems<br>• Marketing |
| Computer Aided Drafting Technology | College of Applied Science and Technology | • Civil Engineering Technology<br>• Mechanical Engineering Technology |
| Computer Integrated Marketing Technology | College of Applied Science and Technology | • Manufacturing Engineering Technology |
| | College of Engineering | • Industrial Engineering<br>• Mechanical Engineering |
| Digital Imaging and Publishing Technology | College of Imaging Arts and Sciences | • Biomedical Photographic Communications<br>• Film/Video/Animation<br>• Graphic Communications<br>• Graphic Media<br>• Imaging and Photographic Technology<br>• New Media Publishing<br>• Professional Photographic Illustration |
| Laboratory Science Technology | College of Applied Science and Technology | •Applied Arts and Sciences<br>• Environmental Management and Technology |
| | College of Science | • Biology<br>• Biotechnology<br>• Chemistry<br>• Environmental Science |

*Note: In addition to the career-focused and transfer degree 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.*

## First-Year Experiences Programming

### NTID programs

Beginning with summer orientation programming, 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 Summer Vestibule Program, which includes:

- placement testing in English and mathematics
- orientation/transition to college life activities
- career sampling
- counseling
- application to a career-focused or transfer program, career exploration studies or pre-baccalaureate studies, if needed

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, participate in RIT's week-long MyOrientation 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

## 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 general education curriculum fosters a spirit of lifelong learning and inquiry. Courses in science, mathematics, English, social science, the humanities, and deaf studies/American Sign Language 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 at NTID satisfies the general education distribution requirements for the AOS and diploma programs offered at NTID, prepares students for completing the College of Liberal Arts (COLA) 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.

### General education distribution requirements

| Degree | Freshman Seminar | Math and Science | Deaf Studies/ASL[1] | Language and Literature | Humanities | Social Sciences | Capstone |
|---|---|---|---|---|---|---|---|
| AS | 2 | 6 | | Liberal Arts (COLA)–8[2] | Liberal Arts (COLA)–8 | Liberal Arts COLA–8 | |
| AAS | 2 | 6 | 3 | Liberal Arts (COLA)–4[3] | Liberal Arts (COLA)–8 | Liberal Arts COLA–8 | 4 |
| AOS | 2 | 6 | (3)[1] | 12 | 6[4] | 6[4] | 3 |
| Diploma | 2 | 6 | (3)[1] | 12 | 3 | 3 | |

1. *The deaf studies/ASL requirement can be satisfied by taking three credits in American Sign Language or an identified deaf studies course. The three-credit course taken to fulfill the deaf 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 AS degrees are required to take Writing Seminar and one, four-credit Arts of Expression course.*
3. *Students earning AAS degrees are required to take Writing Seminar.*
4. *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.*

## 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 diploma, AOS, AAS, and AS 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 in the following areas during summer orientation: mathematics, American Sign Language, writing, and reading.

## 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 and literature:** The English program is designed to enable students to develop English literacy skills. There are three developmental sequences of courses in academic writing, nonfiction reading, and literature. The academic writing and nonfiction reading sequences each have courses at four levels (A–D), while the literature sequence has courses at three levels (B–D). There is also a two-course integrated sequence at level A for students who enter with weaker skills. This program provides the English literacy skills required for AOS and diploma programs at NTID while at the same time providing access to the College of Liberal Arts writing curriculum required for AS, AAS and baccalaureate degrees.

Students who plan to graduate with a diploma are required to complete 12 credits of English courses at level B. Students who plan to graduate with an 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, philosophy, and religion. 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, and makes use of 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 in the College of Imaging Arts and Sciences.

Students are required to take credits in the humanities and the social sciences for AOS degrees, diplomas, and certificates. The social sciences and humanities curricula each have courses at three levels (B-D). Students who plan to graduate with an 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 and/or the humanities will need to successfully complete courses at level B before taking courses at level C. Students who plan to graduate with a diploma are required to complete three credits of social sciences and three credits of humanities courses at the B level or higher.

### Deaf studies/American Sign Language

Students have an opportunity to study American Sign Language and learn about their heritage as deaf people through the deaf studies/ASL curriculum. All students are required to complete one three-credit course in deaf 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 studies courses also satisfy the social sciences and humanities requirements.

### Capstone

All students at the AAS and AOS level are required to complete the capstone seminar. This is an interdisciplinary course that applies the knowledge and skills acquired in the technical and arts and sciences courses to the study of social, cultural, and technological issues.

### Liberal arts requirements

Deaf and hard-of-hearing students enrolled in AAS, AS, or baccalaureate 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.

Liberal arts courses taught by NTID faculty members are designed especially for deaf students. Instructors use simultaneous communication and provide students with additional study guides and materials.

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, speech-to-text, and notetaking, may be requested by students. 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 is based on the Liberal Arts Placement Test or upon satisfactory completion of Written Communication II.

### Writing program

The College of Liberal Arts, through the NTID department of liberal studies, offers a two-course writing sequence (Written Communication I and II) 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. Eligible students must meet with the liberal arts instructional/support faculty before registering for these courses.

**NATIONAL TECHNICAL INSTITUTE FOR THE DEAF FIXED CHARGES 2006–07 (DOMESTIC STUDENTS)**

| | Summer Vestibule Program 8/19-9/3/06 | NSSO* 8/27-9/3/06 | Fall 9/4-11/10/06 | Winter 12/4/06-2/23/07 | Spring 3/12-5/18/07 | Summer 6/4-8/10/07 |
|---|---|---|---|---|---|---|
| Tuition | $509 | $29 | $2,853 | $2,853 | $2,853 | $2,853 |
| Room | 176 | 0 | 1,678 | 1,678 | 1,678 | 1,678 |
| Board (standard meal plan) | 126 | 0 | 1,238 | 1,238 | 1,238 | 1,238 |
| Student fees † | | | 214 | 214 | 214 | 214 |
| Orientation fee ‡ | | | 165 | | | |
| Student Sickness Insurance fee | | | 660§ | | | |
| **Total** | **$811** | **$29** | **$6,808** | **$5,983** | **$5,983** | **$5,983** |

*NOTE: Required books and supplies will impact these figures.*
** 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 ($63); student activities fee ($65); athletics fee ($7); Student Alumni Union fee ($77); and NTID activities fee ($2).*
*‡ Charge to defray cost of fall Orientation program for freshmen and new students only*
*§ The Sickness Insurance Fee is estimated. It has not been finalized.*

*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.*

## 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 the students' responsibility. These costs vary depending each student's program of study. Annual estimated cost for books and supplies for the 2006–07 academic year ranges between $450–$800.

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, but will be charged room, board, and residence hall fees only if they live on campus while participating in a co-op experience.

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 2006–07 is approximately $660.

### Deaf and hard-of-hearing applicants

Deaf or 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 for transfer directly into a program in another RIT college with NTID sponsorship. Deaf students accepted to the Summer Vestibule Program will have their transfer credit 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) or toll-free in the U.S. and Canada at 1-866-644-6843 (voice/TTY), or via e-mail at ntidadmissions@rit.edu. Deaf and hard-of-hearing students may take tours offered at NTID 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. The Lyndon Baines Johnson Building and the Hugh L. Carey Building house laboratories, offices, communication studies and services centers, classrooms, and a 500-seat theater.

Almost all classrooms and laboratories support the latest technologies for teaching and include high-resolution projection displays, digital document displays, VCRs, assistive listening systems, Internet access, and other computer-based services. In addition, classrooms are specifically designed to meet the unique needs of both students and teachers.

All dormitory rooms, campus apartments, classrooms, laboratories, and administrative areas can access the campus-wide computer network with wired or wireless connections.

NTID's main academic building, the Lyndon B. Johnson Building, 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.

One of the features of the Lyndon B. Johnson Building 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.

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 mix of old and new apartment units are also 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 include ABC, CBS, 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 channel services 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.

Construction of a new facility, the Student Development Center, is underway. This facility is scheduled for completion by the fall of 2006 and will include space for student government, clubs and organizations, a study center, various small meeting and work rooms, and a large multipurpose space for both formal and informal large lectures, social events, and other community activities. This new facility will interconnect the LBJ building and the dining commons, making it a strong focal point for all students, faculty, and staff. Simultaneously, the adjacent dining hall has been remodeled to provide a selection of up-to-date dining choices.

## Telecommunications

Deaf, hard-of-hearing, and speech-impaired students can access telephone services through various TTY, VRS, and computer-based relay services. The relay service operates 24-hours-a-day, seven days a week, and can be used to make and receive campus, local, long-distance, and international calls. While there is no charge for using relay services, students are responsible for their personal phone bills.

## Communication skills

The attainment of 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 in collaboration 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 implants. Students may visit the shop to receive information about hearing loss and cochlear implants or to schedule clinical appointments, obtain new ear molds, 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 services department

Every NTID-supported student is assigned to a counselor in the NTID counseling services department. Counselors provide individual personal, social, career, and academic counseling services to their students. In addition, the counselors work closely with students, and the faculty in the 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 Career Resource and Testing Center (CRTC) provides students with materials and information on careers and college programs with special services for deaf and hard-of-hearing students. Services include access to the computerized guidance system, and aptitude, interest, and personality testing, as well as non-credit, skill-building workshops on study skills, learning styles, and stress management.

The CRTC is staffed by a professional counselor from the NTID counseling services department with the help of student assistants. It is open daily with evening hours available during weekdays. For additional information or an appointment, call (585) 475-6468 (voice/TTY).

### 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.

Psycho-educational programs and workshops are also 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. All NTID programs require a co-op work experience. A majority of students complete the co-op experience during the summer; however, co-op can be completed anytime during the year, consistent with student's course schedule.

### Employment

Employment of RIT's deaf and hard-of-hearing graduates is a high priority for NTID. To help ensure that graduates obtain program-related employment, NTID's Center on Employment (NCE) assigns each new student an adviser experienced in employment assistance in the various academic concentrations. To help prepare students for obtaining cooperative work experiences and permanent employment, students take a required course, Job Search Process.

NCE employment advisers are in constant contact with potential employers throughout the United States. In addition, NCE hosts an annual job fair attended by national employers. Such services have contributed to a high employment rate of deaf and hard-of-hearing NTID/RIT graduates.

### Research

NTID faculty members conduct research to understand and support the education of deaf and hard-of-hearing students in a variety of contexts. Researchers hope to promote the personal, educational, and career success of RIT students. Students are invited to participate in research; this can mean taking tests and being part of research studies or conducting research themselves in collaboration with NTID professionals. Researchers sometimes contact graduates to see how well their education has prepared them for work and other aspects of their lives.

## ASL – English Interpretation

***Donna Gustina, Interim Chairperson***

*www.rit.edu/ntid/ASLIE*

## BS Degree Program

### On-the-job responsibilities

The BS degree program in ASL-English interpretation prepares advanced-level sign language interpreters for work in settings where deaf and hard-of-hearing people need the use of interpretation services. This degree allows students to develop specialized skills for working in educational and community settings.

### Places of employment

Graduates of this program will find work in a variety of settings, including: elementary, secondary, and post-secondary educational institutions; community service organizations; hospitals and mental health agencies; 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 completion of additional admission materials obtained from the NTID Admissions Office.

**Academic preparation:**

- Applicants are required to have successfully completed an associate degree in sign language interpreting.
- Associate degree should include at least one science course (with a lab), one math course, Writing Seminar and an Arts of Expression course (or the equivalent) with a grade of "B" or better, two courses in the humanities (four quarter credits each), and two courses in the social sciences (four quarter credits).
- College GPA of 3.0 or better, based on a 4.0 system

**Applicants to the program must submit an interpreting portfolio that contains the following:**

- A 10–15-minute videotape demonstrating the applicant discussing an issue using American Sign Language
- A 10–15-minute videotape demonstrating an unrehearsed sample of the applicant's sign-to-voice interpreting ability
- A 10–15-minute videotape demonstrating an unrehearsed sample of the applicant's voice-to-sign interpreting ability
- A documented term paper written for a college-level course

- At least three letters of recommendation from deaf consumers, employers, and/or the applicant's past practicum/internship supervisor(s) indicating the applicant's potential as an interpreter and contributor to the profession. The applicant's final practicum/internship evaluation may be included in lieu of a letter.

*Note: It is necessary for students in the program to be able to process auditory information.*

For more information on application requirements and procedures, contact NTID Admissions at (585) 475-6700 (voice/TTY) or toll-free in the U.S. and Canada at 1-866-644-6843 (voice/TTY).

**ASL-English interpretation, BS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Advanced Interactive Interpreting 0875-400 | 6 |
| | Interpreting Frozen and Literary Texts 0875-411 | 4 |
| | Professional Electives | 8 |
| | Practicum and Seminar II 0875-415 | 4 |
| | Liberal Arts* | 12 |
| | Approved Electives | 8 |
| | Mathematics Elective (College of Science) | 4 |
| | Science (College of Science) | 4 |
| | Wellness Education† | 0 |
| Second Year | Advanced Sign-to-Voice 0875-501 | 4 |
| | Advanced Voice-to-Sign 0875-502 | 4 |
| | Interpreting Internship 0875-515 | 12 |
| | Issues in Interpreting 0875-520 | 4 |
| | Professional Elective | 4 |
| | Free Electives | 12 |
| | Science (College of Science) | 4 |
| | *Total Credit Hours* | *94* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## AAS Degree Program

### On-the-job responsibilities

The AAS degree program in ASL-English interpretation prepares entry-level sign language interpreters for work in settings where deaf and hard-of-hearing people need the use of interpretation services.

### Places of employment

Graduates of this program will find 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.

### Special entrance requirements

In addition to RIT's general admissions procedures, the ASL-English interpretation program requires completion of additional admission materials obtained 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, three years of science and mathematics, two years of a foreign language, and a minimum of a "B" average in English.
- SAT scores: The Critical Reading score should be at least 550 and the Math score should be at least 500.

**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.

**Application essay:**

- A writing sample will be judged on vocabulary, grammar, mechanics, style, and creativity.

**American Sign Language:**

- Applicants must demonstrate proficiency in ASL at an intermediate level as measured by the departmental skill assessment.

*Note: It is necessary for students in this program to be able to process auditory information.*

For more information on application requirements and procedures, contact NTID Admissions at (585) 475-6700 (voice/TTY) or toll-free in the U.S. and Canada at 1-866-644-6843 (voice/TTY).

**ASL-English interpretation, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | American Sign Language IV, V, VI 0875-301, 302, 303 | 12 |
| | Intercultural Communication for Interpreters 0875-211 | 4 |
| | Introduction to the Field of Interpreting 0875-213 | 4 |
| | Discourse Analysis for Interpreters 0875-310 | 4 |
| | Processing Skills Development 0875-311 | 4 |
| | Voice-to-Sign Interpreting I 0875-315 | 4 |
| | Sign-to-Voice Interpreting I 0875-316 | 4 |
| | Writing Seminar 0502-227 | 4 |
| | Mathematics (College of Science) | 4 |
| | Wellness Education† | 0 |
| Second Year | Voice-to-Sign Interpreting II 0875-325 | 4 |
| | Sign–to-Voice Interpreting II 0875-326 | 4 |
| | Deaf Culture and Community 0875-212 | 4 |
| | Practical and Ethical Applications 0875-320 | 4 |
| | Introduction to Transliteration 0875-330 | 4 |
| | Practicum and Seminar I 0875-350 | 4 |
| | Science (College of Science) | 4 |
| | Liberal Arts | 20 |
| | *Total Credit Hours* | *92* |

** Please see Liberal Arts General Education Requirements for more information.*
*† Please see Wellness Education Requirement for more information.*

## Applied Computer Technology

***Elissa Olsen, Chairperson***

*www.rit.edu/ntid/ACT*

Careers that involve work with computers increase daily. Computers are an important part of business, industry, and other parts of the economy. Computer careers involve maintaining computer software and hardware, networking so that computers can communicate with one another, and developing and working with various applications such as Web and database.

Students may choose from AOS or AAS degree programs in information technology and computing, or they may choose the AS degree (transfer) program.

### Program concentrations

Students who choose the AOS or AAS degree options will select a program concentration in the second year. The concentrations include: PC technical support, Web development and database, and networking and cyber security.

**PC technical support:** Students who select this concentration will develop skills specific to working with office professionals to solve computer-related problems. This may involve work at a help desk responding to client PC problems or performing setup, upgrades, and repairs to PCs and PC peripherals.

**Web development and database:** Students who select this concentration will develop skills specific to designing and supporting websites. This may involve developing or modifying the website as well as developing and supporting the database linked to the website.

**Networking and cyber security:** Students selecting this concentration will develop skills specific to network and network security support. This may involve server set-up, support and administration, network setup, troubleshooting or repair, identifying and implementing security policies, and installing appropriate hardware and software to support a secure and robust network.

### On-the-job responsibilities

**Students who earn AOS and AAS degrees** work as computer technicians, personal computer support specialists, network technicians, network security technicians, network administrators, Web specialists, or database specialists.

### 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 businesses that use computers and networks.

## AS Degree (transfer) Program

The associate of science in applied computer technology is a two-year degree program to prepare deaf and hard-of-hearing students to enter and successfully complete a baccalaureate program in the information technology program in RIT's B. Thomas Golisano College of Computing and Information Sciences (GCCIS). As a direct transfer program specifically designed to articulate with GCCIS, NTID's AS degree maximizes the number of credits a student may transfer toward a baccalaureate degree within GCCIS.

### Prerequisites

The following prerequisites are necessary for admission into the applied computer technology program:

- **ACT** composite test score of 16 or better
- **English:** placement into the College of Liberal Arts Writing Seminar course. Students who qualify for Written Communications II (0502-111) will be considered for admission.
- **Mathematics:** ready for NTID's Elements of Trigonometry

### Transfer Requirements

To transfer to GCCIS, the student 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**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Applications Software 0805-201 | 3 |
| | PC Hardware I, II 0805-216, 217 | 6 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | Introduction to UNIX 0805-220 | 3 |
| | Advanced Math 0884-275 | 4 |
| | Liberal Arts* | 8 |
| | PC Operating Systems 0805-215 | 3 |
| | Computing Fundamentals 0853-310 | 4 |
| | Lab Science§ | 4 |
| | Communications Elective** | 4 |
| Second Year | Programming for IT 4002-217‡ | 4 |
| | Programming for IT 4002-2xx‡ | 4 |
| | Programming for IT 4002-2xx‡ | 4 |
| | Introduction to Multimedia 4002-320 | 4 |
| | Introduction to Networking and Security 0805-224 | 3 |
| | Data Communications and Networks 4002-341 | 4 |
| | Liberal Arts* | 16 |
| | Lab Science§ | 4 |
| | Philosophy or STV 05xx-xxx | 4 |
| | Wellness Education† | 0 |
| | *Total Quarter Credit Hours* | *92* |

**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. All courses taken from NTID must be at Level D.*
*§ Lab Science—Any NTID science courses numbered 200 or higher offered for 4 credits with lab component. These courses include: Human Genetics and Evolution (0885-281), Scientific Basics 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.*

## AOS Degree Program

**Upon completing the AOS degree program, students will qualify for a number of positions, including:** computer technicians, personal computer support specialists; PC and network support specialists.

### 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 level C English or above (nonfiction reading, academic writing, and literature). 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 Elements of Geometry (0884-170) or a higher level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Applied computer technology, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Applications Software 0805-201 | 3 |
| | PC Hardware I, II 0805-216, 217 | 6 |
| | PC Operating Systems 0805-215 | 3 |
| | Introduction to Networking and Security 0805-224 | 3 |
| | Networking Essentials 0805-225 | 3 |
| | Client/Server Networks 0805-226 | 3 |
| | Web Development I, II 0805-251, 252 | 6 |
| | Foundations of Algebra 0884-180 | 4 |
| | Math Elective (Level C or above) | 4 |
| | Job Search Process 0806-101 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | English (Level C or above) | 8 |
| | Communications | 3 |
| | Wellness Education† | 0 |
| | Cooperative Education 0805-299 | Co-op |
| Second Year | Introduction to Programming 0805-230 | 3 |
| | Introduction to UNIX 0805-220 | 3 |
| | Microcomputer Database Software 0805-310 | 3 |
| | Concentration Courses** | 12 |
| | Deaf Studies/ASL* | (3) |
| | Technical Elective*** | 6 |
| | Science (B Level or above) | 3 |
| | English (C Level or above) | 4 |
| | Social Sciences | 3 |
| | Humanities | 6 |
| | Employment Seminar 0806-201 | 1 |
| | Wellness Education† | 0 |
| | Capstone Seminar 0882-295 | 3 |
| | *Total Quarter Credit Hours* | *97* |

*† Please see Wellness Education Requirement for more information.*
** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*** Concentration courses for PC technical support are: Orientation to Business (0804-101), Introduction to MAC (0805-351), Server Management and Security (0805-337), and Computer Interfacing (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). Concentration courses for Web development and database are: Client Side Scripting (0805-320), Database Integration (0805-321), Web Server Technologies (0805-322) and Advanced Web Development (0805-323).*
**** Students may select from applied computer technology electives or approved electives from other majors.*

**Applied computer technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Applications Software 0805-201 | 3 |
| | PC Hardware I, II 0805-216, 217 | 6 |
| | PC Operating Systems 0805-215 | 3 |
| | Introduction to Networking and Security 0805-224 | 3 |
| | Networking Essentials 0805-225 | 3 |
| | Client/Server Networks 0805-226 | 3 |
| | Web Development I, II 0805-251, 252 | 6 |
| | Foundations of Algebra 0884-180 | 4 |
| | Math Elective (Level C or above) | 4 |
| | Job Search Process 0806-101 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 4 |
| | Communications | 3 |
| | Wellness Education† | 0 |
| | Cooperative Education 0805-299 | Co-op |
| Second Year | Introduction to Programming 0805-230 | 3 |
| | Introduction to UNIX 0805-220 | 3 |
| | Microcomputer Database Software 0805-310 | 3 |
| | Concentration Courses** | 12 |
| | Deaf Studies/ASL* | (3) |
| | Technical Elective*** | 6 |
| | Science (B Level or above) | 3 |
| | Liberal Arts* | 12 |
| | Communications | 3 |
| | Employment Seminar 0806-201 | 1 |
| | Wellness Education† | 0 |
| | Capstone Seminar 0882-295 | 3 |
| | *Total Quarter Credit Hours* | *99* |

**Please see General Education distribution requirements chart for more information.*
*† Please see Wellness Education Requirement for more information.*
*** Concentration courses for PC technical support are: Orientation to Business (0804-101), Introduction to MAC (0805-351), Server Management and Security (0805-337), and Computer Interfacing (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). Concentration courses for Web development and database are: Client Side Scripting (0805-320), Database Integration (0805-321), Web Server Technologies (0805-322) and Advanced Web Development (0805-323).*
**** Students may select from applied computer technology electives or approved electives from other majors.*

## AAS Degree Program

**Upon completing the AAS degree program, students will qualify for a number of positions, including:** computer technicians, personal computer support specialists, and PC and network support specialists.

### 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—AAS:** Placement into the College of Liberal Arts Writing Seminar 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:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

# Applied Mechanical Technology*

***Ronald J. Till, Program Chair***

## AAS (Transfer) Degree Program

### Program description

The associate in applied science (AAS) degree in applied mechanical technology (AMT) is a two-year degree program to prepare students to enter and successfully complete a baccalaureate program in RIT's College of Applied Science and Technology (CAST) in manufacturing or mechanical engineering technology. Flexible entry points in NTID English and science or NTID math and science, and AMT course experiences systematically address the preparatory challenges that deaf and hard-of-hearing students face upon entry to the CAST programs. Students in the applied mechanical technology program receive a comprehensive foundation in precision measurement, precision machining, computer aided design (CAD) applications, strength of materials and machine design. As a direct transfer program specifically designed to articulate with CAST, NTID's transfer degree maximizes the number of credits students may transfer toward a baccalaureate degree in manufacturing or mechanical engineering technology.

### Prerequisites

***ACT*** composite test score of 16 or higher.
***English:*** placement into the College of Liberal Arts course, Writing Seminar. Students who qualify for Written Communication II (0502-111) will be considered for admission.
***Mathematics:*** ready for NTID's Elements of Trigonometry (0884-220)
***Science:*** ready for entry into College of Science College Physics I after a single NTID science course

### Transfer requirements

Students who graduate in good standing from NTID and have maintained a grade of C or better in the six NTID AMT technical courses should be well prepared for RIT's CAST because of the full complement of courses established in the program curriculum.

**Applied mechanical technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Engineering Fundamentals 0813-220 | 4 |
| | Computing Tools for Engineering Tech 0890-212 | 4 |
| | Elements of Trigonometry 0884-220 or NTID Science or Written Communication II 0502-111 | 4 |
| | Elements of Trigonometry 0884-220 or NTID Science or Written Communication II 0502-111 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | Manufacturing Processes 0813-222 | 4 |
| | CAD Applications in Engineering Tech 0890-214 | 4 |
| | Advanced Math 0884-275 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education § | 0 |
| | Industrial Processes 0813-224 | 4 |
| | Design, Dimensioning & Tolerancing 0890-216 | 4 |
| | College Physics I 1017-211 | 4 |
| | | 4 |
| Second Year | | |
| | Introduction to Materials Technology 0610-211 | 3 |
| | Materials Testing 0610-304 | 1 |
| | College Physics II 1017-212 | 4 |
| | Introduction to Statics 0610-302 | 4 |
| | 0610-303 Strength of Materials | 4 |
| | 1016-231 Calculus for Engineering Tech I | 4 |
| | 1017-213 College Physics III | 4 |
| | Liberal Arts* | 12 |
| | 0610-315 Principles of Mechanical Design 1 | 4 |
| | 0610-305 Pneumatic & Hydraulic Systems | 4 |
| | 1016-232 Calculus for Engineering Tech II | 4 |
| | ***Total Quarter Credit Hours*** | ***98*** |

**Please see General Education distribution requirements chart for more information. AMT students are not required to take Capstone or Deaf studies/ASL courses.*
*§ Please see Wellness Education Requirement for more information.*

*This program is pending approval by the New York State Department of Education.

## Applied Optical Technology

***Ronald J. Till, Chairperson***
*www.rit.edu/ntid/AOT*

The applied optical technology (AOT) program prepares students to work in the fields of precision optics and ophthalmic lens fabrication. Students may choose from AOS or AAS degree options. Students develop skills in blocking, edging, curve generating, process control, and testing methods to ensure the highest quality optical components. Additional skill sets will incorporate troubleshooting lens systems, utilizing automation equipment, tooling, testing, and overall quality assessment to ensure compliance with customer specifications. They have the opportunity to train on equipment used by the industry, including instructional interferometers, autocollimators, spectrometers, and computer numerical control technology. Students work in a highly technical atmosphere producing optical elements designed for use in a wide range of applications such as aerospace, medical, cinematography, and military.

## AOS Degree Program

### On-the-job responsibilities

Optical technicians set up and operate equipment, execute precision grinding, polishing, and edging processes to produce optical components/systems, and perform end product metrology. They transcribe prescriptions, select appropriate lens forms, and perform lensometer evaluation.

### Places of employment

The program prepares graduates for technical jobs in precision optics manufacturing industries, and retail and wholesale optical laboratories.

**Positions for which graduates will qualify include** entry-level hands-on laboratory and/or manufacturing positions in the precision optics and ophthalmic sectors.

### Prerequisites

**English:** Placement into level C English or above (nonfiction reading, academic writing, and literature). 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), Elements of Geometry (0884-170), or a higher level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into Optical Technology Physics (0885-200) or a higher level course. Typically, students entering this program will have completed at least two years of high school science.

**Applied optical technology, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Optical Math I, II 0827-111, 112 | 6 |
| | Optical Terminology I, II 0827-161, 162 | 6 |
| | Prescription Analysis 0827-115 | 3 |
| | Optical Processes I, II 0827-200, 201 | 9 |
| | Foundations of Algebra 0884-180 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Fundamental Geometry 0884-185 | 1 |
| | Freshman Seminar 0887-200 | 2 |
| | English (Level C or above) | 12 |

| | | |
|---|---|---|
| Second Year | Optical Processes III 0827-202 | 5 |
| | Orientation to Lens Surfacing 0827-280 | 4 |
| | Lens Design 0827-117 | 3 |
| | Lab Simulation I, II 0827-225, 226 | 10 |
| | Fundamental of Optical Testing 0827-235 | 3 |
| | Optical Technology Physics 0885-200 | 4 |
| | Technical Elective | 3 |
| | Precision Measurement 0813-154 | 2 |
| | Blueprint Reading I 0813-139 | 2 |
| | Job Search Processes 0806-101 | 2 |
| | Humanities//Social Sciences | 9 |
| | Wellness Education† | 0 |
| | Cooperative Education 0827-299 | Co-op |
| Third Year | Precision Optics Manufacturing 0827-240 | 3 |
| | Optical Tech Seminar 0827-251 | 2 |
| | Employment Seminar 0806-201 | 1 |
| | Capstone Seminar 0882-295 | 3 |
| | Deaf Studies/ASL* | 3 |
| | *Total Quarter Hour Credits* | *106* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*†Please see Wellness Education Requirement for more information.*

| | | |
|---|---|---|
| Second Year | Optical Processes III 0827-202 | 5 |
| | Orientation to Lens Surfacing 0827-280 | 4 |
| | Lens Design 0827-117 | 3 |
| | Lab Simulation I, II 0827-225, 226 | 10 |
| | Fundamental of Optical Testing 0827-235 | 3 |
| | Optical Technology Physics 0885-200 | 4 |
| | Technical Elective | 3 |
| | Precision Measurement 0813-154 | 2 |
| | Blueprint Reading I 0813-139 | 2 |
| | Job Search Processes 0806-101 | 2 |
| | Liberal Arts* | 8 |
| | Wellness Education† | 0 |
| | Cooperative Education 0827-299 | Co-op |
| Third Year | Precision Optics Manufacturing 0827-240 | 3 |
| | Optical Tech Seminar 0827-251 | 2 |
| | Employment Seminar 0806-201 | 1 |
| | Capstone Seminar 0882-296 | 4 |
| | Deaf Studies/ASL | 3 |
| | *Total Quarter Hour Credits* | *106* |

**Please see General Education distribution requirements chart for more information.*
*†Please see Wellness Education Requirement for more information.*

## AAS Degree Program

### On-the-job responsibilities

Optical technicians set up and operate equipment and execute precision grinding, polishing, and edging processes to produce optical components/systems, and perform end-product metrology. They transcribe prescriptions, select appropriate lens forms, and perform lensometer evaluation.

### Places of employment

The program prepares graduates for technical jobs in precision optics manufacturing industries, and retail and wholesale optical laboratories.

**Positions for which graduates will qualify include** entry level hands-on laboratory and/or manufacturing positions in the precision optics and ophthalmic sectors.

### Prerequisites

**English:** Placement into the College of Liberal Arts Writing Seminar 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), Elements of Geometry (0884-170), or a higher level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into Optical Technology Physics (0885-200) or a higher level course. Typically, students entering this program will have completed at least two years of high school science.

**Applied optical technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Optical Math I, II 0827-111, 112 | 6 |
| | Optical Terminology I, II 0827-161, 162 | 6 |
| | Prescription Analysis I 0827-115 | 3 |
| | Optical Processes I, II 0827-200, 201 | 9 |
| | Foundations of Algebra 0884-180 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Fundamental Geometry 0884-185 | 1 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 8 |

## Art and Computer Design

***John W. Cox, Chairperson***
*www.rit.edu/ntid/ACD*

Becoming a professional artist requires a variety of computer-based and traditional art skills. The art and computer design program offers a seven-quarter curriculum for students who wish to develop these skills to enter the job market directly after graduation, or to continue on for further studies.

### Introductory courses

Several introductory courses are available each quarter for students who have chosen this program as their major, or for those who have not yet matriculated into the art and computer design program. Students can take these courses as part of the process of selecting a major, with all credits counting toward degree requirements in art and computer design.

### First-year courses

In addition to the introductory courses taken in the first year, students will also take courses directly related to their major. These courses provide basic skills in both computer-based and traditional media and prepare students for either advanced courses in art and computer design or for continued study toward a bachelor's degree in one of the programs from the College of Imaging Arts and Sciences.

### Work experience

All NTID art and computer design students gain work experience through a required, one-quarter external cooperative education experience. In addition, two advanced courses provide experience in completing real work assignments for various on- and off-campus clients.

### AOS and AAS degree programs

NTID art and computer design programs prepare students for careers in the art field. Students may choose from AOS or AAS programs. The AOS degree is designed for students who wish to pursue employment after graduation. The AAS degree is for

students who intend to continue their education toward a bachelor's degree in art.

In addition, students may take courses in related fields such as computer technology, imaging, and publishing.

## On-the-job responsibilities

Graduates use computer-based and traditional methods of design to: produce drawings, layouts, and production art for advertising, sales promotion, public relations, and corporate communications; create visual materials for brochures, pamphlets, instructional media, magazines, newspapers, newsletters, and posters; prepare artwork for printing; and use computer hardware and software and other art studio equipment.

## Places of employment

Graduates usually find employment in a variety of organizations, including: computer graphics studios; advertising agencies; commercial art studios; newspapers; manufacturing, printing, and publishing firms; educational institutions; and government agencies.

## Positions for which graduates qualify

Upon completion of the art and computer design program, students will qualify for professional positions, such as computer graphics artist, desktop publishing artist, layout artist, and production artist, to name a few.

## Prerequisites

Successful completion of a sampling experience in art, either through the Summer Vestibule Program or the career exploration course offered during the academic year, is a prerequisite for the art and computer design program. Through this sampling experience, students must demonstrate basic skills in the following areas: program/career information, freehand drawing, design, and layout. Students' work is assessed by faculty members using a skill checklist.

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature courses at the 200 level or higher). Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**English—AAS:** Placement into College of Liberal Arts Writing Seminar 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 the Concepts of Measurement course. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into level B science course (courses at the 150 level or higher). Typically, students entering this program will have completed at least two years of high school science.

**Art and computer design, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Visual Idea Development 0825-105 | 2 |
| | Concepts of Computer Graphics 0825-109 | 1 |
| | Bit-Map Graphics 0825-110 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Perspective Drawing 0825-204 | 2 |
| | Figure Drawing 0825-206 | 2 |
| | Drawing Composition 0825-208 | 2 |
| | Vector Graphics 0825-210 | 2 |
| | Basic Design 0825-211 | 2 |
| | Color in Design 0825-212 | 2 |
| | Design for Graphics 0825-213 | 2 |
| | Basic Typography 0825-221 | 2 |
| | Electronic Layout Programs 0825-230 | 2 |
| | Mathematics (Level B)* | 3 |
| | English (Level C or above) | 12 |
| | Science (Level B) | 3 |
| Second Year | Job Search Process 0806-101 | 2 |
| | Graphics for Communication 0825-301 | 3 |
| | Digital Illustration 0825-310 | 2 |
| | Art History I, II 0825-315, 316 | 6 |
| | History of Graphic Design 0825-317 | 3 |
| | Type in Design 0825-321 | 2 |
| | Introduction to Print Design 0825-324 | 2 |
| | Basic Production 0825-322 | 2 |
| | Introduction to Web Design 0825-344 | 2 |
| | Concentrations: choose one | |
| | Print Design | |
| | Grid Systems 0825-326 | 2 |
| | Identity Systems Design 0825-327 | 3 |
| | Multipage Design 0825-328 | 3 |
| | Production for Designers 0825-329 | 2 |
| | Web Design | |
| | Creating Web Graphics 0825-346 | 2 |
| | Internet Technologies I, II 0805-251, 252 | 6 |
| | Designing Websites 0825-347 | 2 |
| | Cooperative Education 0825-299 | Co-op |
| | Graphics Studio 0825-351 | 4 |
| | Open Electives† | 2 |
| | Deaf Studies/ASL‡ | (3) |
| | Social Science | 6 |
| | Wellness Education§ | 0 |
| | Humanities | 3 |
| Third Year | Employment Seminar 0806-201 | 1 |
| | Portfolio Presentation 0825-352 | 4 |
| | Open Electives† | 2 |
| | Capstone 0882-295 | 3 |
| | Humanities | 3 |
| | *Total Quarter Credit Hours* | *105* |

** Satisfied by Concepts of Measurement (0884-150)*
*† Open plus electives must total four quarter credit hours*
*‡ This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*§ Please see Wellness Education Requirement for more information.*

**Art and computer design, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Visual Idea Development 0825-105 | 2 |
| | Concepts of Computer Graphics 0825-109 | 1 |
| | Bit-Map Graphics 0825-110 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Perspective Drawing 0825-204 | 2 |
| | Figure Drawing 0825-206 | 2 |
| | Drawing Composition 0825-208 | 2 |
| | Vector Graphics 0825-210 | 2 |
| | Basic Design 0825-211 | 2 |
| | Color in Design 0825-212 | 2 |
| | Design for Graphics 0825-213 | 2 |
| | Basic Typography 0825-221 | 2 |
| | Electronic Layout Programs 0825-230 | 2 |
| | Mathematics (Level B) ** | 3 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 4 |
| | Science (Level B) | 3 |

| | | |
|---|---|---|
| Second Year | Job Search Process 0806-101 | 2 |
| | Graphics for Communication 0825-301 | 3 |
| | Digital Illustration 0825-310 | 2 |
| | Art History I, II 0825-315, 316 | 6 |
| | History of Graphic Design 0825-317 | 3 |
| | Type in Design 0825-321 | 2 |
| | Introduction to Print Design 0825-324 | 2 |
| | Basic Production 0825-322 | 2 |
| | Introduction to Web Design 0825-344 | 2 |
| | Concentrations (choose one) | |
| | Print Design | |
| | Grid Systems 0825-326 | 2 |
| | Identity Systems Design 0825-327 | 3 |
| | Multipage Design 0825-328 | 3 |
| | Production for Designers 0825-329 | 2 |
| | Web Design | |
| | Creating Web Graphics 0825-346 | 2 |
| | Internet Technologies I, II 0805-251, 252 | 6 |
| | Designing Websites 0825-347 | 2 |
| | Cooperative Education 0825-299 | Co-op |
| | Graphics Studio 0825-351 | 4 |
| | Open Electives† | 2 |
| | Deaf Studies/ASL | 3 |
| | Liberal Arts* | 12 |
| | Wellness Education§ | 0 |
| Third Year | Employment Seminar 0806-201 | 1 |
| | Portfolio Presentation 0825-352 | 4 |
| | Capstone Seminar 0882-296 | 4 |
| | Open Electives† | 2 |
| | *Total Quarter Credit Hours* | *105* |

** Please see General Education distribution requirements chart for more information.*
*** Satisfied by Concepts of Measurement (0884-150)*
*† Open electives must total four-quarter credit hours.*
*§ Please see Wellness Education Requirement for more information.*

## Automation Technologies

***Ronald J. Till, Chairperson***
*www.rit.edu/ntid/AT*

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. Students may choose from either the AOS or AAS degree program. Within each of these two degree options, students build on a set of core skills and choose to concentrate in one of two areas, applied robotics or semiconductor fabrication. Graduates will be particularly well-suited to take advantage of growing employment opportunities in these expanding industries.

### On-the-job responsibilities

Automation technology technicians' responsibilities include installing, troubleshooting, repairing, upgrading, and maintaining automated systems and their components.

### Places of employment

The program prepares graduates for technical jobs in the robotics and semiconductor industries.

## AOS degree applied robotics option

Positions for which graduates qualify include: robotics technician, semiconductor maintenance technician, semiconductor process technician, automation systems technician, electromechanical technician, instrumentation technician, engineering technician, fluid power controls/system technician, quality control technician, and process control technician.

### Prerequisites

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature). Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Placement into Integrated Algebra (0884-212) or Elements of Trigonometry (0884-220) 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 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 is beneficial.

**Automation technologies, AOS degree, applied robotics option, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Survey of Automation Technologies 0891-201 | 3 |
| | Applied Circuits 0805-212 | 4 |
| | Vocabulary Development 0860-003 | 0 |
| | Digital Logic 0805-240 | 3 |
| | Robotics Fundamentals 0891-218 | 1 |
| | Pneumatic and Hydraulic Systems 0891-210 | 3 |
| | Electronics 0805-245 | 3 |
| | Electromechanical Devices 0891-214 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Physics I 0885-201 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing III 0883-211 | 4 |
| | Nonfiction Reading 0883-210 | 4 |
| | Job Search 0806-101 | 2 |
| | Wellness Education‡ | 0 |
| Second Year | Automated Systems I, II 0891-220, 320 | 8 |
| | Automated Systems Troubleshooting 0891-230 | 4 |
| | Programming Concepts 0891-216 | 4 |
| | Programmable Logic Controllers Programming 0891-314 | 4 |
| | Applied Robotics 0891-318 | 4 |
| | Mechanical Devices and Systems 0891-316 | 3 |
| | Automated Process Control 0813-256 | 3 |
| | Advanced Math 0884-275 | 4 |
| | Advanced Topics in Mechanics 0885-203 | 4 |
| | Deaf Studies/ASL * | (3) |
| | Humanities | 3 |
| | Analyzing Literature 0883-200 | 4 |
| | Cooperative Education 0813-299 | Co-op |
| Third Year | Automated Systems Troubleshooting 0891-330 | 4 |
| | Capstone AOS 0882-295 | 3 |
| | Humanities/Social Science | 9 |
| | *Total Quarter Credit Hours* | *106* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡Please see Wellness Education Requirement for more information.*

## AOS Degree Program—Semiconductor Technology Option

**Positions for which graduates qualify include:** robotics technician, semiconductor maintenance technician, semiconductor process technician, automation systems technician, electromechanical technician, instrumentation technician, engineering technician, fluid power controls/system technician, quality control technician, and process control technician.

### Prerequisites

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature). Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**Mathematics:** Placement into Integrated Algebra (0884-212), Elements of Trigonometry (0884-220), 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 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 is beneficial.

**Automation technologies, AOS degree, semiconductor technology option, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Survey of Automation Technologies 0891-201 | 3 |
| | Applied Circuits 0805-212 | 4 |
| | Vocabulary Development 0860-003 | 0 |
| | Digital Logic 0805-240 | 3 |
| | Robotics Fundamentals 0891-218 | 1 |
| | Pneumatic and Hydraulic Systems 0891-210 | 3 |
| | Electronics 0805-245 | 3 |
| | Electromechanical Devices 0891-214 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Physics I 0885-201 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing III 0883-211 | 4 |
| | Nonfiction Reading 0883-201 | 4 |
| | Job Search 0806-101 | 2 |
| | Wellness Education‡ | 0 |
| Second Year | Automated Systems I, II 0891-220, 320 | 8 |
| | Automated Systems Troubleshooting 0891-230 | 4 |
| | Vacuum and RF 0891-344 | 3 |
| | Programming Concepts 0891-216 | 4 |
| | Automated Process Control 0813-256 | 3 |
| | Advanced Topics in Mechanics 0885-203 | 4 |
| | Principles of Chemistry I, II 0885-211, 212 | 8 |
| | Deaf Studies/ASL* | (3) |
| | Humanities/Social Science | 3 |
| | Analyzing Literature 0883-200 | 4 |
| | Cooperative Education 0813-299 | Co-op |
| Third Year | Semiconductor Tooling 0891-350 | 4 |
| | Capstone AOS 0882-295 | 3 |
| | Advanced Math 0884-275 | 4 |
| | Humanities/Social Sciences | 9 |
| | *Total Quarter Credit Hours* | *106* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡Please see Wellness Education Requirement for more information.*

## AAS Degree Program—Applied Robotics Option

**Positions for which graduates qualify include:** robotics technician, semiconductor maintenance technician, semiconductor process technician, automation systems technician, electromechanical technician, instrumentation technician, engineering technician, fluid power controls/system technician, quality control technician, and process control technician.

