Clarkson University is a nationally-ranked research university and the institution of choice for more than 3,800 enterprising, high-ability scholars from diverse backgrounds who embrace challenge and thrive in a rigorous, highly collaborative learning environment. We add value to our students’ education by partnering with leading businesses, industries and thought leaders to bring relevance to the challenges and needs of a modern world in which the boundaries of knowledge, discipline, nations, and cultures blur. We encourage students to question the status quo, push the limits of what is known, and to apply their ingenuity to develop fresh solutions to real-world challenges. For more than 100 years, our graduates have achieved extraordinary professional success, risen to societal challenges, and advanced the global economy ethically and responsibly. Among our 38,000 alumni, one in five is a CEO, senior executive or owner of a company.

Founded in 1896 to honor Thomas S. Clarkson, the University's main campus is located in the “college town” of Potsdam, NY on a historic 640-acre wooded homestead in the foothills of the Adirondack Park. With three other universities nearby, Clarkson community members enjoy a constantly changing social and intellectual quality of life largely influenced by our proximity to the north slope of the Adirondacks; easy drives to Lake Placid as well as Ottawa and Montreal, Canada; and a high level of regional camaraderie to encourage innovative partnerships in small business development, arts, tourism, recreation, agriculture and green energy.

Clarkson’s educational strengths include:

- rigorous professional preparation
- dynamic, real-world learning
- highly collaborative community
- teamwork that spans disciplines
Questions regarding undergraduate admission and requests for information about Clarkson may be directed to the Office of Undergraduate Admissions.

Changes in Curricula
Information contained in this catalog is current at the time the catalog is posted on our Web site, but as courses and curricula undergo changes by official action of the University, occasionally such changes may supersede information found herein. The accuracy of any particular information can be checked through the Office of Undergraduate Admission, Student Administrative Services, the Dean of the appropriate School, or academic departments.

Please be aware that the information concerning academic requirements, courses, and programs of study in the catalog does not establish an irrevocable contract between the student and the University. The University can change, discontinue, or add academic requirements, courses, and programs of study at any time, without notice. Although every effort is made to provide timely notice to students in order to help in the planning process, it is the responsibility of the student to confirm that all appropriate degree requirements are met.

All students are encouraged to read the catalog thoroughly. Failure to be familiar with the contents does not excuse a student from the requirements and regulations described herein.

Courses
Typical courses for each department are listed in this catalog, but not all courses are offered each year. Descriptions of courses and terms in which specific course are offered are accessible in PeopleSoft. Viewing Clarkson’s searchable course catalog will give up-to-date course descriptions, pre- or co-requisites, course attributes, and other information pertaining to all courses offered. Clarkson’s browse course catalog can be viewed at [www.clarkson.edu](http://www.clarkson.edu). There is no log-in required - just select the term and year that you are interested in viewing.

Course credit is also available for Independent Study and Special Projects.
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The Clarkson Education
Clarkson academic programs span boundaries and vary widely in content. However, at the heart of the institution’s educational process are fundamental goals and values that define a common learning experience and shape the growth of every Clarkson student. The University has articulated its mission, vision, and values as follows:

Mission of Clarkson University
Clarkson University is an independent, nationally recognized technological university whose faculty of teacher/scholars aspires to offer superior instruction and engage in high-quality research and scholarship in engineering, business, science, health, and liberal arts. Our primary mission is to educate talented and motivated men and women to become successful professionals through quality pre-collegiate, undergraduate, graduate, and professional continuing education programs, with particular emphasis on the undergraduate experience. Our community and campus settings enhance the quality of student life and afford students access to and interaction with their faculty. We value the diversity of our University community, and we strive to attune ourselves and our programs to our global, pluralistic society. We share the belief that humane and environmentally sound economic and social development derive from the expansion, diffusion, and application of knowledge.

Vision of a Clarkson Education
The Clarkson University educational experience is designed to provide talented and ambitious students with the knowledge and skills necessary to achieve positions of leadership within their chosen profession. The combination of Clarkson’s strong technologically rich curricula and State-of-the-art teaching and research facilities, coupled with an unparalleled commitment to a friendly learning environment and to students’ personal development, uniquely prepares Clarkson graduates to excel in their chosen professions and to lead rewarding and creative lives.

In addition to attaining mastery of the core knowledge within his or her field, a Clarkson education is designed to enable students to:

- Solve real-world, open-ended problems with creativity and risk taking to obtain solutions that are practical and sustainable, including those they encounter in state-of-the-art research under the direction of distinguished faculty;
- Develop and refine exceptional communication skills with an awareness of potential cultural differences;
- Lead effectively and work productively within and disciplinary and multidisciplinary teams composed of members with diverse interests and backgrounds;
- Excel in using computing and information technologies;
- Learn through instruction and guidance by nationally recognized faculty whose commitment to both teaching and research has made Clarkson a nationally ranked university.

A Clarkson student’s education is greatly enhanced by a personal and friendly learning environment, within a small, residential, nationally recognized University, which:

- Places students at the center of the educational process and where all employees have a commitment to creating an environment that contributes positively to students’ overall educational experience;
• Draws undergraduates, graduate students, faculty and staff together into a cohesive and stimulating learning community, wherein an atmosphere of scholarship and spirit of research is cultivated;
• Uses our campus as a living laboratory to improve learning, and uses the wider region to broaden and extend Clarkson’s outreach and service;
• Provides personal advising and interaction with faculty and staff as well as supportive relationships among students;
• Offers many leadership opportunities through co-curricular groups and activities;
• Respects and learns from its community of diverse people, backgrounds, and cultures.

Together, these provide a unique educational experience that is directed toward developing the whole person.

**Major Values of the Clarkson Community**

"Lead by Example and Others Will Follow"

**Caring:** A positive and friendly atmosphere is created when we care about each other, when we are open to constructive criticism, and when we show appreciation for a job well done.

**Diligence:** “A workman that needeth not to be ashamed.” Initiative and hard work are key ingredients in getting the task done.

**Diversity:** The mutual appreciation of differences and a plurality of opinions, beliefs, and cultural traditions inform and enrich our lives.

**Integrity:** Honesty and accountability in one’s actions and words form the foundation of our relationships with others.

**Growth:** Educational experiences in and out of the classroom enliven our minds, broaden our horizons, and facilitate dialogue and consensus. Learning is a lifelong activity.

**Service:** Offering our time and skills for the good of our fellow citizens leads to the prosperity and environmental health of the community and to the well-being and character development of the individual.

**Teamwork:** Effective teamwork encourages creativity and self-initiative in our respective roles and partnerships. It is essential in getting the task done and in developing the skills needed to meet the challenges of ensuring sustainability of local and global economic, environmental and social systems.

**Vision:** Having a vision of a sustainable future helps us prepare for it. Embracing the inevitable changes in our world as opportunities allow us to anticipate, promote, and facilitate change.

**About Clarkson University**

An innovation powerhouse, Clarkson is where people with purpose come to make things happen. We ignite student-centered learning, career paths and the creation of new knowledge by intentionally colliding academic disciplines, research, and social experiences with each individual’s purpose.

Through a university-wide ecosystem, innovators and collaborators from every discipline get the opportunity to engage in the entrepreneurial mindset and skillsets to stretch boundaries at the nexus of science, technology, engineering, and business. Graduates, faculty and staff are well
known for their abilities to make sense of complex systems, forge connections across fields and lead with powerful purpose: we are the world’s go-to thought-leaders, change-agents, business owners and executives at the helm of major companies, research hubs and start-ups creating solutions to today’s most vexing challenges.

Founded in 1896 with a compelling charge to always search out the real needs of the American people, Clarkson cultivates an innovative and interdisciplinary research environment focused on rapidly solving real world problems for a better future. Example signature areas of research include data analytics, STEM and entrepreneurial education, healthy world solutions, and the next generation of advanced materials. Our external network has more than 380 active partners in industry, government agencies, chambers of commerce and research organizations affording students access to world relevant problems to pursue with their professors as well as a direct pipeline to internships and careers after graduation.

With more than 3,275 undergraduates and 1100+ graduate students, Clarkson offers more than 60 undergraduate and graduate programs in engineering, business, sciences, humanities and arts, education, and health professions leading to bachelor’s, master’s, certificate and doctoral degrees. In addition to an engaged 42,000+ strong alumni community in 87 countries, our global reach extends through our schools, ROTC command, research centers and institutes across the Clarkson corridor stretching from Potsdam to New York City as well as more than 40 international university exchange partners.

Here is a sample of the external accolades:

- Clarkson alumni salaries rank in the top 3 percent of highest salaries in the United States, Pay-scale College Salary Report.
- Colleges That Pay You Back: The 200 Schools That Give You the Best Bang for Your Tuition Buck, Princeton Review
- One of the 25 Colleges with the Highest-Paid Graduates, Money & Career Cheat Sheet.
- Top-20 Best Values (Great Schools, Great Prices), U.S. News & World Report, America’s Best Colleges.
- Top 10: Universities that increase salaries the most, A Clarkson degree will increase your earnings by 42 percent on average, Brookings Institution.

Engineering & Management program is only the second program in the world to be accredited by both AACSB International and the Engineering Accreditation Commission of ABET. Collaborative projects to solve real-world problems prepare students in all majors for the team-oriented global workplace. Some 400 undergraduates a year perform faculty-mentored research or participate in national academic team competitions through Clarkson’s award-winning program called SPEED (Student Projects for Engineering Experience and Design).

Competition projects range from environmental problem solving to Mini-Baja vehicle racing to FIRST Robotics. All business students work on entrepreneurial teams that create and run actual
companies. More than 40 study abroad programs in 21 countries, as well as internships, workplace co-ops, and research fellowships, broaden the undergraduate educational experience.

Clarkson’s major organizational units are the School of Arts & Sciences, the David D. Reh School of Business, the Wallace H. Coulter School of Engineering, and the Institute for a Sustainable Environment, the Graduate School, the Institute for STEM Education, Sponsored Research Services, and The Clarkson School, a unique program in which talented high school age students can begin college early.

Clarkson’s campus includes several academic research centers that leverage the University’s scholarly strengths. The Center for Advanced Materials Processing (CAMP), which is also a New York State Center for Advanced Technology, contains state-of-the-art research laboratories that enable faculty to pursue cutting-edge research and are accessible to undergraduates and graduate students for collaborative projects.

The Clarkson Institute for a Sustainable Environment (ISE) facilitates boundary-spanning environmental research and educational activities within the University and through external partnerships. Students from across campus can integrate sustainability into their curricular or co-curricular education by adding one of ISE’s minor programs in Environmental Science, Environmental Policy, Environmental Health Sciences, or Sustainable Solutions for the Developing World; writing a proposal to implement a sustainability project on campus; participate in research or spend a semester immersed in the social, environmental and economic issues of the Adirondack Park as a part of the ISE Adirondack Semester. In addition to the Institute’s core faculty, Institute affiliated faculty come from all schools on campus and also receive millions of dollars in research and educational grants that translates into opportunities for students to get involved in funded research projects. ISE also houses the Center for Sustainable Energy Systems (CSES) and the Center for Air Resources Engineering and Science (CARES).

The Center for Rehabilitation Engineering, Science and Technology (CREST) serves to integrate biomedical engineering and science with assistive and adaptive technologies and physical therapy to improve lives affected by disease or injury.

The Cora and Bayard Clarkson Science Center is home to mathematics, computer science, biology, biomolecular science, chemistry, physics, psychology and statistics. It also houses the President’s Office.

The Clarkson Center for Complex Systems Science (C³S²) serves to encourage and facilitate research and educational opportunities in the area of complex, nonlinear, dynamical and adaptive systems. C³S² will foster collaboration from an interdisciplinary group of researchers to address important problems from a wide range of scientific, technological and engineering disciplines for the advancement of technology and humanity.

The Center for Identification Technology Research (CITeR) serves its affiliates in the rapidly growing areas of Biometric Identification and Credibility Assessment Technology through interdisciplinary group of faculty, researchers, and students.
Bertrand H. Snell Hall houses the David D. Reh School of Business, the administrative offices of the School of Arts & Sciences, Department of Humanities and Social Sciences, Department of Communication & Media and the Digital Arts & Sciences program. Fully networked classrooms and study spaces, collaborative centers for team projects, and videoconferencing capabilities are among state-of-the-art features that enhance student learning. The building includes academic centers available to students in all majors: the Shipley Center for Innovation and the Eastman Kodak Center for Excellence in Communication. Bertrand H. Snell Hall is connected to the Cora and Bayard Clarkson Science Center by the third story Petersen Passageway.

Clarkson’s physical facilities are valued at $269.4 million. They comprise approximately 1,324,053 square feet of assignable space, of which almost 90 percent has been built since 1970. More than 339,410 sq. ft. are dedicated exclusively to academic programs, including 51,559 sq. ft. in traditional classrooms and 162,941 sq. ft. assigned in laboratory areas.

Retention studies of independent institutions in New York State show on average that 68.9 percent of students who enter as freshmen complete their degrees within six years, and 56.1 percent in four years. At these same schools, the sampling of transfer students shows 63.5 percent completing their degrees in four years and 67.6 percent in six years.

At Clarkson the retention rate is well above the norm: averaged among those completing degrees over the past three years, 73.2 percent of freshmen completed their studies for a bachelor’s degree within six years; 72.1 percent in five years; and 55.8 percent in four years or less. *Among transfer students, 45.7 percent complete their bachelor’s degrees in two years and 83.5 percent in four years.

*Under the Student Right to Know Act, the federal government requires the University to publish the six-year graduation rate for students who have enrolled as first-time freshmen. Clarkson operates a unique program known as The Clarkson School, which allows students to begin their college career one year early (see Undergraduate Admission). This program attracts some students who may not intend to remain at Clarkson for four years and inclusion of these students in the total has the effect of making that published rate misleading. The inclusion of Clarkson School students makes the University’s six-year graduation rate 71.1 percent.

A Brief History of Clarkson
(The following summary has been excerpted largely from A Clarkson Mosaic, a history written by Professor Emeritus Bradford B. Broughton in conjunction with the institution’s 1996 Centennial.) Two months after a highly successful Potsdam businessman, Thomas Streatfeild Clarkson, was crushed to death while trying to save one of his workers in his sandstone quarry on August 17, 1894, his family began planning a memorial to him: a school.

Choosing as their rationale a phrase which his sisters and nieces felt aptly described their brother — Thomas’ favorite Biblical quotation, A workman that needeth not to be ashamed — the family opened the Thomas S. Clarkson Memorial School of Technology in September 1896, in The Main Building (“Old Main”) which they commissioned to be built on Main Street. To the five young men in the preparatory class, eight men and four women in the freshman class, six courses of instruction were offered: electrical engineering, domestic science, art, machine work
and smithing, woodwork and pattern making, and normal manual training. By 1907 the school was offering additional bachelor’s degrees in mechanical, civil and chemical engineering.

Recognizing the need for a gymnasium, the students began a fund-raising campaign for the $11,000 needed to build one in town, spurred on by a $5,000 gift from the Clarkson family. By 1912, this second School building had been erected. That building became the library in 1956 after the new Alumni Gymnasium opened. When the library moved to the Educational Resources Center in 1978, the original building became the Liberal Studies Center.

When the New York State Board of Regents offered scholarships to qualified students attending college within the state in 1913, Clarkson’s Board of Trustees voted to change the school’s name to The Thomas S. Clarkson Memorial College of Technology; the head of the college became president instead of director; and John Pascal Brooks, a Dartmouth graduate, and one of the men on Walter Camp’s first All-American football team, became the first Clarkson director to bear the title of president.

Hockey began in 1919 on a rink behind Old Main, and soon moved to a bigger rink built by the students in Ives Park. Not until the hockey arena was completed on land across the river in 1938 did the team have a building in which to play. That facility was later named for the founding force behind Clarkson hockey, Murray Walker, owner of Weston’s Bookstore. Walker Arena provided home ice for Clarkson teams, which have frequently achieved national ranking, until Cheel Arena was completed in 1991. The Women’s Hockey Team is 3 time NCAA national champions in 2014, 2017 and 2018.

Thomas Clarkson’s nieces, Miss Annie Clarkson and Miss Emily Moore, tried to have the entire school moved to a new campus on a hill outside of Potsdam (hence the nickname, the “hill campus”), with a gift of $1.5 million in 1929. However, because that money shrank to half a million within a year due to the stock market crash, the plans for the move had to be shelved for over 30 years. Since then, the campus has moved almost entirely to the hill, although some administrative offices and the programs in health sciences remain on the original downtown Potsdam campus.

Responding to a plea from New York Governor Thomas Dewey after World War II, Clarkson admitted hundreds of returning veterans. Having no space to house or teach them by 1946, Clarkson rented the New York State School for the Deaf in Malone, N.Y., 40 miles east of Potsdam. For the next five years, freshmen and many sophomores spent their first two years in Malone before moving to the Potsdam campus for the remainder of their Clarkson education. That branch closed in 1951.