### Prerequisites

**English—AAS:** Placement into the College of Liberal Arts Writing Seminar 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 Integrated Algebra (0884-212), Elements of Trigonometry (0884-220), 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 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 is beneficial.

**Automation technologies, AAS degree, applied robotics option, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Survey of Automation Technologies 0891-201 | 3 |
| | Applied Circuits 0805-212 | 4 |
| | Vocabulary Development 0860-003 | 0 |
| | Digital Logic 0805-240 | 3 |
| | Robotics Fundamentals 0891-218 | 1 |
| | Pneumatic and Hydraulic Systems 0891-210 | 3 |
| | Electronics 0805-245 | 3 |
| | Electromechanical Devices 0891-214 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Physics I 0885-201 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education‡ | 0 |
| | Job Search 0806-101 | 2 |
| Second Year | Automated Systems I, II 0891-220, 320 | 8 |
| | Automated Systems Troubleshooting 0891-230 | 4 |
| | Programming Concepts 0891-216 | 4 |
| | Programmable Logic Controllers | 4 |
| | Programming 0891-314 | 4 |
| | Applied Robotics 0891-318 | 4 |
| | Mechanical Devices and Systems 0891-316 | 3 |
| | Automated Process Control 0813-256 | 3 |
| | Advanced Math 0884-275 | 4 |
| | Advanced Topics in Mechanics 0885-203 | 4 |
| | Deaf Studies/ASL | 3 |
| | Liberal Arts* | 4 |
| | Cooperative Education 0891-299 | Co-op |
| Third Year | Automated Systems Troubleshooting 0891-330 | 4 |
| | Capstone AAS 0882-296 | 4 |
| | Liberal Arts* | 8 |
| | *Total Quarter Credit Hours* | *106* |

**Please see General Education distribution requirements chart for more information.*
*‡Please see Wellness Education Requirement for more information.*

## AAS Degree Program—Semiconductor Technology Option

**Positions for which graduates qualify include** robotics technician, semiconductor maintenance technician, semiconductor process technician, automation systems technician, electromechanical technician, instrumentation technician, engineering technician, fluid power controls/system technician, quality control technician, and process control technician.

### Prerequisites

**English:** Placement into the College of Liberal Arts Writing Seminar 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 Integrated Algebra (0884-212), Elements of Trigonometry (0884-220), 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 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 is beneficial.

**Automation technologies, AAS degree, semiconductor technology option, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Survey of Automation Technologies 0891-201 | 3 |
| | Applied Circuits 0805-212 | 4 |
| | Vocabulary Development 0860-003 | 0 |
| | Digital Logic 0805-240 | 3 |
| | Robotics Fundamentals 0891-218 | 1 |
| | Pneumatic and Hydraulic Systems 0891-210 | 3 |
| | Electronics 0805-245 | 3 |
| | Electromechanical Devices 0891-214 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Physics I 0885-201 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 4 |
| | Wellness Education‡ | 0 |
| | Job Search 0806-101 | 2 |
| Second Year | Automated Systems I, II 0891-220, 320 | 8 |
| | Automated Systems Troubleshooting 0891-230 | 4 |
| | Programming Concepts 0891-216 | 4 |
| | Vacuum and RF 0891-344 | 3 |
| | Automated Process Control 0813-256 | 3 |
| | Advanced Topics in Mechanics 0885-203 | 4 |
| | Principles of Chemistry I, II 0885-211, 212 | 8 |
| | Deaf Studies/ASL | 3 |
| | Liberal Arts* | 4 |
| | Cooperative Education 0891-299 | Co-op |
| Third Year | Semiconductor Tooling 0891-350 | 4 |
| | Capstone AAS 0882-296 | 4 |
| | Advanced Math 0884-275 | 4 |
| | Liberal Arts* | 8 |
| | *Total Quarter Credit Hours* | *106* |

**Please see General Education distribution requirements chart for more information.*
*‡Please see Wellness Education Requirement for more information.*

## Business Studies

***Mary Lou Basile, Chairperson***
*www.rit.edu/ntid/BusinessStudies*

Employment opportunities in business and industry increase daily. Business career programs respond to industry's need for people skilled in operating office equipment, maintaining financial records, performing administrative duties, and using computers.

Students may choose the AOS degree program in business technology, the diploma and AAS degree programs in accounting technology and/or administrative support technology, or the AS degree program in business (transfer program).

### Microsoft certification

The department operates an authorized testing center for Microsoft® Office Specialist. Preparatory courses are offered for several exams each quarter.

## AS Degree in Business (Transfer) Program

The associate of science (AS) degree in business is a two-year degree program designed to prepare deaf and hard-of-hearing students to enter and successfully complete a baccalaureate program in RIT's E. Philip Saunders College of Business. The College of Business offers a portfolio of comprehensive programs of study designed to prepare students for leadership in the business environment and is accredited by the Association to Advance Collegiate Schools of Business International, the premier accrediting organization for business schools.

As a transfer program specifically designed to articulate with RIT's College of Business, the AS degree maximizes the number of credits a student may transfer toward a baccalaureate degree within the College of Business. Majors offered by the College of Business include accounting, finance, graphic media marketing, international business, management, management information systems, and marketing.

### Prerequisites

ACT composite test score of 16 and above.

**English:** Placement into the College of Liberal Arts Writing Seminar 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.

### Transfer requirements

To transfer to RIT's E. Philip Saunders College of Business, the student must present a grade point average of 2.5 or higher upon graduation with the AS business degree.

**Business, AS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Applications of Algebra** 0884-210 | 4 |
| | Science (Level D or above) 0884-250 | 4 |
| | Orientation to Business 0804-101 | 3 |
| | Freshman Seminar 0853-200 | 2 |
| | Liberal Arts* | 8 |
| | Explorations in College Algebra 0884-260 | 4 |
| | Financial Accounting I, II 0801-211, 212 | 8 |
| | Fundamentals of Management 0804-284 | 3 |
| | Algebra for Management Science 1016-225 | 4 |
| | Business Software Applications 0112-270 | 2 |
| Second Year | Liberal Arts* | 16 |
| | Calculus for Management Science 1016-226 | 4 |
| | Managerial Accounting I, II 0801-221, 222 | 8 |
| | Laboratory Science (College of Science) | 4 |
| | Professional Communication for Business 0535-352 | 4 |
| | Principles of Microeconomics † 0511-211 | 4 |
| | Principles of Macroeconomics ‡ 0511-402 | 4 |
| | Business Information Systems 0112-315 | 4 |
| | Fundamentals of Marketing 0804-286 | 3 |
| | Wellness Education*** | 0 |
| | *Total Quarter Credit Hours* | *93* |

** Please see General Education distribution requirement chart for more information.*
*** Entering students who have the math proficiency to waive this course may take Explorations in College Algebra (0884-260)*
**** Please see Wellness Education Requirement for more information.*
*† Principles of Microeconomics is a social science course in the College of Liberal Arts. However, for students in the College of Business, it is a required professional course. Therefore, graduates of this AS program who transfer to RIT's College of Business will be required to take an additional College of Liberal Arts lower division social science course to fulfill College of Liberal Arts core distribution requirements. Principles of Economics I will be allocated to the business core in the College of Business.*
*‡ Principles of Macroeconomics is a professional course in the College of Business and is not allocated to the College of Liberal Arts distribution requirements.*

## Accounting Technology

The accounting technology program offers a diploma and an AAS degree, and 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 of this program will find employment in a variety of settings, including: business, industry, and government, as well as self-employment.

### Diploma Program

**Positions for which graduates qualify include** accounts receivable/payable clerk, payroll clerk, general office clerk, file clerk, recordkeeping clerk, data-entry clerk.

### Prerequisites

**English—Diploma:** Placement into level B English or above (nonfiction reading, academic writing, and literature). Students successfully completing a diploma typically enter with reading scores equivalent to 7.0 on the California Reading Test.

**Mathematics:** Mathematics Applications for Business Technology required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Accounting technology, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Principles of Accounting I, II 0801-201, 202 | 8 |
| | Orientation to Business 0804-101 | 3 |
| | Business English 0804-110 | 3 |
| | Keyboarding 0804-111 | 2 |
| | OAS Formatting 0804-112 | 2 |
| | OAS Document Production I 0804-113 | 4 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Payroll/Spreadsheet Applications 0804-212 | 3 |
| | Mathematics** | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | English (Level B or above) | 8 |
| | Science (Level B) | 3 |
| Second Year | Principles of Accounting III 0801-203 | 4 |
| | OAS Document Production II 0804-221 | 4 |
| | Fundamentals of Management 0804-284 | 3 |
| | Employment Seminar 0806-201 | 1 |
| | Law and Society 0882-242 | 3 |
| | or Marketing 0804-286 | |
| | Humanities | 3 |
| | Social Sciences | 3 |
| | Deaf Studies/ASL† | (3) |
| | English (Level B or above) | 4 |
| | Job Search Process 0806-101 | 2 |
| | Cooperative Education 0801-299 | Co-op |
| | *Total Quarter Credit Hours* | *71* |

*** Mathematics Applications for Business Technology (0884-155) is required.*
*† This requirement fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*

### AAS Degree Program

**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—AAS:** Placement into the College of Liberal Arts course, Writing Seminar. 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 required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Accounting technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Principles of Accounting I, II 0801-201, 202 | 8 |
| | Orientation to Business 0804-101 | 3 |
| | Business English 0804-110 | 3 |
| | Keyboarding 0804-111 | 2 |
| | OAS Formatting 0804-112 | 2 |
| | OAS Document Production I 0804-113 | 4 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Payroll/Spreadsheet Applications 0804-212 | 3 |
| | Fundamentals of Marketing 0804-286 | 3 |
| | Mathematics requirement ** | 7 |
| | Freshman Seminar 0887-200 | 2 |
| | Deaf Studies/ASL | 3 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 8 |
| | Science (Level B) | 3 |
| | Wellness Education† | 0 |
| Second Year | Principles of Accounting III 0801-203 | 4 |
| | Cost Accounting I, II 0801-252, 253 | 8 |
| | OAS Document Production II 0804-221 | 4 |
| | Fundamentals of Management 0804-284 | 3 |
| | Liberal Arts* | 8 |
| | Capstone Seminar 0882-296 | 4 |
| | Economics I, II 0801-231, 232 | 6 |
| | Job Search Process 0806-101 | 2 |
| | Principles of Accounting IV 0801-204 | 4 |
| | Applied Accounting Techniques 0801-260 | 2 |
| | Law and Society 0882-242 | 3 |
| | Employment Seminar 0806-201 | 1 |
| | Cooperative Education 0801-299 | Co-op |
| | Wellness Education† | 0 |
| | *Total Quarter Credit Hours* | *107* |

** Please see General Education distribution requirements chart for more information.*
*† Please see Wellness Education Requirement for more information.*
*** Mathematics Applications for Business Technology (0884-155) and a mathematics elective at a level B or higher are required.*

## Administrative Support Technology

The administration support technology program offers a diploma and an AAS degree. It provides students with opportunities for developing skills needed in processing information using a variety of integrated office software applications, as well as appropriate professional interpersonal and human relations skills.

Graduates will input, manipulate and retrieve data; use interactive office software, electronic mail, and information processing skills for applications such as word processing, spreadsheet presentation, and database; and perform other office duties.

## Places of employment

Graduates of this program will find employment in a variety of settings, including business, industry, government, and schools.

## Diploma Program

**Positions for which graduates qualify include** general office clerk, accounts receivable/payable clerk,records management clerk, and payroll records clerk.

## Prerequisites

**English—Diploma:** Placement into level B English or above (nonfiction reading, academic writing, and literature). Students successfully completing a diploma typically enter this degree program with reading test scores equivalent to 7.0 on the California Reading Test.

**Mathematics:** Mathematics Applications for Business Technology required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Administrative support technology, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Orientation to Business 0804-101 | 3 |
| | Business English 0804-110 | 3 |
| | Keyboarding 0804-111 | 2 |
| | OAS Formatting 0804-112 | 2 |
| | OAS Document Production I 0804-113 | 4 |
| | OAS Document Production II 0804-221 | 4 |
| | Administrative Support Technology Seminar 0804-230 | 3 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Payroll/Spreadsheet Applications 0804-212 | 3 |
| | Mathematics Elective (Level B or above)** | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | English (Level B or above) | 12 |
| | Deaf Studies/ASL‡ | (3) |
| Second Year | Principles of Accounting I, II 0801-201, 202 | 8 |
| | Internet Technologies I 0805-251 | 3 |
| | Fundamentals of Management 0804-284 | 3 |
| | Applied Business Techniques 0804-291 | 2 |
| | Advanced Applications for Word Processing 0804-302 | 4 |
| | Job Search Process 0806-101 | 2 |
| | Employment Seminar 0806-202 | 1 |
| | Business Elective† | 3/4 |
| | Humanities | 3 |
| | Social Science | 3 |
| | Science (Level B) | 3 |
| | Cooperative Education 0804-299 | Co-op |
| | *Total Quarter Credit Hours* | *79/80* |

*** Satisfied by Foundations of Algebra (0884-180) or Mathematics Applications for Business Technology (0884-155)*
*† Satisfied by Marketing (0804-286), Business Graphics (0804-303), or Database Applications (0804-304)*
*‡ This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*

## AAS Degree Program

**Positions for which graduates qualify include** administrative assistant, office assistant, word processor, and secretary.

## Prerequisites

**English—AAS:** Placement into the College of Liberal Arts Writing Seminar 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 required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Administrative support technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Orientation to Business 0804-101 | 3 |
| | Business English 0804-110 | 3 |
| | Keyboarding 0804-111 | 2 |
| | OAS Formatting 0804-112 | 2 |
| | OAS Document Production I 0804-113 | 4 |
| | OAS Document Production II 0804-221 | 4 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Payroll/Spreadsheet Applications 0804-212 | 3 |
| | Fundamentals of Marketing 0804-286 | 3 |
| | Mathematics Elective ** | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 8 |
| | Deaf Studies/ASL | 3 |
| | Wellness Education‡ | 0 |
| Second Year | Principles of Accounting I, II 0801-201, 202 | 8 |
| | Internet Technologies I 0805-251 | 3 |
| | Administrative Support Technology Seminar 0804-230 | 3 |
| | Fundamentals of Management 0804-284 | 3 |
| | Advanced Applications for Word Processing 0804-302 | 4 |
| | Business Graphics 0804-303 | 4 |
| | Database Applications for Business 0804-304 | 4 |
| | Liberal Arts* | 8 |
| | Capstone 0882-296 | 4 |
| | Applied Business Techniques 0804-291 | 2 |
| | Desktop Publishing Concepts and Applications 0804-310 | 3 |
| | Job Search Process 0806-101 | 2 |
| | Law and Society 0882-242 | 3 |
| | Communication Studies Elective† | 3 |
| | Science (Level B) | 3 |
| | Cooperative Education 0804-299 | Co-op |
| | Wellness Education‡ | 0 |
| | *Total Quarter Credit Hours* | *104* |

** Please see General Education distribution requirements chart for more information.*
*** Satisfied by Foundations of Algebra (0884-180) or Mathematics Applications for Business Technology (0884-155)*
*† Satisfied by Group Dynamics and Effective Teams (0880-206), Interpersonal Relationships (0880-2201), or Organizational Communication and the Deaf Employee (0880-207)*
*‡ Please see Wellness Education Requirement for more information.*

# Business Technology AOS Degree Program

The business technology AOS degree program includes technical course work in accounting, computers, payroll, general office skills, and word processing/information processing skills. Students elect to complete a sequence of courses that provides either an accounting technology or administrative support technology concentration.

This is a non-transfer 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 schools.

## On-the-job responsibilities

Graduates will input, manipulate, and retrieve data; use interactive software, electronic 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/payable clerk, payroll records clerk, word processing technician, cost accounting clerk, and microcomputer accounting clerk.

## Prerequisites

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature). 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 required. Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Business technology, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Principles of Accounting I, II 0801-201, 202 | 8 |
| | Orientation to Business 0804-101 | 3 |
| | Business English 0804-110 | 3 |
| | Keyboarding 0804-111 | 2 |
| | OAS Formatting 0804-112 | 2 |
| | OAS Document Production I 0804-113 | 4 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Payroll/Spreadsheet Applications 0804-212 | 3 |
| | Mathematics requirement ** | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | English (Level C or above) | 12 |
| | Wellness Education* | 0 |
| Second Year | Principles of Accounting III 0801-203 | 4 |
| | Cost Accounting I, II†† 0801-252, 253 | 8 |
| | or Database Applications for Business‡ 0804-304 | (4) |
| | and Administrative Support Technology Seminar ‡ 0804-230 | (3) |
| | OAS Document Production II 0804-221 | 4 |
| | Fundamentals of Management 0804-284 | 3 |
| | Fundamentals of Marketing 0804-286 | 3 |
| | Advanced Applications for Word Processing 0804-302 | 4 |
| | Business Graphics 0804-303 | 4 |
| | Humanities | 6 |
| | Science (Level B) | 3 |
| | Communication Studies† | (3) |
| | Social Science | 6 |
| | Job Search Process 0806-101 | 2 |
| | Deaf Studies/ASL§ | (3) |
| | Cooperative Education 0804-299 | Co-op |
| | Wellness Education* | 0 |
| Third Year | Applied Accounting Techniques†† 0801-260 | 2 |
| | or Desktop Publishing Concepts and Applications ‡ 0801-310 | (3) |
| | Applied Business Techniques 0804-291 | 2 |
| | Capstone Seminar 0882-295 | 3 |
| | Employment Seminar 0806-201 | 1 |
| | Law and Society 0882-242 | 3 |
| | *Total Quarter Credit Hours* | *103* |

**Please see Wellness Education Requirement for more information.*
*** Mathematics Applications for Business Technology (0884-155) is required.*
*† Satisfied by Group Dynamics and Effective Teams (0880-206), Interpersonal Relationships 0880-2201), or Organizational Communication and the Deaf Employee 0880-207). These credits may be used to satisfy the humanities or social sciences requirements.*
*†† Courses required for accounting technology option*
*‡ Courses required for administrative support technology option*
*§ This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*

# Computer-Aided Drafting Technology

***Ronald J. Till, Chairperson***
*www.rit.edu/ntid/CADT*

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, automobiles, airplanes, mechanical parts, and electronic circuit boards. CAD operators (technicians) take an engineer's, architect's, or designer's sketches and produce a set of technical drawings.

## Manufacturing option

Students who wish to work in manufacturing settings may choose to select the manufacturing option in the diploma, AOS, or AAS degree programs. In addition to a strong emphasis on computer-aided drafting, this option gives students a background in mathematics, manufacturing systems, tolerance systems, engineering materials and methods, circuit boards, components, and mechanical assembly.

## Architecture/engineering/construction (A/E/C) option

Students who wish to work in the architectural, engineering, or construction fields may choose to select the A/E/C option in the diploma, AOS, or AAS degree program. In addition to a strong emphasis on computer-aided drafting, this option gives students a background in mathematics, building systems, construction regulations, site utilities, and materials and methods used in the architecture, engineering, and construction industries.

## Diploma Program

## 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 manufacturing or A/E/C firms creating engineering CAD drawings.

## Places of employment

Graduates of this program will find work in a variety of settings, including manufacturing firms, government agencies, and architectural, engineering, and construction firms.

**Positions for which graduates qualify include** CAD drafters/technicians in architectural, highway design, and civil, mechanical and electrical (electronic) environments.

## Prerequisites

**English—Diploma:** Placement into level B English or above (nonfiction reading, academic writing, and literature). Students successfully completing a diploma typically enter with reading scores equivalent to 7.0 on the California Reading Test.

**Mathematics:** Placement into Foundations of Algebra (0884-180) or Elements of Geometry (0885-170) 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 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 manufacturing, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | CAD I, II 0890-201, 202 | 4 |
| | Manufacturing CAD I 0890-215 | 4 |
| | Applications Software 0805-201 | 3 |
| | CAD Seminar 0890-204 | 3 |
| | Manufacturing Measurement Systems 0890-206 | 2 |
| | Foundations of Algebra 0884-180 | 4 |
| | Elements of Geometry 0884-170 | 4 |
| | Trigonometry for Coordinate Analysis I 0884-205 | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | Processes of Science: Physics of Matter 0885-154 | 3 |
| | English (Level B or above) | 12 |
| | Wellness Education‡ | 0 |
| Second Year | Manufacturing CAD II 0890-225 | 4 |
| | Electrical CAD 0890-235 | 4 |
| | Cooperative Education 0890-299 | Co-op |
| | Geometric Dimensioning and Tolerancing 0890-260 | 3 |
| | Introduction to Manufacturing Materials 0890-270 | 3 |
| | Electrical Components 0890-250 | 3 |
| | Social Science | 3 |
| | Job Search Process 0806-101 | 2 |
| | Deaf Studies/ASL* | (3) |
| | Humanities | 3 |
| | Making Formal Presentations 0860-008 | 0 |
| | Internet Communication 0880-210 | 3 |
| | *Total Quarter Credit Hours* | *72* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡ Please see Wellness Education Requirement for more information.*

**Computer-aided drafting technology, A/E/C, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | CAD I, II 0890-201, 202 | 4 |
| | Construction CAD I 0890-210 | 4 |
| | Applications Software 0805-201 | 3 |
| | CADT Seminar 0890-204 | 3 |
| | A/E/C Measurements Systems 0890-208 | 2 |
| | Foundations of Algebra 0884-180 | 4 |
| | Elements of Geometry 0884-170 | 4 |
| | Trigonometry for Coordinate Analysis I 0884-205 | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | Processes of Science: Physics of Matter 0885-154 | 3 |
| | English (Level B or above) | 12 |
| | Wellness Education‡ | 0 |
| Second Year | Construction CAD II, III 0890-220, 230 | 8 |
| | Construction Materials and Methods I, II 0890-255, 265 | 6 |
| | Principles of Structural Systems 0890-275 | 3 |
| | Cooperative Education 0890-299 | Co-op |
| | Social Science | 3 |
| | Job Search Process 0806-101 | 2 |
| | Deaf Studies/ASL* | (3) |
| | Humanities | 3 |
| | Making Formal Presentations 0860-008 | 0 |
| | Internet Communication 0880-210 | 3 |
| | *Total Quarter Credit Hours* | *72* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡ Please see Wellness Education Requirement for more information.*

## AOS Degree Program

### 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 manufacturing or A/E/C firms creating engineering CAD drawings.

### Places of employment

Graduates of this program will find work in a variety of settings, including engineering and manufacturing firms, government agencies, and architectural and construction firms.

**Positions for which graduates qualify include** CAD drafters/technicians for architectural, highway design, civil, and mechanical and electrical (electronic) environments.

### Prerequisites

Successful completion of a sampling experience either through the Summer Vestibule Program or equivalent career exploration course is a prerequisite, as are the following:

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature). 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 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 manufacturing, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | CAD I, II 0890-201, 202 | 4 |
| | Manufacturing CAD I 0890-215 | 4 |
| | Applications Software 0805-201 | 3 |
| | CADT Seminar 0890-204 | 3 |
| | Manufacturing Measurements Systems 0890-206 | 2 |
| | Foundations of Algebra 0884-180 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Job Search Process 0806-101 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Processes of Science: Physics of Matter 0885-154 | 3 |
| | Physics I 0885-201 | 4 |
| | English (Level C or above) | 12 |
| | Wellness Education‡ | 0 |
| Second Year | Manufacturing CAD II 0890-225 | 4 |
| | Electrical CAD 0890-235 | 4 |
| | Electrical/Mechanical CAD Design 0890-315 | 5 |
| | Geometric Dimensioning and Tolerancing 0890-260 | 3 |
| | Introduction to Manufacturing Materials 0890-270 | 3 |
| | Deaf Studies/ASL* | (3) |
| | Introduction to Material Processes 0890-350 | 3 |
| | Electrical Components 0890-250 | 3 |
| | Humanities | 6 |
| | Social Science | 6 |
| | Internet Technologies I 0805-251 | 3 |
| | Making Formal Presentations 0860-008 | 0 |
| | Group Dynamics and Effective Teams 0880-206 | 3 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Cooperative Education 0890-299 | Co-op |
| Third Year | 3-D Solid Modeling 0890-325 | 5 |
| | Internet CAD Applications 0890-360 | 3 |
| | Mechanical Components 0890-370 | 3 |
| | Capstone Seminar 0882-295 | 3 |
| | *Total Quarter Credit Hours* | *108* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡ Please see Wellness Education Requirement for more information.*

**Computer-aided drafting technology, A/E/C, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | CAD I, II 0890-201, 202 | 4 |
| | Construction CAD I 0890-210 | 4 |
| | Applications Software 0805-201 | 3 |
| | CADT Seminar 0890-204 | 3 |
| | A/E/C Measurement Systems 0890-208 | 2 |
| | Foundations of Algebra 0884-180 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | Job Search Process 0806-101 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Processes of Science: Physics of Matter 0885-154 | 3 |
| | Physics I 0885-201 | 4 |
| | English (Level C or above) | 12 |
| | Wellness Education‡ | 0 |
| Second Year | Construction CAD II, III 0890-220, 230 | 8 |
| | Construction Materials and Methods I, II 0890-255, 265 | 6 |
| | Internet Technologies I 0805-251 | 3 |
| | Principles of Structural Systems 0890-275 | 3 |
| | Presentation Graphics 0890-320 | 5 |
| | Deaf Studies/ASL* | (3) |
| | Site Utilities, Mechanical/Electrical Systems 0890-355 | 3 |
| | Humanities | 6 |
| | Social Science | 6 |
| | Making Formal Presentations 0860-008 | 0 |
| | Group Dynamics and Effective Teams | 3 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Cooperative Education 0890-299 | Co-op |
| Third Year | Advanced Construction CAD 0890-310 | 5 |
| | Internet CAD Applications 0890-360 | 3 |
| | Construction Regulations 0890-375 | 3 |
| | Capstone Seminar 0882-295 | 3 |
| | *Total Quarter Credit Hours* | *108* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡ Please see Wellness Education Requirement for more information.*

## AAS Degree Program

### 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 in manufacturing and A/E/C firms creating engineering CAD drawings.

### Places of employment

Graduates of this program will find work in a variety of settings, including manufacturing firms, government agencies, and architectural, construction, and engineering firms.

**Positions for which graduates qualify include** CAD drafters/technicians for architectural, highway design, and civil, mechanical, and electrical (electronic) environments.

### Prerequisites

**English:** Placement in the College of Liberal Arts Writing Seminar 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:** Completion of Foundations of Algebra (0884-180) or 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 A/E/C, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | CAD I, II 0890-201, 202 | 4 |
| | Construction CAD I 0890-210 | 4 |
| | Applications Software 0805-201 | 3 |
| | CADT Seminar 0890-204 | 3 |
| | A/E/C Measurement Systems 0890-208 | 2 |
| | Integrated Algebra 0884-212 | 4 |
| | Elements of Trigonometry 0884-220 | 4 |
| | Job Search Process 0806-101 | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Processes of Science: Physics of Matter 0885-154 | 3 |
| | Physics I 0885-201 | 4 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education‡ | 0 |
| Second Year | Construction CAD II, III 0890-220, 230 | 8 |
| | Construction Materials and Methods I, II 0890-255, 265 | 6 |
| | Internet Technologies I 0805-251 | 3 |
| | Principles of Structural Systems 0890-275 | 3 |
| | Presentation Graphics 0890-320 | 5 |
| | Site Utilities, Mechanical/Electrical Systems 0890-355 | 3 |
| | Making Formal Presentations 0860-008 | 0 |
| | Group Dynamics and Effective Teams | 3 |
| | Deaf Studies/ASL | 3 |
| | Liberal Arts* | 8 |
| | Advanced Mathematics 0884-275 | 4 |
| | Cooperative Education 0890-299 | Co-op |
| Third Year | Advanced Construction CAD 0890-310 | 5 |
| | Internet CAD Applications 0890-360 | 3 |
| | Construction Regulations 0890-375 | 3 |
| | Capstone Seminar 0882-296 | 4 |
| | *Total Quarter Credit Hours* | *108* |

** Please see General Education distribution requirements chart for more information.*
*‡ Please see Wellness Education Requirement for more information.*

# Computer Integrated Machining Technology

***Ronald J. Till, Chairperson***
*www.rit.edu/ntid/CIMT*

Computer integrated machining technology students prepare for employment in precision machining occupations. These include tool and die making, mold making, instrument making, and computer-numerical-control machining. 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.

## Diploma Program

### On-the-job responsibilities

Set up and operate such machine tools as lathes and milling machines, shape metal into precision parts by conventional and nonconventional processes, follow blueprints and use special instruments to inspect work

### Places of employment

Graduates of this program will find work in a variety of settings, including manufacturing industries, metal-working industries, engineering firms, and engineering research firms.

**Positions for which graduates qualify include** entry-level and apprenticeship programs: tool and die maker, instrument maker, mold maker, pattern maker, model maker, machinist, and CNC operator.

### Prerequisites

Successful completion of a sampling experience either through the Summer Vestibule Program or equivalent career exploration courses is a prerequisite, as are the following:

**English:** Placement into level B English or above (nonfiction reading, academic writing, and literature). Students successfully completing a diploma typically enter with reading scores equivalent to 7.0 on the California Reading Test.

**Mathematics:** Placement into Foundations of Algebra (0884-180), Elements of Geometry (0884-170), or a higher level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or above. Typically, students entering this program will have completed at least two years of high school science.

**Computer integrated machining technology, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Manufacturing Processes I, II, III 0813-131, 132, 133 | 12 |
| | Blueprint Reading I, II 0813-139, 140 | 4 |
| | Precision Measurement 0813-154 | 2 |
| | Elements of Geometry 0884-170 | 4 |
| | Foundations of Algebra 0884-180 | 4 |
| | Mathematics Elective | 2 |
| | Freshman Seminar 0887-200 | 2 |
| | Job Search Process 0806-101 | 2 |
| | English (Level B or above) | 12 |
| | Cooperative Education 0813-299 | Co-op |
| Second Year | Introduction to Numerical Control 0812-150 | 2 |
| | Basic Drafting I, II 0813-101, 102 | 4 |
| | Manufacturing Processes IV, V, VI 0813-134, 135, 136 | 12 |
| | Industrial Materials 0813-151 | 3 |
| | Manufacturing Analysis 0813-152 | 3 |
| | Applications of Algebra 0844-210 | 4 |
| | Trigonometry for Coordinate Analysis I, II 0884-205, 206 | 6 |
| | Social Sciences | 3 |
| | Science (Level B) | 3 |
| | Deaf Studies/ASL* | (3) |
| | Humanities | 3 |
| | *Total Quarter Credit Hours* | *87* |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*

## AOS Degree Program

### On-the-job responsibilities

Set up and operate such machine tools as lathes and milling machines, computer-numerical-controlled machine tools, shape material into precision parts by conventional and nonconventional processes, follow blueprints, use advanced measuring techniques to inspect work

### Places of employment

Graduates of this program will find work in a variety of settings, including manufacturing industries, metal-working 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, CNC operator, or CNC programmer trainee.

### Prerequisites

Successful completion of a sampling experience either through the Summer Vestibule Program or equivalent career exploration course is a prerequisite, as are the following:

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature). 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), Elements of Geometry (0884-170), or a higher level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into any level B science course numbered 150 or above. 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**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Manufacturing Processes I, II, III 0813-131, 132, 133 | 12 |
| | Blueprint Reading I, II 0813-139, 140 | 4 |
| | Precision Measurement 0813-154 | 2 |
| | Foundations of Algebra 0884-180 | 4 |
| | Elements of Geometry 0884-170 | 4 |
| | Trigonometry for Coordinate Analysis I 0884-205 | 3 |
| | Freshman Seminar 0887-200 | 2 |
| | Job Search Processes 0806-101 | 2 |
| | English (Level B) | 12 |
| | Wellness Education‡ | 0 |
| | Cooperative Education 0813-299 | 0 |
| Second Year | Manufacturing Processes IV, V, VI 0813-134, 135, 136 | 12 |
| | Basic Drafting I, II 0813-101, 102 | 4 |
| | Industrial Materials 0813-151 | 3 |
| | Manufacturing Analysis 0813-152 | 3 |
| | Introduction to Computer Numerical Control 0812-150 | 2 |
| | Trigonometry for Coordinate Analysis II 0884-206 | 3 |
| | Deaf Studies/ASL* | (3) |
| | English (Level C) | 12 |
| | Cooperative Education 0813-299 | Co-op |
| Third Year | Advanced Machining Processes 0813-237 | 4 |
| | Computer Numerical Control I, II, III 0812-151, 152, 153 | 12 |
| | Auto Process Control 0813-256 | 3 |
| | Employment Seminar 0806-201 | 1 |
| | Technical Elective | 3 |
| | Capstone Seminar 0882-295 | 3 |
| | Social Sciences/Humanities | 12 |
| | *Total Quarter Hour Credits* | *122* |

**This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡Please see Wellness Education Requirement for more information.*

## Digital Imaging and Publishing Technology

***John W. Cox, Chairperson***

*www.rit.edu/ntid/DIPT*

People who work in digital imaging and publishing careers produce millions of photographic, print, and digital media products used every day by individuals and businesses. Digital technology enables data, text, and graphics to meet the demand for publishing through a wide variety of information dissemination and communication strategies, including printed pages, Web

pages, and CD-ROMs. This program will prepare students for an exciting and challenging career in the nation's second-largest and fastest-growing manufacturing industry.

## Diploma, AOS, and AAS degree programs

Students may choose from diploma, AOS, or AAS degree programs. All three options in digital imaging and publishing technology require students to complete a common core of courses that provide the necessary foundation for careers in the imaging and publishing industry. Students in the AOS and AAS degree programs will complete at least one career concentration: print publishing and prepress, image production, print output production, or Web production. Technical elective courses may be taken from digital imaging and publishing technology concentrations and from other related NTID technical programs. Significant program flexibility is available for each student to elect courses based on career interest and aptitude. A 10-week cooperative work experience is required for students in the AOS and AAS degree programs.

Students who qualify for the AAS degree program may elect specific mathematics and science courses and technical courses from related bachelor's degree programs, as available per enrollment guidelines, in preparation for application to related bachelor's degree programs.

## On-the-job responsibilities

Depending on specific career preparation and placement, students will produce and prepare documents, illustrations, and photographic images for print reproduction, digital display, and digital distribution; produce presentation graphics; produce special-effects images for film and digital formats; perform digital retouching and restoration of photographic images; produce composite digital images; operate a variety of analog and digital video equipment to edit and produce programs; operate a variety of prepress proofing and plate-making systems; operate digital printing systems; operate offset printing presses; operate simple bindery and finishing equipment; operate paper processors; produce images on a variety of photographic materials; and use a variety of quality control procedures to monitor image production, processing, and printing.

## Places of employment

Graduates of the digital imaging and publishing technology program will have employment opportunities in commercial, corporate, and government settings. They may work in commercial printing plants, prepress, and color trade shop companies; in-plant printing departments; book and magazine publishing houses; newspaper facilities; government printing facilities; custom or commercial photographic labs; in-house industrial photographic labs; industrial training or media departments; imaging production houses; or school or university media centers.

**Positions for which graduates qualify include** technician in digital image capture and image preparation, digital prepress, film processing, media production, presentation graphics, or basic video production; photographic laboratory technician, custom copy technician, custom color printer, custom color print inspector/evaluator; and operator of digital printing systems or offset lithographic printing press.

## Prerequisites

Successful completion of an orientation/sampling experience offered during the Summer Vestibule Program and also during the academic year. The sampling activities provide opportunities for students to learn about the digital imaging and publishing industry, identify career opportunities, and evaluate their interest and aptitude for the imaging and publishing field.

**English—Diploma:** Placement into level B English or above (nonfiction reading, academic writing, and literature). Students successfully completing a diploma typically enter with reading test scores equivalent to 7.0 on the California Reading Test.

**English—AOS:** Placement into level C English or higher (nonfiction reading, academic writing, and literature). Students successfully completing AOS degrees typically enter with reading test scores equivalent to 8.0 on the California Reading Test.

**English—AAS:** Placement into the College of Liberal Arts Writing Seminar course. Students typically enter Writing Seminar with reading test scores equivalent to 10.0 on the California Reading Test. However, students who complete AAS degrees typically enter NTID with reading test scores equivalent to 9.0 on the California Reading Test.

**Mathematics:** Placement into Concepts of Measurement (0884-150). Typically, students entering this program will have completed at least two years of high school mathematics.

**Science:** Placement into level B science course numbers 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Digital imaging and publishing technology, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Digital Design and Typography 0878-210 | 3 |
| | Fundamentals of Image Acquisition 0878-215 | 3 |
| | Fundamentals of Image Manipulation 0878-220 | 3 |
| | Fundamentals of Vector Graph Illustration 0878-225 | 3 |
| | Fundamentals of Desktop Publishing 0878-230 | 3 |
| | Fundamentals of Digital Media Publishing 0878-235 | 3 |
| | Fundamentals of Network Publishing 0878-240 | 3 |
| | Fundamentals of Digital Output 0878-245 | 3 |
| | Color Theory and Practice 0878-250 | 3 |
| | Mathematics** (Level B) | 3 |
| | Freshman Seminar 0882-100 | 2 |
| | English (Level B or above) | 8 |
| | Social Sciences | 3 |
| Second Year | Image Processes and Markets 0878-255 | 3 |
| | Technical elective courses | 12 |
| | Production Procedures and Quality Control 0878-361 | 3 |
| | Job Search Process 0806-101 | 2 |
| | Humanities | 3 |
| | Science (Level B or above) | 3 |
| | English (Level B or above) | 4 |
| | Deaf Studies/ASL† | (3) |
| | *Total Quarter Credit Hours* | *73* |

*** Satisfied by Concepts of Measurement (0884-150)*
*† This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*

## AOS and AAS degree options—digital imaging and publishing technology (DIPT)

Two associate degrees are offered in the digital imaging and publishing technology program. As part of the AOS and AAS degrees, students may select from the following concentrations. These courses are represented in the course sequence as DIPT technical concentration courses in the second and third years. Additionally,

two DIPT technical electives are required for the AOS and AAS degrees.

| **Print Publishing and Prepress Option** | **Qtr. Cr. Hrs.** |
|---|---|
| 0878-300 Desktop Publishing | 3 |
| 0878-302 Database Publishing | 3 |
| 0878-304 Publication Publishing | 3 |
| 0878-310 Image Acquisition | 3 |
| 0878-330 Preflight Procedures | 3 |
| 0878-362 Applied Production I | 3 |
| **Total Quarter Credit Hours** | **18** |

| **Imaging Production Option** | **Qtr. Cr. Hrs.** |
|---|---|
| 0878-310 Image Acquisition | 3 |
| 0878-312 Image Manipulation | 3 |
| 0878-322 Composite Imaging | 3 |
| 0878-324 Image Retouch and Restore | 3 |
| 0878-351 Imaging Lab Fundamentals | 3 |
| 0878-352 Imaging Lab | 3 |
| **Total Quarter Credit Hours** | **18** |

| **Print Output Production Option** | **Qtr. Cr. Hrs.** |
|---|---|
| 0878-341 Proofing and Platemaking | 3 |
| 0878-344, 345 Offset Press I, II | 6 |
| 0878-346 Digital Printing Systems | 3 |
| 0878-362 Applied Production I | 3 |
| 0878-398 Special Topics: DocuTech Operations | 3 |
| **Total Quarter Credit Hours** | **18** |

| **Web Production Option** | **Qtr. Cr. Hrs.** |
|---|---|
| 0878-302 Database Publishing | 3 |
| 0878-306 Network Publishing | 3 |
| 0878-308 Digital Media Publishing | 3 |
| 0878-326 Videography | 3 |
| 0878-328 Digital Media Interactive | 3 |
| 0878-398 Special Topics: Web Image Preparation | 3 |
| **Total Quarter Credit Hours** | **18** |

| **DIPT Technical Electives (choose two)** | **Qtr. Cr. Hrs.** |
|---|---|
| 0878-316 Black and White and Color Halftone Production | 3 |
| 0878-332 Image Assembly: T and I | 3 |
| 0878-353 Imaging Lab Production | 3 |
| 0878-354 Advanced Imaging Lab | 3 |
| 0878-355 Display Imaging | 3 |
| 0878-356 Copywork | 3 |
| 0878-363 Applied Production II | 3 |
| 0878-364 Applied Production III | 3 |
| 0878-398 Advanced Digital Print Systems | 3 |

**Digital imaging and publishing technology, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Digital Design and Typography 0878-210 | 3 |
| | Fundamentals of Image Acquisition 0878-215 | 3 |
| | Fundamentals of Image Manipulation 0878-220 | 3 |
| | Fundamentals of Vector Graph Illustration 0878-225 | 3 |
| | Fundamentals of Desktop Publishing 0878-230 | 3 |
| | Fundamentals of Digital Media Publishing 0878-235 | 3 |
| | Fundamentals of Network Publishing 0878-240 | 3 |
| | Fundamentals of Digital Output 0878-245 | 3 |
| | Color Theory and Practice 0878-250 | 3 |
| | Mathematics** (Level B) | 3 |
| | Freshman Seminar 0882-100 | 2 |
| | English (Level C or above) | 12 |
| | Social Sciences | 3 |
| | Wellness Education‡ | 0 |
| Second Year | Image Processes and Markets 0878-255 | 3 |
| | PDF Production and Workflow 0878-305 | 3 |
| | Preparing Photographs for Publishing 0878-314 | 3 |
| | Color Management Systems 0878-318 | 3 |
| | DIPT Technical Concentration Courses | 15 |
| | DIPT Technical Elective | 3 |
| | Production Procedures and Quality Control 0878-361 | 3 |
| | Job Search Process 0806-101 | 2 |
| | Humanities | 6 |
| | Science (Level B or above) | 3 |
| | Deaf Studies/ASL† | (3) |
| | Cooperative Education 0878-299 | Co-op |
| | Wellness Education‡ | 0 |
| Third Year | DIPT Technical Concentration Course | 3 |
| | DIPT Technical Elective | 3 |
| | Social Sciences | 3 |
| | Capstone Seminar 0882-295 | 3 |
| | Employment Seminar 0806-201 | 1 |
| | *Total Quarter Credit Hours* | *104* |

*** Satisfied by Concepts of Measurement (0884-150) or higher level course*
*† This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*‡ Please see Wellness Education Requirement for more information.*

**Digital imaging and publishing technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Digital Design and Typography 0878-210 | 3 |
| | Fundamentals of Image Acquisition 0878-215 | 3 |
| | Fundamentals of Image Manipulation 0878-220 | 3 |
| | Fundamentals of Vector Graph Illustration 0878-225 | 3 |
| | Fundamentals of Desktop Publishing 0878-230 | 3 |
| | Fundamentals of Digital Media Publishing 0878-235 | 3 |
| | Fundamentals of Network Publishing 0878-240 | 3 |
| | Fundamentals of Digital Output 0878-245 | 3 |
| | Color Theory and Practice 0878-250 | 3 |
| | Mathematics** (Level B) | 3 |
| | Freshman Seminar 0882-100 | 2 |
| | Writing Seminar 0502-227 | 4 |
| | Liberal Arts* | 8 |
| | Wellness Education‡ | 0 |
| Second Year | Image Processes and Markets 0878-255 | 3 |
| | PDF Production and Workflow 0878-305 | 3 |
| | Preparing Photographs for Publishing 0878-314 | 3 |
| | Color Management Systems 0878-318 | 3 |
| | DIPT Technical Concentration Courses | 15 |
| | DIPT Technical Elective | 3 |
| | Production Procedures and Quality Control 0878-361 | 3 |
| | Job Search Process 0806-101 | 2 |
| | Science (Level B or above) | 3 |
| | Liberal Arts* | 8 |
| | Cooperative Education 0878-299 | Co-op |
| | Wellness Education‡ | 0 |
| Third Year | DIPT Technical Concentration Course | 3 |
| | DIPT Technical Elective | 3 |
| | Deaf Studies/ASL | 3 |
| | Capstone Seminar 0882-296 | 4 |
| | Employment Seminar 0806-201 | 1 |
| | *Total Quarter Credit Hours* | *104* |

** Please see General Education distribution requirements chart for more information.*
*** Satisfied by Concepts of Measurement (0884-150) or higher level course*
*‡ Please see Wellness Education Requirement for more information.*

## Healthcare Billing and Coding Technology

***Mary Lou Basile, Chairperson***

Students interested in science, allied health, and medical office procedures may combine these interests and prepare for a career in healthcare billing and coding.

Healthcare billing and coding technologists work with patient information to perform such medical office tasks as third-party billing, word and data processing, and basic medical information coding, as well as other computer application tasks.

Students may choose from diploma and AOS degree programs. Technical courses for the first four quarters are the same for the diploma and associate degree options.

The healthcare billing and coding technology programs include one cooperative work experience for the diploma level and two cooperative work experiences for the associate degree. Cooperative work experience is usually taken in the student's home areas, and it is the student's responsibility to obtain transportation to the practice sites.

## Diploma program**

### On-the-job responsibilities

Analyze and use patient information to prepare billing and insurance claims following established procedures. Workers perform routine medical office tasks utilizing skills in computer database and word processing applications.

### Places of employment

Graduates may find employment in physician and dentist offices, medical group practices, acute and long-term care agencies, healthcare billing departments, or insurance companies.

### Skills required

Graduates qualify for positions requiring these skills: medical terminology, keyboarding, patient information analysis, word and data processing, billing procedures, and insurance claim preparation.

### Prerequisites

Fundamentals of Human Biology I and II (0885-161, 162) Medical Word Analysis (0820-105)

**English—Diploma:** Students successfully completing a diploma typically enter with reading scores equivalent to 7.0 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:** Completion of Fundamentals of Human Biology I and II (0885-161, 162) or direct placement into Medical Terminology with Human Anatomy I (0820-211). Typically, students entering this major will have completed at least two years of high school science, including biology. Students must also present successful completion of a sampling experience in healthcare billing and coding, either through the Summer Vestibule Program or first-year programming.

**Healthcare billing and coding technology, diploma, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Healthcare Billing and Coding Technology 0820-115 | 4 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Office Automation Skills Formatting 0804-112 | 2 |
| | Office Automation Skills Document Production I 0804-113 | 4 |
| | Medical Terms with Human Anatomy I,* II, III 0820-211, 212, 213 | 12 |
| | Medical Office and Billing Procedures I, II 0820-221, 222 | 6 |
| | Foundations of Algebra 0884-180 | 4 |
| | Job Search Process 0806-101 | 2 |
| | English (Level B or above) | 8 |
| | Freshmen Seminar 0887-200 | 2 |
| | Humanities† | 3 |
| | Internet Communication 0880-210 | (3) |
| | Cooperative Education 0820-299 | Co-op |
| Second Year | Orientation to Business 0804-101 | 3 |
| | Medical Terms with Human Anatomy IV 0820-214 | 4 |
| | English (Level B or above) | 4 |
| | Social Science | 3 |
| | Deaf Studies/ASL‡ | (3) |
| | Employment Seminar 0806-201 | 1 |
| | *Total Quarter Credit Hours* | *65* |

** Satisfies science requirement*
*† This requirement is satisfied by Internet Communication (0880-210)*
*‡ This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*

## AOS Degree Program**

### On-the-job responsibilities

Analyze and use patient information to prepare billing and insurance claims, perform tasks in ambulatory care coding and outpatient reimbursement procedures. Graduates of the AOS program perform cancer registry procedures using established protocols.

### Places of employment

Graduates may find employment in physician and dentist offices, medical group practices, acute and long-term care agencies, ambulatory-care centers, local/regional/state tumor registries, healthcare billing departments, insurance companies.

### Skills required

Graduates qualify for positions requiring these skills: medical terminology, keyboarding, patient information analysis, word and data processing, billing procedures, insurance claim preparation, ambulatory care coding, and tumor registry.

### Prerequisites

Fundamentals of Human Biology I and II (0885-161, 162) Medical Word Analysis (0820-105)

**English—AOS:** Placement into level C English or above (nonfiction reading, academic writing, and literature). 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:** Completion of Fundamentals of Human Biology I and II (0885-161, 162) or direct placement into Medical Terms with Human Anatomy I (0820-211). Typically, students entering

this major will have completed at least two years of high school science, including biology.

Students must also present successful completion of a sampling experience in healthcare billing and coding either through the Summer Vestibule Program or first-year programming.

*** Admission to these programs has been suspended for the 2006–07 academic year.*

**Healthcare billing and coding technology, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Healthcare Billing and Coding Technology 0820-115 | 4 |
| | Records Management/Business Calculations 0804-211 | 3 |
| | Office Automation Skills Formatting 0804-112 | 2 |
| | Office Automation Skills Document Production I 0804-113 | 4 |
| | Medical Terms with Human Anatomy I *, II, III 0820-211, 212, 213 | 12 |
| | Medical Office and Billing Procedures I, II 0820-221, 222 | 6 |
| | Foundations of Algebra 0884-180 | 4 |
| | Job Search Process 0806-101 | 2 |
| | English (Level C or above) | 8 |
| | Freshman Seminar 0887-200 | 2 |
| | Humanities† | 3 |
| | Internet Communication 0880-210 | (3) |
| | Cooperative Education 0820-299 | Co-op |
| | Wellness Education** | 0 |
| Second Year | Orientation to Business 0804-101 | 3 |
| | Medical Terms with Human Anatomy IV 0820-214 | 4 |
| | English (Level C or above) | 4 |
| | Social Science | 6 |
| | Deaf Studies/ASL‡ | (3) |
| | Ambulatory Disease/Surgery Process 0820-250 | 4 |
| | Ambulatory Care Coding 0820-251 | 4 |
| | Cancer Registry I, II 0820-261, 262 | 8 |
| | Outpatient Reimbursement 0820-270 | 4 |
| | Humanities | 3 |
| | Wellness Education** | 0 |
| | Capstone Seminar 0882-295 | 3 |
| | Cooperative Education II 0820-299 | 0 |
| | Employment Seminar 0806-201 | 1 |
| | ***Total Quarter Credit Hours*** | ***94*** |

** Satisfies science requirement*
*** Please see Wellness Education Requirement for more information.*
*‡ This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course selected.*
*† This requirement is satisfied by Internet Communication (0880-210)*

## Laboratory Science Technology

***Vincent A. Daniele, Chairperson***

*www.rit.edu/ntid/LST*

The laboratory science technology (LST) program was developed primarily from an industry perspective. The LST program prepares students for employment as laboratory technicians. The program's foundation includes course sequences in chemistry, biology, microbiology, instrumental analysis, laboratory mathematics, and a unique six-part laboratory applications series. Program flagships are the application of real-world analyses and a state-of-the-art instrumentation laboratory. Graduates are prepared for work in a broad range of fields, including chemical, biological, biotechnical, environmental, industrial, forensic, and food analysis. Students may choose from AOS and AAS degree programs.

## AOS and AAS degree programs

### On-the-job responsibilities

Technicians are involved with the collection and preparation of samples. Technicians 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 into level C English or above (nonfiction reading, academic writing, and literature). Students successfully completing AOS degrees typically enter with reading scores equivalent to 8.0 on the California Reading Test.

**English—AAS:** Placement into College of Liberal Arts Writing Seminar 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 into Integrated Algebra (0844-212) or higher level course. Typically, students entering this program will have completed at least three years of high school mathematics.

**Science:** Placement into level B science course numbering 150 or higher. Typically, students entering this program will have completed at least two years of high school science.

**Laboratory science technology, AOS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to LST 0879-200 | 2 |
| | Fundamentals of Human Biology I 0885-161 | 4 |
| | English (Level C or above) | 12 |
| | Freshman Seminar 0887-200 | 2 |
| | LST Lab Applications I 0879-201 | 2 |
| | Introduction to LST Microbiology 0879-218 | 3 |
| | Fundamentals of Chemistry I 0885-181 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | LST Lab Applications II 0879-202 | 2 |
| | LST Microbiology 0879-241 | 4 |
| | Fundamentals of Chemistry II 0885-182 | 4 |
| | Laboratory Math I 0884-231 | 3 |
| Second Year | LST Lab Applications III 0879-203 | 2 |
| | Instrumentation I 0879-301 | 3 |
| | Principles of Chemistry I 0885-211 | 4 |
| | Laboratory Math II 0884-232 | 3 |
| | Job Search Process 0806-101 | 2 |
| | LST Lab Applications IV 0879-204 | 2 |
| | Instrumentation II 0879-302 | 3 |
| | Food Laboratory Science I 0879-311 | 4 |
| | or | |
| | Environmental Laboratory Science I 0879-321 | (4) |
| | Principles of Chemistry II 0885-212 | 4 |
| | Social Sciences | 6 |
| | LST Lab Applications V 0879-205 | 2 |
| | Instrumentation III 0879-303 | 4 |
| | Food Laboratory Science II 0879-312 | 4 |
| | or | |
| | Environmental Laboratory Science II 0879-322 | (4) |
| | Deaf Studies/ASL* | (3) |
| | Wellness Education‡ | 0 |
| | Cooperative Education 0879-299 | Co-op |
| Third Year | LST Lab Applications VI 0879-206 | 2 |
| | Senior Seminar 0879-250 | 2 |
| | Technical Elective† | 3-4 |
| | Humanities | 6 |
| | Capstone Seminar 0882-295 | 3 |
| | ***Total Quarter Credit Hours*** | ***105-106*** |

** This requirement also fulfills three credits in either the humanities or social sciences, depending on which discipline offers the course.*
*‡Please see Wellness Education Requirement for more information.*
*† Students must choose one technical elective from the following list: 0879-341 Applied Microbiology (4 credits), 0879-280 Sampling and Testing of Soils and Groundwater (4 credits), 0879-270 Concepts of Surveying and Mapping (3 credits)*

**Laboratory science technology, AAS degree, typical course sequence**

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to LST 0879-200 | 2 |
| | Fundamentals of Human Biology I 0885-161 | 4 |
| | Writing Seminar 0502-227 | 4 |
| | Freshman Seminar 0887-200 | 2 |
| | LST Lab Applications I 0879-201 | 2 |
| | Introduction to LST Microbiology 0879-218 | 3 |
| | Fundamentals of Chemistry I 0885-181 | 4 |
| | Integrated Algebra 0884-212 | 4 |
| | LST Lab Applications II 0879-202 | 2 |
| | LST Microbiology 0879-241 | 4 |
| | Fundamentals of Chemistry II 0885-182 | 4 |
| | Laboratory Math I 0884-231 | 3 |
| | Liberal Arts* | 8 |
| Second Year | LST Lab Applications III 0879-203 | 2 |
| | Instrumentation I 0879-301 | 3 |
| | Principles of Chemistry I 0885-211 | 4 |
| | Laboratory Math II 0884-232 | 3 |
| | Deaf Studies/ASL | 3 |
| | Job Search Process 0806-101 | 2 |
| | LST Lab Applications IV 0879-204 | 2 |
| | Instrumentation II 0879-302 | 3 |
| | Food Laboratory Science I 0879-311 | 4 |
| | or Environmental Laboratory Science I 0879-321 | (4) |
| | Principles of Chemistry II 0885-212 | 4 |
| | Liberal Arts* | 8 |
| | LST Lab Applications V 0879-205 | 2 |
| | Instrumentation III 0879-303 | 4 |
| | Food Laboratory Science II 0879-312 | 4 |
| | or Environmental Laboratory Science II 0879-322 | (4) |
| | Wellness Education‡ | 0 |
| | Cooperative Education 0879-299 | Co-op |
| Third Year | LST Lab Applications VI 0879-206 | 2 |
| | Senior Seminar 0879-250 | 2 |
| | Technical Elective** | 3-4 |
| | Capstone Seminar 0882-296 | 4 |
| | *Total Quarter Credit Hours* | *105-106* |

**Please see General Education distribution requirements chart for more information.*
*‡Please see Wellness Education Requirement for more information.*
*** Students must choose one technical elective from the following list:*
*0879-341 Applied Microbiology (4 credits)*
*0879-280 Sampling and Testing of Soils and Groundwater (4 credits)*
*0879-270 Concepts of Surveying and Mapping (3 credits)*

# Special Certificates

## Deaf Studies Certificate

The deaf studies certificate is intended for people in the public or private sector who are interested in communicating effectively with deaf people in their communities. Classes in the certificate program provide a stimulating basic foundation in communicative and cultural competence in American Sign Language. The program is ideally suited as an introduction to ASL and Deaf culture for people who might be interested in subsequent coursework in the fields of ASL-English Interpretation or deaf education.

Rochester has the highest per capita population of deaf and hard-of-hearing individuals in the United States. There are numerous educational and social resources for this community in the area, making NTID the ideal place to begin your study of American Sign Language.

The 16-credit curriculum is composed of the following courses. Although a primary emphasis in the curriculum is learning basic American Sign Language, students also deepen their understanding of deafness through courses related to the physical, psychological, social, and linguistic aspects of deafness. Substitution of one course for another is generally not permitted. Students must maintain a cumulative GPA of 2.0 for courses in the program in order to receive the certificate.

| Course Title | Qtr. Cr. Hrs. |
|---|---|
| 0876-211, 212, 213 American Sign Language I, II, III | 6 |
| 0876-311, 312 American Sign Language IV, V | 4 |
| 0876-241, 242 Aspects and Issues of Deafness I, II | 6 |
| **Total Quarter Credit Hours** | **16** |

For advising or further information about this program, call (585) 4075-6809 (v/TTY) or (585) 475-6851 (TTY).

## Performing Arts Certificate

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 three-credit courses in the performance/script track (for those students interested in acting, dramaturgy, translation, and dance/movement) or the technical theater track (for those students interested in scenic design and technology, lighting, costume, and stage management). A three-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 credits. This program is not intended as a stand-alone certification.

### Prerequisites

Applicants for the performing arts certificates (either performance/script or technical theater) must be currently 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.

| **Performance/Script Emphasis** | **Qtr. Cr. Hrs.** |
|---|---|
| **Required Course** | |
| 0881-298 Performing Arts Practicum | 3 |
| **Electives Courses–Please choose four of the following courses for 12 additional quarter credit hours:** | |
| 0881-256 Script Analysis | 3 |
| 0881-210 Acting I | 3 |
| 0881-260 Acting II | 3 |
| 0881-258 Introduction to Play Creating | 3 |
| 0881-168 Jazz | 3 |
| 0881-266 Ballet | 3 |
| 0881-267 Fundamentals of Choreography | 3 |
| 0881-202 History of Theatre | 3 |
| 0881-204 Deaf Theatre History | 3 |
| 0881-217 Stage Combat | 3 |
| 0881-218 Dance History | 3 |
| 0881-166 Sign Mime and Creative Movement | 3 |
| 0881-253 Arts Management | 3 |
| 0881-259 Creative Translation | 3 |
| 0881-261 Audition Technique | 3 |
| 0881-167 Dance Performance | 3 |
| 0881-257 Introduction to Dramatic Literature | 3 |
| **Total Quarter Credit Hours for certification** | **15** |

| Technical Theater Emphasis | Qtr. Cr. Hrs. |
|---|---|
| **Required course** | |
| 0881-298 Performing Arts Practicum | 3 |
| **Electives Courses–Please choose four of the following courses for 12 additional quarter credit hours:** | |
| 0881-256 Script Analysis | 3 |
| 0881-222 Scenic Technology I | 3 |
| 0881-223 Scenic Technology II | 3 |
| 0881-224 Scene Painting | 3 |
| 0881-231 Costume Technology I | 3 |
| 0881-232 Costume Technology II | 3 |
| 0881-233 Stage Make-up | 3 |
| 0881-241 Lighting Technology I | 3 |
| 0881-242 Lighting Technology II | 3 |
| 0881-253 Arts Management | 3 |
| 0881-272 Stage Management | 3 |
| | |
| **Total Quarter Credit Hours for certification** | **15** |

## Deaf Studies/American Sign Language Certificate

The Deaf 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 the overall diversity of the human race. The program consists of two tracks: advocacy and community or American Sign Language (ASL) studies.

Each track addresses historical, anthropological, linguistic, literary, artistic, and multicultural aspects of Deaf people's lives. Knowledge, skills, and abilities obtained from the program include: understanding the structure of ASL, application of linguistic principles to other languages (especially English); enhancement of bilingual skills to improve communication; increased knowledge of Deaf culture and Deaf history; 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 wider community. The ASL studies track enhances students' marketability via teaching ASL and Deaf culture in the workplace, at schools, or within the community.

Candidates will be granted the certificate upon successful completion of the course requirements in either of the two tracks. Courses leading to the certificate are offered as part of the NTID social sciences and humanities curricula. Applicants for the Deaf studies/American Sign Language certificate (either the advocacy and community track or the ASL studies track) must be currently matriculated and in good standing in an undergraduate degree program at RIT/NTID or graduates holding a degree from an RIT/NTID program. Introduction to Deaf Studies (0880-190) is a prerequisite for admission to the program.

| Advocacy and Community track: required courses | Qtr. Cr. Hrs. |
|---|---|
| 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** |

| American Sign Language Studies track: required courses | Qtr. Cr. Hrs. |
|---|---|
| 0882-222 Deaf Culture and Community | 3 |
| 0886-249 Structure of ASL | 3 |
| 0886-250 Introduction to ASL Teaching | 3 |
| Deaf Studies/ASL Elective | |
| (choose one course from the listing below) | |
| 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 | 3 |
| **Total Quarter Credit Hours** | **12** |

# Pre-baccalaureate Studies

## Business

***Mary Lou Basile, Business and Studies***

## Computer Science and Information Technology

***Elissa Olsen, Information and Computing Studies***

## Criminal Justice

***Stephen Aldersley, Liberal Studies***

## Imaging Arts and Sciences

***John W Cox, Arts and Imaging Studies***

## Science and Engineering

***Sharon L. Rasmussen, Interim Chairperson, Science and Engineering Support***

### General information

Pre-baccalaureate studies is available as a bridge into baccalaureate degree programs for students who are accepted by NTID and are close to, but not fully ready for, direct entry into an RIT baccalaureate-level program. Students who qualify for pre-baccalaureate studies are those who have academic transcripts, scores on admissions tests, and other evidence that support 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 enables students to focus on needed skills while concurrently progressing toward their chosen field of study. Students take courses taught by support department faculty 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 either an RIT baccalaureate-level or NTID associate-level program.

### Pre-baccalaureate studies in information technology, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Computing Fundamentals 0853-310 | 4 |
| | Programming I 4002-217 | 4 |
| | Programming II 4002-218 or Programming IIa, IIb 4002-220, 221 | 4-8 |
| | Introduction to Multimedia 4002-320 | 4 |
| | Liberal Arts* | 12 |
| | Algebra and Trigonometry 1016-204† | 4 |
| | Discrete Math for Technology I, II 1016-205, 206† | 8 |
| | Pre-baccalaureate courses‡ | 0–4 |
| | *Total Quarter Credit Hours* | *42-50* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*† NTID mathematics courses may be required as prerequisites, depending on placement.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in computer science, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Computer Science I, II, III 4003-231, 232, 233 | 12 |
| | Liberal Arts* | 12 |
| | Calculus I, II, III 1016-271, 272, 273† | 12 |
| | Discrete Math I, II 1016-265, 366 | 4-8 |
| | Pre-baccalaureate courses‡ | 0–4 |
| | *Total Quarter Credit Hours* | *42-50* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*† NTID mathematics courses may be required as prerequisites, depending on placement.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in business, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Business Software Applications 0112-270 | 2 |
| | Laboratory Science | 4 |
| | Liberal Arts* | 12 |
| | Algebra, Calculus for Management Science 1016-225, 226† | 8 |
| | Pre-baccalaureate courses‡ | 6–8 |
| | *Total Quarter Credit Hours* | *34–36* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*† NTID mathematics courses may be required as prerequisites, depending on placement.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in criminal justice, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Computer Applications in Criminal Justice 0501-406 | 4 |
| | Criminology 0501-203 | 4 |
| | Liberal Arts* | 12 |
| | Algebra for Management Science 1016-225† | 4 |
| | NTID Humanities and Social Science courses | 3 |
| | Pre-baccalaureate courses‡ | 6-8 |
| | *Total Quarter Credit Hours* | *35–37* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in School of Art (illustration, medical illustration, fine arts studio) and School of Design (graphic design, industrial design, interior design) programs and program options in the School for American Crafts programs (ceramics/ceramic sculpture, glass/glass sculpture, metal and jewelry design, wood-working/furniture design), typical course sequence.

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Basic Design I, II, III 2012-201, 202, 203 | 6 |
| | Basic Drawing Media I, II, III 2012-201, 202, 203 | 6 |
| | Still Photo I, II, III 2012-201, 202, 203 | 6 |
| | Liberal Arts* | 12 |
| | Pre-baccalaureate courses‡ | 2–4 |
| | *Total Quarter Credit Hours* | *32–34* |

*Portfolio of original artwork is required to determine admission. See the College of Imaging Arts and Sciences support coordinator for further information.*
** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in School of Photographic Arts and Sciences in imaging arts and sciences, professional photographic illustration option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Still Photography I, II, III 2060-257, 258, 259 | 3-9 |
| | History and Aesthetics of Photography 2060-301, 302, 303 | 4-12 |
| | Two-dimensional Design 2013-231, 232, 233 | 3-9 |
| | Liberal Arts* | 12 |
| | Pre-baccalaureate courses‡ | 6–8 |
| | *Total Quarter Credit Hours* | *28-50* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in imaging arts and sciences, biomedical photography option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Still Photography I, II, III 2060-257, 258, 259 | 3-9 |
| | Medical Terminology 1026-301 | 3 |
| | Human Biology 1004-211 | 3 |
| | Human Biology Lab 1004-231 | 1 |
| | Liberal Arts* | 12 |
| | Pre-baccalaureate courses‡ | 6–8 |
| | *Total Quarter Credit Hours* | *28-38* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.*

### Pre-baccalaureate studies in imaging arts and sciences, film and video option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Introduction to Portable Video 2065-243 | 4 |
| | or Script Writing I 2065-342 | (3) |
| | Film Language 2065-222 | 2 |
| | Theater electives/NTID Performing Arts† | 2–8 |
| | Liberal Arts* | 12 |
| | Pre-baccalaureate courses‡ | 6–8 |
| | *Total Quarter Credit Hours* | *25–34* |

*† See College of Imaging Arts and Sciences support coordinator adviser for current information regarding theater electives.*
** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies, and specific discipline areas.*

### Pre-baccalaureate studies in imaging arts and sciences, printing option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Graphic Media Perspectives 2082-201* | 3 |
| | or New Media Perspectives 2083-201 | (3) |
| | Application of Typography and Design 2082-211 | 4 |
| | Digital Image Capture 2082-221 | 4 |
| | Color Separation Systems 2081-409 | 3 |
| | Liberal Arts* | 12 |
| | Algebra for Management Science 1016-225† | 4 |
| | Pre-baccalaureate course‡ | 6–8 |
| | *Total Quarter Credit Hours* | *36–38* |

** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*‡ Pre-baccalaureate courses are available to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*

### Pre-baccalaureate studies in biology, biotechnology, medical sciences, environmental science and environmental management, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Pre-baccalaureate courses‡ | (2-5) |
| | Human Biology I, II, III 1004-231, 232, 233 | 12 |
| | And | |
| | Human Biology Lab 1004-211, 212, 213 | |
| | or General Biology I, II, III 1001-201, 202, 203 | (12) |
| | and | |
| | General Biology Lab 1001-205, 206, 207 | |
| | or General and Analytical Chemistry 1011-215, 216, 217† | |
| | and | |
| | Chemical Principles Lab I, II, III 1011-205, 206, 227 | (14) |
| | Liberal Arts* | 12 |
| | College Algebra and Trigonometry§ 1016-204 | 4 |
| | Elementary Calculus I, II 1016-214, 215 | 6 |
| | *Total Quarter Credit Hours* | *36–43* |

*‡ Pre-baccalaureate courses are an available option to strengthen students' skills in critical thinking, learning strategies and specific discipline areas.*
*† Chemical Principles I, II and III option only for environmental management*
** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*§ Alternative mathematics courses may be required as prerequisites, depending on placement.*

### Pre-baccalaureate studies in science, chemistry option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Pre-baccalaureate courses‡ | (2-5) |
| | General and Analytical Chemistry I, II, III 1011-215, 216, 217 | 14 |
| | And | |
| | Chemistry Labs 1011-205, 206, 227 | |
| | or General Chemistry I, II 1010-251, 252 | (8) |
| | and | |
| | General Chemistry Lab 1010-255 | |
| | And | |
| | Quantitative Analysis 1008-261 | (4) |
| | And | |
| | Quantitative Analysis Lab 1010-265 | |
| | Liberal Arts* | 12 |
| | Precalculus 1016-230§ | 4 |
| | Calculus and Analytical Geometry I, II 1016-241, 242 | 12 |
| | *Total Quarter Credit Hours* | *42–49* |

*‡ 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, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*§ Alternative mathematics courses may be required as prerequisites, depending on placement.*

### Pre-baccalaureate studies in science, math or physics options, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Pre-baccalaureate courses‡ | (2-5) |
| | General Biology I, II, III 1001-201, 202, 203 | 12 |
| | And | |
| | General Biology I, II, III Lab 1001-205, 206, 207 | |
| | or General and Analytical Chemistry I, II, III 1011-215, 216, 217 | (14) |
| | and | |
| | Chemical Principles Labs I, II, III 1011-205, 206, 207 | |
| | or College Physics I, II, III 1017-211, 212, 213§ | (12) |
| | and | |
| | College Physics Labs 1017-271, 272, 273 | |
| | or † University Physics I, II, III 1017-311, 312, 313§ | (15) |
| | Liberal Arts* | 12 |
| | Calculus I, II, III 1016-251, 252, 253§ | 12 |
| | *Total Quarter Credit Hours* | *38–46* |

*‡ Pre-baccalaureate courses are an available 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.*
*† Students must choose one of the two physics sequences for the physics option.*
** Please see Liberal Arts General Education Requirements for more information. Depending on placement, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*

### Pre-baccalaureate studies in engineering option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Pre-baccalaureate courses‡ | (2) |
| | Major-related courses depending on area of interest | 16 |
| | College Chemistry 1011-0208 | 4 |
| | University Physics I, II 1017-311, 312 | 8 |
| | Liberal Arts* | 12 |
| | Calculus I, II, III 1016-281, 282, 283§ | 12 |
| | *Total Quarter Credit Hours* | *54–56* |

*‡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, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*§ Alternative mathematics courses may be required as prerequisites, depending on placement.*

### Pre-baccalaureate studies in engineering technology option, typical course sequence

| | | Qtr. Cr. Hrs. |
|---|---|---|
| First Year | Freshman Seminar 0853-200 | 2 |
| | Pre-baccalaureate courses‡ | (2) |
| | Engineering Technology Seminar 0606-101 | 2 |
| | Major-related courses depending on area of interest | 16 |
| | Liberal Arts* | 12 |
| | Technical Math I 0692-221§ | 4 |
| | Technical Math II 0692-221§ | 4 |
| | Calculus for Technology 1019-420§ | 4 |
| | *Total Quarter Credit Hours* | *44–46* |

*‡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, writing sequence may begin with 0502-110 Written Communication I, 0502-111 Written Communication II, or 0502-227 Writing Seminar.*
*§Alternative mathematics courses may be required as prerequisites, depending on placement.*

# Course Descriptions

*www.rit.edu/ugrad_courses*

*Descriptions of all undergraduate courses offered at Rochester Institute of Technology are available on the RIT website at www.rit.edu/ugrad_courses. Students may also request a Course Descriptions booklet from their college's academic advising office or the Undergraduate Admissions Office.*

# Minors

*www.rit.edu/~932www/ugrad_bulletin/minors/*

RIT offers students a number of academic minors to complement and enhance their undergraduate studies. Students often choose a minor to develop personal or professional interests beyond their chosen degree program. This section of the *Undergraduate Bulletin* lists course requirements established for the approved minors offered by RIT's colleges.

At RIT, a minor is defined as a thematically related set of courses consisting of no fewer than 20 credit hours, taken from a discipline or an interdisciplinary area distinct from the student's major program of study. Some minors may carry the same title as an existing major or degree program (e.g., accounting), while others may be based on a special interdisciplinary set of courses (e.g., science, technology, and environmental studies). The department or college offering the minor determines which courses are required for completion, as well as any associated prerequisite courses.

Completion of a minor results in a formal designation on a student's academic transcript upon graduation from RIT. This provides an official indication that the student has completed the requirements for the minor and serves to highlight this accomplishment to graduate schools, employers, and others. Students may pursue more than one minor if they have a sufficient number of elective courses available within their degree program, or if they choose to graduate with additional credits.

There are currently more than 50 minors offered throughout RIT, including more than 30 offered in the College of Liberal Arts. Minors completed in designated areas within the College of Liberal Arts may be used to fulfill a portion of the university's general education requirements (see Liberal Arts General Education Requirements for more information). The full list of minors offered at RIT is provided, with an asterisk indicating approved College of Liberal Arts minors. This list is followed by a detailed description of the course requirements for each minor. Students who wish to review descriptions of the required courses can find them listed on RIT's website at www.rit.edu/ugrad_courses.

Accounting
American Politics*
Applied Imaging Systems
Art History*
Astronomy
Business Administration
Communication*:
- Advertising and Public Relations
- Applied Communication
- Communication and Culture
- Mass Media Communication

Computer Science
Construction Management
Creative Writing*
Criminal Justice*
Economics*
Engineering:
- Computer
- Electrical
- Engineering Management
- Industrial
- Mechanical
- Semiconductor Processing

Entrepreneurship
Exercise Science
Finance
Foreign Language*:
- Arabic
- Chinese
- French
- German
- Italian
- Japanese
- Russian
- Spanish

Foreign Language/Culture*:
- Arabic
- German
- Italian
- Japanese
- Spanish

History*:
- American
- European
- Modern World

Historical Perspectives on Science and Technology*
Human Resource Management
Imaging Science
Industrial Environment Management
International Business
International Relations*
Journalism
Literary and Cultural Studies*
Management
Management Information Systems
Marketing
Mathematics
Military Studies and Leadership
Music*
Optical Sciences
Packaging Science
Philosophy*
Physics
Polictical Science
Print Media
Psychology*
Public Policy*
Science, Technology, and Environmental Studies*
Science, Technology, and Policy
Sociology/Anthropology*

Statistics
Structural Design
Sustainable Product Design
Telecommunications
Theatre Arts
Women's and Gender Studies*
Writing Studies*

**Fulfills liberal arts general education/advanced study requirements.*

## Accounting

***Minor Adviser: Thomas Tribunella***

Accounting is involved 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
or
0101-335 Cost and Managerial Accounting

**Electives—Choose three of the following courses with at least two 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
0101-554 Seminar in Accounting
0104-340 Personal Financial Management
0104-350 Corporate Finance
0110-319 Legal Environment of Business

## American Politics

***Minor Advisers: Joseph Fornieri and Sean Sutton***

A minor in American politics informs students about the structure and functions of public institutions to prepare students for effective participation in the American political arena.

**Required Courses:**
0513-451 The Legislative Process
0513-452 The American Presidency
0513-456 Judicial Process

**Electives—Choose two of the following courses:**
0508-484 Environmental Policy
0513-449 Special Topics: Tocqueville and America
0513-450 State and Local Politics
0513-453 American Foreign Policy
0513-454 Political Parties and Voting
0513-455 Politics and Public Policy
0513-457 Constitutional Law
0513-458 American Political Thought
0513-460 Constitutional Rights and Liberties
0513-461 Introduction to Comparative Politics
0513-481 Women in Politics
0513-482 African-American Politics
0513-485 Politics Through Fiction
0513-514 Political Theory

## Applied Imaging Systems

***Minor Adviser: Nitin Sampat***

The purpose of the minor in applied imaging systems is to offer students an introduction to the business and technology of photographic imaging – primarily as it relates to image output and lab operations.

A minor in applied imaging systems requires the student to take a total of 20 credit hours. The courses include topics, which span the components of an imaging system – from capture to print. These include, but are not limited to, digital capture, output technologies, color management, and imaging workflows. Topics are taught from an applied, hands-on perspective. Lab assignments are an integral part of the curriculum and the student will work with a variety of imaging instruments and output devices.

All matriculated RIT undergraduate students are eligible to apply for the minor. Majors within CIAS seeking this minor can substitute courses, which they have already taken (up to a maximum of eight credit hours) as part of their major (assessed on a course-by-course basis in consultation with the minor coordinator)

**Prerequisites:**
2076-211, 2076-212, 2076-213 Materials and Processes of Photo (or permission of minor adviser. As a general guideline, the minor is best suited for 3rd and 4th year students.)

**Required Courses:**
2068-411 Imaging Systems
2068-412 Color Management for Photographers
2068-413 Imaging Workflows

**Electives – Choose at least two of the following courses*:**
2061-361 Web Design Using Photography
2076-491 Intro to Digital Imaging
2076-492 Electronic Sensitometry
2082-317 Web-site Design for Graphic Media
2082-337 Digital Asset Management
2082-401 Digital Print Processes
2082-xxx Image Retouching and Restoration

**Equivalent courses may be considered in lieu of these courses by permission of the minor adviser.*

## Art History

***Minor Adviser: Tina Lent***

An art history minor provides students with the opportunity to enhance their knowledge of the art of the past, help them refine their own work, and prepare them for possible careers in academia, galleries, and museums.

**Prerequisites:**
2039-225, 226, and 227 Art and Civilization

**Electives (choose three of the following courses):**
**College of Liberal Arts**
0505-431 Topics in Baroque Art of Southern Europe
0505-432 Renaissance Painting Flanders
0505-433 15th Century Art and Architecture of Florence and Rome
0505-434 16th Century Art and Architecture of Florence and Rome
0505-435 Russian Art from the 10th to the 20th Century
0505-441 American Architecture
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 (Only the following topics are acceptable)
- African-American Art
- American Architecture
- Memory/Memorials
- Art and Technology
- Museums

0505-467 American Film Since the Sixties
0505-468 Art of India and Southeast Asia
0505-469 Art of China, Korea, and Japan
0505-480 Women and the Visual Arts
0505-481 Oriental Art
0505-487 Special Topics: Art of Islam
*(Three additional upper-level liberal arts electives are still required for graduation.)*

**College of Imaging Arts and Sciences (choose three courses):**
2039-300 History of 20th Century Design
2039-320 History of Crafts
2039-330 Philosophy of Art
2039-355 Latin American Art
2039-370 20th Century Art
2039-376 Renaissance Painting/Flanders
2039-380 Contemporary Art (required)
2039-425 Public Art/Public Space
2039-430 Dada and Surrealism
2039-438 Body in Art
2039-440 Conceptual Art
2039-450 Pop Art and Pop Culture
2039-553 Special Topics (Only the following topics are acceptable)
- Pre-Columbian Art
- What is Postmodernism?
- Art of the Last Decade
- Theory and Criticism 20th Century
- Art of Installation
- 15th Century Art/Architecture of Florence and Rome
- 16th Century Art/Architecture of Florence and Rome
- Art and Activism
- Russian Art
- Scandinavian Art
- Arts and Crafts Movement
- Architecture, Interior, Furniture
- American Furniture
- Streamlining America
- Art and Technology

## Astronomy

***Minor Adviser: Andrew Robinson***

Astronomy is an interdisciplinary minor offered jointly by the Department of Physics and the Chester F. Carlson Center for Imaging Science, and administered through the Department of Physics. 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.

**Prerequisite:**
1017-314 Modern Physics I

**Required Course:**
1017-301 University Astronomy

**Electives—Choose four of the following courses (at least one must come from Group A and at least one must come 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
xxxx-xxx** General Elective

***A maximum of four credits of 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*

## Business Administration

***Minor Adviser: Donald O. Wilson***

This minor is appropriate for RIT undergraduate students from outside the E. Philip Saunders College of Business who are interested in a broad exposure to the world of business. Students interested in pursuing an MBA degree may also use this minor program to waive certain MBA foundation courses.

**Required Courses–Choose three of the following courses:**

0101-301 Financial Accounting
0105-363 Principles of Marketing
0102-430 Organizational Behavior
0106-401 Operations Management
0112-315 Business Information Systems
0110-319 Legal Environment of Business
0102-360 Global Business: An Introduction
0104-350 Corporate Finance or
0104-340 Personal Financial Management

**Electives–Choose two electives from different College of business discipline areas**

The additional courses may come from the above list of required courses. Students must meet the prerequisites for any courses they select.

Student interested in using this minor program to waive certain MBA foundation courses can obtain further detailed information by consulting the minor adviser or the COB graduate adviser

## Communication

***Minor Adviser: Bruce Austin***

This minor provides a foundation in spoken, written, and visual communication skills and theories through four tracks: applied communication, mass media, communication and culture, or advertising and public relations. This minor is closed to students enrolled in the professional and technical communication degree program and the advertising and public relations degree program.

**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

**Electives—Choose three courses from one of the following tracks:**

**Applied communication track**

0502-444 Technical Writing
0535-416 Newswriting
0535-415 Organizational Communication
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

**Mass media communication track**

0535-332 Newswriting
0535-421 Public Relations
0535-450 Visual Communication
0535-452 Uses and Effects of Mass Media
0535-482 Mass Communications
0535-524 Communication and Documentary Film
0535-550 Film and Society

**Communication and culture track**

0535-414 Interpersonal Communication
0535-420 Argument and Discourse
0535-444 Rhetoric of Free Speech
0535-450 Visual Communication
0535-484 Rhetoric of Race Relations
0535-490 Persuasion and Social Change
0535-520 Intercultural Communication

**Advertising and public relations track**

0535-421 Public Relations
0535-460 Copywriting and Visualization
0535-461 Principles of Advertising
0535-462 Digital Design
0535-463 Campaign Management and Planning
0535-464 Public Relations Writing

## Computer Science

***Minor Adviser: Henry A. Etlinger***

The computer science minor is designed to achieve two basic goals. First, students who complete this minor will acquire a foundation in basic programming fundamentals with an emphasis on modern programming practices. Secondly, a computer science minor will provide an opportunity for students to expand their programming foundation by either delving more deeply into programming, or by sampling selected theoretical or applied areas within computer science. The minor requires a total of five courses (20 credit hours).

**Required Courses:**

4003-231 Computer Science I
4003-232 Computer Science II
4003-233 Computer Science III

Students may choose any two elective courses from the list of undergraduate computer science offerings, with some exceptions. Students are not permitted to take computer science service courses (all courses listed under the 4001 prefix; 4003-318, Scientific Programming; 4003-309, C for C++ Programmers; or 4003-341, Professional Communications), or courses designed specifically for computer science majors in the Honors Program. At least 12 quarter hours must be in courses not required by a student's home department.

## Construction Management

***Minor Adviser: Maureen Valentine***

The construction management minor broadens student's learning experiences and professional opportunities by creating a focus in construction management. The minor's curriculum offers broadly-based courses covering many aspects of construction management including building construction, cost estimating, construction project management, and construction safety. Students have flexibility in their choice of electives, allowing them to individualize the curriculum to match their interests.

**Required Courses:**
0608-422 Elements of Building Construction
0608-509 Construction Cost Estimating
0608-560 Construction Project Management
0608-544 Contracts and Specs

**Electives–Choose three of the following courses:**
0608-500 Labor Relations
0608-460 Construction Equipment
0608-444 Mechanical and Electrical Equipment for Buildings
0633-504 Construction Safety

## Creative Writing

***Minor Adviser: Dr. Linda Reinfeld***

This minor provides theoretical and historical background and models to assist students as they develop their own creative writing abilities.

**Prerequisite:**
0502-227 Writing (or equivalent)

**Requirements**: Five courses are required.

**Choose three courses from the following group:**
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 courses from the following group:**
0504-441 Art of Poetry
0504-442 The Short Story
0504-443 The Novel
0504-460 Modern Poetry

**Please note that students may take the Advanced Creative Writing course twice. A student in the creative writing minor has the option to take one of the creative writing courses and then take Advanced Creative Writing twice in order to complete an extended writing project.*

## Criminal Justice

***Minor Adviser: Thomas Castellano***

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.

**Required Course:**
0501-400 Criminology

**Electives—Choose two of the following courses:**
0501-441 Corrections
0501-444 Concepts in Criminal Law
0501-443 Law Enforcement in Society
0501-456 Courts
0501-406 Technology in Criminal Justice

**Also choose two of the following courses:**
0501-405 Major Issues in the Criminal Justice System (Topics may vary)
0501-440 Juvenile Justice
0501-445 Minority Groups and the Criminal Justice System
0501-446 Women and Crime
0501-507 Computer Crime

## Economics

***Minor Advisers: Michael Vernarelli and Jeffrey Wagner***

An economics minor provides a systemic 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.

**Prerequisite:**
0511-211 Principles of Microeconomics

**Required Course:**
0511-402 Principles of Macroeconomics

**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
0511-450 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
0511-481 Environmental Economics
0511-484 Natural Resource 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

## Engineering

Students may choose from five minors offered in the Kate Gleason College of Engineering. These include electrical engineering, engineering management, industrial engineering, mechanical engineering, and semiconductor processing.

### Computer Engineering

***Minor Adviser: Dr. Andreas Savakis***

A minor in computer engineering exposes students to some fundamental disciplines in computer engineering and provides a foundation to explore specialized subject material in computer engineering professional electives and/or graduate courses.

**Prerequisites:**
1016-281 Project-based Calculus I
or
1016-272 Calculus B
or
1016-265 Discrete Math I
4003-232 Computer Science II (or equivalent)

***Required Courses:***
0306-341 Introduction to Digital Systems
0306-250 Assembly Language 4 (0306-341 and 4003-232)
0306-550 Computer Organization 4 (0306-250)

***Elective Course – Choose two of the following courses:***
0306-351 Hardware Description Languages
0306-381 Applied Programming
0306-451 Digital Signal Processing
0306-460 Electronics for Computer Engineers
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
0306-658 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

### Electrical Engineering

***Minor Adviser: Vincent Amuso***

A minor in electrical engineering exposes students to some fundamental disciplines in electrical engineering and provides a foundation to explore specialized subject material in electrical engineering professional electives or graduate courses.