With that flood of veterans came the Trustees’ realization that the College would have to expand its facilities, and expand them it did over the next 20 years, adding not only facilities but graduate programs in engineering, science, and management, including PhD programs in most.

During that post-war period, and through the mid-1980s, Clarkson expanded both of its campuses, with many new residence halls on the hill campus, including Hamlin-Powers, the Quad, Moore House, Price and Graham Halls, Woodstock (originally planned for married student housing only), and the Townhouses. Beside them, it built the Educational Resources
Center in 1978 and the added recreational facilities of the Indoor Recreation Center in 1980. The downtown campus also witnessed expansion during those years; Peyton Hall for chemical engineering, Damon Hall for civil, Clarkson Hall for electrical, and Lewis House for a student union. Clarkson also gradually took over Snell Hall from SUNY Potsdam for classrooms and office space.

In the fall of 1991, two significant developments occurred on the hill campus. Clarkson opened the CAMP (Center for Advanced Materials Processing) building, a research and teaching complex with state-of-the-art laboratories, designated a New York State Center of Advanced Technology. The building was connected to the existing Rowley Laboratories and, in the fall of 1996, all engineering departments were consolidated in the CAMP-Rowley complex.

Also in 1991, the University opened the Cheel Campus Center, a combination student union and hockey arena that includes dining areas, student government and activities rooms and offices, and a post office. In the fall of 1998, the University also completed a new Fitness Center, which connects the Indoor Recreation Center and Alumni Gymnasium.

In the spring of 1999, Clarkson Hall was renovated and rededicated as the Center for Health Sciences. This downtown facility now houses the University’s programs in Occupational Therapy, Physical Therapy, and Physician Assistant Studies. The newest academic building, Bertrand H. Snell Hall, opened on the hill campus for the fall 2000 semester. A wing of biochemistry laboratories was added to the Cora and Bayard Clarkson Science Center and opened in fall 2005. The Technology Advancement Center (TAC), an 18,000-square-foot addition connecting the Schuler Educational Resources Center and the Cora and Bayard Clarkson Science Center, was completed in fall 2008. A new Student Center was completed in August 2010 and connects all academic buildings.

In 2016 The University welcomed a Graduate School campus in Schenectady, New York that takes advantage of all that New York’s Capital Region has to offer. Like Potsdam, Schenectady has a large collegiate presence (Union College and Schenectady Community College in the same city) as well as many other educational institutions, research institutes and government think tanks.

**Clarkson Ignite**

In 2017, a new framework for enhancing the Clarkson educational experience was born. This framework, now known as Clarkson Ignite, represents a forward-thinking integration of innovation resources across the Clarkson community. These expanded investment in facilities, curriculum and programming will produce graduates across all disciplines who are literate in innovation and equipped to meet the needs of the innovation economy. More than ever, today’s innovation occurs at the intersection of business, engineering, science and technology — Ignite will produce graduates that can make connections across disciplines and create extraordinary economic and societal value. Recent renovations to the Andrew S. Schuler Educational Resources Center, Studio Space in Bertrand H. Snell Hall, and downtown incubators located in Peyton Hall, Old Main, and Damon Hall provide physical space in support of these and other initiatives.
Degree Programs

Bachelor’s Degree Majors
All bachelors’ degree programs at Clarkson require completion of 120 credit hours and the learning expectations of the Clarkson Common Experience. In addition to traditional discipline-specific degrees, Clarkson offers majors that combine work from at least two different fields so that students can broaden their areas of expertise.

A description of each degree program and its requirements can be found below. The Higher Education General Information Survey (HEGIS) code designated by the New York State Education Department for classifying these academic programs can be found in the list of degree programs and HEGIS Codes near the end of the catalog. Clarkson offers the Bachelor of Science (BS) degree in the following majors:

**School of Arts & Sciences**
- American Studies
- Applied Mathematics & Statistics
- Biology
- Biomolecular Science
- Chemistry
- Communication
- Computer Science
- Data Science
- Digital Arts & Sciences
- History
- Humanities
- Interdisciplinary Liberal Arts
- Interdisciplinary Social Sciences
- Mathematics
- Physics
- Political Science
- Psychology

**David D. Reh School of Business**
- Financial Information & Analysis
- Global Supply Chain Management
- Business Intelligence and Data Analytics
- Innovation & Entrepreneurship
- Engineering & Management

**Wallace H. Coulter School of Engineering**
- Aeronautical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Mechanical Engineering

**Interdisciplinary Programs**
- Mathematical Economics
- Software Engineering
  (See ISE for additional programs)

**Institute for a Sustainable Environment (ISE)**
- Environmental Science & Policy
- Environmental Health Science

**Institute for STEM Education**

Program Length for a bachelor of science degree is four years.

**Bachelor of Professional Studies (BPS)**
In addition to the Bachelor of Science (BS) degree, Clarkson offers a Bachelor of Professional Studies degree program to provide flexibility and interdisciplinary study. The BPS enables a student to design and pursue an individual curriculum that meets personal career objectives. Programs may be designed in any discipline or by combining disciplines offered at Clarkson.
Double Majors and Second Clarkson Degrees
Undergraduates may also enhance an academic major by combining it with a second major. This may lead to a single bachelor’s degree with a double major or to two Clarkson bachelor’s degrees.

Minors
To complement and enrich bachelor’s degree programs, Clarkson also enables students to assemble coursework in designated minor programs. Such minors provide students with another area of specialization outside their major. Minors require 15 or more credit hours of specified coursework. Completion of an approved minor is indicated on a student’s transcript.

Humanities and Social Sciences also offer disciplinary minors and student-designed minors not in the below list. See Minors in Humanities and Social Sciences in the School of Arts & Sciences section of the Catalog or contact the chair of the Department of Humanities and Social Sciences.

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<td>Biomedical Engineering</td>
<td>Engineering</td>
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<td>Biomedical Science and Technology</td>
<td>Sustainable Solutions for the</td>
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<tr>
<td>Information Technology</td>
<td>Developing World</td>
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<td>ISE</td>
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</tbody>
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Wallace H Coulter School of Engineering
Electrical Engineering Science
Environmental Engineering
Software Engineering Sustainable
Energy Systems Engineering
Biomedical Engineering

Interdisciplinary
Biomedical Engineering
Biomedical Science and Technology Information Technology

ISE
Environmental Health Science
Environmental Science
Environmental Policy
Sustainable Energy Systems Engineering
Sustainable Solutions for the Developing World
**Professional Concentrations**
Undergraduate students may build an area of specialized expertise termed a professional concentration within, or closely related to, their degree program major. Such concentrations require at least 15 credit hours of coursework. Successful completion of a faculty-approved concentration is indicated on a student’s transcript. Course requirements vary and interested students should consult with academic advisers. The following professional concentrations have been designated:

**Arts & Sciences**
Gender & Sexuality Studies (in the BS in Interdisciplinary Liberal Studies & BS in Interdisciplinary Social Sciences)
Health Psychology

**Engineering**
Architectural Engineering
Biomolecular Engineering
Construction Engineering Management
Electric Power Engineering
Environmental Engineering
Materials Engineering
Structural Engineering
Water Resource Engineering

**ISE**
Environment and Security
Ergonomics
Industrial Hygiene

**Engineering and Management**
Global Supply Chain Management

**Accreditation**
Clarkson is accredited by the Middle States Commission on Higher Education, 3624 Market St., Philadelphia, PA 19104-2680, 215-662-5606. The undergraduate programs in aeronautical, chemical, civil, computer, electrical, environmental, mechanical, and software engineering are accredited by the Engineering Accreditation Commission of ABET, [http://www.abet.org](http://www.abet.org). Students who have completed at least three years towards a bachelor’s degree in engineering are eligible to take the Fundamentals of Engineering examination toward licensure as professional engineers. The School of Business is accredited by the Association to Advance Collegiate Schools of Business (AACSB). The undergraduate engineering and management program in the School of Business is also accredited by the Engineering Accreditation Commission of ABET, Inc., [http://www.abet.org](http://www.abet.org). In addition, the University is accredited by the United States Civil Service Commission, and its curricula are approved by the New York State Board of Regents. All Clarkson degree programs are approved by the New York State Division of Veterans Affairs for the training of veterans and other eligible persons.
Academic Program Options

University Studies
Catherine Avadikian, Director

The University Studies Program was designed to serve those individuals who are ready to enter into their freshman year of college without making an initial commitment to a major field of study. It enables students to more fully investigate the full range of academic offerings relating to their specific academic and career interests. Students registered under University Studies are full-time matriculated undergraduate students who have yet to declare a specific major area of study. In all cases, a selection of an academic major will occur prior to the end of the freshman year.