**Prerequisites:**
1016-283 Calculus III
1017-313 University Physics III

**Additional prerequisites, depending on choice of electrical engineering elective courses, may include:**
1016-314 Engineering Statistics
1016-328 Engineering Mathematics
1016-420 Complex Variables
1016-351 Probability and Statistics
4001-211 Programming Using C

**Required Courses:**
0301-381 Circuits I
0301-382 Circuits II

**Electives—Choose three of the following courses:**
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

All 600-level electrical engineering courses must meet prerequisites.

### Engineering Management

***Minor Adviser: Jacqueline Mozrall***

The minor in engineering management integrates technological and managerial expertise while it focuses 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, both as 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.

**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:**
0303-520, 620 Engineering Economy
0303-481 Engineering Management
0101-494 Cost Accounting for Technical Organizations

**Electives—Choose two of the following courses:**
0303-401 Operations Research
0303-402 Production Control
0303-422 Systems and Facilities Planning
0303-503 Systems Simulation
0303-510 Applied Statistical Quality Control
0303-703 Supply Chain Management
0303-726 Contemporary Production Techniques
0303-734 Systems Safety Engineering
0303-758 Design of Experiments
0303-765 Databases for Information Systems
0303-766 Manufacturing Systems
0303-784 Systems Project Management
0303-785 Engineering Risk Benefit Analysis
(Other elective courses may be appropriate with minor adviser approval.)

## Industrial Engineering

***Minor Adviser: Jacqueline Mozrall***

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, operation 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)

**Core Courses—Select at least three of the following courses:**
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
0303-525 Manufacturing Engineering

**Electives—Choose two of the following courses:**
0303-516 Human Factors
0303-630 Advanced Systems Integration
0303-703 Supply Chain Management
0303-711 Advanced Simulation Techniques
0303-726 Contemporary Production Systems
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
0303-784 Systems and Project Management
0303-785 Economic Risk Benefit Analysis
(Other elective courses may be appropriate with minor adviser approval.)

## Mechanical Engineering

***Minor Adviser: Alan Nye***

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 will expose the student to the core foundations of the discipline and is intended to help non-majors explore high technology careers and to communicate effectively with engineers on project teams.

**Prerequisites:**
1016-282 Project-based Calculus II
or
1016-273 Calculus C
1011-208 College Chemistry
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

## Semiconductor Processing

***Minor Adviser: Michael Jackson***

The semiconductor processing minor is designed to provide basic knowledge to non-microelectronic engineering students from math and statistics, science, and other engineering disciplines whose career path may involve the semiconductor industry. This program also prepares students to pursue graduate studies in microsystems engineering, research in semiconductor applications, and nanotechnology.

**Prerequisites:**

1016-281 Calculus I
1016-282 Calculus II
1017-311 University Physics I
1011-208 College Chemistry

**Required Courses:**

0305-221 Introduction to Microlithography
0305-350 IC Technology
0305-643 Thin Film Processes

**Electives—Choose two of the following courses:**

0305-564, 574* Microlithography Systems
0305-632 Silicon Process Integration
0305-650 CMOS Processing
0305-666, 676 Microlithography. Materials and Processes
0305-704 Process and Device Modeling
0305-707* Nanoscale CMOS
0305-731 Microelectronics Manufacturing I
0305-732 Microelectronics Manufacturing II
0305-830 Metrology and Failure Analysis
0305-870 Microelectromechanical Systems

**These electives are suitable for students with appropriate prerequisites from their major program.*

## Entrepreneurship

***Minor Adviser: Richard DeMartino***

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.

**Required Course:**

0102-490 Entrepreneurship

**Choose one of the following entrepreneurial experiences:**

0102-547 Field Experience in Business Consulting
KGCOE Engineering Senior Design Capstone
Other approved field experience
RIT Student Incubator

**Electives—Choose three of the following courses:**

0101-301 Financial Accounting
0101-302 Management Accounting
0102-250 World of Business
0102-530 Managing Innovation and Technology
0105-363 Principles of Marketing
0303-790 Fundamentals of Sustainable Design
0303-784 Systems and Project Management
0304-xxx Intellectual Property
0610-517 Product Ideation
0610-518 Design and Development
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

## Exercise Science

***Minor Adviser: Richard Doolittle***

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.

**Prerequisites:**

1001-201 General Biology I
1001-202 General Biology II
1001-203 General Biology III
or
1001-251, 252, and 253 Introduction to Biology

**Required Courses:**

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
1026-307 Exercise Prescription for Special Populations

## Finance

***Minor Adviser: Melissa Palmer***

The finance minor will help 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.

**Required Courses:**
0101-301 Financial Accounting
0104-340 Personal Financial Management
0104-350 Corporate Finance
0104-453 Intermediate Investments

**Electives—Choose one of the following courses:**
0104-452 Managing Corporate Assets and Liabilities
0104-504 Finance in a Global Environment
0104-510 Management of Financial Institutions
0104-520 Introduction to Options and Futures
0104-554 Seminar in Finance

## Foreign Language

This minor provides two full years of foreign language instruction to prepare students for living and working within an intercultural society both at home and abroad. Students may choose a foreign language minor in Arabic, Chinese, French, German, Italian, Japanese, Russian or Spanish.

### Arabic Language

***Minor Adviser: Diane Forbes***

**Prerequisite:**
0503-405 Beginning Arabic I

**Required Courses—Choose five of the following:**
0503-445 Beginning Arabic II
0503-446 Beginning Arabic III
0503-447 Intermediate Arabic I
0503-448 Intermediate Arabic II
0503-449 Intermediate Arabic III
0503-450 Advanced Arabic I
0503-498 Advanced Arabic II
0503-513 Advanced Arabic III

### Chinese Language

***Minor Adviser: Diane Forbes***

**Prerequisite:**
0503-408 Beginning Chinese I

**Required Courses—Choose five of the following:**
0503-451 Beginning Chinese II
0503-452 Beginning Chinese III
0503-453 Intermediate Chinese I
0503-454 Intermediate Chinese II
0503-455 Intermediate Chinese III
0503-456 Advanced Chinese I
0503-457 Advanced Chinese II
0503-458 Advanced Chinese III

### French Language

***Minor Adviser: Wilma Wierenga***

**Prerequisite:**
0503-435 Beginning French I

**Required Courses—Choose five of the following courses:**
0503-464 Beginning French II
0503-465 Beginning French III
0503-466 Intermediate French I
0503-467 Intermediate French II
0503-468 Intermediate French III
0503-469 Advanced French I
0503-470 Advanced French II
0503-471 Advanced French III

### German Language

***Minor Adviser: Wilma Wierenga***

**Prerequisite:**
0503-412 Beginning German I

**Required Courses—Choose five of the following courses:**
0503-472 Beginning German II
0503-473 Beginning German III
0503-474 Intermediate German I
0503-475 Intermediate German II
0503-476 Intermediate German III
0503-478 Advanced German I
0503-479 Advanced German II
0503-501 Advanced German III

### Italian Language

***Minor Adviser: Elisabetta D'Amanda***

**Prerequisite:**
0503-521 Beginning Italian I

**Required Courses—Choose five of the following courses:**
0503-522 Beginning Italian II
0503-523 Beginning Italian III
0503-524 Intermediate Italian I
0503-525 Intermediate Italian II
0503-526 Intermediate Italian III

### Japanese Language

***Minor Adviser: Hiroko Yamashita***

**Prerequisite:**
0503-420 Beginning Japanese I

**Required Courses—Choose five of the following courses:**
0503-480 Beginning Japanese II
0503-481 Beginning Japanese III
0503-482 Intermediate Japanese I
0503-483 Intermediate Japanese II
0503-484 Intermediate Japanese III
0503-488 Advanced Japanese I
0503-489 Advanced Japanese II
0503-500 Advanced Japanese III

## Russian Language

***Minor Adviser: Diane Forbes***

**Prerequisite:**
0503-424 Beginning Russian I

**Required Courses—Choose five of the following:**
0503-425 Beginning Russian II
0503-426 Beginning Russian III
0503-427 Intermediate Russian I
0503-428 Intermediate Russian II
0503-429 Intermediate Russian III
0503-431 Advanced Russian I
0503-432 Advanced Russian II
0503-433 Advanced Russian III

## Spanish Language

***Minor Adviser: Diane Forbes***

**Prerequisite:**
0503-430 Beginning Spanish I

**Required Courses—Choose five of the following courses:**
0503-490 Beginning Spanish II
0503-491 Beginning Spanish III
0503-492 Intermediate Spanish I
0503-493 Intermediate Spanish II
0503-494 Intermediate Spanish III
0503-496 Advanced Spanish I
0503-497 Advanced Spanish II
0503-502 Advanced Spanish III

# Foreign Language/Culture

The foreign language/culture minor provides intermediate study in foreign language and appropriate courses in the culture of the chosen language area. This is an interdisciplinary minor is offered in Arabic, German, Italian, Japanese, and Spanish.

## Arabic Language/Culture

***Minor Adviser: Diane Forbes***

**Prerequisite:**
0503-405 Beginning Arabic I

**Required Courses—A sequence of three courses from the following is required:**
0503-445 Beginning Arabic II
0503-446 Beginning Arabic III
0503-447 Intermediate Arabic I
0503-448 Intermediate Arabic II
0503-449 Intermediate Arabic III
0503-450 Advanced Arabic I
0503-498 Advanced Arabic II
0503-513 Advanced Arabic III

**Culture Course Electives**
**—Choose two of the following courses:**
0505-487 Art of Islam: The Arabic Tradition
0505-487 Art of Islam: Persian/Turkish/Mughal Traditions
0507-442 Contemporary Middle East

## German Language/Culture

***Minor Adviser: Wilma Wierenga***

**Prerequisite:**
0503-412 Beginning German I

**Required Courses—A sequence of three courses from the following is required:**
0503-472 Beginning German II
0503-473 Beginning German III
0503-474 Intermediate German I
0503-475 Intermediate German II
0503-476 Intermediate German III
0503-478 Advanced German I
0503-479 Advanced German II
0503-501 Advanced German III
**Electives—Choose two of the following courses:**
0503-477 Contemporary German Culture (offered alternating summers in Marburg, Germany)
0505-459 Era of Haydn and Mozart
0505-482 Beethoven
0505-483 Bach and the Baroque
0505-484 Romanticism in Music
0505-486 German Theater and Drama
0507-488 Modern Germany

## Italian Language/Culture

***Minor Adviser: Elisabetta D'Amanda***

**Prerequisite:**
0503-521 Beginning Italian I

**Required Courses—A sequence of three courses from the following is required:**
0503-522 Beginning Italian II
0503-523 Beginning Italian III
0503-524 Intermediate Italian I
0503-525 Intermediate Italian II
0503-526 Intermediate Italian III

**Electives—Choose two of the following courses:**
0504-477 Survey of Italian Literature
0505-433 15th Century Art and Architecture of Florence and Rome
0505-434 16th Century Art and Architecture of Florence and Rome
0504-491 Modern Italian Poetry
0504-500 Topics in Italian Literature

## Japanese Language/Culture

***Minor Adviser: Hiroko Yamashita***

**Prerequisite:**
0503-420 Beginning Japanese I

**Required Courses—A sequence of three courses from the following is required:**
0503-480 Beginning Japanese II
0503-481 Beginning Japanese III
0503-482 Intermediate Japanese I
0503-483 Intermediate Japanese II
0503-484 Intermediate Japanese III
0503-488 Advanced Japanese I
0503-489 Advanced Japanese II
0503-500 Advanced Japanese III

**Electives—Choose two of the following courses:**
0503-510 Languages in Japanese Society
0503-511 Structures of Japanese Language
0505-469 Art of China, Korea 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

## Spanish Language/Culture

***Minor Adviser: Diane Forbes***

**Prerequisite:**
0503-430 Beginning Spanish I

**Required Courses—A sequence of three courses from the following is required:**
0503-490 Beginning Spanish II
0503-491 Beginning Spanish III
0503-492 Intermediate Spanish I
0503-493 Intermediate Spanish II
0503-494 Intermediate Spanish III
0503-496 Advanced Spanish I
0503-497 Advanced Spanish II
0503-502 Advanced Spanish III

**Electives—Choose two of the following courses:**
0503-595 Special Topics: Women in the Hispanic World
0504-461 Latin American Literature
0507-445 Modern Latin America
0507-453 U.S.-Latin American Diplomatic History
0507-490 History of Mexico
0510-442 Cultures of Latin America
0510-444 Social Movements/Global Economy
0513-486 Latin American Politics

# History

## American History

***Minor Adviser: Laurence Winnie***

The American history minor emphasizes the social, cultural, and political history of the United States.

**Required Courses—Choose five of the following courses:**
0507-401 History of American Women: Colonies to 1848
0507-402 History of American Women: 1848 to Today
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. Since 1945
0507-462 The Civil War and Reconstruction
0507-463 Deaf History
0507-465 Survey of African American History
0507-466 American Slavery, American Freedom
0507-467 Disabilities in American History
0507-469 Special Topics: Tocqueville and America
0507-470 European Union and America in 21st Century
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

## European History

***Minor Adviser: Laurence Winnie***

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 courses:**
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: Europe of the Dictators
0507-483 History of Christianity
0507-488 Modern Germany
0507-498 Modern France
0513-453 American Foreign Policy
0507-470 European Union and America in 21st Century

## Modern World History

***Minor Adviser: Laurence Winnie***

The modern world history minor provides a comparative perspective in modern world history.

**Required Courses—Choose five of the following courses, with at least one coming from each of the three groups below:**

**Modern Europe**

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: Europe of the Dictators
0507-483 History of Christianity
0507-488 Modern Germany
0507-498 Modern France
0513-453 American Foreign Policy
0507-470 European Union and America in 21st Century

**Modern Africa, Asia, and Latin America**

0507-412 Modern Japan in History, Fiction, and Film
0507-442 Contemporary Middle East
0507-445 Modern Latin American History
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 African History

**Modern America**

0507-410 Terrorism, Intelligence, and War
0507-411 Origins of U.S. Foreign Relations
0507-440 U.S. Social and Intellectual History
0507-441 20th Century American Diplomatic History
0507-447 U.S. History Since 1945
0507-462 The Civil War and Reconstruction
0507-463 Deaf History
0507-465 Survey of African American History
0507-466 American Slavery, American Freedom
0507-467 Disabilities in American History
0507-469 Special Topics: Tocqueville and America
0507-470 European Union and America in 21st Century
0507-492 Selected Problems in Black History
0507-493 History of Social Discrimination
0507-494 Immigration and Ethnicity
0507-495 The Civil Rights Movement in 20th Century U.S. History
0507-497 Biography in/as History

## Historical Perspectives on Science and Technology

***Minor Adviser: Christine Keiner***

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 will 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.

**Electives—Choose four of the following courses:**

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

**Required seminar:**

0508-520 Historical Perspectives on Science and Technology Seminar

## Human Resource Management

***Minor Advisers: Jon Horne and Carol Whitlock***

The human resource management minor allows students to integrate their primary academic interest in the arts, business, engineering, or the sciences with information that deals directly with the social, corporate, or legal constraints of workforce management. It provides students with the ability to market themselves as knowledgeable human resource managers in preparation for future leadership or management roles.

The curriculum offers broadly-based courses covering many aspects of the field such as 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:**

0619-480 or 0102-432 Human Resource Management
or
Human Resource Management
0626-427 Employment/Labor Law
0697-442 or 0102-430 The Learning Organization
or
Organizational Behavior

**Electives–Choose two of the following courses:**

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

***Minor Adviser: Carl Salvaggio***

Students will 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 Calculus I
1016-282 Calculus II
1016-283 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 Matrix Algebra
1016-351 Probability and Statistics I
1016-352 Probability and Statistics II
4010-440 Software Architecture

**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-xxx Magnetic Resonance Imaging
1051-xxx Physics and Engineering of Medical Imaging Systems
1051-xxx Ultrasound

## Industrial Environmental Management

***Minor Adviser: Maureen Valentine***

The industrial environmental management minor will broaden the learning experiences and professional opportunities of students in technical and business disciplines who have an interest in management of waste water, hazardous materials, and solids. The minor's choice of electives is flexible, allowing students to individualize the curriculum to match their interests. Air emission management is also covered.

**Prerequisites:**

1011-211 Chemical Principles 1
1011-205 Chemical Principles 1 Lab

**Required Courses:**

0630-201 Principles of Environmental Management
0630-352 Industrial Wastewater Management
0630-350 Solid and Hazardous Waste Management
0630-354 Air Emissions Management

**Electives–Choose one of the following courses:**

0630-480 Environmental Regulatory Law
0630-505 Resource Reduction
0630-515 Corporate Environmental Management

## International Business

***Minor Adviser: Donald O. Wilson***

Students who minor in international business will benefit from learning the global view of worldwide markets and the role of business in these markets.

**Required Course:**

0102-360 Global Business: An Introduction

**Electives—Choose four of the following courses:**

0102-432 Managing in the Global Environment
0102-465 Strategy in the Global Environment
0102-575 Global Business: Special Issues
0104-504 Finance in a Global Environment
0105-363 Principles of Marketing
0105-555 Marketing in a Global Environment

## International Relations

***Minor Advisers: Elizabeth Matthews and Spencer Meredith***

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.

**Required Courses:**

0513-488 War and the State
or
0513-487 International Law and Organization

**Electives—Choose four of the following courses:**

0507-442 Contemporary Middle East
0507-444 Strategy and Diplomacy: Europe
0507-488 Modern Germany
0513-441 Politics in China
0513-443 Politics of Russia and the Newly Independent States
0513-444 The Cold War and Beyond
0513-446 Politics in the Third World
0513-447 Human Rights and Global Perspectives
0513-453 American Foreign Policy
0513-461 Introduction to 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 The Search for Peace: The Middle East Peace Process
0513-492 Religion and International Politics
0513-493 Global Politics and the Environment
0513-494 Comparative Public Policy
0513-495 Revolutions and Political Change
0513-496 Government and Politics in East Asia

## Journalism

***Minor Adviser: Bruce Austin***

The journalism minor provides students with a foundation in the professional study and practice of journalism. The minor provides a broad perspective on journalism including 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. (Note: This minor is closed to students enrolled in the professional and technical communication and the advertising and public relations degree programs.)

**Required course:**
0535-482 Mass Communications

**Electives—Choose four of the following courses:**
0535-416 Newswriting
0535-532 Professional Writing
0535-470 Law and Ethics of the Press
0535-472 News Editing
0535-473 eJournalism

## Literary and Cultural Studies

***Minor Adviser: Richard Santana***

The department of English offers both traditional and contemporary 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. This minor allows students to pursue a course of study is specifically tailored to individual student 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 their interests in particular authors, themes, histories, genres, geographies, media, and/or interpretive and analytical methodologies. All of the courses offered by the department of English are writing intensive and offer opportunities for sustained writing and communication practice.

**Prerequisites:**
0504-227 Writing (or equivalent)

**Electives—Choose five of the following courses:**
0504-440 Drama/Theater
0504-441 The Art of Poetry
0504-442 The Short Story
0504-443 The Novel
0504-444 Film as Literature
0504-448 Biographical Literature
0504-450 Ibsen, Family, and Society
0504-451 Chaucer
0504-452 James Joyce
0504-454 Shakespeare: Tragedy
0504-455 Shakespeare: Comedy
0504-456 Dostoevsky
0504-457 Tolstoy
0504-458 Walt Whitman
0504-459 Toni Morrison
0504-460 Modern Poetry
0504-461 Latin American Literature
0504-462 Literature and Technology
0504-464 Myth, Legend, Folklore
0504-465 Viking Myth and Saga
0504-466 Early Black Writers
0504-467 Black Writers Today
0504-468 Literary Representations of America
0504-469 American Literature: New Approaches
0504-471 Irish Literature
0504-473 Patterns in Mathematics and Poetry
0504-474 British Romantic Literature
0504-476 Immigrant Voices in American Literature
0504-477 Survey of Italian Literature
0504-479 The Latino Experience in Literature
0504-480 Women in Literature
0504-484 Literature and Religion
0504-485 Global Literatures: Planetary Extremities and Extremisms
0504-487 Literature of French Black Africa and the Caribbean
0504-490 Autobiography
0504-491 Modern Italian Poetry
0504-492 Native American Women's Experience
0504-493 Maps, Spaces, and Places
0504-494 Pan-Indian Native American Literature, 1890-1967
0504-495 Contemporary Native American Literature, 1968-Present
0504-496 Women in the Hispanic World: The Politics of Identity Formation
0504-500 Italian Literature: Special Topics
0504-510 The View from Paris
0504-524 Contemporary Film
0504-545 Deaf Literature

## Management

***Faculty Adviser: Donald O. Wilson***

A management minor will provide a solid introduction to the world of general business management.

**Required Course:**
0102-430 Organizational Behavior

**Electives—Choose four of the following courses:**
0102-250 World of Business*
0102-432 Managing in the Global Environment

0102-438 Business Ethics
0102-455 Human Resources Management
0102-460 Leadership in Organizations
0102-462 Management and Career Development
0102-490 Entrepreneurship
0102-530 Managing Innovation and Technology
0102-547 Field Experience in Business Consulting
0102-554 Seminar in Management

*If selected, this course must be taken as one of the first two courses of the minor.

## Management Information Systems

***Minor Adviser: Daniel A. Joseph***

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 will enhance the career options of students in any major at RIT and increase their capacity to analyze, design, and manage business processes related to their major line of work.

**Required Courses:**
0112-315 Business Information Systems Processes
0112-340 Database Management Systems
0112-370 Systems Analysis and Design

**Electives—Choose two of the following courses:**
0112-330 Business Programming
0112-380 Network Technologies
0112-405 Object-Oriented Business Programming
0112-410 Object-Oriented Analysis and Design
0112-430 Web Systems Development
0112-440 Database Systems Development
0112-450 Enterprise Management
0112-460 Software Quality and Testing

## Marketing

***Minor Adviser: Donald O. Wilson***

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 courses:**
0105-505 Buyer Behavior
0105-440 Internet Marketing
0105-550 Marketing Management
0105-551 Marketing Research
0105-555 Marketing in a Global Environment
0105-559 Professional Selling
0105-560 Integrated Marketing Communications

## Mathematics

***Minor Adviser: James Halavin***

The mathematics minor provides an opportunity for students to deepen their technical background and gain further appreciation for modern mathematical sciences.

**Prerequisites:**
1016-281 Calculus I
1016-282 Calculus II
1016-283 Calculus III
or equivalent

**Plus at least one of the following:**
1016-305 Multivariable Calculus
1016-306 Differential Equations
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 may not be courses that are also required by the student's home program. All required courses must be taken in the department of mathematics and statistics at RIT.

**Choose five of the following courses:**
**Electives Group I**
1016-318 Matrices and Boundary Value Problems
1016-328 Engineering Mathematics
1016-331 Matrix Algebra
1016-351 Probability and Statistics I
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

**Electives Group II—Choose at least one of the following:**
1016-411 Real Variables I
1016-412 Real Variables II
1016-432 Linear Algebra
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
1016-571 Topology I
1016-572 Topology II

## Military Studies and Leadership

***Minor Advisers: Lt. Col. David Easley and Lt. Col. Dale Watson***

The minor in military studies and leadership is offered through the departments of aerospace studies (Air Force ROTC) and military science (Army ROTC) interdisciplinary. This minor provides RIT students the opportunity to learn about military officer training and their mission to develop leaders for tomorrow's Armed Forces. The aerospace studies and military science departments accomplish this through a series of courses promoting 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: 20 quarter hours credits required**

**Group 1—Choose any combination from Group 1 to earn a minimum of three quarter credit hours.**

0650-210 The Air Force Today (1)
0650-211 The Air Force Today II (1)
0650-212 The Air Force Today III (1)
0640-201 Introduction to Military Science Personnel (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 three quarter credit hours.**

0519-201 History of Airpower I (1)
0519-202 History of Airpower II (2)
0519-203 History of Airpower III (1)
0640-301 Military Geography (2)
0640-302 Psychology and Leadership (2)
0640-303 Military and American Society (2)

**Group 3—Choose any combination from Group 3 to earn a minimum of eight quarter credit hours.**

0102-310 Air Force Management and Leadership I (5)
0102-311 Air Force Management and Leadership II (5)
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 three quarter credit hours.**

0513-401 National Security Forces I (4)
0640-501 Army Training Systems (3)
0640-502 Military Administration and Logistics (3)
0640-503 Military Ethics (3)

**Group 5—Elective: Choose any of the above courses to earn a minimum of three quarter credit hours.**

## Music

***Minor Adviser: Edward Schell***

The music 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 credit hours selected from the following areas of study are required for the minor.

**Required Course:**

0505-499 Music Theory I

**Required Ensembles:** Four credits (four quarters) must come from participation in one of the ensembles. Up to an additional four ensemble 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*

**Each of the required ensemble classes is 1 credit hour only. Four quarters of participation are required to complete one upper-level course equivalent.*

**Music History Elective:** Choose at least one of the music history courses listed below. Up to an additional eight 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 Personal and Social Commentary
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 eight credits may be counted toward the minor.

0505-485 Music Theory II
0505-461 World Music I
0505-462 World Music II

## Optical Sciences

***Minor Adviser: Zoran Ninkov***

This is an interdisciplinary minor offered jointly by the Department of Physics and the Chester F. Carlson Center for Imaging Science. The minor will provide students with a background in a broad set of technologies and techniques for exploiting the properties and applications of light.

Students will have the opportunity for additional study in Optical Sciences in order to build a secondary area of expertise in support of their major program or as another area of interest.

**Required Courses:**
(1) A course in each of three fundamental areas of optical science:
a. Optical principles
b. Sources of electromagnetic radiation
c. Detectors
(2) Two elective courses (from an approved list) that provide specialization in any of the areas listed in requirement (1).

**Requirement (1) can be fulfilled by completing:**
**a. For optical principles, one of the following courses:**
1051-303 Geometrical Optics
1017-455 Optical Physics
0305-525 Optics for Microelectronic Engineering
1017-320 Principles of Optics
**b. For sources of electromagnetic radiation, one of the following courses:**
1017-556 Laser Physics
0609-511 Laser Technology
1051-370 Radiometry
**c. For detectors, the following course:**
1051-465 Detectors

**Requirement (2) can be fulfilled by completing any two of the following courses:**
1051-455 Optical Physics
1017-314 Modern Physics (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)
2076-454 Holography I

Other courses may be used in lieu of courses on this list with the approval of the optical sciences minor adviser.

## Packaging Science

***Minor Adviser: Tom Voss***

The packaging science minor has flexibility so that a student may individualize the minor to their interests based on the type of electives chosen. This minor will broaden the learning experiences and professional opportunities of non-packaging majors by creating a second focus in packaging. Students from outside the packaging science program, particularly those in engineering technology programs, multidisciplinary studies, management, marketing, international business, engineering programs, and programs within the School of Print Media could all benefit from the packaging science minor. The minor offers broadly based courses, covering every aspect of packaging, including development/design, testing, marketing, and production. Related legal, economic, and environmental concerns are also addressed. Undergraduate students who have enough free and/or elective credit hours to complete the minor in a field different from their major are eligible.

**Required Courses:**
0607-502 Packaging Materials
0607-503 Packaging Container Systems
0607-504 Concept to Consumer

*These are courses developed for non-packaging majors and are also 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.*

**Electives: Select 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 Military and Export Packaging
0607-568 Food Preservation and Packaging
0607-570 Point-of-Purchase Display

*These are existing upper level elective courses in the packaging science program.*

## Philosophy

***Minor Adviser: David Suits***

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. The philosophy minor consists of five upper-level philosophy courses.

**Choose one of the variable topic courses below:**

0509-444 Great Thinkers
0509-449 Special Topics
0509-450***** Seminar in Philosophy

**Choose four of the fixed topic courses below:**

0509-440 Philosophy of Religion
0509-441 Logic
0509-442* Philosophy of Art/Aesthetics
0509-443*** Philosophy of Science
0509-445**** Social and Political Philosophy
0509-446 Philosophy of Law
0509-447 Contemporary Moral Problems
0509-448 Philosophy of Peace
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: One previous philosophy course or consent of instructor is strongly encouraged.*
***Prerequisite: One philosophy course.*
****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.*
******Prerequisite: Two prior courses in philosophy or permission of instructor.*

## Physics

***Minor Adviser: James R. Kern***

Students will 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.

**Prerequisites:**

1017-311 University Physics I
1017-312 University Physics II
1017-313 University Physics III

**Required Courses:**

1017-314 Modern Physics I
1017-318 Vibrations and Waves

**Electives—Choose three of the following courses (at least one must come from Group A and at least one must come from Group B):**

**Group A:**

1017-321 Introduction to Laboratory Techniques
1017-374, 378 Modern Physics Laboratory I, II
1017-431 Electronic Measurements

**Group B:**

1017-315 Modern Physics II
1017-401 Intermediate Mechanics I
1017-411 Electricity and Magnetism I
1017-415 Thermal Physics
1017-455 Optical Physics
1017-440 Stellar Astrophysics
1017-480 Mathematical Methods in Physics I
1017-522 Quantum Mechanics I

## Political Science

***Minor Adviser: Paul Ferber***

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 importantly, the political science minor seeks to help students make sense of an increasingly complicated political environment that confronts them in their role as citizens.

The courses in this minor are drawn from those in the American politics and international relations minors. Students may select three courses from the American politics minor, and two from the international relations minor, or vice-versa.

**International Relations**

0507-442 Contemporary Middle East
0507-444 Strategy and Diplomacy: Europe
0507-488 Modern Germany

0513-441 Politics in China
0513-443 Politics of Russia and the Newly Independent States
0513-444 The Cold War and Beyond
0513-446 Politics in the Third World
0513-447 Human Rights / Global Perspective
0513-449 Special Topics
0513-453 American Foreign Policy
0513-461 Introduction to 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 Middle East Peace Process
0513-492 Religion and International Politics
0513-493 Global Politics and the Environment
0513-494 Comparative Public Policy
0513-495 Revolutions and Political Change
0513-496 Government and Politics in East Asia

**American Politics**
0508-484 Environmental Policy
0513-449 Special Topics: Tocqueville and America
0513-450 State and Local Politics
0513-451 The Legislative Process
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
0513-482 African-American Politics
0513-485 Politics Through Fiction
0513-514 Political Theory

## Print Media

***Minor Adviser: Barb Birkett***

A print media minor enables students to broaden and customize their programs to learn the important parameters of designing for print, understanding the variables in distributing information both electronically and in print, gaining insight into the materials and process of print production, or learning about the industries that use print as a communications medium, such as advertising and publishing.

**Required Courses:**
2082-201 Graphic Media Perspectives
2082-207 Graphic Media Workflow I
2082-371 Principles of Printing

**Electives—Please choose ten additional quarter credit hours from upper division School of Print Media courses. All course prerequisites must be met.**

2081-367 Lithographic Process I
2081-458 Ink Chemistry and Formulation
2082-208 Graphic Media Workflow II
2082-313 Media Distribution and Transmission
2082-317 Website Design for Graphic Media
2082-337 Digital Asset Management
2082-367 Media Industries Analysis
2082-387 Substrates for Printing
2082-401 Digital Print Process
2082-417 Database Publishing
2082-407 Color Management Systems

## Psychology

***Minor Adviser: Kathleen Chen***

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 courses:**
0514-440 Childhood and Adolescence
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
0514-544 History and Systems of Psychology

## Public Policy

***Minor Adviser: Ann Howard***

The purpose of this minor is to provide students with a foundation in the field of public policy and to allow them to make connections between public policy and other fields of study. Students are allowed to follow one of two "tracks" within the public policy 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 course prerequisites.

**POLICY ISSUES TRACK**
**Required Courses:**
0521-400 Foundations of Public Policy
0521-460 Capstone: Public Policy Minor

**Electives—Choose three of the following courses:**
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 Problems/Urban Policy
0515-451 Technology Transfer and Globalization
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

**POLICY ANALYSIS TRACK**
**Required Courses:**
0521-400 Foundations of Public Policy
0521-402 Policy Analysis I
0521-403 Policy Analysis II
0521-404 Policy Analysis III

**Electives—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 Problems/Urban 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

## Science, Technology, and the Environment

***Minor Adviser: Thomas Cornell***

This minor integrates the study of human society, science and technology, and the natural environment.

**Prerequisite:**
0508-211 Science, Technology, and Values

**Required Courses—**Choose three courses from one of the following groups, and one additional course from the other group. A fifth course must be chosen from either group:

**SCIENCE AND TECHNOLOGY STUDIES**
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 Society
0508-446 Makers of Modern Science
0508-447 Special Topics (Topics will vary)
0508-449 History of Women in Science and Engineering
0508-450 History of Chemistry
0508-451 Cyborg Theory: (Re)Thinking the Human Experience
0508-452 Gender, Science, and Technology
0508-520 Historical Perspectives on Science and Technology Seminar
0508-540 Science and Technology Policy Seminar
0509-443 Philosophy of Science
0515-451 Transfer Technology and Globalization

**ENVIRONMENTAL STUDIES**
0507-464 American Environment and Character
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 (Topics will vary)
0508-488 History of Ecology and Environmentalism
0508-489 History of the Environmental Sciences
0508-490 Biodiversity and Society
0508-520 Historical Perspectives on Science and Technology Seminar
0508-540 Science and Technology Policy Seminar
0511-481 Environmental Economics

## Sociology and Anthropology

***Minor Adviser: Murli Sinha***

The sociology and anthropology minor analyzes the changing interrelations between work, technology, and culture in different nations across the globe. With the internationalization of the workforce, trade, and production, our social interactions become increasingly marked by differences in gender, class, racial, and ethnic identities. This minor analyzes 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:**
0510-210 Cultural Anthropology
or
0515-210 Foundations of Sociology

**Electives— Choose five of the following courses:**

0510-440 Cultures in Globalization
0510-443 Immigrants in the U.S.
0510-444 Social Movements in the Global Economy
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
0510-451 Gender and Sexuality
0510-502 Introduction to Archaeology
0510-507 Archaeological Science
0515-406 Qualitative Methods
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
0515-485 Diversity in the City
0515-506 Social Inequality

## Science, Technology, and Policy

***Minor Adviser: Thomas Cornell***

The purpose of this minor is to provide students with both breadth and depth in the field of science and technology policy. The minor allows students to make connections between public policy and other scientific and technical fields. The minor explores contemporary science and technology policy issues and will give students 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. (Note: 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.)

**Prerequisite:** None

**Requirements:** Students must choose at least one of the following 400 level courses:

0508-447 Science and Technology Policy
0521-400 Foundations of Public Policy

**Students must also take:**

0508-540 Science and Technology Policy Seminar

**Electives:** If only one of the required 400 level courses are taken, select three electives from the following list; if two of the required 400 level courses are taken, select two electives from the following list:

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
0508-487 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

## Statistics

***Minor Adviser: James Halavin***

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 Calculus I
1016-282 Calculus II
1016-283 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 courses that are also required by the student's home program. All required courses must be taken in the department of mathematics and statistics at RIT. Students may elect to take either 1016-352 or 1016-314 as part of the minor, but not both.

1016-314 Engineering Statistics I
1016-351 Probability and Statistics I
1016-352 Probability and Statistics II
1016-353 Applied Statistics
1016-354 Introduction to Regression Analysis
1016-355 Design of Experiments
1016-358 Statistical Quality Control
1016-451 Mathematical Statistics I
1016-452 Mathematical Statistics II
1016-454 Non-parametric Statistics
1016-457 Research Sampling Techniques
1016-558 Multivariate Analysis
1016-5xx Choices through advising

## Structural Design

***Minor Adviser: Maureen Valentine***

The structural design minor will broaden students learning experiences and professional opportunities by creating a focus in structural design and analysis of steel, concrete, and wood. The minor also explores building codes as they relate to design. The choice of electives is flexible, allowing student's to individualize the minor to his or her interests.

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. The minor curriculum offers courses covering many aspects of structural design and analysis.

**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 courses**
0608-470 Timber Design
0608-497 Structural Steel Design
0608-305 Structural Computer Applications
0608-496 Reinforced Concrete Design

## Sustainable Product Development

***Minor Adviser: Brian Thorn***

A multidisciplinary minor in sustainable product development will enable students to explore issues associated with developing and delivering sustainable product systems. Courses in the minor will enhance 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.

**Prerequisites:**
1016-226 Calculus for Management Science or higher

**Additional prerequisites, depending on choice of elective courses, may include:**
0304-343 Materials Processing (or equivalent)
0304-344 Materials Science (or equivalent
0521-400 Foundations in Public Policy

**Required Courses:**
0303-520, 620 Engineering Economy
or
0617-436 Engineering Economics
0303-491, 691 Fundamentals of Sustainable Product Design
0303-791 Introduction to Life Cycle Assessment and Costing

**Electives–Choose two electives courses from the following courses. One elective must be selected from the list of Social Context electives.**

**Social Context**
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
0508-463/4 Great Lakes I/II
0508-482 Energy and the Environment
0508-483 Environmental Values
0508-484 Environmental Policy
0508-490 Biodiversity and Society
0521-408 Tech Innovation and Public Policy
0521-451 Energy Policy

**Engineering**
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**
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

***Minor Adviser: Warren Koontz***

A telecommunications minor is available for undergraduate students in any of the eight RIT colleges 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 or 0614-464
Voice Communications/Lab.
Signaling, Transmission, and Switching in Voice Communications
0614-477 Networking Technologies

**Electives: Select two of the following**
0614-475 Switching Technologies
0614-479 Network Management
0614-480 Telecommunications Policy
0614-483 Telecommunications Transmission Systems
0614-5651/562 Network Engineering/Lab
0614-574 Network Planning and Design
0614-520 Fiber Optic Telecommunications Technology

Students who have prior knowledge and/or experience but who may not have completed the required prerequisites may take "the" course with the approval of the instructor.

## Theatre Arts

***Minor Advisers: Tina Lent, Peter Ferran, and Roger Freeman***

The theatre 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. This combination of the academic and practical will offer students a more profound understanding of the theatre arts, and in a broader sense an introduction to cultural development and the communication of ideas.

*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 theatre arts minor.*

**Required Course:**

0505-489 Theatre Production Seminar and Workshop

**Electives–Choose no fewer than two and no more than four of the following courses:**

0505-450 Music and the Stage
0505-453 Theatre in the United States
0505-457 Contemporary Drama, Theatre, and Media
0505-458 Modern European Theatre and Drama
0505-486 German Theatre and Drama
0505-502 Shakespeare the Dramatist

**Choose no more than two of the following courses:**

0505-447 American Musical Theatre
0505-446 American Film of the Studio Era
0505-467 American Film Since the Sixties
0504-440 Drama and Theatre
0504-450 Ibsen: Family and Society
0504-454 Shakespeare: Tragedy/Romance
0504-455 Shakespeare: Comedy/History

## Women and Gender Studies

***Minor Adviser: Tina Lent***

The women's and gender studies minor is an interdisciplinary, multicultural series of courses that 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.

**Requirements:** The women's and gender studies minor requires five upper-level courses, which include the foundations course and four electives. The electives may be chosen from the list below. Only one course from the affiliated list can be used for credit toward the minor.

**Required Course:**

0522-400 Foundations of Women's and Gender Studies

**Electives—Chose four of the following courses:**

0522-405 Women and Science
0522-401 American Women: Colonial Era to 1848
0522-402 American Women: 1848 to Today
0522-406 Feminist Theory
0522-407 Seminar on Sexual Violence
0522-436 Women's Stories, Women's Films
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
0522-459 Toni Morrison
0522-480 Women and the Visual Arts
0522-481 Women in Literature
0513-482 Women in Politics
0522-484 Autobiography
0522-492 Native American Women's Experience
0522-483 Psychology of Women

**Affiliated Electives—Choose one of the following courses:**

0505-446 American Film in the Studio Era
0504-455 Shakespeare: Comedies and Histories
0504-467 Black Writers Today

## Writing Studies

***Minor Advisers: Lisa Hermsen and Doris Borrelli***

The writing studies minor is a useful complement to any RIT major and offers students the opportunity to develop and practice writing skills in a variety of contexts, over several quarters; the competencies needed to be effective, confident, and versatile when facing writing challenges in the workplace; an understanding of the theoretical and historical foundations underlying written communication and linguistics. The writing studies minor is designed to accommodate students with a wide variety of writing interests, disciplinary majors, and professional goals.

**Prerequisite:**

0502-227 Writing (or equivalent)

**Requirements:** Students taking a minor in writing studies will complete 5 upper-level courses. Two are a choice of required courses and three are electives.

**Choose one course from the following:**
0502-443 Written Argument
0502-456 Rhetoric of Science

**Choose one course from the following:**
0502-445 The Evolving English Language
0502-457 Language, Dialects and Identity

Students are encouraged to customize the minor by consulting with an adviser from the department of language and literature to select three additional courses appropriate for students' individual interests and goals. (Students must take five different courses. They may not use a course for both a requirement and an elective.)

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

# Liberal Arts Concentration Areas

## American Artistic Experience

***Concentration Adviser: Tina Lent***

The American artistic experience concentration provides students with the opportunity to study the American artistic experience in a variety of arts, including painting, architecture, film, photography, music, theatre, 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.

**Choose three courses from the following:**

0505-441 American Architecture
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 Theater
0505-448 20th Century American Music
0505-452 Special Topics in American Art (Topics will vary)
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 1960's
0505-470 American Popular Song 1830-1950
0505-471 American Popular and Rock Music
0505-488 Special Topics in American Theater

## American English for ESL Students

***Concentration Adviser: Wilma Wierenga***

The American English for ESL students concentration aims to give non-native speakers of English a deeper understanding of the structure of the English language and provide additional opportunity for the development of reading, writing, speaking, and cultural proficiency. Since English is a foreign language for many of RIT's international students, this concentration is an expansion of the foreign language concentrations already available to them.

*Note: Evening students cannot declare this concentration.*

**Prerequisite:**

0502-227 Writing (or equivalent)

**The concentration consists of three courses:**

1. An upper-division writing course, such as:
0502-443 Written Argument
or
0502-449 Worlds of Writing
2. The Communication course 0535-501 Effective Speaking
3. One of the following American culture courses. These courses were selected because each one offers a general, broadly conceived introduction to an important aspect of American culture:

**Art, Music, Theatre**

0505-442 Music in the United States
0505-444 American Painting
0505-446 American Film of the Studio Era
0505-453 Theatre in the United States

**American Politics, Economics, History**

0507-440 United States Social and Intellectual History
0507-457 The History of Popular Culture in America
0513-453 American Foreign Policy

## American Politics

***Concentration Advisers: Joseph Fornieri and Sean Sutton***

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 present in detail various aspects of the American political system, which gives the student the tools to participate effectively in the political process.