Many students begin their studies without declaring a major. Frequently, their interests span over several disciplines and they need time to explore their choices. Students who enroll in the University Studies Program work with the Program Director to develop an individualized course schedule for the first year designed to facilitate exploration and keep all options open. This first-year program allows students the freedom to experience and familiarize themselves with degree programs and departments of study based on their individual interests and career goals.

The program is structured and designed to assist students in making a sound, educated, and well thought-out decision about an appropriate major. In the first year, students are placed in courses based on their interests and recommendation of their advisor so that within two semesters, they will be able to enroll in a major of their choice and still earn a bachelor’s degree in four years.

Additionally, students are encouraged to participate in professional societies and counseling activities that can help them define their academic goals and career-related objectives.

Personalized academic advising is emphasized and students are directed to take full advantage of related services available to them at Clarkson.

Pre-Health Professions and Advising
Damien Samways, Associate Professor and Chair of the Pre-Health Advising Committee
Amy Thompson, Pre-Health Advising Coordinator
healthadvising@clarkson.edu

Students may prepare for further professional study in medical (including Occupational Therapy, Physician Assistant, and Physical Therapy), dental and veterinary schools through any major at Clarkson. For a more structured path into these professions, students can choose to complement their primary degree with a Minor in Medicine and Health Care, which includes courses covering the interdisciplinary range of knowledge and perspectives necessary to be an effective health-practitioner. Regardless of the undergraduate path taken, Clarkson’s Health Professions Advisory Committee meets with students individually as they progress through their courses of study, providing guidance and advice in meeting University and departmental requirements and ensuring preparation for entrance into professional schools.

Pre-Occupational Therapy
Clarkson offers an undergraduate Pre-OT advising program and a graduate degree program in Occupational Therapy. Students interested in preparing for entrance into Clarkson’s Masters of Occupational Therapy degree program should contact the department at 315-268-4412.

**Pre-Physical Therapy and Physical Therapy**
Clarkson offers an undergraduate Pre-PT concentration and an entry level Doctor of Physical Therapy graduate degree program. Students interested in preparing for entrance into Clarkson’s Doctor of Physical Therapy degree program should contact the department at 315-268-3786.

**Pre-Physician Assistant and Physician Assistant Studies**
Clarkson offers an undergraduate Pre-Physician Assistant advising program and a graduate degree program in Physician Assistant Studies. Students interested in preparing for entrance into Clarkson’s Masters of Physician Assistant Studies degree program should contact the department at 315-268-7942.

**Pre-Medicine, Pre-Dentistry, and Pre-Veterinary Programs**
Students intending to apply to medical, dental or veterinary school will receive guidance in the planning and completion of required coursework and professional experience, in addition to assistance in submitting their final application. Clarkson provides committee letters to accompany applications when requested, and also offers a preparatory course for students required to sit the MCAT. Students can contact healthadvising@clarkson.edu for further details.

**Pre-Law**
Joseph Andriano, and Christopher Robinson, Advisors

Students from many degree programs at Clarkson have entered law school. Educators agree that success in a law career depends more upon the development of skills and habits conducive to legal reasoning than a student’s specific major. Students planning to seek admission to law school should use elective courses to develop a broad cultural background; intellectual curiosity; and reading, writing and speaking skills. Students interested in law school may consider completing the Law Studies Minor. Courses in business, engineering, and science help develop analytical skills and the technical background often helpful in understanding potential legal problems. Liberal Arts courses in the humanities and social sciences provide broad cultural background and the opportunity to develop analytical and verbal skills, since they entail a wide range of reading assignments, emphasize class discussion, and offer students the opportunity to prepare and criticize oral and written work.

Clarkson University and University of New Hampshire School of Law, Franklin Pierce Law Center, Concord, New Hampshire, have signed an articulation agreement for students interested in pursuing a law degree specializing in intellectual property law. Franklin Pierce Law Center is an internationally known school training specialists in patent law and other intellectual property fields.

Students admitted to Clarkson as first-year students can file a joint admission application with Franklin Pierce. When they complete their baccalaureate degree from Clarkson, they will be fully
admitted to the Franklin Pierce Law Center providing they have a final undergraduate grade-point average of at least 3.25, an LSAT (Law School Admissions Test) score at or above the 75th percentile, and that they have not engaged in any intentional academic misconduct or criminal activity. Pre-law advising is available for students in all majors to help them develop academic programs that will serve as a strong foundation for future legal studies. A list of pre-law advisors is available through the Dean’s Office in the School of Business at 315-268-2300. The advisors provide counseling and information about law schools and careers in law.

Multidisciplinary Project (MP) and Multidisciplinary Team (MT) Courses
Clarkson has developed courses to provide students with the opportunity to solve real-world design problems in a team-based multidisciplinary atmosphere. Often these courses culminate in national competitions. Such multidisciplinary project experience has been increasingly valued by recruiters in the corporate marketplace. MP courses provide course credit, while MT courses carry no credit, but participation is recorded on the student’s transcript.

Summer Sessions
Clarkson offers two five-week summer sessions for undergraduates. A well-balanced offering of courses enables students to:

- participate in programs such as Cooperative Education or Study Abroad and still graduate with their class;
- enrich their academic program with electives that do not fit into the normal semester;
- take courses required for continuation in a specific program or transfer into a new area.

Three-Year Bachelor’s Degree Option
Students who have graduated in the top 10 percent of their high school class and who enroll in a Business or Arts & Sciences major may complete a bachelor’s degree in three calendar years. To satisfy this accelerated schedule, students apply Advanced Placement credits and/or work on special research projects during the summer.

Physical Education
Steve Yianoukos, Director of Athletics & Recreation Bill Bergan, Director of Physical Education

Physical Education offers an array of optional courses that vary based upon student interest and the season. The program is designed to offer a variety of activities in individual, lifetime and team sports which augment the required Personal Wellness course. Special attention is given to those activities with significant carry-over values for lifelong participation.

Optional Physical Education Courses
Optional physical education courses include Weight Training Techniques, EMT/CPR Lifesaving, Golf, Racquetball, Aerobic Fitness, and Badminton. In cooperation with the University medical staff, the Physical Education Department will assist those students who are physically disabled to design a program best suited to their capabilities.
The Henry R. Hodge Sports and Recreation Complex is located on the Potsdam campus, adjacent to the residence halls and easily accessible to all students. Facilities include the Deneka Family Fitness Center, Alumni Gymnasium, Schuler Recreation Building (which houses the Stephenson Field House and the Fuller Pool), the Denny Brown Adirondack Lodge, and the Snell Athletic Fields. Additional facilities include Walker Center, Hantz Turf Field, Bagdad Field, Scott Field, Neugold Field, and the Cheel Campus Center and Arena.

The Department of Athletics and Recreation offers a number of summer camp opportunities. Please contact them directly at 315-268-6622 or visit them on the Website for more details.

**Honors Program**
Jon Goss, Director
honors@clarkson.edu

Clarkson offers an intensive, four-year undergraduate Honors curriculum for exceptionally talented students majoring in any of our degree programs. Applicants typically rank in the top 10% of their high school class, have excellent standardized test scores, and demonstrate outstanding academic achievement. They are also typically highly engaged in co-curricular and extra-curricular activities, and have an excellent record of leadership and service. Students must maintain a grade-point average of 3.25 and keep up with leadership and service requirements of the Honors Program to remain in good standing.

Applicants to the Honors Program must complete an on-line form, which includes two short essay questions, and submit a résumé. Selected candidates are invited to interview, which may be conducted in-person, via Skype, or by phone. The Honors Program admits up to 60 new first year students and up to 15 sophomore students per year.

The Honors Program complements work in the majors, emphasizing the development of critical thinking, problem solving, teamwork, and communication skills. Students take one Honors course per semester. Courses develop as interlocking, multidisciplinary sequences, bringing perspectives from different disciplines to bear on contemporary problems at the interface of science, technology and society. The approach is open-ended and project based. The four-year sequence comprises the following general topics:

- First year – Ethical Issues in Science, Technology and Society
- Second year- The Sophomore Project
- Third year – Ways of Knowing and The Honors Thesis
- Fourth Year – The Honors Thesis and Experience of Research and Modernity

The Honors Program also offers students opportunities to engage in original research through its summer research programs. Students participate in cutting-edge research with faculty mentors, and the program provides board and room, research supplies and a stipend. This includes an abbreviated five-week “pre-frosh” program for entering first year students even before they matriculate at Clarkson.