**Choose three of the following courses:**

0508-484 Environmental Policy
0513-449 Special Topics: Tocqueville and America
0513-450 State and Local Politics
0513-451 The Legislative Process
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

0513-461 Introduction to Comparative Politics
0513-481 Women In Politics
0513-482 African American Politics
0513-485 Politics Through Fiction
0513-514 Political Theory

## Art History

***Concentration Adviser: Tina Lent***

The art history concentration provides students with the opportunity to study art history across a broad period of historical time and geographical space. The wide variety of specialized courses allows students to gain an insight into the artistic contributions of Europe, Asia, and the developing world. This concentration includes a number of liberal arts courses as well as some upper-division specialty art history courses previously available only to students studying in the College of Imaging Arts and Sciences. 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.

**Choose three of the following courses:**

0505-430 20th Century Art
0505-431 Topics in Baroque Art
0505-432 Renaissance Painting: Flanders
0505-433 15th Century Art and Architecture of Florence and Rome
0505-434 16th Century Art and Architecture of Florence and Rome
0505-435 Russian Art 10th through 20th Century
0505-441 American Architecture
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: American Architecture I, II, III
0505-452* Special Topics: Memory, Memorials, and Monuments
0505-467 American Film Since the 1960's
0505-468 Art of India and Southeast Asia
0505-469 Art of China, Korea, and Japan
0505-480 Women and the Visual Arts
0505-481 Oriental Art
0505-487 Art of Islam: Special Topics
-Persian, Turkish/Mughal Traditions
-Arabic Tradition

*These are the ONLY acceptable topics.

## Communication

***Concentration Adviser: Bruce Austin***

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. The concentration enables students to understand and apply several modes of communication in academic, professional, and personal situations. Students are encouraged, but not required, to complete Human Communication (0535-480) before enrolling in other concentration courses.

*Note: This concentration is closed to students enrolled in the professional technical communication degree program and advertising and public relations.*

**Choose three of the following courses:**

0535-480 Human Communication
0535-481 Persuasion
0535-482 Mass Communications
0535-483 Small Group Communication
0535-501 Public Speaking

## Criminal Justice

***Concentration Adviser: Thomas Castellano***

A concentration in criminal justice will provide 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.

*Note: This concentration is closed to criminal justice degree program students.*

**Required Course:**

0501-400 Criminology

**Electives—Choose two of the following courses:**

0501-405 Major Issues in the Criminal Justice System (Topics will vary)
0501-406 Technology in Criminal Justice
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

## Economics

***Concentration Advisers: Michael Vernarelli and Jeffrey Wagner***

An economics concentration is the study of human behavior in the allocation of scarce resources to production and the distribution of production among the members of society. Once called the dismal science, the study of economics has taken on increasing importance as we realize that so many of the world's problems (e.g., energy, overpopulation, global pollution) have an

economic basis. The purpose of the economics concentration is to apply tools of economics analysis to a variety of study areas. *Note: Economics concentration is closed to students enrolled in the economic degree program.*

**Prerequisite:**
0511-211 Principles of Microeconomics

**Required course:**
0511-402 Principles of Macroeconomics

**Electives—Choose two of the following courses:**
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 Lesser Developed Countries
0511-450 Benefit-Cost Analysis
0511-452 Monetary Analysis and Policy
0511-455 Intermediate Macroeconomic Theory
0511-464 Game Theory with Economic Applications
0511-481 Environmental Economics
0511-484 Natural Resource Economics
0511-453 Intermediate Microeconomics Theory
0511-454 International Trade and Finance
0511-456 Industrial Organization
0511-459 Managerial Economics
0511-461 Seminar in Applied Economics

*Note: The following courses have introductory calculus and statistics as additional prerequisites.*
0511-457 Applied Econometrics
0511-458 Economic Forecasting
0511-460 Mathematical Methods: Economics

## Environmental Studies

***Concentration Adviser: Richard Shearman***

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 will also explore the economic, legislative, and regulatory framework within which most environmental decisions are made. Since most technological areas have significant environmental implications associated with them, it is essential that students have an understanding of, and a well thought out value orientation about, such environmental consequences.

**Choose three of the following courses:**
0507-464 American Environment and Character
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 (Topic will vary)
0508-488 History of Ecology and Environmentalism
0508-489 History of the Environmental Sciences
0508-490 Biodiversity and Society
0508-520 Historical Perspectives on Science and Technology Seminar (Prerequisite: any two of the history of science or technology courses approved by the department)
0508-540 Science and Technology Policy Seminar (Prerequisite: 0508-441, 0508-484, or 0521-400)
0511-481 Environmental Economics (Prerequisite: 0511-211)

## Foreign Language/Culture

This interdisciplinary concentration allows students to study the language and characteristics of a culture of one particular country or area. Students will choose two language courses beyond Beginning I and one related culture course. The goal of this concentration is to introduce students to the language, customs, and cultural aspects (history, art, literature) of one particular country or area. Students will also become aware of the relationship between language and culture and the differences between their own language and culture and those of the country studied. Finally, with the acquisition of cultural literacy and communicative competence in a foreign language, students will become highly attractive candidates for careers in an increasingly global marketplace.

### Arabic Language/Culture

***Concentration Adviser: Diane Forbes***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-405 Beginning Arabic I, or equivalent. All students beginning the study of Arabic must see the world languages coordinator (Professor Forbes) for screening. Arabic is part of the World Languages Program. Students with some proficiency will be placed accordingly. Attendance at the orientation meeting (first evening of each quarter) is mandatory.

**Required Language Courses—Choose two of the following**:
0503-445 Beginning Arabic II
0503-446 Beginning Arabic III
0503-447 Intermediate Arabic I
0503-448 Intermediate Arabic II
0503-449 Intermediate Arabic III

**Culture Course Electives—Choose one of the following:**
0505-487 Art of Islam: Special Topics
-Persian, Turkish/Mughal Traditions
-Arabic Tradition
0507-442 Contemporary Middle East

## American Sign Language (ASL)

***Concentration Adviser: Wilma Wierenga***

*Note: This concentration is closed to native or fluent users of American Sign Language. Evening students may not declare this concentration.*

**Prerequisite:** 0503-400 Beginning American Sign Language I. American Sign Language students with some proficiency must see Professor Wierenga for proper placement.

**Required Language Courses:**
0503-440 American Sign Language II
0503-441 American Sign Language III

**Culture Course Electives—Choose one of the following:**
0504-545 Deaf Literature
0507-463 Deaf History
0515-529 Deaf Culture in America

## Chinese Language/Culture

***Concentration Adviser: Wilma Wierenga***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-408 Beginning Chinese I, or equivalent. All students beginning the study of Chinese must see Professor Wierenga for screening. Students with some proficiency will be placed according to that proficiency.

**Required Language Courses—Choose two of the following:**
0503-451 Beginning Chinese II
0503-452 Beginning Chinese III
0503-453 Intermediate Chinese I
0503-454 Intermediate Chinese II
0503-455 Intermediate Chinese III
0503-456 Advanced Chinese I
0503-457 Advanced Chinese II
0503-458 Advanced Chinese III

**Culture Course Electives—Choose one of the following:**
0504-447 Special Topics
0505-469 Art of China, Korea, and Japan
0505-481 Oriental Art
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 Language/Culture

***Concentration Adviser: Wilma Wierenga***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-435 Beginning French I, or equivalent. Students with some proficiency must see the foreign language chair (Professor Wierenga) for proper placement.

**Required Language Courses—Choose two of the following:**
0503-464 Beginning French II
0503-465 Beginning French III
0503-466 Intermediate French I
0503-467 Intermediate French II
0503-468 Intermediate French III
0503-469 Advanced French I
0503-470 Advanced French II
0503-471 Advanced French III

**Culture Course Electives—Choose one from the following:**
0503-512 Tocqueville and America
0504-487 Literature of French Black Africa and Caribbean
0507-498 Modern France
0504-510 The View from Paris

## German Language/Culture

***Concentration Adviser: Wilma Wierenga***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-412 Beginning German I, or equivalent. Students with some proficiency must see Professor Wierenga for proper placement.

**Required Language Courses—Choose two of the following:**
0503-472 Beginning German II
0503-473 Beginning German III
0503-474 Intermediate German I
0503-475 Intermediate German II
0503-476 Intermediate German III
0503-478 Advanced German I
0503-479 Advanced German II
0503-501 Advanced German III

**Culture Course Electives—Choose one from the following:**
0503-477 Contemporary German Culture (offered alternating summers in Germany)
0505-459 Era of Haydn and Mozart
0505-482 Beethoven
0505-483 Bach and the Baroque
0505-484 Romanticism in Music
0505-486 German Theater and Drama
0507-488 Modern Germany

## Italian Language/Culture

***Concentration Adviser: Elizabeth D'Amanda***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-521 Beginning Italian I, or equivalent. Students with some proficiency must see Professor D'Amanda for proper placement. Students take two language courses beyond Beginning Italian I and one culture course.

**Required Language Courses—Choose two of the following:**

0503-522 Beginning Italian II
0503-523 Beginning Italian III
0503-524 Intermediate Italian I
0503-525 Intermediate Italian II
0503-526 Intermediate Italian III

**Culture Course Electives—Choose one from the following:**

0504-477 Survey of Italian Literature
0504-491 Modern Italian Poetry
0504-500 Italian Literature: Special Topics
0505-433 15th Century Art and Architecture of Florence and Rome
0505-434 16th Century Art and Architecture of Florence and Rome

## Japanese Language/Culture

***Concentration Adviser: Hiroko Yamashita***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-420 Beginning Japanese I, or equivalent. Students with some proficiency must see the Japanese instructor, Professor Yamashita, for proper placement.

**Required Language Courses—Choose two of the following:**

0503-480 Beginning Japanese II
0503-481 Beginning Japanese III
0503-482 Intermediate Japanese I
0503-483 Intermediate Japanese II
0503-484 Intermediate Japanese III
0503-488 Advanced Japanese I
0503-489 Advanced Japanese II
0503-500 Advanced Japanese III

**Culture Course Electives—Choose one of the following:**

0503-510 Languages in Japanese Society
0503-511 Structure of Japanese Language
0505-469 Art of China, Korea, and Japan
0505-481 Oriental Art
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 Language/Culture

***Concentration Adviser: Diane Forbes***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-424 Beginning Russian I, or equivalent. All students beginning the study of Russian must see the World Languages Coordinator for screening. Russian is part of the World Languages Program. Students with some proficiency will be placed according to that proficiency. Attendance at the orientation meeting (first evening of each quarter) is mandatory.

**Required Language Courses—Choose two of the following:**

0503-425 Beginning Russian II
0503-426 Beginning Russian III
0503-427 Intermediate Russian I
0503-428 Intermediate Russian II
0503-429 Intermediate Russian III
0503-431 Advanced Russian I
0503-432 Advanced Russian II
0503-433 Advanced Russian III

**Culture Course Electives—Choose one of the following:**

0504-456 Dostoevsky
0504-457 Tolstoy
0507-448 History of Russia to 1917
0507-449 History of Russia Since 1917
0513-443 Politics of Russia and the Newly Independent States
0513-444 The Cold War and Beyond
0505-435 Russian Art 10th through 20th Century
0505-452 Special Topics: Russian Art I
0505-452 Special Topics: Russian Art II
0504-495 Special Topics: Dangerous Texts, Nabokov

## Spanish Language/Culture

***Concentration Adviser: Diane Forbes***

*Note: This concentration is closed to native speakers. Evening students may not declare this concentration.*

**Prerequisite:** 0503-430 Beginning Spanish I, or equivalent. Students with some proficiency must see the Spanish instructor, Professor Forbes, for proper placement.

**Required Language Courses—Choose two of the following:**

0503-490 Beginning Spanish II
0503-491 Beginning Spanish III
0503-492 Intermediate Spanish I
0503-493 Intermediate Spanish II
0503-494 Intermediate Spanish III
0503-496 Advanced Spanish I
0503-497 Advanced Spanish II
0503-502 Advanced Spanish III

**Culture Course Electives—Choose one of the following:**

0504-452 Special Topics: Magical Realism

0504-461 Latin American Literature
0504-496 Women in the Hispanic World: The Politics of Identity Formation
0504-479 Latino Experience in Literature
0507-445 Modern Latin America
0507-453 U.S. Latin American Diplomatic History
0507-490 History of Mexico
0510-442 Cultures of Latin America
0510-444 Social Movements in the Global Economy
0513-486 Latin American Politics

## Global Studies

***Concentration Adviser: Please contact College of Liberal Arts Office of Student Services.***

The interdisciplinary concentration in global studies offers courses in the areas of 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 the 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.*

**Prerequisite:**
0511-211 Principles of Microeconomics (or equivalent)
or
0513-211 American Politics
or
0513-214 Introduction to International Relations (or equivalent)

**Choose three of the following courses:**
0507-441 20th Century American Diplomatic History
0507-446 Europe Since 1945
0507-496 African History
0511-448 Economics of Lesser Developed Countries
0513-453 American Foreign Policy
0513-461 Introduction to Comparative Politics

## History

***Concentration Adviser: Laurence Winnie***

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 more depth in a more restricted field of study.

**Choose three of the following courses:**
0507-401 American Women: Colonies to 1848
0507-402 American Women: 1848 to Today
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 20th Century American Diplomatic History
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 America 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: Europe of the Dictators
0507-451 Local History
0507-453 U.S./Latin American Diplomatic History
0507-456 U.S. and Third World Revolutions in the 20th Century
0507-457 The History of American Popular Culture
0507-460 Revolutionary Leaders of Latin America
0507-461 The Renaissance World
0507-462 The Civil War and Reconstruction
0507-463 Deaf History
0507-464 The American Environment and The American Character
0507-465 Survey of African American History
0507-466 American Slavery, American Freedom
0507-467 Disabilities in American History
0507-468 The United States and Japan
0507-469 Special Topics: Tocqueville and America
0507-470 European Union and America in 21st Century
0507-483 History of Christianity
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
0507-492 Selected Problems in Black History
0507-493 History of Social Discrimination
0507-494 Immigration and Ethnicity
0507-495 The Civil Rights Movement in 20th Century U.S. History
0507-496 African History
0507-497 Biography in/as History
0507-498 Modern France

## International Relations

***Concentration Advisers: Elizabeth Matthews and Spencer Meredith***

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 RIT 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. This concentration offers the prospect of serving their future needs.

**Choose three of the following courses:**

0507-442 Contemporary Middle East
0507-444 Strategy and Diplomacy of Europe
0507-488 Modern Germany
0513-441 Politics in China
0513-443 Politics of Russia and the Newly Independent States
0513-444 The Cold War and Beyond
0513-446 Politics in the Third World
0513-447 Human Rights
0513-453 American Foreign Policy
0513-461 Introduction to 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 The Search for Peace: The Middle East Peace Process
0513-492 Religion and International Politics
0513-493 Global Politics and the Environment
0513-494 Comparative Public Policy
0513-495 Revolutions and Political Change
0513-496 Government and Politics in East Asia

## Latino/Latina/Latin American Studies

***Concentration Adviser: Diane Forbes***

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.
*Note: Evening students may not declare this concentration.*

**Choose three of the following courses:**

0504-447 Special Topics: Magical Realism
0504-461 Latin American Literature
0504-479 Latino Experience in Literature
0504-496 Women in the Hispanic World: The Politics of Identity Formation
0507-445 Modern Latin America
0507-490 History of Mexico
0510-440 Cultures in Globalization
0510-442 Cultures of Latin America
0515-483 Hispanic American Culture
0510-444 Social Movements in the Global Economy
0513-486 Comparative Politics in Latin America

**One of the following Spanish or Portuguese language courses may be used for this concentration.** The student should consult with the instructor for placement at the proper level.

0503-490 Beginning Spanish II
0503-491 Beginning Spanish III
0503-492 Intermediate Spanish I
0503-493 Intermediate Spanish II
0503-494 Intermediate Spanish III
0503-496 Advanced Spanish I
0503-497 Advanced Spanish II
0503-502 Advanced Spanish III
0503-532 Beginning Portuguese II
0503-533 Beginning Portuguese III
0503-534 Intermediate Portuguese I
0503-535 Intermediate Portuguese II
0503-536 Intermediate Portuguese III
0503-537 Advanced Portuguese I
0503-538 Advanced Portuguese II
0503-539 Advanced Portuguese III

## Literary and Cultural Studies

***Concentration Adviser: Richard Santana***

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)

**Choose three of the following courses:**

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
0504-448 Biographical Literature
0504-450 Ibsen; Family and Society
0504-451 Chaucer

0504-452 James Joyce
0504-454 Shakespeare: Tragedy/Romance
0504-455 Shakespeare: Comedy/History
0504-456 Dostoevsky
0504-457 Tolstoy
0504-458 Walt Whitman
0504-459 Toni Morrison
0504-460 Modern Poetry
0504-461 Latin American Literature
0504-462 Literature and Technology
0504-464 Myth, Legend, Folklore
0504-465 Viking Myth and Saga
0504-466 Early Black Writers
0504-467 Black Writers Today
0504-468 Literary Representations of America
0504-469 American Literature: New Approaches
0504-471 Irish Literature
0504-473 Patterns in Mathematics and Poetry
0504-474 British Romantic Literature
0504-476 Immigrant Voices in American Literature
0504-477 Survey of Italian Literature
0504-479 Latino Experience in Literature
0504-480 Women in Literature
0504-484 Literature and Religion
0504-485 Global Literatures: Planetary Extremities and Extremisms
0504-487 Literature of French Black Africa and the Caribbean
0504-490 Autobiography
0504-491 Modern Italian Poetry
0504-492 Native American Women's Experience
0504-493 Maps, Spaces, and Places
0504-494 Pan-Indian Native American Literature, 1890-1967
0504-495 Contemporary Native American Literature, 1968-present
0504-496 Women in the Hispanic World: The Politics of Identity Formation
0504-500 Italian Literature: Special Topics
0504-510 The View from Paris
0504-524 Contemporary Film
0504-545 Deaf Literature

## Minority Relations in the United States

***Concentration Adviser: Kijana Crawford***

A concentration in minority relations in the United States offers the student a variety of academic perspectives on how groups of persons sharing similar characteristics (whether cultural, inherited, or learned) interact with groups sharing different characteristics. The focus of this concentration will be upon racial and ethnic minorities in the U.S. Courses will examine the issues of differential power between groups and analyze the social structures, which are used to maintain or alter these power differences. Studies in this concentration will also look at the interpersonal level of response of both majority and minority group members. Finally the concentration courses will investigate 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 courses:**
0504-447 Special Topics: Multicultural Literature
0504-461 Latin-American Literature
0504-466 Early Black Writers
(Prerequisite: 0502-227 Writing)
0504-467 Black Writers Today
(Prerequisite: 0502-227 Writing)
0507-492 Selected Problems in Black History
0507-494 Immigration and Ethnicity
0507-495 Civil Rights Movement in 20th Century U.S. History
0507-496 African History
0515-506 Social Inequality
0515-482 African American Culture
0515-483 Hispanic American Culture
0515-485 Diversity in the City
0535-484 Rhetoric of Race Relations

## Music

***Concentration Adviser: Edward Schell***

A concentration in music offers the student a broad range of 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.*

**Choose three of the following courses:**
0505-401* RIT Singers
0505-402* RIT Philharmonia
0505-403* RIT Concert Band
0504-404* RIT World Music Ensemble
0504-405* RIT Jazz Ensemble
0505-420* Applied Music
*Each of these ensemble courses is one credit hour only. Four quarters of participation are required to complete one concentration course.

0505-442 Music in the United States
0505-447 The American Musical Theater
0505-448 20th Century American Music
0505-449 Music Theory I
(Prerequisite: Elementary Music Skills)
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
(prerequisite: 0505-449 Music Theory I)

## Peace Studies

***Concentration Adviser: Evan Selinger***

The peace studies concentration enables students to study the varied and significant attempts to conceive and realize peace. Courses in literature, social sciences, and philosophy will enable students to form constructive concepts such as real peace, life quality, human rights, freedom, toleration, and solidarity. The goal of the concentration is to give students a sound understanding of the alternatives to aggression, conflict, or violence as means of settling human disputes.
*Note: Evening students may not declare this concentration.*

**Choose three of the following courses:**
0509-445 Social and Political Philosophy
0509-446 Philosophy of Law
0509-448 The Philosophy of Peace
0513-453 American Foreign Policy
0513-491 The Search for Peace: The Middle East Peace Process
0535-490 Persuasion and Social Change

## Public Policy

***Concentration Adviser: James J. Winebrake***

The purpose of this concentration is to provide students with a clear understanding of public policy, the policy process, and policy analysis. Students will 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 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. Reflecting the interdisciplinary nature of policy studies, additional courses are offered from the areas of sociology; political science; and science, technology and society. In addition, Policy Analysis I, II and III are offered especially for students who are considering the master of science in science, technology, and public policy or who have an interest in analytical tools.

**Required course:**
0521-400 Foundations of Public Policy

**Electives—Choose two of the following courses:**
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* Transfer Technology and Globalization
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 (Topics will vary)
* These courses have prerequisites or co-requisites.

## Religious Studies

***Concentration Adviser: Brian Schroeder***

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 ten courses of the religion concentration provide an opportunity for the student to learn about major eastern and western religious traditions from the point of view of history, sociology, anthropology, literature, philosophy, and theology.
*Note: Evening students may not declare this concentration.*

**Choose three of the following courses:**
0504-484 Literature and Religion
(Prerequisite: 0502-227 Writing)
0507-483 History of Christianity
0509-440 Philosophy of Religion
0509-460 East Asian Philosophy
0509-466 Existentialism
(with approval of the religious studies coordinator)
0509-467 Medieval Philosophy
0509-468 Metaphysics
0509-469 19th Century Philosophy
(with approval of the religious studies coordinator)
0510-483 Anthropology of Religion
0514-483 Social Psychology of Religion

## Philosophy

***Concentration Adviser: David Suits***

The philosophy concentration provides students with an opportunity to study the nature, methods, problems, and achievements of philosophical inquiry. Through this concentration, students will develop 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 one interacts.

**Choose three of the following courses:**

0509-440 Philosophy of Religion
0509-441 Logic
0509-442* Philosophy of Art/Aesthetics
0509-443† Philosophy of Science
0509-444 The Great Thinkers (Thinker will vary)
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 (Topic will vary)
0509-450§ Seminar in Philosophy (Topic will vary)
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

**Prerequisite: One previous philosophy course or permission of the instructor is strongly encouraged.*
***Prerequisite: One philosophy course.*
*†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.*
*§Prerequisite: Two prior courses in philosophy or permission of the instructor.*

## Psychology

***Concentration Adviser: Kathleen Chen***

This concentration provides the opportunity for advanced study in various areas of psychology. Depending on which courses are selected, students may conduct in depth study of one of the major areas of the discipline such as human development, normal and abnormal personality, or perception and learning. The courses will enable students to learn more about their own functioning and the functioning of others. 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 psychology degree program students.*

**Prerequisite:**

0514-210 Introduction to Psychology (or equivalent)

**Choose three of the following courses:**

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
0514-544 History and Systems

## Science and Technology Studies

***Concentration Adviser: Thomas Cornell***

The science and technology studies concentration will examine some major impacts of science and technology in the contemporary world. Special reference will be given to American concerns. Students will 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. The rationale for the concentration is based on the accelerating importance these historically dissimilar, but closely intertwined, fields have on everyday life. In addition, science and technology have become social systems in their own right; have made possible increasing freedom, a fantastic variety of choice, and, paradoxically, a 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.

**Choose three of the following courses:**

0504-462 Literature and Technology
(Prerequisite: 0502-227 or equivalent)
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 Society
0508-446 Makers of Modern Science
0508-447 Special Topics (Topics will vary)
0508-449 History of Women in Science and Engineering
0508-450 History of Chemistry
0508-451 Cyborg Theory:
(Re)Thinking the Human Experience
0508-452 Gender, Science, and Technology

0508-520 Historical Perspectives on Science and Technology Seminar (Prerequisite: any two of the history of science or technology courses approved by the department)
0508-540 Science and Technology Policy Seminar
0509-443 Philosophy of Science (Prerequisite: At least one prior course in either philosophy or one of the natural sciences)
0515-451 Transfer Technology and Globalization (Prerequisite: 0515-210, 0510-210, or equivalent)

## Sociology and Anthropology

***Concentration Adviser: Murli Sinha***

A concentration in sociology and anthropology emphasizes the interrelation between society and culture in different parts of the world: the United States, Europe, Latin America, Africa, and Asia. Students are free to explore how people create and experience their social world by selecting courses from a wide range of topics focused on issues such as cultural differences and ethnocentrism, families and kinship, ethnicity and racism, class and inequality, immigration, women, gender and sexuality, health and bodies, urban life and cities, film and mass media, religion, technology and work, globalization, and social and cultural change.

**Prerequisite:**
0515-210 Foundations of Sociology
or
0510-210 Cultural Anthropology (or equivalent)

**Choose two of the following courses:**
0510-440 Cultures in Globalization
0510-442 Cultures of Latin America
0510-443 Immigrants in the U.S.
0510-444 Social Movements in the Global Economy
0510-445 Global Cities
0510-446 Native North Americans
0510-447 Anthropology of Mass Media
0510-448 Native Americans in Film
0510-451 Gender and Sexuality
0510-452 Bodies and Culture
0510-483 Anthropology of Religion
0510-502 Introduction to Archaeology
0510-506 Great Discoveries in Archaeology
0510-507 Archaeological Science
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 Groups Relations
0515-449 Population and Society
0515-451 Transfer of Technology and Globalization
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

## Theatre Arts

***Concentration Adviser: Tina Lent***

The theatre arts concentration offers students a focused study of the theatrical and dramatic arts, with courses in dramatic and theatrical literature, history, criticism, and theory. This concentration serves to offer students a more profound understanding of the theatre arts, and in a broader sense an introduction to cultural development and the communication of ideas.

**Choose three of the following courses:**
0505-450 Music and the Stage
0505-453 Theatre in the United States
0505-457 Contemporary Drama, Theatre and Media
0505-458 Modern European Theatre and Drama
0505-486 German Theatre and Drama
0505-489 Theatre Production Seminar and Workshop
0505-502 Shakespeare the Dramatist

## Women's and Gender Studies

***Concentration Adviser: Tina Lent***

A concentration in women's and gender studies offers students a variety of academic perspectives on the role of women in modern western civilization. The courses share the following objectives: to examine the roles, values, and self-perceptions of women in a traditionally male-oriented society; to develop a sophisticated, humanistic angle of vision from which to appreciate the many and varied accomplishments of women; and to develop a mature sensitivity to the difficulties and frustrations encountered by women. Although the focus of the concentration will be 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 will be encouraged to relate the intellectual knowledge gained in each course to insights about their own experience and behavior.

**Prerequisite:** Courses listed below with an asterisk (*) may have prerequisites. Please see course descriptions.

**Choose three of the following courses:**

0522-400* Foundations of Women's and Gender Studies
0522-405 Women and Science
0522-407 Seminar on Sexual Violence
0522-481* Women in Literature
0522-484 Autobiography
0522-483* Psychology of Women
0522-446* Women and Crime
0522-459* Toni Morrison
0522-436* Women's Stories, Women's Films
0522-480* Women and the Visual Arts
0522-482* Women in Politics
0522-401* American Woman: Colonies to 1848
0522-402* American Woman: 1848 to Today
0522-450* Gender, Science, and Technology
0522-406* Feminist Theory
0522-447* Women, Work, and Culture
0522-449 History of Women in Science and Engineering
0522-492 Native American Women's Experience

## Writing Studies

***Concentration Advisers: Lisa Hermsen and Doris Borelli***

This concentration provides opportunities for advanced study in writing and linguistics. These courses provide opportunities for students to study language and develop strategies for effective writing across a variety of contexts. Course topics include technical and scientific writing, principles of written argumentation, writing for the majors, English language studies, autobiography, and oral history. Writing processes and language awareness from academic to public forums receive close attention.

**Prerequisite:**

0502-227 Writing (or equivalent)

**Choose three of the following courses:**

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: Autobiography and Oral History
0502-456 Rhetoric of Science
0502-457 Language, Variation, and Identity
0502-459 Creative Nonfiction
0502-460 Science Writing
0502-560 Special Topics in Writing

# 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, it 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

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 more specific information.

## Confidentiality of records

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) 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 United States Department of Education concerning the alleged failure of RIT to comply with the requirements for this act.

## Transcripts

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 overstamped "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.

## 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: www.rit.edu/~620www/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 use a touch-tone telephone, the World Wide Web, fax machine, or mail, or register in person at their home department or the Office of the Registrar. The registration period ends with the first six weekdays of the term, also called the add/drop period. Specific dates and procedures can be found in the quarterly Schedule of Courses booklet. 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 sixth 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 sixth week. For policies pertaining to withdrawal from the university and tuition refund.

## 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, page 6). 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).

Institute 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

1. 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.
2. 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.
3. Any student whose program quarterly grade point average falls below 1.00 will be suspended.
4. 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.

## 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

Based on an average of the three most recent cohort survival statistics, RIT's student graduation rate is 61 percent for students entering at the first-year level and graduating from a four- or five-year program.

Excluding part-time and nondegree students, 90 percent of first-year, full-time day students register for their second year.

The statistics reported herein have been computed in a manner consistent with data reported to the State Education Department through the university's Office of Institutional Research and Policy Studies.

**The physician assistant program requires a 2.8 grade point average.*

# Counseling and Academic Services

RIT wants its students to succeed in their college experiences. The university provides a variety of counseling and academic services to allow students to achieve their personal, as well as educational goals.

Counseling services can help answer questions regarding student orientation to new college experiences, academic program requirements, career planning and job placement, or other areas of concern. Personal and spiritual guidance is also available on campus.

Students may find there are times when they need some special support to succeed in their classes. RIT provides a number of tutoring services, study centers, and learning resources, from the library to the computer labs. Media resources are also available to assist in class assignments.

## Academic Support Center

*www.rit.edu/~369www/*
***(585) 475-6682***

The Academic Support Center offers academic support to students, faculty, and staff. The center offers workshops, classes, and labs for all levels of students, from freshmen to graduates. In addition to basic skill development, it offers courses that teach students how to improve study techniques and how to assess and make the most of their individual learning abilities.

Academic Support Center services are free to RIT students. For more information concerning these services, contact the center at (585) 475-6682 (voice/TTY).

**Reading and writing department:** The writing lab 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. The lab has a drop-in policy with no appointments or referrals necessary. Individual and small group assistance is available for reading textbooks and for speed-reading strategies.

**Mathematics department:** The department is focused on supporting students' progress in the learning of mathematics. The department offers assessment for placement in appropriate courses, tutoring, and instruction in a variety of formats. An individualized math course offering diagnostic testing and carefully prepared review materials is offered. The math lab offers free tutoring in most math courses as well as math-related areas such as chemistry, physics and statistics. The lab offers review packets on a variety of topics in algebra, trigonometry, and calculus as well as a list of math videos available in the Wallace Library. Review sessions are offered each quarter on Techniques for Differentiation, Integration for Calculus I and II, and Trigonometry.

**Study skills department:** The focus of this department is on the development of good study skills to promote academic success. Diagnostic evaluation, individual instruction and mentoring, and tailor-made courses for various RIT groups are available. A series of mini-workshops, the Lunch 'n' Learning Series, is offered each quarter. Topics covered include time management, listening and notetaking, text reading, test taking and preparation, and memory improvement. Visit the study skills website: www.rit.edu/lponline.

**College Restoration Program:** The College Restoration Program (CRP) is a full-time specialized program of instruction, with matriculated status, for students who have experienced academic difficulty and suspension from a college.

A course of action can be recommended only after the reason for academic difficulty has been established. If it is determined (after an interview and diagnostic and achievement tests have been administered) that CRP can be helpful, a very structured program, including one or two content courses and ASC instruction, is arranged.

The student meets regularly with an ASC faculty mentor to clarify directions and goals, to discuss relationships between the skills courses, and to review progress.

The entire program is designed to strengthen the student's self-confidence. Successful completion of this program could qualify students for readmission to the college or department of their choice or entrance into another educational program.

Although the College Restoration Program does not guarantee a participant readmission to his or her former college or admission as a transfer student at another school, the center provides recommendations and résumés of student achievement in the program to colleges upon request of the student.

For more information, contact the Academic Support Center at (585) 475-6682 (voice/TTY).

**Academic Assessment Program:** The Academic Assessment Program helps 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 ranges from personal or interpersonal problems to unclear college major and career path choices, to ineffective or underdeveloped study skills.

Outcomes of the assessment process include identification of the problem or problems and may include referrals to various campus support services. For more information or an appointment, contact the Academic Support Center at (585) 475-6682.

**Learning Support Services:** Learning Support Services (LSS) 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. LSS recognizes that each student is unique and responds to this by offering three levels of

check-ins: weekly, bi-weekly, or daily. Students may select their level of participation on a quarterly basis. This is a fee-based service. For more information, contact the LSS chair at (585) 475-5296.

**Academic Accommodations Office:** This office provides the academic accommodations for students who have been approved for these services by the disability services coordinator. The most frequently used services include extended-time testing, readers, scribes, notetaking, and textbook taping.

## Center for Religious Life

*www.rit.edu/~320www/*
***(585) 475-2135 (voice/TTY)***

The Center for Religious Life is unique in the campus community. Recognizing the balance of mind and spirit, the center's interfaith staff provide worship and observances in the diverse religious and cultural traditions represented within the campus community. These include Nondenominational, Baptist, Catholic, Hillel, and Lutheran. 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

RIT's 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 the focal point for the diverse religious traditions within the university, housing two chapels, meetings rooms, and offices for the campus ministry staff.

For more information, contact the coordinator of the Interfaith Center by phone at (585) 475-2135 (voice/TTY) or e-mail at efs0368@rit.edu.

## Cooperative Education and Career Services

*www.rit.edu/~964www/*
***(585) 475-2301 (voice), (585)-475-6905 (TTY)***

The Office of Cooperative Education and Career Services supports the university's special emphasis on learning through experience. The cooperative education program was started at RIT in 1912. Since that time it has grown into one of the largest in the world.

Last year more than 1,900 employing organizations across the country participated in the program, hiring more than 3,000 RIT students involved in mandatory and optional co-op programs. More than 600 companies visit RIT annually, conducting more than 7,000 employment interviews. Co-op gives the student the opportunity to obtain practical work experience and enhances knowledge acquired in the classroom.

In the Office of Cooperative Education and Career Services, each student has a program coordinator who provides assistance with career advising and the job search, from the beginning of the co-op process right through career entry upon graduation. The office also provides a variety of job search seminars, career and employer research materials, online job postings for co-op and full-time positions, on-campus interview opportunities, and a reference service for graduating students. Services of the office remain available to alumni for a lifetime. Students are encouraged to visit the department website at www.rit.edu/co-op/careers for more information.

The Office staff spends considerable time developing opportunities with employers nationwide, as well as monitoring and fostering current relationships. These linkages with business and industry enhance RIT's ability to provide an education that meets the needs of the job market and aids students and graduates in their pursuit of successful careers.

## Counseling Center

*www.rit.edu/counseling*
***(585) 475-2261 (voice), (585) 475-6897 (TTY)***

The Counseling Center, located in the August Center, offers a variety of services to RIT students. These services include:
- Personal/psychological counseling
- Crisis intervention
- Career exploration counseling
- Career exploration resources
- DISCOVER (computer-assisted career guidance)
- Developmental programs and groups
- Testing
- Consultation
- Referral services

### RIT Counseling Center hours

Counseling Center hours are 8:30 a.m. to 7 p.m., Monday through Thursday; and 8:30 a.m. to 4:30 p.m. on Friday, except during finals week, break weeks, and summer quarter. During those periods, the hours are 8:30 a.m. to 4:30 p.m., Monday through Friday. Services are confidential and free. For more information about services, please call (585) 475-2261 (voice) or (585) 475-6897 (TTY), or visit the Counseling Center website at www.rit.edu/counseling.

### Personal/psychological counseling

Individual and group counseling are available for students to deal with things like depression and anxiety, more effective ways of dealing with conflict and stress, managing feelings and emotions, developing satisfying relationships, communicating with others, or coping with personal crises, to name a few.

### Crisis intervention

Crisis counseling and emergency services may be obtained by calling or visiting the Counseling Center during business hours, or by calling Campus Safety at (585) 475-3333 and asking to speak to the counselor on call after hours.

### 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. Tests of aptitude, interest, and personality may be used in this assessment process.

### Career exploration resources
Located in the reception area of the RIT Counseling Center, career exploration resources include occupational information on a variety of careers, vocational and educational reference books, and DISCOVER. The center and its resources are available on a walk-in basis.

### DISCOVER
DISCOVER is a career guidance system that uses a computer to help students learn more about:

- the career planning and decision-making process;
- themselves, especially their interests, abilities, and work-related values;
- careers that may be appropriate based on interests, abilities, and/or values;
- the world of work, including descriptions of more than 40 occupations; and
- graduate and professional school opportunities.

### Groups and outreach programs
The Counseling Center staff offers groups that assist students in their personal development. These groups offer a supportive environment in which to explore a variety of issues that typically affect the lives of students such as forming relationships, handling loss, managing stress, clarifying values, and choosing careers.

In addition, center staff members will present special programs to student groups and organizations. Presentations include communication skills, helping friends get help, stress management, and dealing with loss, among other topics.

### Testing
The Counseling Center may administer a number of psychological tests and interest inventories as part of the counseling process. In addition, it administers advance-credit exams.

### Consultation
Staff members of the Counseling Center will provide consultation services to interested students, faculty, and staff regarding student problems and a number of areas within their scope of expertise.

### Referral services
Staff can assist with referrals to community-based practitioners and resources, when appropriate.

## Disability Services Coordinator

*www.rit.edu/~371www/*
***(585) 475-7804 (voice), (585) 475-6988 (TTY)***

RIT is committed to supporting members of our learning community who have disabilities. All students with disabilities who request accommodations must send appropriate documentation of the disability to the Disability Services Coordinator's Office. The coordinator will: 1) assess students' documentation; 2) review students' requests for accommodations; 3) recommend appropriate and reasonable accommodations; and 4) refer students to the appropriate service providers. The office works closely with the disability liaisons of each of the colleges at RIT to ensure support for students with disabilities within each college. The office coordinates services with residence life and works with campus safety, which supervises the Accessible Van Services to provide transportation around campus for those who are mobility impaired. For more information, call the disability services coordinator at (585) 475-7804 (voice) or (585) 475-6988 (TTY).

## Educational Technology Center

*www.rit.edu/etc*
***(585) 475-2551***

The Educational Technology Center (ETC) provides services that enhance and support the educational environment.

ETC's media production services department produces educational and informational media for faculty and staff. These include video, multimedia/Web, graphics, and photography/digital imaging production. Media production services also captions video and other digital media.

The classroom learning technologies department deals with many aspects of classroom technology. Support covers the delivery and setup of projectors (slide, overhead, and video/data) as well as TV/VCR/DVD carts; access to and training on installed classroom equipment; and the operation of equipment in the academic auditoriums. ETC also supports the installation and maintenance of computer and video projection equipment and podiums in classrooms and lecture halls. Instructional services also provides equipment and technical support to RIT student clubs and organizations.

The media resource center (MRC) provides media support to faculty, staff, and students. MRC staff works with faculty to identify media within the collection and locate new media to support their curriculum needs. The MRC collection consists of a variety of media formats, including videotape, DVD, audiotape, and an art history slide collection. The various media formats are available for use in the classroom or the MRC viewing area. Requests for captioning RIT-owned media (ETC or department collections) are coordinated by the MRC staff.

ETC will arrange an array of communication feeds including webcasts, satellite feeds, and teleconferences.

ETC is located on the lower level of Wallace Library. More than 70 students assist with production, classroom technology support, and office duties. Individuals are invited to drop in and explore these resources. For further information, call (585) 475-2551, or visit www.rit.edu/etc.

## English Language Center

*www.rit.edu/~370www*
***(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. For more information about the center's program

offerings, visit the English Language Center (1301 Eastman), call (585) 475-6684 (voice/TTY) or visit the website at www.rit.edu/~370www or e-mail jbcelc@rit.edu.

### Full-time program

The intensive English language program consists of 20 hours of class instruction per week at beginning, intermediate, and advanced levels. There is a fee for this program. 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 to 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 English Language 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 English Language Center offers a program in which international students give private and group lessons in their native languages. The international student is supervised by a trained language instructor, who assists in curriculum development and provides language teaching methodology. 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 in the past include 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 or pick up an application at 1301 Eastman.

### Translation service

The English Language Center's translation service provides quick and efficient translation of documents, reports, letters, and manuals for RIT students, faculty, and staff, as well as businesses in the Rochester area. For a fee, documents of all types, general to technical, can be translated.

## First-Year Enrichment Program

*www.rit.edu/firstyear*
***(585) 475-7033***

First-Year Enrichment (FYE) is an interactive course designed to enhance the personal, academic, and professional success of first-year students and to facilitate their academic and social integration into RIT.

This required two-credit, two-quarter course is designed to maximize the student's potential to achieve academic success and to adjust responsibly to the personal and interpersonal challenges presented by collegiate life. FYE actively engages students during their critical transition to college by examining problems and issues common to first-year students. The course is customized for each college at RIT, integrating the needs specific to students in each major into a classroom experience that is focused on topics such as time management, academic success strategies, student finances, ethical decision-making, goal-setting, information literacy, copyright infringement and plagiarism, RIT resources, and more. FYE partners with other courses in learning communities and provides a career-based approach to each of the core topics introduced in the class.

Individual coaching appointments are provided by each FYE instructor to assist students with transitional issues, help students establish academic and personal development goals, encourage their involvement in campus activities, and foster connections with their academic program and college. Coaching is a unique aspect of FYE at RIT and is an action-oriented effort to help students identify and reach their goals.

For more information, you may contact the First-Year Enrichment Office by calling (585) 475-7033, or visit our website at www.rit.edu/firstyear.

**Freshmen students only:** All first-year students are required to satisfactorily complete the First-Year Enrichment course and two different wellness activity courses to satisfy their graduation requirement. NTID Pre-baccalaureate, AAS, or AOS students must complete the Wellness for Life course and one wellness activity course to satisfy their graduation requirement.

### Course offerings

**1105-051 First-Year Enrichment I**
The first part of the two-quarter First-Year Enrichment course is designed to enhance the personal, academic, and professional success of first-year students and to facilitate their academic and social integration into RIT. Students must pass both FYE I and FYE II to satisfy the wellness requirement for graduation. Offered fall quarter only.

**1105-052 First-Year Enrichment II**
The second part of the two-quarter First-Year Enrichment course is designed to enhance the personal, academic, and professional success of first-year students and to facilitate their academic and social integration into RIT. Students must pass both FYE I and FYE II to satisfy the wellness requirement for graduation. Offered winter quarter only.

**1105-048 First-Year Enrichment 10 Week**
A 10-week, one-quarter First-Year Enrichment course is available, but restricted to designated college programs. Successful completion of the First-Year Enrichment 10-week course satisfies the wellness requirement for graduation. Offered fall quarter to selected majors.

## Higher Education Opportunity Program

*www.rit.edu/~305www/*
***(585) 475-2221 (voice/TTY)***

The Higher Education Opportunity Program (HEOP) is a New York State- and RIT-funded service that qualifies students for additional financial and academic support for up to five full years, not including periods during which students may be enrolled in

cooperative education. This supplemental assistance is available for students who need extra time to complete their academic requirements. While both New York State and RIT provide financial support, HEOP students must also qualify for the New York State Tuition Assistance Program (TAP) and federal Pell Grant program, and be personally responsible for loan and college work-study contributions. The HEOP program is dedicated to each individual student's academic success and personal growth.