All students must also complete an Honors thesis based upon original scholarship conducted in the
junior and senior year under the guidance of a faculty member. A wide range of topics and formats is accepted, from laboratory research to business plans, from engineering design to artwork, and from software applications to creative writing. There is even an option to complete a thesis on a co-op assignment.

All Honors students must complete the leadership and service requirements. The Leadership Program is four-year program of activities and reflective essays that develops personal and positional leadership skills of Honors students, and successful completion of the program is a graduation requirement for all students entering the Honors Program from fall 2017. The Service Program is administered by students themselves who coordinate a wide range of opportunities to serve the Honors Program, campus, and the local community. A minimum of ten hours of service per year is required to graduate from the Honors Program.

Honors students enjoy many other benefits, including: the Honors Scholarship as part of their Clarkson financial assistance package; the Honors Educational Enhancement Scholarship that funds high impact scholarly and professional development activities; dedicated academic advising and a professional development program; a residential learning community; and peer mentorship programs.

The Honors Program at Clarkson is administered by an Honors Council composed of representative faculty and staff, and Honors students who are elected by their peers. Students are also engaged in governance of the program through the elected Steering Board and its committees, which include Honors Ambassadors, Service Committee, Activities Committee, and Webmasters.

**Early Entrance College Program: The Clarkson School**

At The Clarkson School, the University offers a unique program for talented high school age students who are ready to begin college early. Unlike many early-entrance college programs, The Clarkson School provides a full-time residential program and dedicated advising that facilitates the transition to college life. The Clarkson School has been bringing academically advanced students to campus since the fall of 1978.

Students who enroll in The Clarkson School live together on campus, with specially trained residential advisors. Commuting day students from St. Lawrence County may also join the community. Clarkson School students are matriculated as University students and typically earn about 32-34 college credit hours during the year. Courses may be selected from the University’s offerings in the Schools of Arts & Sciences, Business, and Engineering. With assistance from the School staff, students design their programs of study to meet their individual needs and interests.

The low student-staff ratio of The Clarkson School ensures individualized attention. Our orientation and advising program emphasizes time-management and study skills that are essential for success in college. Each student’s progress is carefully monitored and individualized help is provided where necessary. Our Personal and Professional Development Program is designed to complement their academic experience: workshops focus on resume and cover letter writing, preparation for
interviews and career fairs, writing personal statements, financial aid, summer research opportunities and other topics. Advising and special seminars focus on effective study skills habits, time and stress management, career and major exploration as we believe that by enriching our students’ mind, body and soul, they will continue to grow as contributing members of the community, society and in their future.

Monthly family dinners are held to build a sense of community amongst the Clarkson School students and they are themed to address the needs of first year students. Students will enjoy guest speakers, discussions of future educational opportunities, and meetings with faculty mentors. Field trips are also an integral part of the program and they typically combine educational and community-building activities. The University’s clubs, activities and most sports are open to Clarkson School students.

Upon satisfactory completion of the year, students may automatically continue as sophomores at Clarkson University. In most cases, our students have been given credit and appropriate advanced placement at other institutions. The staff provides guidance and help for those who wish to continue their education at other colleges and universities.

Costs of the Clarkson School are comparable to the cost of a year at Clarkson University, and financial aid and merit-based scholarships are available. Please note that students who elect to remain concurrently enrolled in high school and The Clarkson School are not eligible for Federal student aid. Credit may be given for Advanced Placement or college courses taken in high school, dependent on scores or grades achieved.

Applying to The Clarkson School
The Admission Committee evaluates each applicant’s credentials with great care. In general, applicants accepted to The Clarkson School have demonstrated high levels of achievement in their academic work, personal maturity, and engagement in extra-curricular activities. In order to determine whether a student is ready for the early college experience at The Clarkson School, we consider academic preparation as evidenced in the cumulative GPA, rank in class, standardized test scores, and the rigor of the curriculum the student has taken. Attention is given to the letters of recommendation to see if the writer feels that the student is prepared for the early college experience.

A completed application portfolio consists of: Clarkson School Application, Essay, Secondary School Report, official high school transcript, standardized test scores, and at least two letters of recommendations. There is a $50 Application Fee.

All potential Clarkson School students are strongly encouraged to visit the campus for an interview and campus tour. Students who interview with an Admission Representative for The Clarkson School will have their application fee waived.

The priority application deadline is June 1, but earlier application is highly recommended. Admission
decisions are made on a rolling basis for students who have completed their Application Portfolio.

Please note that all students are admitted to The Clarkson School subject to policies and procedures set forth in The Clarkson School Admission guidelines.

To request an Application Portfolio or more information, call or write: Director of Admission, The Clarkson School, Clarkson University, Box 5650, Potsdam, NY 13699; telephone 1-800-574-4425 or 315-268-4425; email tcs@clarkson.edu. Interested students can also visit our web site at www.clarkson.edu/tcs for additional information, as well as access to our online application. The Clarkson School is a one-year (two semester) program.
The Associated Colleges Consortium
The Associated Colleges of the St. Lawrence Valley was chartered in 1970 to stimulate a variety of cooperative activities among Clarkson University, St. Lawrence University, SUNY Canton, and SUNY Potsdam. With only 10 miles separating the four campuses, a significant amount of social, cultural and academic cooperation is possible.

Clarkson students have ready access to most resources at the other colleges. Special events are publicized through joint calendars and other means. Each of the four libraries permits students from all of the colleges to draw upon the total holdings of approximately one million volumes. (See Educational Resources Center.)

Students may cross-register for courses within the consortium, and some sharing of faculty takes place. To be eligible to cross-register, undergraduate students must be enrolled in at least 12 credits at Clarkson, excluding the cross-registered course, eligible students can take up to two courses (not available at their home institution) per academic year totaling no more than eight credits on a space-available basis at one or another of the campuses. An academic year for cross-registration includes the fall and spring semesters.

A form for cross-registration is available at [http://associatedcolleges.org/services/crossregistration](http://associatedcolleges.org/services/crossregistration)

Students will be enrolled as non-matriculated students at the host institution and the courses(s) will be transcribed at the host institution. At the end of the semester, an official transcript will be sent to the student's home institution and credit will be posted as transfer credit on their Clarkson transcript. Undergraduate students must receive a grade equivalent to a C (2.000) or higher at Clarkson. Grades in such courses are not used in computing a student’s GPA. If cross-registration credits result in a course load requiring additional tuition charges, the student is responsible for those additional charges. Students are responsible for any special fees, such as lab fees, fees for registration, or transcript fees.
ACADEMIC REQUIREMENTS FOR UNDERGRADUATE STUDENTS

The Clarkson Common Experience

A Clarkson education prepares each student for today's world and tomorrow's challenges. All Clarkson students are required to meet the learning expectations of the Clarkson Common Experience. The Clarkson Common Experience integrates each student's learning in a major field of study with learning expectations that broaden the student's understanding of our modern world. Each Clarkson graduate achieves objectives in fundamental academic abilities, in personal and social development, and in prescribed areas of knowledge.

Learning Expectations of the Common Experience

Each Clarkson graduate will achieve academic abilities that include:

- mastery of a major field of study,
- effective communication in oral, written, and technological forms,
- critical and imaginative thinking, and
- problem solving skills using both quantitative and qualitative reasoning where appropriate.

Each graduate is also expected to experience personal and social development that includes:

- an increased understanding of and insight into his or her own behavior,
- an appreciation of the need for self-motivated life-long learning,
- an increased social awareness and interpersonal competence, including an appreciation for the value of experiencing diversity, and
- an understanding of and recognition of the need for personal, societal, and professional ethics.

Knowledge is the essence of a university education, and each Clarkson graduate is expected to become knowledgeable beyond his or her major field in these areas:

- the nature of cultures and societies,
- contemporary and global issues,
- the imaginative arts and their role in society,
- science and technology, including their relationship to society and their impact on the environment,
- economic and organizational concepts and decision-making, and
- methods for studying and explaining individual and group behavior.

Components of the Clarkson Common Experience

The Clarkson Common Experience provides a common set of learning expectations and outcomes for all Clarkson students. To achieve these outcomes, each student is required to complete a set of courses and a professional experience. Course work consists of required and elective courses both from within a student's major field and from across the spectrum of all disciplines in the university. Embodied in the Common Experience are four components that serve as common threads through multiple courses:
• learning to communicate effectively,
• developing an appreciation for diversity in both working and living environments,
• recognizing the importance of personal, societal, and professional ethics,
• understanding how technology can be used to serve humanity.

Each of these components is introduced early in the curriculum, reinforced in subsequent courses, and included in upper division courses.

The Communication Component: To develop excellent communication skills, Clarkson requires communication-intensive coursework, first in UNIV190, The Clarkson Seminar, then across the curriculum and in the major. Courses designated as writing intensive are assigned communication points on a scale of one or two (C1 or C2) to indicate the extent of communication experience in that course. Beyond UNIV190, The Clarkson Seminar, students must obtain six more “communication points,” at least two of them within the major at the 300/400 level. Communication points can be obtained by taking designated courses, or, with approval, through co-curricular experiences. Depending on initial abilities and background, students may also be required to enroll in a course that provides writing instruction and support for UNIV190, The Clarkson Seminar. Students for whom English is a second language must also meet the ESL requirements as described below.

The Diversity Component: From the moment they arrive on campus, Clarkson students prepare for the culturally diverse environments they will inevitably experience in their future careers. FY100, First-Year Seminar, helps students “respect and learn from Clarkson’s diverse community.” In UNIV190, The Clarkson Seminar, students will be urged to question their own assumptions and to consider different worldviews. Later in their academic coursework, students will gain a deeper understanding of cultural diversity within and among societies, recognizing how it influences their own actions and affects the lives of those around them. The Professional Requirement in the major area of study will prepare students to enter the global workforce by helping them understand the importance of diversity in the workplace.

The Ethics and Values Component: Through a repeated emphasis on ethics and values, Clarkson promotes in its students the profound reflection necessary to sustain personal, academic, professional, and civic integrity. Students are expected to view this process not just as an academic issue, but as critical for all aspects of their lives, including community activities, sports, student organizations, and work. Issues of personal ethics and values are addressed beginning with FY100, First-Year Seminar. Social and cultural values are discussed as part of UNIV190, The Clarkson Seminar. Several courses in the knowledge sequence emphasize social and cultural values or philosophical and ethical issues. In the Professional Requirement, students identify ethical problems in situations typically encountered within their professions and analyze these issues from different ethical perspectives.

The Technology Component: All Clarkson students are expected to understand the basis of our
modern technological society and to gain an appreciation for both the potential benefits and limitations of technology. Students will be introduced to the basic knowledge necessary for understanding technology through two courses in mathematics and two courses in the natural sciences, including at least one with a laboratory component. A Technology Course is required that reinforces this knowledge in the context of demonstrating how technology may be used to serve humanity. The interrelation of science, technology and society is studied in one of the knowledge area courses.

Requirements of the Clarkson Common Experience
FY100, First-Year Seminar
First-Year Seminar treats personal and social adjustment topics as well as Clarkson values, ethics and diversity. [Fall semester] [Required only for first-year students.]

UNIV190, The Clarkson Seminar
The Clarkson Seminar welcomes first year students into a world of cultures, histories, and the global forces that will shape their personal and professional lives beyond their Clarkson education. Students will define issues within a broad cultural context and gain experience in evaluating and interpreting texts. Seminar classes will be small and thematically structured, with an emphasis on discussion, critical reading and thinking, extensive writing, and collaborative work. [Fall Semester]

Knowledge Areas and University Courses
Students achieve learning outcomes in six broad areas of knowledge. Students are required to take at least five courses that have Knowledge Area designators, and the five courses must cover at least four of the six Knowledge Areas listed below:

- Cultures and Societies (CSO)
- Contemporary and Global Issues (CGI)
- Imaginative Arts (IA)
- Science, Technology, and Society (STS)
- Economics and Organizations (EC)
- Individual and Group Behavior (IG).

Additionally, at least one of these five courses must be a University Course that has two Knowledge Area designators. University Courses are multidisciplinary and address learning outcomes in two of the six areas of knowledge, and students observe and participate in the interaction of disciplines.

Mathematics, Science and Technology Courses
Students must achieve learning outcomes in basic mathematics, science and technology by completing five courses in these areas. Students develop quantitative literacy through the study of mathematics, including probability and statistics. Students must take two courses in mathematics as specified by the major. Students develop an understanding of the principles of science and technology through two natural science courses, at least one of which must have an integrated laboratory component. Students gain an understanding of how technology is developed through a Technology Course that addresses the theme of technology serving humanity.
Communication
Clarkson places a strong emphasis on developing students' abilities to communicate effectively in a variety of contexts using diverse forms of communication. Students must select coursework and possibly extra-curricular activities that carry a total of at least six communications points. Courses and activities with a communications component will be identified as carrying either one or two points. At least two points must come from within the student's major discipline in a course at the 300 or 400 level.

Major Field of Study
A significant characteristic of the Common Experience is the integration of requirements from both outside and within a major field of study. Each student pursues a degree program in a major field and completes a set of prescribed courses to demonstrate mastery of that field. As part of these courses, students achieve outcomes of the Common Experience.

Information Technology Expertise
Students will gain expertise in using information technology and computational software appropriate to their major field of study.

Professional Requirement
The Professional Requirement incorporates learning outcomes involving professionalism, ethics, and diversity. These outcomes include understanding the concepts of professionalism, professional responsibility, and professional ethics, and knowing how the student's professional community promotes, supports, and enforces these concepts. Students should develop an appreciation for the value of diversity in the workplace.

Professional Experience
All students participate in a project-based professional experience following the first-year such as co-op, internship, directed research, or community project clearly related to the student’s professional goals.

Bachelor's Degree Graduation Requirements
1. At least 120 credit hours.
2. At least a 2.000 cumulative average.
3. At least a 2.000 cumulative average in the major field of study for the Class of 2004 or later.
4. Meet the requirements of the Clarkson Common Experience.
5. Meet the requirements for a degree program as determined by the offering department or school.
6. A student entering as a first semester freshman must have been in residence for at least four semesters, including the final undergraduate semester; or, if entering with advanced standing, have completed at least half the remaining upper-level undergraduate work in residence at Clarkson. The program must include a minimum of two semesters (30 credit hours) including the final undergraduate semester.

EAP/ESL Requirement
Students for whom English is a second language must take an English language placement examination upon entering Clarkson. Based on the outcome of this examination, a student may be required to complete one or more English for Academic Purposes (EAP, formerly ESL) courses prior to enrolling in UNIV190, The Clarkson Seminar, or any course assigned one or two communications points.

**NOTE that international students who enter as first-year students and are placed in EAP course(s) may substitute another course for UNIV190, The Clarkson Seminar. The substitute course (1) must have a C1 or C2 designation and (2) must have at least one of the Knowledge Area designators (CGI, CSO, EC, IA, IG, STS) and come from the humanities and/or social science disciplines. The substitute course must be in addition to the 5 required Knowledge Area courses.**

**Grading System**

Grades are reported in accordance with the following system:

<table>
<thead>
<tr>
<th>Undergraduate Letter Grades</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Passed with 4.000 quality points per credit hour</td>
</tr>
<tr>
<td>A</td>
<td>Passed with 4.000 quality points per credit hour</td>
</tr>
<tr>
<td>A-</td>
<td>Passed with 3.667 quality points per credit hour</td>
</tr>
<tr>
<td>B+</td>
<td>Passed with 3.334 quality points per credit hour</td>
</tr>
<tr>
<td>B</td>
<td>Passed with 3.000 quality points per credit hour</td>
</tr>
<tr>
<td>B-</td>
<td>Passed with 2.667 quality points per credit hour</td>
</tr>
<tr>
<td>C+</td>
<td>Passed with 2.334 quality points per credit hour</td>
</tr>
<tr>
<td>C</td>
<td>Passed with 2.000 quality points per credit hour</td>
</tr>
<tr>
<td>C-</td>
<td>Passed with 1.667 quality points per credit hour</td>
</tr>
<tr>
<td>D</td>
<td>Lowest passing grade with 1.000 quality points per credit hour</td>
</tr>
<tr>
<td>F</td>
<td>Failed with 0.000 quality points per credit hour</td>
</tr>
</tbody>
</table>

Therefore, a student who passes a 3-hour course with an A will earn 3 x 4.000 or 12.000 quality points; an A-, 3 x 3.667 or 11.001 quality points, etc. The quality-point average is determined by dividing the total number of earned quality points by the total number of credit hours taken at Clarkson on a traditional basis (A+, A-, B+, B ...). Selected courses may be taken on the Pass/No Credit system where P=passed, quality-point average not affected; NC (no credit) on student’s record for C-, D, or F grade in courses taken as Pass/No Credit, quality-point average not affected.