To qualify, a student must meet strict academic and financial guidelines set by the New York State Education Department prior to attending college. Any student who has taken college courses following high school graduation, matriculated or not, is ineligible. Students must have graduated from high school or the equivalent and be New York State residents. Transfer students are eligible if they are coming from a like program at another institution in the state: HEOP, EOP, SEEK or College Discovery. Transfers must apply to and be accepted by both the HEOP office and the Admissions office for entrance. Space in the program is limited.

Services for all students include personal, academic, financial, and career counseling. Tutoring is available in all subjects, and the HEOP staff act as campus resources and advocates. Students accepted as freshmen must attend a three-week summer program prior to fall quarter entrance. They live on campus and attend a selection of skills-building classes carefully designed to facilitate their entry into standard RIT courses.

HEOP has existed on the RIT campus for more than 30 years. Across the state, the HEOP program has been applauded for its graduation rate. Inquiries should be directed to (585) 475-2221 (voice/TTY).

## Honors Program

*http://honors.rit.edu*
***(585) 475-4466***

The RIT Honors Program provides a supportive and encouraging environment for students of intellectual curiosity and academic distinction. Students benefit by working closely and sharing academic experiences with other honors students and faculty, both in and out of the classroom.

Designed around three basic ideals of Leadership, Scholarship and Citizenship, the Honors Program is for students who 1) seek to challenge themselves in exemplary learning experiences such as undergraduate research projects, honors seminars, and study abroad; 2) wish to extend and share their knowledge through participation in professional associations and conferences; 3) hope 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. The 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:

• Honors curriculum—Special courses, seminars, projects, and advising are offered in the student's home college and in honors general education courses in the College of Liberal Arts and College of Science.

• Research and experiential learning—The Honors Program offers opportunities to work with faculty on applied and interdisciplinary research projects.

• Honors advising—Each college has designated an experienced faculty 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 Honors Program for guidance on how to include study abroad 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 expected to participate in the honors courses and co-curricular activities in their college, and replace approximately half of their liberal arts requirements with honors courses. Honors students are also required to participate in 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 grade point average and other requirements.

**Admission:** Applicants who submit RIT's Application for Undergraduate Admission (or the Common Application) by February 1 are invited to apply for Honors Program admission if their high school grades, rank, and test scores place them among the top five percent of the applicants to the university. This normally requires grades and class rank of 95 percent or higher and outstanding SAT or ACT scores. Students who are invited to apply for admission to the Honors Program are asked to submit supplemental application materials, including a teacher recommendation, admission essays, and a listing of academic awards, college-level courses, and special enrichment programs in which they have participated. 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.

For more information about the Honors Program, contact the Office of Academic Enhancement Programs, Bldg 13, Room 1314, telephone: (585) 475-4466; fax: (585) 475-7633; e-mail: aep@mail.rit.edu; website: http://honors.rit.edu.

## Information and Technology Services

*www.rit.edu/~wwwits/*
***(585) 475-4357***

Computing and network services at RIT are provided by Information and Technology Services (ITS).

### Wireless, portal, and more

The campus-wide network includes wireless capabilities in open public areas such as the Student Union, Crossroads Café, Wallace

Library, and in every college. Popular features are e-mail and access to the Internet, including Internet 2, a second-generation Internet technology with increased broadband capabilities for better access to digital libraries, scientific instruments, and other research applications. Many faculty have incorporated these features into their curricula.

ITS partnered with several on-campus departments such as Student Affairs and Student Government to launch myRIT, the Institute's internal Web portal found 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 manages numerous computer labs and "smart" classrooms (in cooperation with the Educational Technology Center) 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.

### Computer security and safeguards

Computing system use is guided by the RIT Code of Conduct for Computer and Network Use. This document, located at www.rit.edu/computerconduct, reflects current issues related to ethical use of computing and network resources. ITS has put into place multiple safeguards to protect RIT's network environment and the integrity of individual user accounts.

Computer accounts are issued to students, faculty, and staff so that they can perform activities supporting educational goals and internal RIT functions. Students can obtain an account at the ITS HelpDesk or at the reference desk at Wallace Library by showing their RIT ID card. Forms for faculty and staff accounts are available by contacting the HelpDesk: www.rit.edu/its/help/forms.

### Computer training and consulting services

ITS also provides consulting services, seminars, and computer training courses. Mobile learning assistants help faculty, staff, and students with specific computer tasks. ITS also offers computer-based training modules covering 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 or to log onto the system, go to www.rit.edu/cbt.

### Student employment information and Resnet services

ITS employs more than 250 students and is one of the largest student employers at RIT. Contact student employment at www.rit.edu/~967www for more information about ITS job opportunities or go to desktop support services (ITS) to learn about job information in on-campus labs: www.rit.edu/its/services/computer_labs.

The Resnet Office, an area within ITS, provides computer support to students living in residential housing at RIT. The Resnet team can assist students with getting their computers connected to the RIT network, accessing campus computing resources, and troubleshooting computer software and hardware. Call Resnet at (585) 475-2600 (voice), (585) 475-4927 (TTY); email resnet@rit.edu or visit http://resnet.rit.edu.

### Modem access to the campus computer network

Both asynchronous and DialIP remote Internet connection service (14.4 to 56 Kbps): (585) 427-2000. Also available is Virtual Private Network (VPN) for users on Roadrunner or DSL.

### Contacting the HelpDesk

The ITS HelpDesk is located in room 1113 of the Gannett Building (7B). Contact HelpDesk staff via telephone or TTY:
(585) 475-HELP (4357),
(585) 475-2810 (voice/TTY)
E-mail: helpdesk@rit.edu

### Service hours

Fall, winter, and spring quarter hours
Monday-Thursday: 7:30 a.m. to 8 p.m.
Friday: 7:30 a.m. to 5 p.m.
Saturdays: Closed
Sundays: Noon to 6 p.m.

Summer quarter, holidays, and quarter breaks
Monday-Friday: 7:30 a.m. to 5 p.m.
Saturday/Sunday: Closed

## International Student Services

*www.rit.edu/internationalservices*
***(585) 475-6943 (voice/TTY)***

The Office of International Student Services is the primary resource for more than 1,200 hearing and deaf international students from 90 countries, as well as for members of the campus community seeking cross-cultural information. The program 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 coordinated with the Rochester International Council. For more information, call (585) 475-6943 (voice/TTY) or visit the International Student Services website, www.rit.edu/internationalservices.

## New Student Orientation

*www.rit.edu/~orient/*
***(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 to 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 begin-

ning college or transferring from one college to another,
- attend academic planning sessions,
- experience living on campus and 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 one week, and attendance is required. Transfer students participate in a one- to two-day program. Brief mini-orientations are offered at the start of the winter and spring quarters. For further information, visit www.rit.edu/orientation.

## North Star Center for Academic Success and Cultural Affairs

*www.rit.edu/northstar*
***(585) 475-4704 (voice/TTY)***

The North Star Center for Academic Success and Cultural Affairs, established in 2000, was created to improve student retention and graduation rates of African American, Latino American, and Native American students at Rochester Institute of Technology. In the best ideals of Frederick Douglass, the North Star Center also promotes the moral and intellectual development of all RIT students through cultural awareness and affirmation. The North Star Center also reflects RIT President Albert Simone's vision to create an ethnically and racially diverse environment—a microcosm of the knowledge, skills, character, and culture needed for future civil society.

In support of its mission, The North Star Center provides services and develops initiatives to enhance the student experiences of African American, Latino American, and Native American RIT students. The North Star Center provides personal advising, advocacy, leadership development opportunities, diversity education, cultural programming, and a connection to campus and community resources.

What makes the center unique among its counterparts nationwide is a focus on academic success: The center combines the resources of academic and student affairs setting forth to not be just a multicultural center, which caters specifically to the social aspects of student development. Rather, it expands the concept of student development to include the development of the total student while keeping academic excellence first and foremost.

The center also offers student advocacy and support, College liaisons, whose primary responsibility is to create and provide a supportive environment for academic success, are assigned to a specific college and interact on a daily basis with faculty, academic advisers, student affairs, and social organizations. Essentially, they are knowledgeable about all aspects of the student's college, academic support services, degree requirements, and social life.

The North Star Center also disseminates information to students and families about internships, scholarships, and job opportunities. In addition, collaboration with several campus units and student organizations brings prominent speakers and community leaders to campus to meet with students, faculty, and staff. North Star Center staff advise the Black Awareness Coordinating Committee, the Latin American Student Association, Caribbean Students Association, and other student groups. Visit our website at www.rit.edu/northstar.

## NTID Resources for Deaf and Hard-of-Hearing Students

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 counseling, mental health counseling, student-life programming, and communication skills development in the form of speech-language instruction, speechreading, listening/audiological services, as well as a state-of-the-art learning center.

### NTID Learning Consortium

The NTID Learning Consortium is a partnership among academic departments and educational programs throughout NTID and RIT. The goal of this partnership is supporting student success in the college curriculum. Resources of the NTID Learning Center and the Self-Instruction Lab are an integral part of the consortium.

The NTID Learning Center (www.ntid.rit.edu/nlc) represents a creative combination of human, physical, and technological resources through which consortium partnerships can be realized.

Learning Center resources include:
- Regular tutorial and curricular support staffed by faculty and advanced students and 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 and curricular support for students is available on a walk-in, scheduled, or assigned basis, either individually or in small groups
- Educational workshops (either tied to credit-bearing courses or independent experiences) addressing skills, knowledge and attitudes important for success in college and beyond
- Computer work stations supporting both tutorial activities and course assignments, as well as independent student work
- A "smart classroom" that supports instructional innovation through computer and multimedia-based technologies and serves as a site for distance learning innovations
- A video resource room supporting video conferencing
- Designated areas for individual and small-group tutoring and studying

The Self-Instruction Lab (www.ntid.rit.edu/nlc/sil) is available to support signed and spoken language communication. The lab offers flexible scheduling to meet learner needs as well as materials and equipment to support individual learning styles. Each of the lab's state-of-the-art instructional carrels is equipped with a color TV monitor and a VCR. The lab offers instructional materials in videotape, videodisc, CDROM, and audiotape formats that are designed to supplement classroom instruction and support independent practice and study. Video production capabilities also are available.

## Communication Studies and Services

NTID strongly encourages all students to expand their communication skills and ability 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. Faculty/staff conduct assessments and provide coursework, workshops, and individualized instruction. They also work in collaboration with faculty and staff across the university.

## Speech and Language Services

The speech and language faculty/staff provide curricular and cocurricular 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; individualized use of multimedia and computerized visual feedback systems; and communication seminars and workshops. 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/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 videotape recording and playback. The faculty in the department are certified by the American Speech-Language-Hearing Association.

## Audiology Services

The audiology faculty/staff offer a variety of workshops and information on topics related to hearing aids, cochlear implants, communication strategies, telecommunications and assistive technologies, auditory training, speechreading, and job interviewing. Hearing and hearing-aid evaluations are available through the Hearing Aid Shop (Johnson Building room 3130). The evaluations are provided by audiologists who are certified by the American Speech-Language-Hearing Association and licensed through the State of New York. Faculty/staff are available on a daily basis 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 get hearing aids or cochlear implants repaired, as well as other services. In addition, students can schedule appointments for audiology and cochlear implant clinics with faculty/staff and with consultant ophthalmologists and otologists in the Eye and Ear Clinic. Services are available to all students, and most are provided at no cost.

## NTID Counseling Services

NTID Counseling Services is committed to the goal of 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. The counselors are trained in counseling and 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 students 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. Counselors also assist in coordinating special services for students with secondary disabilities. For additional information about NTID counseling services, call (585) 475-2876 (voice/TTY) or send a fax to (585) 475-6468.

## NTID Mental Health Services

The RIT 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 services department, campus safety, and other related campus units. Some of the counselors at the Center are fluent in sign language.

Some concerns that students may need help in resolving include medication referral and management, depression, anxiety, family conflicts, intimate relationships, and sexual and personal identity matters. Workshops, discussion groups, and group counseling experiences on topics such as stress management, eating disorders, managing emotions, and improving relationships are also offered.

A 24-hour emergency crisis intervention service for students experiencing mental or emotional trauma is provided in conjunction with other relevant campus units. For additional information, contact the RIT Counseling Center at (585) 475-2261 (voice) and (585) 475-6897 (TTY) during office hours. For after hours assistance, contact campus safety at (585) 475-3333 to speak to the counselor on-call.

## NTID Student Life Team

The Student Life Team is committed to providing quality cocurricular 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, the use of creative program strategies and a strong commitment to utilizing student paraprofessionals, the SLT emphasizes cultural diversity, minority student support, leadership development, deaf culture and ASL, and contemporary social issues. To learn more about the team and programs, please contact (585) 475-6639 (TTY) or stop by the office suite on the first floor of Ellingson Hall.

### NTID Center for Intercollegiate Athletics and Recreation Support Team

The NTID Center for Intercollegiate Athletics and Recreation (CIAR) Support Team is committed to providing quality services that maximize access for deaf and hard-of-hearing students engaged in Wellness Education courses, the First-Year Enrichment course, and Intercollegiate Athletics, as well as Intramurals and Recreation programs.

Support team members teach the RIT First-Year Enrichment course and Wellness Education courses, signing for themselves. They also provide consultation and advising for deaf and hard-of-hearing intercollegiate student athletes and coaches. Collaboration with the NTID Admissions Office allows potential deaf and hard-of-hearing student athletes the opportunity to meet with members of the Support Team and RIT Intercollegiate coaches and visit the athletic facilities.

Opportunity for deaf and hard-of-hearing students to develop leadership and professional skills occurs through the peer educator/paraprofessional program under the direction of the NTID CIAR Support Team. The student paraprofessionals utilize a variety of innovative strategies and programming efforts that support student access, inclusion, team building, and education.

For more information regarding support provided through the NTID CIAR Support Team, contact the Support Office at (585) 475-6104 (voice), (585) 475-6530 (TTY), or by e-mail at jnsdhd@rit.edu or mlwphy@rit.edu.

### NTID Summer Vestibule Program

The Summer Vestibule Program (SVP) is NTID's required orientation program for new deaf 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 SVP, students learn about the programs offered at NTID and the other colleges of RIT, while faculty and staff members evaluate students' skills, abilities, and motivation. Through this process, students gain information that assists the selection, or confirmation of an appropriate program and design of their individual academic plans.

Acceptance into SVP does not automatically guarantee admission to the program the student selects during SVP. 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 SVP, having requisite skills to begin the program and availability of space in the program.

During SVP, 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 leisure activities, including intramural sports, dances, picnics, swimming and captioned movies, also are a part of SVP.

### 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 services available to them, acquaints them with RIT's campus and services, and allows them to meet other new students and their department's chairperson and faculty members, who will assist them with fall quarter class registration.

## Online Learning

*http://online.rit.edu*
***(585) 475-5896 (V/TTY)***

A recognized leader in the delivery of online asynchronous (any time, anywhere) education, RIT began offering online education in the late 1980s and offered its first full degree in 1992.

Today RIT offers 42 degree and certificate programs—11 graduate degrees, five undergraduate degrees, nine graduate certificates, and 17 undergraduate certificates. RIT offers more than 400 courses online each year. Students are encouraged to select and apply to an academic program but may enroll in courses without being a matriculated student.

All courses offered online meet the same rigorous objectives set for traditional classroom experience. Faculty members who teach an online course 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 style and goals exist in the online classroom. Most classes establish a weekly schedule for learning activities or a project-based learning approach with deliverables due after certain outcomes have been accomplished. These may include projects, exams, team-based projects, required asynchronous discussion, or building/using computer programs to demonstrate capabilities. Most classes also include required readings from textbooks, electronic reserves (from the library), webpages, or downloadable documents (PDFs). Students interact with one another online to exchange ideas and collaborate.

All courses use Internet and Web-based technologies for the underlying course structure. Students log in frequently during the week and must have unrestricted access to the Internet, a computer, a telephone, a VCR and a TV monitor to participate in courses. Not all courses use the same technologies; some will take advantage of toll-free phone conferences, while others will use text-based chat. Others utilize CD-ROMs. Some use Web-based simulations, and some may require additional software.

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, quarterly orientation, access to student records and online ordering for all course materials through the campus bookstore. Registration can also be completed via the RIT Information Center/SIS, touchtone telephone, fax, and mail.

RIT Online Learning serves students throughout the United States and in more than 40 countries. Those living near Rochester can choose to take both online and traditional courses as a way of increasing flexibility and remaining on target to completing a degree.

For more information, see Online Learning at http://online.rit.edu or call us at 1-800-CALL-RIT (V/TTY), (585) 475-5089, or (585) 475-5896 (V/TTY).

## RIT Libraries

*wally.rit.edu/*
***(585) 475-2046***

The RIT Libraries are comprised of three distinct entities: Wallace Library, Cary Library, and the RIT Archives. A balanced combination of traditional and electronic resources, Wallace Library is regarded as RIT's cultural and information center. Special events are frequently hosted by the Library in The Idea Factory, a sprawling collaborative area on the first floor.

The Cary Library houses a unique collection of more than 20,000 volumes on the history of printing, rare book illustration, book design, and other fascinating aspects of the graphic arts. Located on the third floor, the RIT Archives collects, organizes, preserves, and displays materials from the Institute's past. Also located within the building are the Educational Technology Center (ETC) and the Media Resource Center.

From the Library's web-based workstations, users can access the Library's catalog, search many electronic commercial databases, and surf the Internet. The library's staff offers hands-on instruction for using various electronic and Internet resources. They will schedule specialized class instruction upon request. Interlibrary loan services and in-house book requesting are available online through IDS Express. The second floor computer lab provides access to additional computer workstations, image scanning, and color copying.

A variety of seating options and small-group study rooms are available, which can accommodate more than 1,000 users, in total. Part of the Library, the popular Java Wally's café provides a relaxed setting for casual conversation as well as another option for meetings or studying in its After Hours Room.

For library hours, call (585) 475-2046 (voice); for RE: SEARCH ZONE Desk, call (585) 475-2563 (voice/TTY) or (585) 475-2564 or e-mail 610wmlref@rit.edu; for the Circulation Desk, call (585) 475-2562 (voice) or (585) 475-2962 (TTY).

## RIT/TRiO Student Support Services

*www.rit.edu/~triosss/*
***(585) 475-2832***

The goal of RIT/TRiO Student Support Services is to provide the necessary academic and personal support that will enable students who qualify to fully realize their potential and to successfully complete their college career. The federally funded program has been hosted at RIT for more than 30 years and includes the following components. Each has a distinct purpose but is integrally linked with the others.

**The academic component** offers a full complement of services—including tutoring, math mentoring, advisement, and skills development—to assist students with academic concerns, enable them to understand and refine their learning process, and use academic resources more effectively.

**The counseling component** works to bring students into the program and provides support that enables them to direct their energies into positive pursuits. A counselor assists each student in understanding all that is available to him or her and how to access the appropriate assistance. A counselor also will work with students on areas of general concern.

**The programming component** provides complementary experiences that enhance the student's academic and personal perspectives by drawing on RIT and other community resources. This component can provide the student with new opportunities for personal and professional growth.

The ultimate purpose of RIT/TRiO Student Support Services is to help students meet their unique challenges and become a part of the larger community. It often serves as a bridge between the learning community that it creates and RIT in order to foster success.

Eligibility for the program is determined by financial eligibility, documented disability, and first-generation college status. Any full-time undergraduate student who is a U.S. citizen or has a green card and meets one of the eligibility requirements may become a member of RIT/TRiO Student Support Services. For further information, contact the office at (585) 475-2832 or (585) 475-2833.

## Study Abroad Program

*http://studyabroad.rit.edu*
***(585) 475-4466***

To prepare students for success in an increasingly global society, RIT offers a range of study abroad opportunities. Study abroad programs led by RIT faculty are in most cases offered in the summer. Many programs—including a program at RIT's campus in Dubrovnik, Croatia, and intensive language study programs in Japan, Germany, and Italy—offer credit toward liberal arts requirements. Other programs are offered in environmental science (Galapagos Islands, and Baja, Mexico) and photography (Brazil, and Oaxaca, Mexico).

Through affiliation agreements with other institutions, RIT also offers students the opportunity to enroll in study abroad programs in many geographic locations around the world while receiving RIT credit and financial aid. Affiliations such as those with Syracuse University, SUNY/Oswego in Germany, the Budapest Semesters in Mathematics Program, the Denmark International Studies Program, Queen's University in Sussex, the School for Field Studies, and Arcadia University enable students from every major to find a study abroad program that meets their needs. Program locations include the United Kingdom, Ireland, Italy, France, Denmark, Germany, Spain, Hungary, Greece, Costa Rica, Mexico, the Turks and Caicos Islands, Kenya, Equatorial Guinea, Hong Kong, Singapore, Australia, China, and New Zealand.

For more information about study abroad, contact the Study Abroad Office in Academic Enhancement Programs, Bldg 13, Room 1314, telephone: (585) 475-4466; fax: (585) 475-7633; e-mail: studyabroad@mail.rit.edu; website: http://studyabroad.rit.edu

## Veteran Enrollment Services

*www.rit.edu/milstudy*
***(585) 475-6641***

Successful transition from the military to a quality civilian career can only result from careful planning and effective implementation. Educational preparation begins with knowing what resources are available to you and how to put these resources to the best use. Active duty service persons, reservists, members of the National Guard, veterans, and their eligible dependents need to begin their educational programs through RIT's Veteran Enrollment Services (VES) office.

We are located on the first floor of the Bausch & Lomb Center. VES is easily accessible for disabled veteran students. VES hours of operation are Monday through Thursday, 8:30 a.m. to 6 p.m., Friday until 4:30 p.m., to serve day and evening students. Students are encouraged visit the office or call (585) 475-6641 to speak with the counselor.

We are ready to assist you in developing an educational plan and provide you the necessary support services to ensure the timely receipt of U.S. Department of Veteran Affairs (VA), Defense Department (DOD), and New York State educational benefits. Services available include benefit counseling, benefit application, certification, and appeals. We issue RIT veteran tuition deferments, tutorial assistance, military record requests, and ACE transfer credit recommendations. The vet's counselor is available to address telephone, email, or Web chat inquiries and assist with RIT, State, and VA-related education benefit information.

Visit our website at www.rit.edu/milstudy for updated VES information and links to DOD, State, VA, and other sites that may be of interest to you.

Chapter 30 or 34/30: Commonly referred to as the New G.I. Bill, 34/30 is a conversion program that is a significantly different benefit from Chapter 30. Monthly benefit payments are paid directly to the veteran or service member upon enrollment and certification by the approved institution. Those on active-duty can apply through their commanding officers or the nearest post education service officer for active-duty benefits such as ACES tuition assistance or New G.I. Bill. The amount to be paid to these service members is equal to the monthly amount for single veterans, not to exceed the cost of tuition. RIT's online programs are of interest to active duty members as they are offered in an anytime, anywhere format.

Chapter 31: VA Vocational Rehabilitation (VAVR) is only available to service-connected disabled veterans. Veterans that are approved for VAVR are eligible for full funding for tuition, fees, books, supplies, and other costs required in a program approved by the U.S. Department of Veterans Affairs. Additional money is are sent to these veterans each month to help offset the cost of living while attending school. Programs to include preparatory or remedial courses are approvable for VAVR.

Chapter 35: All dependents and spouses of deceased or permanently and totally disabled veterans (due to active duty service) are entitled to educational benefits for any of RIT's many programs. Students or parents who wish to have questions regarding eligibility are encouraged to contact our office, the VA or local veteran service agency counselors. Generally 45 months of full-time benefits are available, along with tutorial assistance for coursework in question. VES currently has a large population of veteran dependents, and we look forward to assisting them with federal and state educational benefits.

Chapter 1606 and 1607, Selected Reserve GI Bill: Reserve-force educational benefits provide an initial foundation upon which to layer educational resources. Many members are eligible for incentives, kickers, student loan repayment programs, or reserve-force tuition assistance programs. Selected Reserve GI Bill monthly benefits, and tutorial assistance begin when a member provides OVES with an official Notice Of Basic Eligibility (NOBE). When received, the NOBE (DD Form 2384) will be forwarded to the VA regional office in Buffalo, New York, to ensure prompt education benefit payment. Questions regarding Reserve GI Bill benefits, loan repayment, tutorial or other programs that reservists and members of the National Guard may be entitled to can be directed to our office or to the service member's command.

Please contact us if you need additional information about DIC, pension, REPS, or VA work-study. We welcome your questions and look forward to providing the best possible support services available to our veterans and their families.

## Women's Center

*www.rit.edu/~306www/womens/*
***(585) 475-7464 (voice/TTY)***

The Women's Center at RIT provides information, programming, support, and advocacy to address a wide variety of issues affecting women, including academic, social, psychological, physical, and spiritual needs of women; domestic violence, sexual assault, sexual harassment and personal safety; and exploration of gender-related issues. The Women's Center strives to provide a visible and accessible location and a supportive environment where students are encouraged to engage in dialogue, exchange viewpoints, and find assistance.

Through its programs, speakers, and workshops, the center addresses these topics: sexual assault, domestic violence, sexual harassment and personal safety, women and leadership, women in sports, gender and communication, life skills and financial management, current issues in feminism, and current issues in men's studies. The center also sponsors the women's mentoring program, which connects new students with upperclass students.

The Women's Center is committed to developing and supporting graduate and undergraduate student leaders. Working in the center provides students with the opportunity to learn about gender issues, develop practical skills, and collaborate with diverse campus and community organizations. Many types of volunteer opportunities are available. Students interested in paid work positions or volunteer work are encouraged to contact the center's coordinator.

The Women's Center is located in room A450 of the Student Alumni Union. The phone number is (585) 475-7464 (voice/TTY), and e-mail may be sent to ritwom@rit.edu.

# Campus Life

## Campus Living

RIT recognizes the significance of the on-campus living experience and its effect on the student's academic and social development. The Center for Residence Life, in keeping with the educational mission of the university, has as its overall purpose the general well-being and growth of students. To ensure this goal, the atmosphere, conditions, and services within our residence halls provide for much more than just a place to sleep. The antiquated term "dorm" is no longer an accurate description. Our residence halls offer a comprehensive campus living experience.

Many activities, programs and services are provided to residents by professional and paraprofessional staff members. To learn more about our staff, you can visit our website at www.rit.edu/sa/rl/. Events are planned and regularly conducted on each floor and, on a larger scale, in each quad area. Social and developmental activities are specifically 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. Many other topics also are covered, each designed to better prepare students to grow and mature as complete individuals.

The Residence Hall Association (RHA) represents all residential students and is a liaison between the student body and the administration. This association functions as the resident community government, developing changes in policies and procedures that will benefit the resident population. RHA also provides students with a variety of services, facilities, programs, and equipment. One of these options is RITchie's, a free game room managed by RHA. It is a comfortable place for students to relax and play video games, pool, air hockey, foosball, and a variety of board games. Students can play X-Box, Playstation 2, or Gamecube games as well as any of our other games for free. There is also an extensive rental movie library.

### Residence hall living

Serving approximately 3,000 students, our residence halls offer many living options to meet diverse individual needs, interests, backgrounds, and maturity levels. Students may choose living arrangements according to their own lifestyles; for example: same gender, coeducational, wellness, alcohol/substance free, intensified study, over 21 years of age, Honors, and mainstream (hearing and deaf/hard-of-hearing students living on the same floor). Also available are living options in Greek fraternities and sororities and special-interest houses such as Art House, Business Leaders of Tomorrow, Computer Science House, Engineering House, the House of General Science, International House, Photo House, and Unity House. Membership in Greek or special interest houses is required, and dues may be charged.

All RIT on-campus housing facilities are smoke-free. Smoking will not be permitted in student rooms, and indoor rooms/lounges or within a 25-foot proximity to the building. RIT offers a variety of room types to the residence hall population. Room assignments are made by staff members in RIT's Housing Operations Office. Entering students are assigned to double rooms, and a limited number of single rooms are available for upperclass students.

Upon receiving their acceptance packet, incoming students must complete and return the Residence Hall Contract, included in this mailing. First-year students are required to live in residence halls, unless they live with their families within a 30-mile radius of RIT. Occasionally, entering students initially may be assigned to temporary housing until on-campus housing becomes available. This is a temporary arrangement and, as space becomes available, students are quickly reassigned to on-campus housing. At the end of the first year in the residence halls, students participate in an annual housing selection process in order to reserve RIT housing for the following academic year. The RIT Inn, residence hall spaces, and campus apartments are available through this process. RIT's housing contract is for the full academic year (fall, winter, and spring quarters). If a student should become enrolled in a co-op program as part of educational study, he or she is charged only for the period of actual occupancy. Additionally, all residence hall students must participate in a meal plan. Charges for meal plans are included in the Expenses and Financial Aid section of this bulletin.

Within the residence halls, all rooms and corridors are carpeted, and each room is provided with beds, desks, chairs, and dressers according to the number of students assigned to that room. Window coverings and closet space also are provided. Each corridor has its own bathroom equipped with showers, and floors have a kitchenette with tables, chairs, and televisions. All residence hall rooms are equipped with cable television access and free, direct, high-speed Ethernet connections to the campus computer systems and the Internet. In the Ellingson, Peterson, and Bell residential area, suites are available in which three bedrooms are connected by a common bathroom. Several laundry facilities are available in the residence halls. Students can use their flex debit or coins to operate the machines.

### Campus living for sophomores and beyond

RIT offers housing in the RIT Inn, residence halls, and campus apartments for students in their sophomore year and beyond. All RIT housing is smoke-free. An annual housing selection process is held midway through the academic year for students to select

their housing for the following academic year. Students are offered housing based on their class status, with first-year students going first and the process ending with sixth-year students. Students are able to rank their preferences and preferred roommates, but RIT is unable to guarantee housing preferences.

RIT Housing Operations manages one of the nation's largest university-operated apartment systems, with approximately 3,000 students residing in nearly 1,000 individual townhouse and apartment units.

While undergraduate students compose the majority of apartment residents, a mixture of graduate and international students, as well as single and married students, can be found in each apartment complex. Apartment contracts run from September through May, but residents are permitted to leave for co-op employment without penalty.

Each complex is supported by Center for Residence Life staff who assist students in making a successful transition to independent, responsible living. Students will find programs ranging from social to educational with a focus on connecting them to both campus and community-wide resources, and many programs are geared toward the transition to post-college life. Residence Hall staff also follow up on health and safety, roommate, or community concerns. They are available 24 hours a day, seven days a week. To find out more about staff resources, visit www.rit.edu/sa/rl/.

All apartments are equipped with a refrigerator and electric stove but are otherwise unfurnished, except for University Commons, which is fully furnished. Four of the five Institute apartment complexes are located less than a mile from the center of campus, and the other complex is located three miles south of the campus. All apartment complexes are serviced by RIT's shuttle bus system. Information regarding apartments, townhouses, and suites can be found on our website at http://housing.rit.edu.

The RIT Inn is a unique housing option for approximately 300 upperclass students. The Inn blends college housing with many of the perks of a first-rate hotel. This facility offers furnished, air-conditioned double rooms with high-speed Ethernet connections and free cable. In addition, there is an indoor/outdoor pool, fitness center, sauna, free light housekeeping, free reserved parking, whirlpool, coffee shop, and dining facility that accepts students' food debit cards. Free shuttle service is provided for students residing at the Inn, which is located three miles south of campus.

### 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 continual updated listing of available roommates and their specific interests.

Housing Connection provides maps, information pamphlets, and telephones for users of the service. A trained staff member assists students in their research for housing or roommates. For more information, call (585) 475-2575 (voice/TTY), or visit our website, www.rit.edu/~hcwww.

## Major Student Organizations

### Student Government

Student government is the representative body for students. It works with RIT administration, faculty, and staff to communicate the needs and desires of the student body and to communicate 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. For more information, please contact us at (585) 475-2204 (voice/TTY) or www.sg.rit.edu

### NTID Student Congress

The NTID Student Congress (NSC) is an organization comprised of deaf and hard-of-hearing students who represent and provide programs for members of their community. NSC 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 new 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. For more information, please contact us at http://nsc.rit.edu.

### Off-Campus and Apartment Student Association (OCASA)

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 complementary services that include an area with PCs and Macintosh computers, a copier, fax machine, and various office supplies. Also available are a microwave, refrigerator, free coffee, tea, and hot chocolate. A daily newspaper and a variety of magazines are on hand.

Stop in at the OCASA office or contact us at (585) 475-6680 (voice/TTY) or www.rit.edu/~ocasawww for more information.

### College Activities Board

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 call (585) 475-2509 (voice/TTY). Visit our website at http://cab.rit.edu.

### Black Awareness Coordinating Committee (BACC)

The Black Awareness Coordinating Committee fosters an awareness of the role of African American men and women in the total society and creates a greater understanding of the African American culture among students, faculty, and staff at RIT. Each year the committee sponsors various social and cultural programs designed to achieve these objectives. For more information, please call (585) 475-5624 (voice/TTY), or go to www.rit.edu/~baccwww.

### Residence Halls Association

The Residence Hall Association (RHA) represents all residential students living in the residence halls. RHA is the liaison between the residence hall student body and the administration. RHA strives to provide diverse programming for the students by supporting programs with Residence Life staff and other organizations. RHA also provides students with a variety of services such as a video library with over 800 videos and DVDs. RHA also operates RITchie's, a student run arcade with a coffee house atmosphere located in the tunnel under Gibson Hall. The RHA office is located in the tunnel under Baker Hall and can be contacted at (585) 475-6655 (voice/TTY) or www.rha.rit.edu.

### Global Union

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. For more information, call (585) 475-2567 or www.rit.edu/~globalun.

### Greek Council

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. For additional information, call the Greek Council Office at (585) 475-7123 (TTY), or visit us online at http://greek.rit.edu.

### WITR Radio

WITR is an FM radio station operated by RIT students. It is licensed by the Federal Communications Commission as a noncommercial, educational station. It is also 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 five 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 a programming service to the RIT and 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 in 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. For more information, please contact us at www.modernmusicandmore.com.

## Student government clubs

For more information about the following clubs, please contact the Clubs Office at (585) 475-4483 (voice/TTY), or visit our website at http://clubs.rit.edu, or stop by the office in the RITreat. Look for the quarterly Club Day in the Student Alumni Union. The following list were recognized clubs that were active during the 2005–06 school year:

#### Career-Related

Aero-Design Club
AIGA (Graphic Arts)
American Marketing Assoc.
ASBMBSA
ASCE (Civil Engineers)
Association for Women in Computing
Biomedical Photo Student Assoc.
BMA (Business Management)
Ceramics Guild
Chem Club
Emerging Black Artists
Financial Management Assoc.
Forensic Science Club
Gamma Epsilon Tau
Glass Guild
Imaging Science and Technology
ITSO (Information Technology)
IIE (Industrial Engineers)
IDEA (Interior Design)
International Business Group
Life Science Club
MacRIT
MISST (Management of Info Systems)
Materials Research Society - RIT Chapter
MESA (Microelectronic Engineering)
National Press Photographers Assoc.

National Society of Black Engineers
New Media Fusion
NTID Computer Club
Pharmaceutical Industry Club
Physician Assistant Student Assoc.
Pi RIT
Premedical Student Assoc.
Psychology Club
PUB
RIT AudioFX
RIT Hospitality Assoc.
SPARSA (Security Practices)
SHPE (Hispanic Engineers)
Society of Manufacturing Engineers
Society of Plastics Engineers
Student Dietetic Assoc.
Student Illustration Guild
Student Interpreting Assoc.
SSWO (Social Work)
TPSA (Technical Photographer)
Ultrasound Student Assoc.

**Ethnic**

Asian Culture Society
Asian Deaf Club
Caribbean Student Assoc.
Chinese Student Scholar Assoc.
DISA (Deaf International)
Ebony Club
Hellenic Student Society of RIT
Hispanic Deaf Club
Japanese Culture Organization
Korean Student Assoc.
LASA (Latin American)
Native American Student Assoc.
Organization of African Students
OASIS (Indian Student Alliance)
Piazza Italiana
RIT Russian Student Assoc.
Society of European Affairs
Taiwanese Student Assoc.
Vietnamese Student Assoc.

**Hobby and Special Interest**

Alpha Phi Omega
Ballroom Dance Club
Break Dancing Club
Chess, Poker, Checkers Club
College Democrats
Collegiate Entrepreneurs Society
Cool Cartoon Club Project
Creative Outlet
Doves
Electric Vehicle Club
Electronic Gaming Society
Empty Sky Go Club
FACES (Feminist Group)
Fine Arts Club
Formula SAE Racing Team
Friends of Veterans
Graduate Photography Assoc.
Guild of Sequential Illustrators
International Socialist Organization
Juggling Club
Micro-Air Vehicle Club
Mini-Baja Club
NTID Drama Club
Red Brick Network
RIsTep
RIT Amateur Radio Club
RIT Anime Club
RIT College Republicans
RIT Comedy Troupe
RIT Dance Team
RIT Debate Society (RITDS)
RIT FIRST
RIT Fishing Club
RIT Gay Alliance
RIT Habitat for Humanity
RIT Human Powered Vehicle Team
RIT Libertarians
RIT Model Railroad Club
RIT Outing Club
RIT Paintball
RIT Patent Club
RIT Players
RIT Rally Enthusiast Club
RIT Scale Speed Club
RIT Social Action Group
RIT Sport Modified Car Club
RIT Swing Dance Club
RIT Triathlon
RITchie's Army
RITveg
Robotics Club
RWAG (Wargamers)
Signatures Magazine
Social Computing Club
Spectrum
SEAL (Environmental Action)
Students in Free Enterprise
Wood Club

**Music Related**

RIT Gospel Ensemble
RIT Student Music Assoc.
Swing Cats

**Religious**

BASIC (Christian Fellowship)
Buddhism Sangha
Campus Crusade for Christ
Hillel/Jewish Student Union
Hindu Students Council
InterVarsity Christian Fellowship
Korean Christian Fellowship

Muslim Student Association
Officers Christian Fellowship

**Sports**
Bike Club
Bowling Club
Equestrian Club
Fencing Club
Horizontal Ultimate Frisbee
Men's Lacrosse
Martial Arts Club
NTID Cheerleading
Pool Club
RIT Alpine Ski and Snowboard
RIT Field Hockey Club
RIT Kendo Club
Women's Rugby
RIT Running Club
RIT Table Tennis Club
RIT Weightlifting Club
Roller Hockey
Men's Rugby
Men's Soccer Club
Tae Kwon Do Club
Men's Volleyball
Men's Water Polo

### Student professional associations

Students can also 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 inquire with their academic department regarding the organizations for their academic interests.

### 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, 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.

### The RIT Leadership Institute and Community Service Center

This department 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, a corporate leadership career series, a public speaking series, an alternative spring break program, a civic engagement forum, the American Heart Walk, Hillside Special Santa Drive, and volunteer connections with over 200 different agencies within the Rochester area. For more information on leadership and community service opportunities, call (585) 475-7058, email lead@rit.edu, or check out our website at www.rit.edu/lead.

### Student Alumni Union

The Student Alumni Union is designed specifically to service events sponsored by and for the entire campus community—students, faculty, administrative groups, alumni, and guests. 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 cocurricular activities and features the 500-seat Ingle Auditorium; a complete game room with billiards, foosball, electronic games, and the RITZ Sportzone; a music practice room; a unisex hairstyling and tanning salon; a candy counter; a Ben & Jerry's ice cream shop; two separate dining areas (the main cafeteria and the RITZ); meeting rooms; and lounges. Organizations that have offices housed in the Union include the Student Problem Resolution, Student Affairs, Student Conduct and Conflict Management Services, Women's Center, International Student Services, the North Star Center, Black Awareness Coordinating Committee, Food Service, College Activities Board, The Center for Campus Life, Leadership Institute and Community Service Center, Student Government, WITR, the RIT Credit Union, Reporter magazine, Off-Campus and Apartment Student Association, Staff Council, and Global Union.

### The RITreat

The RITreat is an area dedicated to students in the Student Alumni Union. The following resources can be found in the RITreat:

- Club and organization space
- Computers/word processors/fax machine
- Student Problem Resolution Office
- Student Government Office
- 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

## Campus Social Events

The RIT campus is a melting pot of activity and fun for all students. During the course of the year, more than 700 student events are registered, mostly by clubs and organizations. 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 Orientation and ending with the Senior Night social event for graduating seniors.

Between these bookend events, RIT sponsors a major Brick City Festival, Parents Weekend, Alumni Weekend, and Spring Fest, with its traditional carnival. Major concerts are held four to five times a year. Past musical entertainers have included Medesky, Martin and Wood, Kanye West, and Hoobastank. RIT has also hosted famous comedians such as Wayne Brady, David Spade, Dane Cook and Jon Stewart. Cultural programs abound with the Cultural Spotlight Series and the Performing Artists' Series, featuring a variety of ethnic and cultural performers (i.e., Sweet Honey in the Rock, Edward James Olmos, and the Nutcracker Ballet).

Numerous speakers have graced the campus, including Magic Johnson, Colin Powell, Robert Redford, former presidents Gerald Ford and Jimmy Carter and Rudolph Giuliani. The RIT Players hold quarterly theater productions. Weekend evenings have their own traditions, including Thursday Night Cinema Series and Friday Night in the RITZ. Other events are held annually, including the RHA Vegas Night, RIT Greek Week, and CAB Winter Concert. Every other year, the College of Liberal Arts sponsors a musical theater production, and NTID hosts the RIT/Gallaudet Weekend.

The Cultural Spotlight Series is sponsored by the Center for Campus Life, and the Performing Artists Series. Contemporary and traditional events are programmed year round. 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.

## College of Liberal Arts Performing Arts Program

### RIT Singers
The university-sponsored vocal ensemble, the RIT Singers, is composed of 70-80 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 Singers also participate in the Western New York Intercollegiate Choral Festival. One credit hour is awarded for participation in the course. For more information, call (585) 475-6087, or e-mail Edward Schell at 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.

### Select Women's Ensemble
Selected through auditions, this 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. They perform during Brick City Festival, their annual Gospel Fest held in February, Black History Month, and their annual anniversary concert. During the past few years they have opened for such renowned performers as Richard Smallwood and 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 course. For more information, call (585) 475-2014, or e-mail Michael Ruhling at mergsl@rit.edu.

### RIT Jazz Ensemble
Instrumentalists with a background in jazz will want to check out the RIT Jazz Ensemble. The Jazz Ensemble is open to all RIT students 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 per week on Tuesday evenings in the SAU Music Room, 7-10 p.m. One credit hour is awarded for participation in the course. For more information, call (585) 475-5366 or e-mail Jonathan Kruger at jhkgsl@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 one per week on Wednesday evenings in the SAU Music Room, 7-9 p.m. One credit hour is awarded for participation in the course. For more information, call (585) 475-5366 or e-mail Jonathan Kruger at 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 hand-made African drums. One credit hour is awarded for participation in the course. For more information, call (585) 475-4439, or e-mail Carl Atkins at cjagsh@rit.edu.

## NTID Performing Arts Program

### RIT/NTID Dance Company

The RIT/NTID Dance Company is a unique ensemble of deaf, hard-of-hearing and hearing students enriching the educational life of the 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 non-dancers, from every level of ability and experience) at the annual audition in fall quarter.

The RIT/NTID Dance Company has presented a diverse repertoire consisting of full-length ballets, student and faculty choreography in modern dance, jazz, and a variety of ethnic-based dance. It has also 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. As part of the NTID Performing Arts Outreach Program, the Dance Company tours the U.S. annually. For information contact Thomas Warfield, director of dance, at (585) 475-6252 (voice/TTY) or at 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).

Lab Theater—This includes 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 Institute Creative Arts Committee, 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 leadings artists and critics who deal with the issues of technology in art today. For more information, call (585) 475-2646 (voice/TTY).

## Margaret's House

### Child Care Programs

Margaret's House is a state-licensed and nationally accredited child care center offering full-day quality care and education for children eight weeks to eight years of age. It includes a district-approved full-day kindergarten as well as after school, vacation and summer programs. It 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

Contact Roberta DiNoto at (585) 475-5176 (voice/TTY) or rxdhcc@rit.edu.

### Kids on Campus Programs

Kids on Campus provides a variety of academic and sports activities. Programs are characterized by a dynamic, project-oriented approach to learning. Kids on Campus is for students entering grades 5 through 9 and 10 through 12. A full-day program is offered during July and workshops for High School students are offered throughout the summer.

Kids on Campus programs are offered to all Rochester-area students. Call for information and registration material and check the website at http://kidsoncampus.rit.edu. Contact Susan Kurtz at (585) 475-5987 or sfkldc@rit.edu.

## Center for Intercollegiate Athletics and Recreation

RIT recognizes the need for wellness education in today's society. To meet this need, RIT offers an exceptional program of specifically designed courses to help students develop and maintain a well-balanced, active lifestyle. Consistent application of wellness concepts plus other aspects of the body-mind connection assist students to enhance their health.

Our wellness program and classes offered are designed to assist students in making healthy decisions and choices to support their academic and social interactions in college and beyond. The learning experiences provided throughout the wellness curriculum are an integral part of the total educational experience at RIT.

More than 60 wellness activity courses are available during the year. Course offerings vary each quarter. Registration for wellness courses coincides with the dates and times for the academic departments. A nominal fee is charged for most courses. Please check quarterly schedule of courses for more information.

### Wellness courses

Wellness for Life, Wellness Challenge Exam, Eating, Body Image and Food, and Healthy Relationships

### Fitness

Aerobics, Aeroboxing, Aquathenics, Aqua size, Total Body Conditioning, Running for Fitness and Competition, Spinning, Swimming for Fitness, Pilates, Introduction to Weight Training and the Health/Fitness Challenge

### Health and safety
CPR and First Aid, Life guarding and Water Safety Instruction

### Lifetime recreation
Archery, Badminton, Basketball, Massage, Billiards, Bowling, Fencing, Fly Fishing, Flag Football, Frisbee, Golf, English and Western Horseback riding, Juggling, Racquetball, Scuba, Soccer, Softball, Swimming, Tennis, Volleyball, Yoga, Ice Skating, Handball, Ballet, Ballroom Dance, Latin Swing Dance, Jazz, Country Line Dancing, Swing and Tap

### Interactive adventures
Rock Climbing (indoor and outdoor), Adirondack Hiking, Kayaking, Snowshoeing, Ice Climbing, Cross Country Skiing, Canoeing, Cross Country Skiing, and Camp Cooking.

### Martial arts
Cardiokickboxing, Karate, Self-Defense/Women, Kung-Fu, Tai Chi, Quigong, Aikido, and Brazilian Capoeira

### Military sciences
Army ROTC (Leadership Drills/Lab, Physical Conditioning), Air Force ROTC (Physical Training), Navy ROTC

*Note: Prerequisite for all above courses is enrollment in the RIT ROTC program.*

### NTID support services
The NTID Support Team is committed to providing quality services that maximize access for deaf and hard-of-hearing students who are engaged in wellness courses, intercollegiate athletics and intramural programs. NTID team members teach courses (signing for themselves), provide tutoring, advising, and coordinate note taking services. Consultation/advising is available to deaf and hard-of-hearing, student athletes and RIT intercollegiate coaches. The team serves as a liaison between the NTID Admissions Office and the Center for Intercollegiate Athletics and Recreation to provide potential deaf and hard-of-hearing student athletes the opportunity to meet with athletic coaches and visit our facilities.

The team provides opportunities for deaf and hard-of-hearing students to develop leadership and professional skills through the peer educator/paraprofessional program. Through collaboration with other units within NTID and RIT, the student paraprofessionals utilize a variety of creative strategies and programming efforts that support access, inclusion, team building, and education. For additional information regarding support services, call (585) 475-6104 (voice/TTY) or (585) 475-6530 (TTY).

### Intramural activities
An extensive program of intramural activities is offered at RIT. Under the direction of the Center for Intercollegiate Athletics and Recreation, activities include men's, women's, and co-ed teams in basketball, volleyball, softball, ice hockey, flag football, soccer, tennis, dodgeball, and golf. Also offered is a program for individual competitions in racquetball, table tennis, tennis, and badminton.

### Recreation
RIT offers some of the finest recreational facilities available in colleges today. Indoor facilities feature four gymnasiums, an ice rink, an aquatics center (eight-lane competitive pool with moveable bulk-head diving area, recreational pool and hot tub) saunas, elevated indoor running track, racquetball courts, a multilevel physical fitness and weight training center, dance studio, recreational equipment room, wrestling room, boxing room, spinning room, game room (video games, billiards), a multipurpose room, and a 60,000 square foot multipurpose field house that includes a 200 meter track.

Outdoor facilities include nine lighted tennis courts, an archery range, nature trails, a climbing/bouldering wall (Red Barn), an all-weather track, numerous athletic fields, and an artificial turf field.

### Intercollegiate athletics
For eight decades, intercollegiate athletics has developed a tradition of excellence at RIT. The university's heritage in competitive athletics is a rich one. It has grown to become highly successful and widely recognized on the regional and national levels. RIT has won more than 60 percent of its contests in each of the last three years. Some of the men's team accomplishments have come in soccer (12 NCAA appearances and runner-up honors in 1988), cross country (nine Eastern College Athletic Conference crowns and six top-10 finishes in the last seven NCAA championships), hockey (two national championships and seven ECAC titles), basketball (two ECAC championships, in 1992-93 and 2002-03, and the Chase Scholarship title in 1994-95 and 1996-97), and lacrosse (seven Empire 8 crowns and an ECAC title).

Women's teams have also excelled. Volleyball boasts several Empire 8 crowns and third place in the 1993 NCAAs and 2003 ECAC Champions. Women's softball is a perennial state contender. Women's tennis is 212-103-3 over the past 24 years, and women's ice hockey won its first ECAC title in 1989. RIT is one of only a handful of schools in New York State to offer women's ice hockey on the varsity level.

Each year more than 450 athletes take part in 24 varsity sports offered at RIT. Fall competition features men's and women's cross country, women's volleyball, women's and men's soccer, and women's tennis. Winter sports include men's and women's basketball, swimming, hockey, and indoor track and men's wrestling. Spring competition features baseball, men's and women's crew, men's and women's track, men's and women's lacrosse, softball, and men's tennis.

A National Collegiate Athletic Association (NCAA) Division III member institution, RIT competes against schools in the Northeast with similar academic and intercollegiate athletics philosophies. Known as the Tigers, RIT teams are also members of the Eastern College Athletic Association (ECAC), New York State Women's Collegiate Athletic Association (NYSWCAA) and the Empire 8 Conference.

The men's hockey program recently joined the Atlantic Hockey Association and will begin playing a Division I schedule in 2005-06.

Since varsity sports began at the university in 1915-16, RIT teams have won more than 50 conference titles, 20 ECAC crowns and three NYSWCAA championships. Individually, the Tigers

boast six national champions, including Barry Zacharias (swimming), Mark Stebbins (twice in track), Michele Jones (track), Darrell Leslie (wrestling), and Matt Hamill (wrestling), a two-time NCAA champion.

### Club sports

In addition to intercollegiate sports and intramural programs, RIT offers several club sports. The program is a division of RIT Student Government and the Center for Intercollegiate Athletics and Recreation. Its purpose is to provide competition for recognized club sports, although some are solely for recreational or instructional purposes. Participation is open to all full- and part-time RIT students. The following sports are offered: alpine skiing, bowling, equestrian, field hockey, lacrosse (men), outing club, gymnastics, sailing, paintball, Frisbee, fencing, running, triathlon, soccer (men), Tae kwon do, kendo, table tennis, roller hockey, rugby (men and women), volleyball (men), and water polo.

## Student Health Center

The Student Health Center provides primary medical care on an outpatient basis. The staff includes physicians, nurse practitioners, registered nurses, health educators, an alcohol/drug counselor, and an interpreter for the deaf. Services are available by appointment. Health education programs are provided also.

The Student Health Center is located on the walkway linking the academic and residence hall areas of the campus. Students are seen Monday through Thursday, 8:30 a.m. to 7 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 RIT.

**The quarterly student health fee is mandatory for all fulltime 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 a 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 or health insurance should be directed to the office at (585) 475-2255 (voice) or (585) 475-5515 (TTY).

### RIT ambulance

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.

For emergency assistance and/or transport, the RIT ambulance can be dispatched through Campus Safety at (585) 475-3333 (voice) and (585) 475-6654 (TTY).

### Health records

Medical records are confidential. Information will not be released without the student's written consent. Exceptions to this rule are made only when required by the public health laws of New York State.

**New York State and RIT immunization requirements**

**New York State Public Law 2165** requires that all matriculated students enrolled for more than six 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). RIT requires all students under 26 years of age, who live in campus housing, to be immunized against meningitis (meningococcal disease). Other immunizations required by RIT include Hepatitis B, DPT, polio, TD booster, and PPD (for students from high risk areas). Additional information concerning these requirements, 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.

## Campus Stores

RIT operates two campus stores. The main store, Campus Connections, is located on the west side of the Student Alumni Union and sells textbooks, computers, photography equipment, art and office supplies, RIT clothing, as well as recreational reading material, cards, and gifts. Students can also access the Campus Connections website at http://bookstore.rit.edu. Campus Connections accepts cash, checks, MasterCard, VISA, and RIT flexible debit cards (Tiger Bucks) for payment. Certain students may have arrangements with a government agency to pay for some of their books and supplies; this is handled at the Campus Connections service counter, located on the first floor.

The Candy Counter, located in the lobby of the Student Alumni Union, sells candy, tobacco products, health and beauty aids, film, daily newspapers, snack items, and drinks.

In addition, Ben & Jerry's offers Vermont's famous ice cream (including sugar-free), frozen yogurt, sorbet, shakes, fruit smoothies, Cappuchillo Coolers, ice cream cakes, and more. Cash, RIT flexible debit (Tiger Bucks), food debit, and credit cards (on orders more than $20) are accepted. Ben & Jerry's is located in the lobby of the Student Alumni Union.

## Campus Safety

Campus Safety is open 24 hours a day and is located in Grace Watson Hall. To report an emergency on campus, dial 333 (voice/TTY) or (585) 475-3333 from the RIT apartment complexes. The department provides the following services:

### Escort service
Campus Safety strongly encourages students to use the mobile escort service, available to anyone, seven days a week on a timed schedule between 11 p.m. and 3 a.m. Simply call the Campus Safety Department at (585) 475-2853, or use one of the blue-light courtesy call boxes located across the campus.

### Lost and found
All campus lost and found property is stored by Campus Safety. Each year Campus Safety disposes of a great deal of unclaimed property because it is not identifiable and the owners do not claim it.

### Emergency notification
There may be times when emergency notifications need to be made to a family member. If this should occur, contact Campus Safety at (585) 475-2853 or (585) 475-6654 (TTY). Campus Safety will locate the student and relay the message.

### Blue light call boxes
Campus courtesy call boxes, identified by a blue light, are located across the campus. These call boxes provide a direct line to Campus Safety 24 hours a day. The location of the call is automatically recorded at the Campus Safety Communications Center, making it possible for hard-of-hearing individuals to use the call boxes also. The call boxes may be used to request an escort, assist a motorist, report any suspicious persons or activities, or request access to a locked building or room.

### Presentation programs
Throughout the year, Campus Safety hosts a variety of prevention programs on various topics, including fire safety (video and slide presentations), crime prevention, personal safety, alcohol awareness, driver safety, as well as a state-certified defensive driving program. Call (585) 475-2074 for more information.

### Safety and security report
Additional information about Campus Safety services, security procedures and crime statistics can be found in the "RIT Campus Safety Annual Report," which can be obtained by calling (585) 475-6963. Services are also explained on RIT's website at http://finweb.rit.edu/campussafety/ritsafety2005.pdf.

The Advisory Committee on Campus 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/) and by contacting RIT's Campus Safety department at (585) 475-6620 (v/TTY). A hard copy of reported crime statistics required to ascertain 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).

RIT provides a variety of security services and prevention programs to everyone on campus. Although each individual is ultimately responsible for his or her own personal safety, learning and practicing some basic precautions can enhance one's well-being.

### Transportation services
Campus Safety, in conjunction with the Rochester Genesee Regional Transit Authority, provides an on- and off-campus shuttle service 365 days a year. Schedules are available at all apartment offices, the Student Alumni Union information desk, the library, Campus Connections, Campus Safety, and the NTID information area. Schedules are also posted on the RIT webpage (http://finweb.rit.edu/campussafety). In addition, Campus Safety operates a van service for those with impaired mobility, Monday through Friday, 7 a.m. to 6 p.m., during fall, winter, and spring quarters. The transportation division also provides vans for the use of student groups, clubs, and organizations. For more information, call the Campus Safety Transportation Office at (585) 475-7300 or (585) 475-6006.

### Vehicle registration
All vehicles operated on campus must be registered with Campus Safety, and stickers must be properly displayed on each vehicle. Fines are imposed for operators in violation of RIT parking and traffic regulations. The vehicle registration process can be initiated online at http://finweb.rit.edu/campussafety.

### Handicap parking permits
Campus Safety honors ADA-approved handicap parking permits from every state. Handicap parking permits may be issued from Campus Safety to students who live in RIT housing. A doctor's note is required. Commuters, faculty, and staff should go to their local municipalities for handicap permits.

### Public safety
Campus Safety conducts programs in fire safety practices and evacuation techniques (which are reinforced through fire drills held in accordance with New York State Education laws), safety in the work place, environmental health, and defensive driving certification (recognized by New York State for insurance and point reductions).

## Commission for Promoting Pluralism

The Commission for Promoting Pluralism was established to formulate a plan of action that would address seriously and deliberately the subject of pluralism and community-building in every part of the university. Its evolution is the result of an identified need for RIT constituents to deepen their respect and appreciation for all people in the RIT community and beyond. This institutional focus attempts to:

- proactively identify and eliminate barriers that restrict equality throughout the RIT community;
- develop and implement programs that promote commitment to equality and justice in campus-wide activities; and
- develop and nurture a support system that increases participation by all members of the RIT community.

## 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 persons 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.

## 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 to the quality of campus life. The RIT Conduct Code and disciplinary process is printed in its 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 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 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 about which all students should care deeply—not only the safety of oneself, but the safety of others. Students should behave sensibly to protect the welfare of others and to 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/sexual 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 that are 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 are ultimately 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 possession, use, serving, sale or unlawful manufacturing of drugs and/or 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 for 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

1. 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 will continue to be a licensed premise and will be permitted to serve alcohol to individuals who are at least 21 years of age.
2. 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.
3. 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 that 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.
4. The 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.
5. Campus Safety and other RIT officials have the right to terminate events and take appropriate action if they determine that it is probable that Institute 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.
6. 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.
7. 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.)
8. 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 further restricted by existing municipal and state ordinances. Prior to planning any activity or event were alcohol is to be served, individuals/groups should consult the Center for Campus Life located in the Student Alumni Union regarding the provi-

sions and restrictions governing alcohol use at RIT activities and events.

9. 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 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 in the Student Alumni Union. 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.
10. 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 Campus Safety intervention and campus judicial action.
11. Serving, selling, or providing alcohol to persons who are 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 which suggests that excessive drinking has occurred cannot be served or permitted continued access to alcohol. Individuals who serve such individuals alcoholic beverages will face Campus Safety intervention, campus judicial action and possible civil and criminal prosecution.
12. Use of false or altered identification or other misrepresentation of one's age in order to possess or consume alcohol is explicitly forbidden.
13. 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 Campus 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.
14. 14. 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 to the judicial actions and sanctions described in this policy. All guests or visitors to the campus must also 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<br>• In residence halls and Greek houses regardless of age<br>• Under 21 years of age<br>• Possession of bulk alcohol | 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; possible referral for 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 and/or 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 is 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.

1. 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.
2. 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 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.

3. Campus 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. Campus Safety will discuss requirements for security with the sponsoring individuals or groups prior to the event.
4. 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 community-wide event where alcoholic beverages are to be served to students or student groups.
5. When alcoholic beverages are served at student-sponsored parties/events, nonalcoholic beverages and food must also be served. Guidelines may be obtained at the Center for Campus Life.
6. 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. They will also be responsible for assuring that only individuals who are at least 21 years of age are consuming alcohol during the party/event.
7. 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**

1. RIT explicitly prohibits use, possession, sale, manufacturing, or trafficking of illegal drugs on RIT-owned or operated property, or at RIT-sponsored events.
2. 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 Campus 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.
3. 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 to 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 must also 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; possible alternative education program<br>Second Offense: Disciplinary suspension or dismissal; drug treatment while on suspension from the Institute |
| 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.

# Admission to Undergraduate Study

Admission to RIT is competitive, but our admission process is a personal one. We are interested in learning about your interests, abilities and goals in order to provide the best information and guidance we can as you select the college that is right for you.

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 complete.

All applications for transfer admission and all freshman applications for winter, spring or summer quarter entry are reviewed as they are received, and notification letters are mailed four to six weeks after the application is complete.

**Specific instructions for completing the application process are contained in our 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 and/or 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 are often 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.

## 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 for 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 listing 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 (see application form for additional instructions).

## 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 NTID supplementary application. This application 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 U.S. Department of Education, includes these criteria:

- Hearing loss—Students must have a hearing loss in the better ear (unaided) of 70 decibels (ANSI, 1969) or greater across the 500 and 2,000 Hertz range.
- Educational access and support-service needs—Students must have a hearing loss that, without educational access services, seriously limits their chances for success in a regular college program. Educational access services include sign language interpreting and notetaking.

The NTID Office of Admissions typically sends notification of admission decisions four to six weeks after all application materials have been provided.

## 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.

## Transfer credit

Students who have completed studies at another accredited college before coming to RIT will be awarded transfer credit for all prior course work that is judged to be applicable to their RIT program. Usually a grade of C or better is required for a course to transfer.

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. Deaf students accepted to NTID's Summer Vestibule Program will have their transfer credit 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), college-level examination placement (CLEP), International Baccalaureate (IB), New York State proficiency examinations, or RIT-prepared examinations.

## Diagnostic testing in mathematics

Students 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.

## New York State immunization requirement

New York State Public Law 2165 requires that all matriculated students enrolled for more than six 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 in 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, Bausch & Lomb Center, 60 Lomb Memorial Drive, Rochester, NY, 14623-5604, sending e-mail to visit@rit.edu, or calling (585) 475-6631 (Monday through Friday, 8:30 a.m. to 4:30 p.m.).

Deaf and hard-of-hearing students who wish to enter NTID or another RIT college may contact the NTID Office of Admissions, Lyndon Baines Johnson Building, 52 Lomb Memorial Drive, Rochester, NY 14623-5604, or call (585) 475-6700 (voice/TTY). Office hours are Monday through Friday, 8:30 to 4:30 p.m.

## Part-time and Graduate Enrollment Services

These offices provide central information and counseling services for students interested in enrolling in graduate degree programs or in part-time undergraduate studies offered through RIT's various schools and colleges. We encourage you to contact them if you need assistance in

selecting an academic program, exploring financial aid opportunities, registering for classes or receiving information about any aspect of part-time or graduate 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., or Friday. We invite you to visit our website at www.rit.edu/~625www, call (585) 475-2229 for enrollment information, or visit the offices on the first floor of the Bausch & Lomb Center on campus.

# Freshman Admission Guidelines

## College of Applied and Science and Technology

| Academic Programs | High School Preparation Required |
|---|---|
| Engineering Technology: Civil, Computer, Electrical, Electrical/Mechanical, Manufacturing, Mechanical, and Telecommunications Engineering Technology programs; Undeclared Option2 | Algebra, geometry, trigonometry, and two years of science (including physics or chemistry) required. Technology courses desirable. |
| Environmental Management: Environmental Management, Safety Technology | Three years of mathematics, including trigonometry, and two years of science (including physics or chemistry). |
| School of Hospitality and Service Management: Hospitality and Service Management, Nutrition Management, Undeclared Option2 | College preparatory program including algebra, geometry, and two years of science. Chemistry required for Nutrition Management program. |
| Multidisciplinary Studies: Applied Arts and Science | Freshmen should apply to RIT Exploration Program in the College of Liberal Arts. |
| Packaging Science: Management, Technical and Printing Options | Algebra and two years of science required. Technical option requires geometry and trigonometry. |

## College of Business

| Academic Programs | High School Preparation Required[1] |
|---|---|
| Accounting, Finance, Graphic Media Marketing, International Business, Management, Management Information Systems, Marketing, Undeclared Business Option2 | College preparatory program including algebra, geometry, and two years of science. Trigonometry and courses emphasizing writing skills also desirable. |

## College of Computing and Information Sciences

| Academic Programs | High School Preparation Required[1] |
|---|---|
| Applied Networking and System Administration | Algebra, geometry and two years of science required. Physics, chemistry, computing and technology courses recommended. |
| Computer Science | Algebra, geometry, trigonometry and two years of science required. |
| Information Technology, New Media/ Information Technology | Algebra, geometry and two years of science required. Technology courses desirable. |
| Medical Informatics | Algebra, geometry, trigonometry, biology, and chemistry required. |
| Software Engineering | Algebra, geometry, trigonometry, chemistry, and physics required. |

## College of Engineering

| Academic Programs | High School Preparation Required[1] |
|---|---|
| Computer, Computer/Software, Electrical, Electrical/Biomedical, Electrical/Computer, Industrial and Systems, Industrial/Ergonomics, Industrial/ Manufacturing Industrial/Information Systems, Mechanical, Mechanical/Aerospace, Mechanical/Automotive, Mechanical/Bioengineering, Mechanical/Energy, and Microelectronic Engineering programs; Engineering Exploration Program2 | Four years of mathematics required (algebra, geometry, trigonometry, and pre-calculus). Physics and chemistry required for all programs. Biology also required for Electrical/Biomedical Engineering option. |

## College of Imaging Arts and Sciences

| Academic Programs | High School Preparation Required[1] |
|---|---|
| School of Art:<br>Fine Arts Studio, Illustration, Medical Illustration, Undeclared Option2<br>School of Design:<br>Graphic Design, Industrial Design, Interior Design, New Media/Design, Undeclared Option2<br>School for American Crafts:<br>Ceramics/Ceramic Sculpture, Glass/Glass Sculpture, Metals/Jewelry Design, Woodworking/Furniture Design, Undeclared Option2 | Studio art experience in addition to a balanced academic program with courses in English, social studies, mathematics and science. Mechanical drawing is also 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. |
| School of Film and Animation:<br>Film and Animation, Digital Cinema | College preparatory program including two years of mathematics and two years of science. |
| School of Photographic Arts and Sciences:<br>Advertising Photography, Fine Art Photography, Photojournalism, Biomedical Photographic Communication, Imaging and Photographic Technology, Visual Media | College preparatory program including two years of mathematics and two years of science. Biology required for Biomedical Photographic Communication. |
| School of Print Media:<br>Graphic Media, New Media/Publishing | Algebra, trigonometry, and two years of science (physics or chemistry preferred). |

## College of Liberal Arts

| Academic Programs | High School Preparation Required[1] |
|---|---|
| Advertising and Public Relations, Criminal Justice, Economics, International Studies, Professional and Technical Communication, Psychology, Public Policy, RIT Exploration Program3 | College preparatory program including algebra, geometry, and two years of science required. Trigonometry also required for Public Policy. |

## National Technical Institute for the Deaf

| Academic Programs | High School Preparation Required[1] |
|---|---|
| Accounting Technology, Administrative Support Technology, Applied Computer Technology, Applied Optical Technology, Art and Computer Design, ASL-English Interpretation, Automation Technologies, Business, Business Technology, Computer Aided Drafting Technology, Computer Integrated Machining Technology, Digital Imaging and Publishing Technology, Laboratory Science Technology, Prebaccalaureate Studies | General college preparatory courses in science, mathematics and English. See program descriptions for specific requirements, or contact NTID Department of Admissions, 585-475-6700 (voice/TTY). |

## College of Science

| Academic Programs | High School Preparation Required[1] |
|---|---|
| Applied Mathematics, Applied Statistics, Computational Mathematics | Algebra, geometry, trigonometry, and two years of science required. Additional mathematics recommended. |
| Biology, Bioinformatics, Biotechnology | Algebra, geometry, trigonometry, biology, and chemistry required. |
| Biochemistry, Chemistry, Environmental Chemistry, Polymer Chemistry | Algebra, geometry, trigonometry, chemistry, and one science elective required. |
| Environmental Science | Algebra, geometry, trigonometry, biology, and chemistry required. |
| Physics | Algebra, geometry, trigonometry, physics, and one science elective required. |
| Biomedical Sciences, Diagnostic Medical Sonography (Ultrasound), Physician Assistant | Algebra, geometry, trigonometry, and biology required for all programs. Chemistry or physics required for ultrasound program. Chemistry required for biomedical sciences program and physician assistant program. |
| General Science Exploration2, Premedical Studies3 | Algebra, geometry, trigonometry, biology, chemistry, and physics are recommended. |
| Center for Imaging Science:<br>Imaging Science | Algebra, geometry, trigonometry, and chemistry or physics required. Calculus desirable. |

*1 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.*
*2 A one-year program for students wishing to explore alternatives before selecting a specific degree program within this RIT college or school*
*3 A one-year program for students undecided on a major who wish to explore program options in one or more of RIT's colleges.*
*4 Students interested in premedicine, predentistry, preveterinary, or preoptometry may select any major in the College of Science*

# Transfer Admission Guidelines

## College of Applied Science and Technology

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Engineering Technology:<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. |
| Manufacturing Engineering Technology | 1 | Fall preferred | Manufacturing, Mechanical, Drafting and Design, Robotics or Electromechanical Technology; Engineering Science | Courses in mathematics, science and engineering technology. |
| Electrical Engineering Technology | 1 | Fall preferred | Electrical Technology, Electronic 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. |
| Environmental Management:<br>Environmental Management & Technology Safety Technology | 1 | Any quarter | Biology, Chemistry or Environmental Sciences; Business or Public Administration; Liberal Arts with math/science | Math through Calculus I, micro and macro economics, introductory courses in biology, chemistry and physics. |
| School of Hospitality and Service Management:<br>Hospitality and Service Management<br>Nutrition Management | 1 | Any quarter | Dietetics or Nutrition, Foodservice Management, Hotel/Resort Management, Travel/Tourism Management, Agriculture, Technology, Business or Liberal Arts | Courses in business and economics, foreign language, math, science and liberal arts. Science courses are required for Nutrition Management program. |
| Multidisciplinary Studies:<br>Applied Arts and Science | 2 | Any quarter | Transfer from associate degree programs considered on individual basis. | Courses in liberal arts, sciences and math. |
| Packaging Science:<br>Management Option<br>Technical Option<br>Printing Option | 1 | Any quarter | Business Administration, Marketing, Management, Graphic Arts, Engineering Science, Liberal Arts with math/science | Courses in business, mathematics, science, liberal arts, statistics or computer science. |

## College of Business

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Accounting | 1 | Any quarter | Accounting or AS degree in Business Administration | Courses in economics, accounting, liberal arts, science and mathematics. |
| Finance<br>Graphic Media<br>Marketing<br>International Business<br>Management<br>Marketing | 1 | Any quarter | AS degree in Business Administration or Liberal Arts | Courses in economics, liberal arts, science and mathematics. |
| Management Information Systems | 1 | Any quarter | Data Processing/Management Information Systems or AS in Business Administration | Courses in liberal arts, math, science, economics and computer science. |

## College of Computing and Information Sciences

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Computer Science<br>Software Engineering | 1 | Fall preferred | Computer Science<br>Engineering Science | Courses in computer science, calculus, liberal arts; calculus-based physics, chemistry or biology. |
| Applied Networking and System Administration<br>Information Technology<br>Medical Informatics<br>New Media/Information Technology | 1 | Any quarter | Computer Applications, Computer Science, Information Systems | Courses in programming, computer applications, calculus, lab sciences, liberal arts. |

## College of Engineering

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Computer Engineering<br>Electrical Engineering<br>Industrial and Systems Engineering<br>Mechanical Engineering<br>Microelectronic Engineering | 1 | Fall preferred | AS degree in Engineering Science (plus computer science electives for computer engineering applicants) | Pre-engineering courses such as calculus, calculus-based physics, chemistry and liberal arts. Computer science courses for computer engineering applicants. |
| Transfer Adjustment:<br>Electrical Engineering only | | Summer only | AAS degree in Electrical Technology with one year of engineering calculus | |

## College of Imaging Arts and Sciences

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| School of Art:<br>Fine Arts Studio<br>Illustration<br>Medical Illustration<br><br>School of Design:<br>Graphic Design<br>Industrial Design<br>Interior Design<br>New Media/Design & Imaging | 4 | Fall only | Related programs or studio art experience in desired disciplines.<br>A portfolio of original artwork is required to determine admission, studio art credit and year level in the program. | Courses in studio art, art history and liberal arts. Portfolio of original artwork is required to determine admission, studio art credit and year level within the program. |
| Transfer Adjustment:<br>All Art and Design programs | | Summer only | Summer courses can lead to third-year status in most programs. | |
| School for American Crafts:<br>Ceramics/Ceramic Sculpture<br>Glass/Glass Sculpture<br>Metals/Jewelry Design<br>Woodworking/Furniture Design | 4 | Fall only | Transfer as a third-year student is uncommon, as comparable programs are not generally available at other colleges. A portfolio of original artwork is required. | Courses in art history, studio art and liberal arts. Portfolio of original artwork is required to determine admission, studio art credit and year level within the program. |
| School of Film and Animation:<br>Film and Animation<br>Digital Cinema | 2 | Fall preferred | No common program available. | Courses in liberal arts, science, design, drawing, and film, video or animation. |
| School of Photographic Arts and Sciences:<br>Biomedical Photographic Communications | 3 | Fall preferred | No common program available. | Courses in biology, photography and 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 liberal arts. Portfolio required for photo credit. |
| Advertising Photography<br>Fine Art Photography<br>Photojournalism<br>Visual Media | 4 | Fall preferred | Applied Photography. Portfolio required for photo transfer credit. | Courses in liberal arts, photography, design and art history. Portfolio required for photo transfer credit. |
| Transfer adjustment:<br>Available in all photography programs | | Summer only | Transfer adjustment leading to second- or third-year status in most programs | |
| School of Print Media:<br>Graphic Media<br>New Media/Publishing | 1 | No summer entry | Transfer from associate degree programs considered on an individual basis. | Courses in liberal arts, college math, physics and chemistry, business |

## College of Liberal Arts

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Advertising and Public Relations | 1 | Any quarter | Liberal arts, business, communication, advertising, public relations | Courses in 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, liberal arts, math and science. |
| Economics | 2 | Any quarter | AS degree in Business Administration or Liberal Arts. | Courses in business, liberal arts, math, science and computer science. |
| International Studies | 2 | Any quarter | Liberal Arts with social sciences, sciences, languages. | Courses in liberal arts, social sciences, sciences, languages. |
| Professional and Technical Communication | 1 | Any quarter | Liberal arts with emphasis in communication and a technical field such as business, photography or computer science. | Courses in liberal arts, math, science and computer science. |
| Psychology | 1 or 3 | Any quarter | Liberal Arts with science or social science. | Courses in liberal arts, sciences, social sciences. |
| Public Policy | 1 | Any quarter | Liberal Arts, Environmental Studies, Economics, Government, Science. | Courses in liberal arts, sciences, social sciences. |

## National Technical Institute for the Deaf

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Accounting Technology, Administrative Support Technology, Applied Computer Technology, Applied Optical Technology, Art and Computer Design, ASL-English Interpretation, Automation Technologies, Business, Business Technology, Computer Aided Drafting Technology, Computer Integrated Machining Technology, Digital Imaging and Publishing Technology, Laboratory Science Technology, Pre-Baccalaureate Studies | - | - | Transfer requirements vary by program. Please contact NTID Office of Admissions 585-475-6700 (voice/TTY). | Transfer requirements vary by program. |

## College of Science

| Program at RIT | Co-op[1] | Entry Term | Appropriate Associate Degree Programs for Transfer | Transfer Course Recommendations without Associate Degree |
|---|---|---|---|---|
| Biology | 2 | Fall preferred | Biology or Liberal Arts with biology option. | Courses in liberal arts, sciences or math. |
| Bioinformatics, Biotechnology | 2 | Fall preferred | Biotechnology or Liberal Arts with biology | Courses in liberal arts, sciences and math. |
| Biochemistry, Chemistry, Environmental Chemistry Option, Polymer Chemistry | 2 | Any quarter | Liberal Arts with chemistry option; Chemical Technology, Laboratory Technology. | Courses in liberal arts, chemistry, math and physics. |
| Biomedical Sciences<br>Diagnostic Medical Sonography (Ultrasound) | 3 | Fall preferred | Liberal Arts with science option; Allied Health; Radiologic Technology. | Courses in liberal arts, sciences, and math. |
| Environmental Science | 2 | Fall preferred | Biology, Chemistry, Environmental Science, Liberal Arts with science option. | Courses in liberal arts, sciences and math. |
| Applied Mathematics<br>Applied Mathematics Computational Mathematics | 2 | Any quarter | Liberal Arts with math/science option, Computer Science, Engineering Science, Sciences. | Courses in math, computer science and liberal arts. |
| Physician Assistant | 3 | Fall only | Liberal Arts with science option; Allied Health areas. | Courses in liberal arts, sciences and math. |
| Physics | 2 | Fall preferred | Liberal Arts with math/science option. | Liberal arts, physics, math, chemistry. |
| Center for Imaging Science:<br>Imaging Science | 2 | Fall preferred | No common program available. | Courses in calculus or higher mathematics, college chemistry, calculus-based physics and liberal arts. |

*1 Cooperative Education: 1-required, 2-optional, 3-internship or practicum required, 4-no specific requirement*

# Expenses and Financial Aid

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, 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, 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, NY 14692-8978. Payment may also be made in person at the Student Financial Services Office on the first floor of the George Eastman building. 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 2006–07 school year are as follows:*
*Fall quarter August 16, 2006*
*Winter quarter November 21, 2006*
*Spring quarter March 7, 2007*
*Summer quarter May 23, 2007*

## 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 are also enrolled in classes.
3. Nonmatriculated students are charged for the type of course taken (evening rate for Evening Division courses; the Tier 2 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 2006–07 (MATRICULATED DAY COLLEGE STUDENTS EXCEPT NTID) *

| Tuition | Per Quarter | Per Year—3 Quarters |
|---|---|---|
| **Full-time Undergraduate (12–18 Credit Hrs.)** | | |
| Tier 1† | $7,983 | $23,949 |
| Tier 2‡ | $8,209 | $24,627 |
| **Part-time Undergraduate (Less than 12 Credit Hrs.)** | | |
| Tier 1 | $532/Cr. Hr. | $523/Cr. Hr. |
| Tier 2 | $547/Cr. Hr. | $547/Cr. Hr. |
| **Student Activities Fee (Mandatory Charge)** | | |
| Full-time Undergraduate | $65 | $195 |
| Part-time Undergraduate | $33 | $99 |
| **Student Health Fee (Mandatory Charge)** | | |
| Full-time Undergraduate | $63 | $189 |
| **Residence Hall Room Charges §** | | |
| Double Occupancy | $1,678 | $5,034 |
| Single Occupancy | $1,930 | $5,790 |
| **Board/Meal Plans **** | | |
| Ultra-Meal Plan (Continuous entry to Grace Watson) + 5 meal options | $1,388 | $4,164 |
| 14 Meals (Includes $83 debit/qtr.) + 3 meal options | $1,238 | $3,714 |
| 12 Meals (Includes $214 debit/qtr.) + 5 meal options | $1,238 | $3,714 |
| All Debit (upperclassmen only) | $1,238 | $3,714 |
| **Matriculated Evening Division students** | | |
| Undergraduate Tuition | $378/Cr. Hr. | |

**Please refer to the tuition information for NTID on page 137.*
*† Tier 1: For day undergraduate students who matriculated and enrolled at RIT prior to the 2003-04 school year.*
*‡ Tier 2:For day undergraduate students who matriculated and enrolled at RIT during the 2003-04 school year and after.*
*§ Additional single-occupancy rates are available, depending on square footage of rooms.*
***Additional meal plans are also 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: $165 (one-time charge for new freshman students)
- Quarterly photo/print facilities fee: $90 (charged to all full-time photo and print media students; $45 per quarter charged to all part-time photo 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, hospitality), books and supplies will average $900 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 per 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 semi-annual 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 the student first registers at RIT.

For plan and enrollment information visit the Web at www.universityhealthplans.com, or call 1-800-437-6448. 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

1. 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.
2. Students must pay all charges not authorized for payment by VR before the quarterly due date.
3. VR counselors should specify each charge they are covering on their authorization forms.
4. 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 with the office. For additional information, call (585) 475-6186 (voice/TTY) or -5489 (voice/TTY).

### Financial standing

Students, former students, and graduates are in good financial standing when their account is paid in full in 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, the 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 to 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 such a student later finds that he or she is subject to academic suspension or has failed prerequisites, the student 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.
4. 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:
   - 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

NOTE: 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 is also responsible for any unpaid balance at the time of withdrawal. Aid programs are reimbursed in the following sequence: Federal Direct Loans, Perkins Loans, Federal Pell Grants, Federal SEOG, other financial aid, 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 appeals 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 check out. Room and board refund policies are established by the center for Residential Life and RIT Food Service.

**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

We feel strongly that no qualified student should refuse to consider RIT because of cost. With this in mind, RIT 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 $170 million from all sources, including more than $85 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 and his or her family are 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 who award federal financial aid use the FAFSA. The FAFSA is available in high school guidance offices, college financial aid offices, and in most public libraries. Students can also complete the FAFSA online at www.fafsa.ed.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 that 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 may expect notification of financial aid awards beginning March 15. Current RIT students may 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 are generally awarded on the basis of academic record. RIT awards many such scholarships each year. Other typical scholarship sources are competitions, 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 freshman. Trustee Scholarships and Phi Theta Kappa Scholarships are awarded to transfer students. Winners 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 and may reduce the need to borrow. In many cases, no alterations to a student's financial aid award are necessary. If we are required by federal regulations to amend a financial aid award as a result of receipt of an outside scholarship, we will make every effort to reduce the student's loan or work award before reducing RIT need-based grants.

### Grants

Grants are gifts of financial assistance that are awarded on the basis of demonstrated need. RIT awards grants that vary from $500 to $13,000 per academic year. RIT also awards grants under the federally funded Supplemental Education Opportunity Grant program. The Federal Pell Grant and New York Tuition Assistance Program are additional examples of grants. Many 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 your ability to meet your later financial obligations. Student loans are generally not repaid until after graduation or termination of study.

Many students will 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 are also eligible to participate in several educational loan programs designed to make funds available for college expenses. Federal PLUS Loans are available to supplement other aid programs in meeting educational costs. While the parent loan is not based on need, the amount borrowed in any year cannot exceed educational costs minus other financial aid received.

RIT has also developed special loan programs with private lenders to assist families in meeting educational expenses. These loans are available to students, using variable or fixed rates of interest. Additional information is available from the Office of Financial Aid and Scholarships.

### Employment

Employment opportunities are also available to assist RIT students in meeting college expenses. Whether or not students seek financial aid, they may choose to defray some of their expenses through student employment 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

7,000 students are employed on campus each year. The Student Employment Office also helps students secure part-time employment off campus.

RIT's cooperative education program may also contribute to meeting college expenses. Students are encouraged to contact the Office of Cooperative Education and Career Services and the chair of their program of study to learn more about co-op opportunities.

### Payment plans

The RIT Monthly Payment Plan combines the elements of a deferred payment plan and a prepayment plan to allow students and their families to finance educational costs over a 10-month period with the initial payment beginning August 1st. 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 may also 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, may be obtained from the Student Financial Services Office.

RIT also offers a Tuition Prepayment Plan, a prepaid plan that guarantees no tuition increases for the equivalent of two or four years (six or 12 academic quarters) of undergraduate education. The cost for the plan is established each year but is generally less than tuition at the current rate. The plan is available to matriculated full-time undergraduate RIT students who are not receiving any form of RIT need-based grants. Additional information is available from the Office of Financial Aid and Scholarships or the Student Financial Services Office.

NTID-sponsored students may contact the NTID/VR billing department at (585) 475-2080 (voice/TTY) or (585) 475-5489 (voice/TTY) for more information about payment options.

## Academic Progress Requirements for State Aid Programs

### New York State Tuition Assistance Program (TAP)

In order to receive a Tuition Assistance Program 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. TAP academic requirements are current as of the 2005-06 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 2 to 4
2. Complete 9 credits per quarter to receive TAP payments 5 to 7
3. Complete 12 credits per quarter to receive TAP payments 8 to 12

Completion of a course is defined as meeting course requirements and receiving a letter grade of "A", "B", "C", "D", or "F". In addition, 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.

### Waiver of academic progress standards for TAP

Students who have been denied Tuition Assistance Program 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 may also 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 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 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 in RIT or NTID programs are as follows:

Completion of:
- First quarter—minimum cumulative GPA = 1.0
- Second quarter—minimum cumulative GPA = 1.2
- Third quarter—minimum cumulative GPA = 1.4
- Fourth quarter—minimum cumulative GPA = 1.6
- Fifth quarter—minimum cumulative GPA = 1.8
- 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
- Second academic year (six academic qtrs.)—60 degree credits required
- Third academic year (nine academic qtrs.)—90 degree credits required
- Fourth academic year (12 academic qtrs.)—120 degree credits required
- Fifth academic year (15 academic qtrs.)—150 degree credits required
- Sixth academic year (18 academic qtrs.)—180 degree credits required

*Part-time students must accumulate credit hours on a fulltime 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.

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 should also 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 2006–07 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.
Standard of Satisfactory Progress for the Purpose of Determining Eligibility for New York State Student Aid*

### Notification and appeal

Students whose academic progress is not in compliance with federal requirements will be notified of the deficiency and advised of the appeal process. Copies of the policy are available upon request.

## Academic Progress Requirements for RIT Grants and Scholarships

Academic progress requirements for RIT need-based grants and scholarships 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.