**Academic Standing**

1. **Academic Warning.** A full-time undergraduate student in Good Standing whose current semester Quality-Point Average (QPA) falls below 2.000 shall be placed on Academic Warning. To be removed from Academic Warning, back to Good Standing, a student needs to complete at least 12 credit hours with a current semester QPA of at least 2.000.
2. **Academic Probation.** A full-time undergraduate student on Academic Warning who fails to complete at least 12 credit hours with a current semester QPA of at least 2.000 will be
placed on Academic Probation. To be removed from Academic Probation, back to Academic Warning, a student needs to complete at least 12 credit hours with a current semester QPA of at least 2.000.

3. **Academic Separation.** A full-time undergraduate student on Academic Probation who fails to complete at least 12 credit hours with a current semester QPA of at least 2.000 will be separated from the University. Any undergraduate student who fails to attain a current semester QPA of at least 1.000 shall also be Separated from the University.

4. **To be continued, if Separated,** an undergraduate must request continuance by submitting a Request for Continuance form available in PeopleSoft. Former students who have been away from Clarkson for at least one semester following an academic separation must request readmission by submitting a Request for Readmission Following Separation form [http://www.clarkson.edu/sas/student_records/documents/requestafterseparation.docx](http://www.clarkson.edu/sas/student_records/documents/requestafterseparation.docx) one month before the beginning of the semester the student wishes to return to the Continuance and Readmission Review Committee at the following e-mail address: registrar@clarkson.edu. The student needs to complete all answers on the form and provide the programs(s) of study the student wishes to be continued in. All cases of continuance require approval of the University’s Continuance and Readmission Committee. If continued, a student’s academic standing will be Academic Probation.

5. The academic standing acquired at the end of any semester shall take effect at the beginning of the next summer school or semester in which the student enrolls.

Further information may be found by contacting Student Administrative Services.

**Dean’s List and Academic Scholar List**

To qualify for the Dean’s List during any semester, a full-time undergraduate student must receive no failures and earn a semester quality-point average of at least 3.250. A 3.800 semester quality-point average or better qualifies a student for the Presidential Scholar List.

Both lists require a student to be enrolled for at least 14 credit hours in a prescribed curriculum of which 12 or more credit hours are graded in the traditional manner (not graded on a pass/no credit basis).

**Degree with Distinction**

A student will receive the bachelor’s degree "with distinction" if his or her cumulative quality-point average is at least 3.250, and "with great distinction" if it is at least 3.750. A more detailed and complete explanation of all academic and graduation requirements at Clarkson appears on the Web at [www.clarkson.edu/](http://www.clarkson.edu/).

**Double Major and Second Degree**

- A single Clarkson bachelor’s degree with a double major is awarded when the student satisfies all curricular requirements for two Clarkson bachelor’s degree programs, but does not qualify for a second degree.

- A student can be awarded two Clarkson bachelor’s degrees. A student qualifies for a second Clarkson bachelor’s degree if he or she satisfies all degree requirements for two different Clarkson bachelor’s degree programs and has a minimum of 150 credit hours, including at least 30 credit hours unique to each program.
Candidates for admission to Clarkson as first-year students are graduates, or soon-to-be graduates of a secondary school, preparatory school or equivalent educational process. In special instances, students are considered for earlier admission provided their academic records demonstrate a very high potential for academic success. In these select cases, students may be required to take an Ability to Benefit Test as prescribed by both state and federal education departments. In addition to superior scholastic achievement, consideration is given to personal qualities, participation in meaningful extracurricular or out-of-school activities, leadership and other information that may indicate the potential for successful completion of a college career.

The Committee on Admission places particular emphasis upon the following:

1. The secondary school record.
2. The results of the SAT Reasoning Test or American College Testing Program (ACT) exams.
3. The personal statement describing a special interest, experience or achievement that is important and meaningful to you.
4. The recommendation of the principal, headmaster, or school counselor.
5. Students for whom English is not their first language are required to submit TOEFL scores.
6. SAT subject tests are optional.

A personal interview and a visit to the campus are strongly recommended. The purposes of the interview are to increase the applicant’s knowledge about Clarkson, provide an opportunity for the applicant to ask questions, and to share information about relevant personal, extracurricular and coursework preparations and backgrounds. For more information, call 800-527-6577 or email admission@clarkson.edu. Candidates for admission to Clarkson as transfer students should review the transfer admission section below.

**Academic Preparation**

A thorough secondary school background in English, mathematics, and science is important in the academic preparation of a candidate for admission. Among the 16 units of secondary school work, the applicant’s record should include the following:

<table>
<thead>
<tr>
<th>Engineering, Science, &amp; Engineering &amp; Management Programs</th>
<th>Business and Liberal Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>4 units</td>
<td>4 units</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Mathematics</td>
</tr>
<tr>
<td>4 units</td>
<td>3 units</td>
</tr>
<tr>
<td>Science, including:</td>
<td>Science</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1 unit</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1 unit</td>
</tr>
<tr>
<td>Physics</td>
<td>1 unit</td>
</tr>
</tbody>
</table>
High school mathematics preparation should emphasize the thorough mastery of fundamental definitions, concepts, principles and operations. The applicant must have sufficient preparation in algebra and trigonometry to begin the study of calculus. Courses in the sciences should stress basic principles and conceptual and quantitative understanding through classroom and laboratory work. Chemistry and physics are particularly important as background for Clarkson’s first-year science courses.

**First-Year Application Procedure**

Students can apply using either the Clarkson University Application or the Common Application. Students may submit either application online or in paper format. The applications are available at [https://www.clarkson.edu/apply-now](https://www.clarkson.edu/apply-now).

The Common Application and Supplement Information Forms are available at [https://www.clarkson.edu/apply-now](https://www.clarkson.edu/apply-now).

A first-year application fee of $50 is required for those who submit a paper application. This fee is nonrefundable and must accompany the application. The application fee is waived for students who submit an application online. Candidates are encouraged to submit their completed applications between October 1 and January 15 of their final year in secondary school. It is the student’s responsibility to make certain that appropriate secondary school transcripts, SAT or ACT test results, and recommendations are provided either with the application or promptly thereafter.

Applications submitted after January 15 are given full consideration in the order of their completion. Offers of admission continue only if space permits.

Students wishing to postpone admission for a year may do so. The procedure is to apply for admission in the senior year of secondary school and, when making the deposit reserving a place in the class, request a one-year extension. Most requests for deferred admission mention an intention to work or to travel before beginning college.

**Early Decision Plan**

Early Decision is an option for students who after careful consideration are certain that Clarkson is their number one college choice. The plan does not prohibit the student from making other applications, but it does commit the student to withdraw other applications if accepted at Clarkson. Early Decision candidates are strongly encouraged to visit the campus and meet with our students, faculty, and staff. The Early Decision deadline is December 1 of the senior year. The high school record through grade eleven, with SAT or ACT scores, and recommendations should be received no later than December 15. If November SAT scores are sent directly to Clarkson, they will be included in the early decision review. Admission notification will occur by January 1. Students who complete the Free Application for Federal Student Aid (FAFSA) will also receive financial aid notification.

**Personal Interview**
An informal interview is very helpful to the student in formulating college plans and is strongly recommended. It provides an opportunity to ask questions and gain a direct impression of the opportunities Clarkson offers and to determine the student’s “fit” with the University. This interview should be held on the campus with an admission staff member if possible, since a personal visit to Potsdam is highly recommended, for students receiving selected scholarships the interview is required.

The Office of Admission is open on weekdays from 9 a.m. until 4 p.m. and on Saturdays by appointment only. Interviews on campus should be arranged by email or phone at least one week prior to the intended visit. A personal interview conducted by a local alumnus/a in the student’s hometown area may also be arranged through the Admission Office. The telephone number, for use during normal business hours, is 800-527-6577 or 315-268-6480 or via email at admissions@clarkson.edu.

Notification
All applicants are promptly notified upon careful review of completed credentials. In the event that it is necessary to postpone action pending the receipt of final grades, or for other reasons, applicants will be notified. Notification of admission begins in January of the senior year if all materials have been received.

Deposit
A $300 deposit is required when the first-year candidate accepts the offer of admission; the class is filled as deposits are received. The deposit is payable any time prior to the Candidate’s Reply Date, as established by the National Association for College Admission Counseling. The reply date is May 1st. The deposit is not refundable if the student decides not to attend Clarkson, and it is not credited to the yearly University charges. The deposit is placed in a special account to provide payment for any outstanding charges for which the student is responsible at the time of graduation or upon withdrawal from the University. At this time, the unused portion is refunded.