## 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 | 3 | 9 | 20 | 32 | 44 | 56 | 68 | 80 |
| with at least this grade point average | 0 | .50 | .75 | 1.00 | 1.20 | 1.30 | 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 | 3 | 9 | 20 | 32 | 44 | 56 | 68 | 80 | 92 | 104 | 116 | 132 | 148 | 164 |
| with at least this grade point average | 0 | .50 | .75 | 1.00 | 1.20 | 1.30 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |

**Graduate Degree—Quarter System**

| Before being certified for this payment | 1st | 2nd | 3rd | 4th | 5th | 6th |
|---|---|---|---|---|---|---|
| a student must have accrued at least this many credits | 0 | 12 | 24 | 36 | 48 | 60 |
| with at least this grade point average | 0 | 2.00 | 2.50 | 2.70 | 2.80 | 2.90 |

## 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 six 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 six credit hours will be counted on a prorated basis.

### 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 Parent Loans, Federal Perkins Loans, Federal Pell Grants, Federal SEOG, other federal aid.

### 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 120 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:

$$\frac{\text{Scholarship}}{\text{Scholarship Plus Student Payments}} = \text{Percent Returned to Scholarship Program} \times \text{Remaining Credit Balance}$$

## UNDERGRADUATE FINANCIAL AID PROGRAMS 2006-07

| MERIT SCHOLARSHIPS | ELIGIBILITY* | AMOUNT† | WHERE TO APPLY |
|---|---|---|---|
| RIT Presidential Scholarships | Winners are selected based on academic records, recommendations, and academic program requirements. | $3,000 to $10,000 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. | RIT Presidential and Merit Scholarships totaling $12,000 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 SAT reading plus math score 1200 or higher (ACT 26) and B+ average.* | $5,000 per year. May not be combined with other RIT merit scholarships. 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 SAT reading plus math score 1170 or higher (ACT 26) and B+ average who submit outstanding art portfolios. Up to 10 awarded. | $5,000 per year. May not be combined with other RIT merit scholarships. Renewable. | Freshman admission applications and art portfolios submitted by February 1 will be reviewed for possible selection. |
| RIT Achievement Scholarships - All Programs | Freshman applicants with SAT reading plus math score 1200 or higher (ACT 26), strong extracurricular achievements, and B+ average.Up to 100 awarded. | $3,000 to $6,000 per year. May not be combined with other RIT merit scholarships. Renewable. | Freshman admission applications submitted by February 1 will be reviewed for possible selection |
| RIT Honors Program Scholarships | Freshman admitted to the RIT Honors program. | $1,000 per year. Renewable with Honors program membership. | See undergraduate admission application for instructions. Must apply by February 1. |
| RIT Computing Medal Scholarships | Must be an RIT Computing Medal winner from a participating high school. | $3,000 per year. 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. Up to 10 awarded each year. | $5,000 per year. May not be combined with other RIT merit scholarships. Renewable. | Submit scholarship application online at: www.rit.edu/co-opscholarship. Apply between October 1 and February 15. |
| RIT/SAE Engineering Scholarships | Freshman applicants to engineering technology or engineering programs. Based on academic record. | $5,000 per year. May not be combined with other RIT merit scholarships. Renewable. Up to 25 awarded per year. | Download scholarship application at: www.sae.org/students/engschlr.htm. Mail application to SAE by Dec. 1. |
| RIT/FIRST Robotics Scholarships | Freshman applicants with SAT reading plus math score 1200 or higher (ACT 26) and B+ average who have participated on a high school FIRST team. Up to 10 awarded. | $5,000 per year. May not be combined with other RIT merit scholarships. Renewable. | Download scholarship application at: www.usfirst.org. Mail scholarship application to RIT and apply for admission by February 1. |
| RIT/Project Lead The Way (PLTW) Scholarships | Freshman applicants with SAT reading plus math score 1200 or higher (ACT 26) and B+ average who complete two or more PLTW courses Up to 5 awarded. | $5,000 per year. May not be combined with other RIT merit scholarships. Renewable. | Submit a letter of recommendation from a PLTW teacher along with RIT admission application and school transcripts by February 1. |
| 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. | $6,000 per year with transfer GPA of 3.5 or higher; $4,500 per year with GPA of 3.3 to 3.49. 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 3.5 or higher transfer GPA (computed by RIT) and 30 semester or 45 quarter hours completed at previous institution. | $5,000 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 awarded is $2,000 for six quarters of academic study ($333 per quarter applied toward tuition charges). | Download scholarship application at: www.rit.edu/~940www/dev/nrsscholarship/html. File scholarship application in March. |
| ROTC Scholarships | Students enrolling in ROTC who are academically qualified. | Tuition support, fees, books and monthly stipend. | Air Force: (585) 475-5196; Army: (585) 475-2881; Navy: (585) 275-4275 |
| RIT/ROTC Subsidy | Army, Air Force, and Navy ROTC cadets awarded three- or four-year scholarships prior to enrollment. | Value of a double room and standard meal plan. Award amount may be affected by Pell Grant, veteran's benefits, and other RIT or private awards. | Contact the Office of Financial Aid and Scholarships at (585) 475-2186 or www.rit.edu/financialaid. |

*† Scholarship amounts indicated are based on RIT tuition rates. Awards may be prorated for NTID-sponsored students.*

| NEED-BASED GRANTS | ELIGIBILITY* | AMOUNT† | WHERE TO APPLY |
|---|---|---|---|
| RIT Grants | Students demonstrating financial need. | Amounts vary up to $13,000 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 priority deadline. |
| NTID Grant-in-Aid | Full-time students enrolling in RIT's National Technical Institute for the Deaf (NTID) must demonstrate financial need due to insufficient support from outside sources. | Minimum award is $100; maximum award varies. | File the Free Application for Federal Student Aid (FAFSA) by priority deadline. |
| RIT/NTID Grant | NTID students who are enrolled in an RIT Bachelor's degree program must demonstrate financial need. | Minimum award is $100. | File the Free Application for Federal Student Aid (FAFSA) by priority deadline. |
| RIT Part-time Studies Grant | Part-time undergraduate students enrolled for less than 12 credit hours in an RIT degree program. Must demonstrate financial need. | Amounts vary. | File the Free Application for Federal Student Aid (FAFSA) by priority deadline. |
| RIT-Urban League, Ibero/PRYD and Minority Transfer Scholarships | Awarded to African American, Hispanic or Native American students demonstrating financial need and academic achievement. | Up to $3,000 per academic year. Renewable. | Apply for admission to RIT by February 1. File FAFSA by March 1. |
| Tuition Assistance Program (New York State) | Full-time students who are New York State residents and meet state income guidelines. | $500 to $5,000 per year for entering freshman. Transfer students' 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) | Awarded to matriculated undergraduate students enrolled for 6 to 11 credits per term and who meet NYS residency requirements. Must demonstrate financial need based on NYS net taxable income and 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. | $400 to $4,050 per year. Prorated for part-time study. | File the Free Application for Federal Student Aid (FAFSA). |
| Federal Academic Competitiveness Grant | Full-time students who completed a rigorous secondary school program and meet need criteria | Up to $750 for first-year students; up to $1,300 for second-year students | File the free application for Federal Student Aid (FAFSA). |
| Federal SMART Grant | Full-time students in certain math and science programs who meet need criteria | Up to $4,000 for third-year or fourth-year students | File the free application for Federal Student Aid (FAFSA). |
| Federal Supplemental Educational Opportunity Grant (SEOG) | Students with high financial need (normally those who qualify for a Federal Pell Grant). | $100 to $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 NYS. | Amounts vary, based on individual need and availability of funds. | Contact HEOP Director at RIT (585-475-2221) for eligibility guidelines. |
| Other State Grants | Varies | Amounts vary. | State Education Dept in VT, RI, PA, D.C. |
| **LOANS** | **ELIGIBILITY*** | **AMOUNT†** | **WHERE TO APPLY** |
| Federal Perkins Loans | Students who meet requirements established by federal government. | Up to $4,000 per year. ($20,000 limit for undergraduate study) | File the Free Application for Federal Student Aid (FAFSA). |
| Federal Direct Loans | All students enrolled at least half-time in a degree program. | Max. amount: first year: $2,625; second year: $3,500; third-fifth years: $5,500. | 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. | Max. amount (including unsubsidized): first year: $6,625; second year: $7,500; third-fifth years: $10,500. | 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. |
| RIT Loan | Students matriculated in a degree program. May be used independent of or combined with Federal Direct Loans. | Varies | File the Free Application for Federal Student Aid (FAFSA). |

| EMPLOYMENT | ELIGIBILITY* | AMOUNT† | WHERE TO APPLY |
|---|---|---|---|
| Federal Work Study Program | Students with financial need. Most jobs provided on campus. Some community service positions are available. | Varies depending on hours and wage rate. RIT wage rates start at $6.75 per hour. | File the Free Application for Federal Student Aid (FAFSA). |
| RIT Employment Program | No financial need requirement. May be on campus or off. | Varies, depending on hours and wage rate. RIT wage rates start at $6.75 per hour. | RIT Student Employment Office. |

| OTHER AWARDS | ELIGIBILITY* | AMOUNT† | WHERE TO APPLY |
|---|---|---|---|
| Regents Award for Child of Veterans (CV) and Child of Correction Officer Awards (CO) | Children of veterans who are deceased, disabled, or missing in action as a result of service during World War I, World War II, Korean Conflict, or Vietnam (CV), or who died as a result of injuries sustained in the line of duty (CO). | $450 per year, for up to five years, depending on the normal length of the program. | Same as TAP. In addition, file the CV or CO Award Supplement available on request from NYSHESC. May 1 deadline. |
| Military Service Recognition Scholarship (MSRS) | Children, spouses and financial dependents of members of the armed forces of the United States 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 from NYSHESC. |
| Memorial Scholarships for Children and Spouses of Deceased Police Officers, Firefighters, EMS Workers, and World Trade Center Memorial | Child or spouse of person who died in service or was a victim of the Sept. 11 terrorist attacks. | Award amounts are based on tuition and non-tuition costs of attendance. In combination with certain other state and federal grants, may equal the average cost of attendance at the State University of New York. | Same as TAP. In addition, file the appropriate award supplement, available on request from NYSHESC. May 1 deadline. |
| Aid to Native Americans | Member on the official tribal roll of a NYS tribe or child of a member. | Up to $2,000 per year for a maximum of four years or five years in certain programs. | Contact: Native American Education Unit, NYS Education Dept., Room 374 EBA, Albany, NY 12234, (518) 474-0537. |
| Vietnam Veterans Tuition Award Program<br><br>Persian Gulf Veterans Tuition Award Program | Recipients must meet NYS residency requirements and have served in the armed forces in Indochina or the Persian Gulf during specified periods of hostility. | Awards are $1,000 per year for full-time study or $500 per year for part-time study. Awards are available for undergraduate or graduate study. | Same as TAP. In addition, file the Vietnam Veterans Tuition Award Supplement or Persian Gulf Veterans Tuition Award Supplement to establish eligibility. Call NYSHESC at 1-888-NYS-HESC for information. |
| 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 to $5,000 per year. TAP and some other benefits may supplement this award. | Contact: Bureau of HEOP/VATEA Scholarships. NYS Education Dept., Education Bldg. Annex, Rm. 1071, Albany, NY 12234, (518) 486-1319. |
| New York State Primary Care Service Corps Scholarship | U.S. citizen and permanent NYS resident. Must agree to practice in state facility for 18 months for each year of aid received. | Up to $15,000 per year, depending on educational expenses. Must be within 24 months of graduation or certification in order to apply. | Contact: NYS Primary Care Service Corps, Corning Tower, Rm. 1084, Empire State Plaza, Albany, NY 12237, (518) 473-7019. |
| Robert C. Byrd Honors Scholarship Program (federally funded) | U.S. citizen and permanent NYS resident attending NYS or out-of-state college. | $1,500 per year, 310 awards statewide (10 to each of 31 congressional districts). | Contact: Bureau of HEOP/VATEA Scholarships. NYS Education Dept., Education Bldg. Annex, Rm. 1071, Albany, NY 12234, (518) 486-1319. |
| New York Scholarships for Academic Excellence | U.S. citizen or eligible non-citizen. Permanent NYS resident must attend NY college or school. | $1,500 to top graduating senior of each high school in the state. $500 to other academically gifted students. | Contact high school guidance office. |
| New York Lottery<br>Leaders of Tomorrow Scholarship | U.S. citizen. Graduate of NYS high school. Must attend NYS college or school. | One award for each high school in the state. $1,000 per year. Maximum of four years. | Contact high school guidance office. |
| Veterans Benefits | Eligible veterans and children of deceased veterans or service-connected disabled veterans | Amounts vary. | Contact the Office of Veterans Affairs at 1-888-442-4551 or visit their website at www.va.gov. |
| Aid to Native Americans | Awarded to students who are at least 1/4 American Indian, Eskimo, or Aleut and 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. |

## Notes:

*This chart covers the most commonly awarded financial aid programs available to full-time undergraduate students at RIT. Information is correct as of June 2006. 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.*

## Named Scholarships

*Each year the university awards named 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
American Color Graphics Scholarship
Amzalek Ames Scholarship
Association of Women in Computing
Avis Mason Andrews Graduate Scholarship
Robert Anderson Scholarship
Betsy L. Andrews Scholarship
Clara L. Andrews Scholarship
Ezra R. Andrews Scholarship
Kate Rider Andrews Scholarship
Randall Andrews Scholarship
Howard Applegate Scholarship
Lee Augustine Memorial Scholarship
Ralph Avery Scholarship
Alfred Bader COB International Study Program
Helen Bader Foundation
Joseph Bader Scholarship
BAE Systems Scholarship
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
Richard Benjamin Memorial
Bennett Award
Ruth L. Bernhardt Scholarship
Frank P. Benz, Jr. Memorial 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
Harold Brodie Scholarship
Steffan Brown Scholarship
Peter C. Browne Scholarship
Bryce Scholarship
Nettie Bullis Scholarship
College of Business Recent Alumni Business Alumni Scholarship
Business Faculty Endowed Scholarship
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
Caldwell Manufacturing Scholarship
Campus Connections Book and Supply Scholarship
Richard Capilla Scholarship
Chester Carlson Scholarship
Howard F. Carver Scholarship
Howard T. Case Scholarship
Theodore Chapman Scholarship
Donald E. Chase
Virginia R. Chase Memorial Scholarship
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
Wells Coleman Scholarship
Coleman Corporation Scholarship
Ward D. Collister Scholarship
Comstock Foundation 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
Bryon 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
James J. DeCaro Endowed Scholarship Fund
De Ridder Corporation Scholarship
Del Rosso Family Scholarship
Eliot Derman–GTS Scholarship
Ronald Dodge Engineering Scholarship
Ronald Dodge Faculty/Staff Grants Endowed Fund
Ronald Dodge Memorial Endowed Scholarship Fund
Patrick Donovan Memorial
Doolittle/Merril Scholarship
Dorothy E. Ann Fund (D.E.A.F.) Endowed Scholarship
Thomas W. Dougherty Scholarship
Mr. and Mrs. Joseph F. Dyer Endowed Scholarship Fund
ECI Systems & Engineering
Eberly Family Scholarship
Robert Elder Scholarship
Eisenhart Memorial Scholarship
Ellingson Foundation Scholarship
Isabel & Benjamin Emerson Scholarship
Fred Emerson Foundation Scholarship
Engineering Women of Rochester Scholarship
Raymond Englert Scholarship
Gerald Ephraim Scholarship
Eyer Foundation Scholarship
RIT Facilities Management Employeer Endowed Scholarship
Max Factor Family Foundation Endowed Scholarship Fund
John Doane Fay Scholarship
Rose & George Feigenbaum Scholarship Endowed Scholarship Fund
William & Mildred Feinbloom Scholarship
Ruth H. Fenyvessy Memorial Endowed Scholarship Fund
Joseph Ferraro Memorial Scholarship
Fisons Corporation Scholarship
Flora J. Foley Scholarship
Benjamin Forman Scholarship
Maurice & Maxine Forman Endowed Scholarship Fund
Dr. Eugene Fram Scholarship
Ron Francis Scholarship
Freedom Forum Scholarship
R. T. French Scholarship
Richard A. Freund Scholarship
Ann Wadsworth Frisina Memorial
Dr. Robert Frisina Award
Max & Helene Frumkes Memorial
Karl Fuchs Scholarship
Fuji Corporation Scholarship
Garlinghouse Endowed Scholarship Fund
Garth Waite-Brennan Endowed Scholarship
Gegeheimer/McClure Scholarship
Frank Geist Scholarship
General Motors Scholarship
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Sarah Margaret Gillam Scholarship
Jean Gillings Scholarship
Gitner Family Scholarship
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Good Samaritan Association Scholarship
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Isaac Gordon Scholarship
Gould Pumps Inc. Award
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Gravure Foundation Scholarship
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Hakes Assoc. Scholarship
Hale Foundation Packaging Scholarship
Ezra Hale Scholarship
William B. Hale Scholarship
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Sil Hall Scholarship
Carter Harmon Scholarship
Harris Semiconductor Scholarship
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G. Sherwin Haxton Scholarship
Safford Hazlett Scholarship
Healthcare Purchasing Scholarship
William Randolph Hearst Endowed Scholarship
Heidelberg/RIT Scholarship
Sol Heumann Scholarship
John & Catherine Hill Annual Scholarship
John and Catherine Hill Endowed Scholarship
Francis Sallie Ann Hilliard Scholarship
Laura Church Hillman Scholarship
Hoffend Scholarship Fund
Hogadone & Larwood Scholarship
Holmes Family Endowed Scholarship
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Jerry Hughes Scholarship
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Sharyn & Steven Janis Scholarship
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Lucille Ritter Jennings Endowed Scholarship Fund
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Abraham & Teresa Katz Scholarship
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Henry & Mary Kearse Memorial Fund
Stephen J. Kersting Memorial Scholarship
Katherine Keyes Scholarship
Drew & Francis King Endowment Fund
Ruth Klee Award
David Klieman Scholarship
Kodak Professional Imaging Award
Lowell Koenig Scholarship
Jack Kronenbert Scholarship
Sara L. Kuhnert Endowed Scholarship Fund at NTID
Lancer Graphics Scholarship
Francis Lang Scholarship

LeChase Corp. Scholarship
Leenhouts Family Scholarship
Lehigh Press Scholarship
R. David LeButt Packaging Scholarship
Chester H. Lehmann Scholarship
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The Edward H. Lichtenstein Memorial Endowed Scholarship Fund
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M/E Engineering
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Donald Margolis Scholarship
Marine Midland Fellowship
William Mariner Scholarship
Clara Martin Scholarship
Dr. James C. Marsters Endowed Scholarship Fund
McGowan Foundation Scholarship
John McIntee Scholarship
McIntosh Education Fund
Dean McWhirter Memorial Scholarship
Melissa Meisenhelder Scholarship
Alice Melnyk Scholarship
Bernadette Merkel Memorial Scholarship
Norman Miles Scholarship
Norman Miller Electrical Engineering Scholarship
Barbara Milliman Scholarship
Abraham & Sadie Milstein Scholarship
MMET Faculty, Staff, Alumni
Earl Morecock Scholarship
Bernice Skinner Morelock Scholarship
Clifford Waite Morgan Scholarship
Catherine Morse Scholarship
Charles W., Sue L., Freda L. Muffitt Scholarship
Mowris-Mulligan Memorial Scholarship
Dr. Gengi Murai Endowed Scholarship Fund
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Nathaniel Rochester Society Scholarships
Don Naylor Scholarship
C. B. Neblette Memorial Scholarship
Evaline and Louis Neff Scholarship
Grace B. Norton Scholarship
Ruth D. Norton Endowed Scholarship Fund
Joseph F. Noveck Memorial Scholarship
NTID Alumni Association Endowed Scholarship Fund
NTID Annual Fund
NTID Architectural Technology Award Scholarship Fund
NTID Business Careers Endowed Scholarship Fund
NTID Foundation Endowed Scholarship Fund
NTID Performing Arts Endowed Scholarship Fund
NTID Printing Production Scholarship
NTID Science/Engineering Careers Endowed Scholarship Fund
NTID Visual Communication Endowed Scholarship Fund
NYS Federation of Home Bureaus, Inc. Endowed Scholarship Fund in Honor of Martha Perry
Milton H. & Ray B. Ohringer Endowed Scholarship Fund
Omnova Foundation
Pactiv Corp. Scholarship
PAETEC Scholars Program
Robert F. Panara Endowed Scholarship Fund
Passero Associates Scholarship
Daniel Pasto Scholarship
Mohal Patel Scholarship
Sarah Louise Patterson and Minneiska
Louise Hall Scholarship
Barbara Paul Memorial Scholarship
William Farley Peck Scholarship
Gerald & Pamela Pelano Scholarship
Philips ECG Inc. Scholarship
Phoenix Fiction Award
Edward A. Pike Scholarship
Eugene and Wanda Polisseni Award
Polyfibron Technologies
A. C. Powers Memorial Scholarship
Praxair Scholarship
David Presco Scholarship
John Myers Pritchard
Pulver Family Endowed Scholarship Fund
Q. C. I. Corporation Scholarship
Queens Group Scholarship
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Byron J. Ramseyer
Eustis and Thelma Rawcliffe
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Bill Reedy Eastman Kodak Scholarship
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R. Bruce Reinecker Scholarship
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Ronald S. Ricotta Scholarship
Tom and Betty Richards Endowed Scholarship
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RIT Alumni Network
RIT Greek Organization Scholarship
RIT International Student Association
RIT Womens Council Scholarship
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Robbins & Meyers Scholarship
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Mary Hope Robinson Endowment for the Performing Arts
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Edythe & Edward Sklar Endowed Scholarship Fund
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Sidney Smith Family Endowed Scholarship
Southwest Printing Management Fund
Harry Speck Scholarship
Karl Sperber Scholarship
Sprint Scholarship Fund @ NTID
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Alfred L. Stern Fund
Hattie M. Strong Scholarship
Pearl Hewlett Stutz Scholarship
Solon E. Summerfield Foundation Endowed Scholarship Fund
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Held by: S. Manian Ramkumar

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Established: 1981
Donor: RIT Board of Trustees Purpose: Established in honor of former RIT President Paul A. Miller, recognizes RIT faculty making distinguished contributions to continuing education with record of matching Institute intellectual and educational resources with needs of students and the community
Held by: Carol Richardson

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Established: 1977
Donor: Mr. and Mrs. J. Warren McClure
Purpose: To perpetuate Mr. McClure's professional interest in the field of marketing
Held by: Dr. Eugene H. Fram

**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: Dr. John E. Ettlie

### Kate Gleason College of Engineering

**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: Dr. Satish G. Kandlikar

**Gleason Professor**
Established: 1993
Donor: Gleason Memorial Fund
Purpose: To provide for a faculty member to lead a research and development program in electrical engineering
Held by: Dr. P. R. Mukund

**Kate Gleason Chair and Associate Professor**
Established: 1999
Donor: Gleason Foundation
Purpose: To honor Kate Gleason and increase the visibility of engineering for young women
Held by: Dr. Margaret B. Bailey

**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: Dr. 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: Dr. Nabil Z. Nasr

**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: Dr. Bruce W. Smith

### College of Imaging Arts and Sciences

**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 Pitkin

**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 as a former president of the American Institute of Graphic Arts and to perpetuate his interest in the field
Held by: Open

**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:

**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: Michael Kleper

**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 newspaper publishing industries, as well as promotion of RIT color research activities.
Held by: Patricia Sorce

### 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: Dr. Mary Lynne 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: Dr. 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: Dr. 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: Dr. Diane S. Hope

### College of Science

**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: Dr. 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 long-time friends of RIT
Held by: Dr. John R. Schott

**Xerox Professorship in Digital Color Imaging Systems**
Established: 1996
Donor: Xerox Corporation
Purpose: Established to expand color imaging activities within the Chester F. Carlson Center for Imaging Science. The Xerox Professor teaches courses in color imaging systems, mentors graduate students in imaging and color science, initiates new funded research and collaborates with existing faculty and research associated with the Munsell Color Science Laboratory.
Held by: Dr. Mark D. Fairchild

## Faculty

### College of Applied Science and Technology

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

**Carol A. Richardson**, BSEE, University of Wyoming; MSEE, Union College—Vice Dean, Miller Professor

**Linda A. Tolan**, NCC, BS, State University of New York College at Geneseo; MS, Rochester Institute of Technology—Associate Dean, Associate Professor

**Janice T. Farone**, BS, Roberts Wesleyan College—Assistant Dean

### Civil Engineering Technology/Environmental Management and Safety

### Civil Engineering Technology

**Abi Aghayere**, BS, University of Lagos; MS, Massachusetts Institute of Technology; Ph.D., University of Alberta; PE—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, U.S. Military Academy; MSCE, Iowa State; PE—Professor Emeritus

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

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

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

**Maureen S. Valentine**, BSCE, Tufts University; MECE, Virginia Polytechnic Institute; PE—Chair, Civil Engineering Technology, Environmental Management and Safety; Associate Professor

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

### Environmental Management and Safety

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

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

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

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

### Civil Engineering Technology, Environmental Management & Safety Adjunct Faculty

**Brock Barry**, BS CET, Rochester Institute of Technology, MSCE, University of Colorado, PE

**Gregory Jones**, BS, Auburn University; MS, Rochester Institute of Technology

**Alan Knauf**, BSCE, Massachusetts Institute of Technology; JD, University of Michigan Law School

**Ed Mullen**, BS, Clarkson University

**Michael Pilla**, MS, Rochester Institute of Technology

**George Thomas**, BS, Clarkson University; MS, Johns Hopkins University

**Jason Vigil**, BSCET, Rochester Institute of Technology, MSCE, University of North Carolina, PE

**Tom Wickerham**, BA, Thiel College

### Electrical, Computer and Telecommunications Engineering Technology

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

**Richard C. Cliver**, BSEE, Rochester Institute of Technology; MSEE, University of Rochester—Assistant Professor

**Steven A. Ciccarelli**, BSEE, MS, Rochester Institute of Technology—Assistant Professor

**Thomas Dingman**, BSEE, MS, Rochester Institute of Technology—Professor

**Michael Eastman**, BSET, MSCS, Rochester Institute of Technology—Acting Department Chair, Associate Professor

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

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

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

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

**William P. Johnson**, BA, Kings College; BSEE, MSEE, Syracuse University—Professor

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

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

**Jeffrey S. Lillie**, BSEE, Rochester Institute of Technology; MSEE, University of Rochester—Assistant Professor

**Carol A. Richardson**, BSEE, University of Wyoming; MSEE, Union—Miller Professor, Vice Dean

**Charles L. Swain**, BSEE, Pennsylvania State University; MS, Elmira College; MSEE, Pennsylvania State University—Associate Professor

**Anthony P. Trippe**, PE, BS, Rochester Institute of Technology; MS, Fairleigh Dickinson University (DBA U.S. International University)—Assistant Professor

**Thomas Young**, BA, Hunter College; MS, New York University; MSEE, Rochester Institute of Technology—Professor

**George H. Zion**, BSET, MSCS, Rochester Institute of Technology—Professor

### Manufacturing and Mechanical Engineering Technology/Packaging Science

**George H. Sutherland**, BSME, Alberta; MEng, McMaster University; Ph.D., Stanford University; PE—Chair, Professor

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

**Scott J. Anson**, BSME, MSME, State University of New York at Binghamton; PE—Assistant Professor

**Phillip J. Batchelor**, BSME, Marquette University; MSME, University of Illinois—Visiting Lecturer

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

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

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

**Thaddeus Hopkins**, BS, MS, Rochester Institute of Technology—Coordinator for Undeclared Engineering Technology Students; Assistant Professor

**Daniel Johnson**, BS, MS, Rochester Institute of Technology, Manufacturing Engineering Technology Program Chair—Assistant Professor

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

**William Leonard**, AAS, State University of New York College at Canton; BS, MS, Rochester Institute of Technology—Assistant Professor

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

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

**Robert A. Merrill**, BS, Clarkson College; MS, Northeastern University; PE, Mechanical Engineering Technology Program Chair—Professor

**S. Manian Ramkumar**, BE, PSG, College of Technology-Bharathiar; ME, Rochester Institute of Technology —Professor

**John A. Stratton**, BS, Rochester Institute of Technology; MS, Rensselaer Polytechnic Institute; PE, Electrical/Mechanical Engineering Technology Program Chair—Professor

### Packaging Science

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

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

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

**Thomas Voss**, BS, MS, Michigan State University, Packaging Science Program Chair —Assistant Professor

**Fritz J. Yambrach**, BS, Michigan State University; BS, MBA, Utah State University, Ph.D., University at Buffalo—Associate Professor

### Engineering Technology Adjunct Faculty

**Dominic T. Bozzelli**, BS, University of Notre Dame; MS, Rochester Institute of Technology; MS, State University of New York College at Brockport

**Jeanne W. Christman**, BSEE, Clarkson University; MSCS, University of Texas at Dallas

**Gary J. DeAngelis**, BS, MS, University of Lowell

**Ilya Grinberg**, MSEE, Lvov Polytechnic Institute, Ukraine; Ph.D., Moscow Institute of Civil Engineering

**Joel Hallas**, BSEE, University of Connecticut; MSEE, Northeastern University

**Frank Hubbell**, BT, Rochester Institute of Technology

**Alan Kaminsky**, BS, Lehigh University; MS, University of Michigan

**Charles Kernehan**, AAS, Rochester Institute of Technology

**Robert Keiffer**, BS, Clarkson University; MS, Syracuse University

**David LaRue**, AAS, Monroe Community College; BS, Rochester Institute of Technology

**Bruce Link**, BSET, Rochester Institute of Technology; MSEE, Binghamton University

**John Link**, BSEE, Rochester Institute of Technology

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

**Ann Mary Masterson**, BS Clarkson University, MBA University of Rochester

**Sidney McQuary**, AAS, Williamsport Community College; BS, MS, Ph.D., University of Connecticut

**David L. Olsson**, BS, MS, Ph.D., Michigan State University—Professor Emeritus

**David A. Portzer**, BA, Park College; MSEd., Temple University

**Charles Ridler**, BS, MS, Rochester Institute of Technology

**Alfred M. Rodgers**, AAS, Alfred State College; BS, Rochester Institute of Technology

**Jacob Schanker**, PE, BEE, MEE, City College of New York

**John Todd Schueckler**, BS, Rochester Institute of Technology; MS, Rensselaer Polytechnic Institute

**James W. Wilson**, AAS, Rochester Institute of Technology

**Alan R. Zoyhofski**, AAS, Erie Community College; BS, MS, Rochester Institute of Technology

### Hospitality and Service Management

**Stanley Bissell**, BA, Ohio Wesleyan University; MA, University of Auckland; MS, State University of New York College at Geneseo—Associate Professor

**Barbara A. Cerio-Iocco**, RD, BS, MS, State University of New York at Buffalo—Associate Professor

**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; Professor

**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 College at Buffalo—Associate Professor

**Elizabeth A. Kmiecinski**, RD, BS, Ohio State University; MS, University of Kentucky—Associate Professor

**Richard M. Lagiewski**, BS, MS, Rochester Institute of Technology—Visiting Assistant Professor

**Dianne C. Mau**, BS, Rochester Institute of Technology; MS, State University of New York College at Brockport; Ph.D., Columbia University—Associate Professor

**James Myers**, BS, MS, Rochester Institute of Technology; Ph.D., Michigan State University—Associate Professor

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

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

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

**Clinton J. Wallington**, Ph.D., University of Southern California—Professor

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

**Gladys Winkworth**, BS, State University of New York at Albany; MS, State University of New York College at Brockport—Visiting Assistant Professor

### Center for Multi-disciplinary Studies

**Mary Boyd**, BA, Earlham College; MS, Computer Science, University of Iowa—Associate Director, Assistant Professor

**Samuel McQuade III**, BA, Western Washington University; MPA, University of Washington; Ph.D., George Mason University—Graduate Program Coordinator

**Richard Morales**, MS, State University of New York at Brockport; MS, Syracuse University; Ph.D., Maxwell School of Citizenship and Public Affairs, Syracuse University—Faculty Emeritus

**Thomas F. Moran**, BSME, California State Polytechnic College; MSME, California State College at Long Beach—Associate Professor

**James Myers**, BS, MS, Rochester Institute of Technology; Ph.D., University of Michigan—Director, Associate Professor

**Carol Romanowski**, BA, SUNY Plattsburgh; BS, MS, Ph.D., University at Buffalo—Assistant Professor

**Linda A. Tolan**, BS, State University of New York at Geneseo; MS, Rochester Institute of Technology—Associate Dean; Associate Professor

### Reserve Officer Training Corps

#### Army ROTC

**LTC Dale E. Watson**, BS, West Chester University of Pennsylvania; MSA, Central Michigan University —Professor

**LTC Paul T. Hansen**, AAS, Monroe Community College; BS, State University of New York at Albany; MS, State University of New York College at Brockport—Assistant Professor

**MSG Daniel Jackson**, Training NCO

**Gary Mastroleo**—Human Resource Assistance

**MAJ Donald C. Powell**, BA, State University of New York College at Geneseo—Assistant Professor

**CPT Ian J. Feyk**, BA, George Mason University—Assistant Professor

**SSG ( R ) James K. Tibbit**, AS, Columbia College—Logistics Manager

**MSG Robert Hotchkiss**, AS, Industrial Engineering, Canton ATC; Air Defense Auxiliary, ISG El Paso, TX—Instructor

#### Air Force ROTC

**Lt Col David Easley**

**Maj. Erika Foster**, BS, USAFA; MS, University of Oklahoma—Assistant Professor

### E. Philip Saunders College of Business

**Wayne J. Morse**, BBA, Siena College; MBA, Cornell University; Ph.D., Michigan State University; CPA; Illinois—Interim Dean, Professor

**Brian F. O'Neil**, BS, Syracuse University; MS, Ph.D., Purdue University—Associate Dean; Director, Graduate Business Programs

**Jerry H. Curnutt**, AB, William Jewell College; MS, Ph.D., University of Illinois—Assistant Dean for Administration

### Accounting Program

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

**Khondkar E. Karim**, B. Com. , M. Com., University of Dhaka; MSA, Eastern Michigan University; DBA, Mississippi State University; CPA, Mississippi—Associate Professor

**Francis E. Kearns**, AB, Cornell University; BD, Harvard University; MBA, Ph.D., State University of New York at Buffalo; CPA, New York—Assistant Professor

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

**Wayne J. Morse**, BBA, Siena College; MBA, Cornell University; Ph.D., Michigan State University; CPA, Illinois—Interim Dean, Professor

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

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

**Thomas Tribunella**, BBA, Niagara University; MBA, Rochester Institute of Technology; Ph.D., State University of New York at Albany; CPA, New York—Assistant Professor

### Finance Program

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

**Chun-Kueng (Stan) Hoi**, BS, 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

**Robert Manning**, BA, Duke University; MA, Northern Illinois University; Ph.D., Purdue University—Research Professor of Consumer Finance

**Melissa Palmer**, BBA, St. Bonaventure University; MBA, University of Rochester —Visiting Lecturer

**Ashok J. Robin**, MBA, Ph.D., State University of New York at Buffalo—Professor

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

### Management and International Business Programs

**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

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

**Shalini Khazanchi**, BS, South Gujarat University; MBA, University of Pune; Ph.D., University of Cincinnati—Assistant Professor

**Martin Lawlor**, BS, State University of New York at Buffalo; MBA, Rochester Institute of Technology—Visiting Lecturer

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

**David M. Reid**, BS, University of Salford; MS, University of Manchester; Ph.D., University of Edinburg—Professor

**Sandra L. Rothenberg**, BS, Syracuse University; MS, Ph.D., Massachusetts Institute of Technology—Associate Professor

**Holly S. Slay**, BS, Wilberfore University; CChE, University of Dayton; MA, Western Michigan University—Instructor

**Zhi Tang**, BS, Shandorun University; MS, Fudon University; 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—Assistant Professor

### Management Information Systems Program

**James Baroody**, BS, University of Richmond; MS, College of William and Mary; Ph.D., University of Wisconsin, Madison—Chair, Decision Sciences and Management Information Systems, Distinguished Lecturer

**Jack S. Cook**, BS, MA, MBA, University of South Dakota; MS, Ph.D., Washington State University—Associate Professor

**Daniel A. Joseph**, BS, Niagara University; MA, State University of New York at Albany; MBA, Ph.D., State University of New York at Buffalo—Associate Professor

**Koffi N'Da**, MS, Abidjan, Côte d'Ivoire (Ivory Coast); MS, Ph.D., Laval University—Assistant Professor

**M. Pamela Neely**, BS, State University of New York at Buffalo; MS, University of Colorado; Ph.D., State University of New York at Albany—Assistant Professor

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

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

### Marketing Program

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

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

**Eugene H. Fram**, BS, ML, University of Pittsburgh; Ed.D., State University of New York at Buffalo—Professor

**Neil Hair**, BS, University of Wales; MS, Sheffield Hallam University; Ph.D., Cranfield University—Assistant Professor

**Kevin Scully**, BS, State University of New York at Geneseo; MBA, Rochester Institute of Technology—Lecturer

**Philip R. Tyler**, BS, Rochester Institute of Technology; MBA, DBA, Michigan State University—Associate Professor

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

**Stanley M. Widrick**, BS, Clarkson College; MBA, State University of New York at Buffalo; Ph.D., Syracuse University—Chair, International Business, Management, and Marketing, Professor

### Decision Sciences Program

**John E. Ettlie**, BS, MS, Ph.D., Northwestern University—Director, Technology Management Center, Professor

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

**Thomas F. Pray**, BS, MS, Clarkson College; Ph.D., Rensselaer Polytechnic Institute—Professor

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

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

**Jorge L. Díaz-Herrera**, BS, Venezuela; MS, Ph.D., University of Lancaster—Dean

**Edith Lawson**, BS, University of Wisconsin at Stevens Point; MS, Rochester Institute of Technology—Associate Dean

### Computer Science

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

**Jessica Bayliss**, Ph.D., University of Rochester—Assistant Professor

**Hans-Peter Bischof**, BS, MS, University of VIM; Ph.D., University of Osnabrück—Graduate Program Chair; Associate Professor

**Zach Butler**, BS, Alfred University; Ph.D., Carnegie Mellon University—Assistant Professor

**Roxanne Canosa**, Ph.D., Rochester Institute of Technology—Assistant Professor

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

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

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

**Joe Geigel**, Ph.D., George Washington University—Assistant Professor

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

**Edith Hemaspaandra**, BS, MS, Ph.D., University of Amsterdam—Associate Professor

**Christopher Homan**, Ph.D., University of Rochester—Assistant Professor

**Trudy Howles**, BT, MS, Rochester Institute of Technology—Associate Professor

**Alan Kaminsky**, MS, University of Michigan—Associate Professor

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

**Minseok Kwon**, BS, MS, Seoul National University—Assistant Professor

**Sidney Marshall**, Ph.D., Dartmouth University—Associate Professor

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

**Rajendra K. Raj**, Ph.D., University of Washington—Associate Professor

**Leonid Reznik**, Ph.D., St. Petersburg Polytechnic Institute—Professor

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

**Ankur Teredesai**, MS, University of Baroda; Ph.D., University of Rochester—Assistant Professor

**Paul Tymann**, BS, MS, Syracuse University—Associate Professor

**Michael Van Wie**, Ph.D., University of Rochester—Assistant Professor

### Information Technology

**James Leone**, BS, University of Cincinnati; MA, Ph.D., Johns Hopkins University—Department Chair; Professor

**Catherine I. Beaton**, BA, BE, MITE, Dalhousie University, Canada—Assistant Professor

**Kevin Bierre**, BA, State University of New York at Geneseo; MS, Cornell University and Rochester Institute of Technology—Assistant Professor

**John A. Biles**, BA, MS, University of Kansas—Undergraduate Program Coordinator; Professor

**Dianne P. Bills**, BA, University of Rochester; MS, Rochester Institute of Technology—Associate Professor; Coordinator, Graduate Programs

**Daniel Bogaard**, BA, Indiana University; MS, Rochester Institute of Technology—Assistant Professor

**Deborah Coleman**, BA, Empire State College; MS, Rochester Institute of Technology—Assistant Professor

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

**Christopher Eggert**, BS, MS, Rochester Institute of Technology; Ph.D., State University of New York at Buffalo—Assistant Professor

**Daniel Garrison**, BS, Liberty University; MFA, Rochester Institute of Technology—Assistant Professor

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

**Anne Haake**, MS, University of South Carolina; MS, Rochester Institute of Technology; Ph.D., University of South Carolina—Associate Professor

**W. Michelle Harris**, BS, Carnegie Mellon; MPS, Tisch School of Arts—Assistant Professor

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

**Edward Holden**, BA, State University of New York at Oswego; MBA, Rochester Institute of Technology—Assistant Professor

**J. Alan Jackson**, BS, MS, Ph.D., Florida State University—Assistant Professor

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

**Jai Kang**, MA, Kent State University; MS, Georgia Institute of Technology; Ph.D., State University of New York at Buffalo—Assistant Professor

**Daniel R. Kennedy**, BS, MS, Rochester Institute of Technology—Assistant Professor

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

**Jeffrey Lasky**, BBA, University of New York; MBS, City University of New York; MS, University of Minnesota—Professor

**Elizabeth Lane Lawley**, AB, MLS, University of Michigan; Ph.D., University of Alabama—Associate Professor

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**Peter P. Ciancaglini**, PharmD, Campbell University School of Pharmacy—Adjunct Faculty

### Clinical Faculty

Clinical Faculty from a wide variety of local and regional medical centers, hospitals, and ambulatory practices serve as preceptors for physician assistant (PA) students during the internship phase of the program

### Nuclear Medicine Technology

**Kristen Waterstram-Rich**, MS, CNMT, Rochester Institute of Technology—Program Director, Associate Professor

**Vaseem Chengazi**, MD—Medical Director

### Clinical Faculty

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**Vaseem Chengazi**, MD—Chief, Division of Nuclear Medicine, University of Rochester Medical Center, Rochester

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**Leonard Kolodny**, MD—Chief of Radiology, Department of Nuclear Medicine, Highland Hospital, Rochester

**Gretchen Rehberg**, CNMT—Chief Technologist, Department of Nuclear Imaging, Rochester General Hospital, Rochester

**Ronald Schwartz**, MD—Director, Department of Nuclear Cardiology, Strong Memorial Hospital, Rochester

**Sanjeer Taneja**, MD—Director, Division of Nuclear Imaging, Department of Diagnostic Radiology/Nuclear Imaging, Rochester General Hospital, Rochester

**David Wolt**, MD—Chief Radiologist, Department of Diagnostic Imaging, Park Ridge Hospital, Rochester

### Diagnostic Medical Sonography

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**Vikram Dogra**, MD—Medical Director

**Susan Voci**, MD—Co-Medical Director

### Clinical Faculty

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**Lisa Allen**, BS, RDMS—Chief Sonographer, Maternal Fetal Medicine, State University of New York Upstate Medical University at Syracuse

**Tamara Allen**, RDMS—Chief Sonographer, Women GYN and Childbirth Associates, Rochester

**Spencer Annabel**, MD—Medical Director, Ultrasound Department, St. James Mercy Hospital, Hornell

**Paula Arnold**, RDMS—Chief Sonographer, Antenatal Testing Unit, Rochester General Hospital, Rochester

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## National Technical Institute for the Deaf

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### Academic Affairs

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