Transfer Admission
Clarkson prides itself on the success and strength of its Transfer Program and has put in place numerous transfer articulation agreements with two-year (2+2 programs) and liberal arts institutions (3+2 engineering programs) within the United States. For a current list of institutions with which Clarkson has articulation agreements, please visit www.clarkson.edu. Unlike most institutions, Clarkson has established a separate office within Undergraduate Admission dedicated to the needs of transfer students. As a result of this commitment to transfer students, Clarkson and, the local community, welcome a large number of new transfer students each fall and spring to the campus. The quality and success of these students is consistently reflected in the praise from the faculty and those who graduate with honors.

Application Process
Transfer applicants are defined as those students who have graduated from secondary school and, after the first full-time experience as a matriculated student at another university or post-secondary institution, wish to continue their college education at Clarkson. Transfer applicants are admitted on a rolling basis (as their files become complete); however, the preferred deadline for completed applications is July 1 for fall admission and December 1 for spring admission. Applicants must complete the following steps:

- Submit a completed Transfer Common Application or Clarkson University Transfer Application at [https://www.clarkson.edu/apply-now](https://www.clarkson.edu/apply-now).
- Arrange for official transcripts to be forwarded from each institution previously attended and/or currently attending. Course descriptions in English are required for international students, if necessary.
- Submit the Dean of Students Recommendation, found at [https://www.clarkson.edu/apply-now](https://www.clarkson.edu/apply-now). This can be completed by Dean or equivalent title.
- Arrange for high school transcripts and SAT or ACT scores if applying with fewer than 24 credits, to be sent to the Transfer Office.
- Arrange for TOEFL scores to be submitted if English is not their first language. A 550 (paper based), a 213 (computer based), or 80 (internet based) score is required for admittance. Acceptance of other English testing exams or requests for waivers should be made in writing to the Director of Admission at the address above.
- Submit two Letters of Recommendation, including one from an academic professor/instructor.
- A personal statement describing a special interest, experience or achievement that is important and meaningful to you.

In addition, applicants should be aware that:

- The $50 application fee is waived by applying online or by completing an on- or off-campus interview.
- An on- or off-campus interview is optional, but strongly recommended.

Once a student’s file is complete, it will be reviewed for admission. Students who accept the offer of admission must submit a $300 deposit. (Three hundred dollars of this deposit is placed in a special account to provide payment for any outstanding charges for which the student is responsible at the time of graduation or upon withdrawal from the University. At that time, the unused portion is refunded.)

After acceptance to Clarkson, the appropriate academic department evaluates transcripts to determine the number of credits to be transferred. If needed, the faculty member may recommend courses to be taken in the final term or summer before transfer. The evaluator will also propose a tentative course schedule for the student’s first semester on campus. This evaluation is completed and mailed to the student within approximately two weeks of acceptance.

**Financial Assistance for Transfers**

Clarkson has financial assistance opportunities available for entering transfer students. Please check the Scholarships and Financial Assistance section of this catalog.
**2+2 Transfer Student Policies**
The 2+2 Transfer Program is based on articulation agreements with two-year colleges. These agreements typically specify a program of study at the two-year institution that will prepare students to enter Clarkson with junior status (54+ credits). These agreements cover students wishing to study engineering, business, science, or other disciplines.

Students who do not attend an institution with a formal 2+2 agreement are also encouraged to apply. The lack of an agreement does not mean that a student is ineligible for transfer or will not receive transfer credit for courses. Transfer coordinators interested in establishing a formal agreement should contact the Director, Office of Transfer Admission, Clarkson University, and Box 5610, Potsdam, NY 13699

**3+2 Engineering Transfer Program**
The 3+2 transfer programs are established with many colleges and universities in the United States. Students who participate take the first three years of the prescribed program at a four-year liberal arts institution. Subsequently, they transfer with junior standing into one of Clarkson’s four-year engineering curricula. Upon satisfactory completion of two years of engineering courses, students receive degrees from both institutions. The 3+2 program provides students with an opportunity to obtain an exceptionally broad and firm academic foundation in the arts and sciences coupled with specialized training in an engineering discipline. For further information, please contact the Director, Office of Transfer Admission, Clarkson University, Box 5610, Potsdam, NY 13699 or visit http://www.clarkson.edu/.

**International Student Admission**
As an internationally recognized institution, Clarkson has both undergraduate and graduate students and faculty from more than 44 countries. This multicultural richness is evidenced on campus in our student organizations, successful multicultural events and the number of events/trips scheduled by the International Student Organization (ISO). International students can enter Clarkson as first-year students, transfer students, graduate students, or as part of a University exchange program. For the purpose of admission, an international student is defined as a student who is studying or wants to study in the U.S. on a nonimmigrant visa. This definition does not include permanent residents or refugees who should apply using the same procedures as domestic students.

International students are a critical component of the Clarkson Community and integral to the mission and vision of the University (see The Clarkson Education). Clarkson wants all students to graduate with a firm academic understanding of their chosen field, with excellent written and oral communication and presentation skills, and knowing how to work effectively in diverse multicultural teams.

To assist international students in attending Clarkson, the institution:

- provides merit-based international scholarships to qualified applicants;
- has an International Student Advisor on campus;
- supports several international student organizations; and
- has established a special office in Undergraduate Admission to support international students.
International Student Application Process

Clarkson University is a member of the Common Application. International students, both first-year and undergraduate transfer, need to begin the admission process very early. Completed applications are continuously accepted; however, the preferred deadlines for completed applications are as follows:

**First-Year Applicants:**
- January 15 (Fall Admission)
- October 15 (Spring Admission)

**Transfer Applicants:**
- July 1 (Fall Admission)
- December 1 (Spring Admission)

Applications received after the dates above will be reviewed as space permits. Those applications arriving too late to process will automatically be deferred and considered for the following semester.

International applicants are admitted on a rolling basis (as their files become complete). Priority is given to those who complete their file by the preferred deadlines listed above. International first-year applicants may complete the Common Application online or in paper form. Applicants will also be asked to submit a Supplement Information Form. To request a paper application, please contact the Office of Undergraduate Admission, Clarkson University, Box 5610 Potsdam, NY 13699, call 315-268-2125, or e-mail intladmission@clarkson.edu. The electronic Common Application and Supplement Form can be accessed at [http://www.clarkson.edu/apply-now](http://www.clarkson.edu/apply-now).

All international students are encouraged to contact the U.S. Educational Advising Center within their country to receive guidance regarding the application process. U.S. Educational Advising Centers can provide many services to support international students who are planning on studying in the U.S. To find the center nearest you, visit [www.educationusa.state.gov](http://www.educationusa.state.gov/).

International Student Admission Requirements

To complete your file and process your application, we require the following documents:

*Official Transcripts.* Transcripts should include an English translation, if necessary. They should be accompanied by a school profile for all secondary schools or catalog/course descriptions from the higher institutions the applicant has attended. Mid-year and final grades also should be sent as they become available. National exam scores should also be submitted, if available.

*TOEFL* (Test of English as a Foreign Language) scores submitted (if English is not your primary language). For further information on the TOEFL exam, please visit [www.ets.org/toefl](http://www.ets.org/toefl) or email toefl@ets.org. See the information regarding English requirements below.

*SAT* Reasoning Test for first-year candidates only. For more information about the SAT and how to register for it, contact the College Board at [http://www.collegeboard.org/](http://www.collegeboard.org/). (Students from mainland China are exempt from this requirement.)
Certificate of Finance. The Certificate of Finance is required to verify the student’s sources of financial support for his/her expenses during the one-to-four years at Clarkson. In addition to completing the form, financial documentation verifying the source of funding is required from a bank, employer, or sponsoring organization. Once a student is accepted by the institution, the Certificate of Finance is processed, and the enrollment deposit is submitted, an I-20 will be issued. The I-20 will reflect any merit-based scholarship awarded to the student. The Certificate of Finance form is provided by the International Admission office.

Recommendations. A minimum of two recommendations should be submitted, preferably one from a math or science teacher for applicants wishing to pursue an engineering or science degree. The letters should discuss the student’s ability to succeed at the university level and present reasons to admit the student. Personal Statement. Describe a special interest, experience or achievement that is important and meaningful to you.

Campus Visit/Interview (optional). International students are strongly encouraged to visit the campus. The International Admission Office (tel. 315-268-2125) can greatly assist in coordinating the visit to include pick-up from nearby airports, arranging for student hosts, faculty appointments, campus tours, admissions interview, meals, and hotel arrangements.

Application Fee: There is a required $50 application fee for International first-year applicants. The application fee is waived for students who apply online. Once a student’s admission application file is complete, it will be reviewed and a decision made.

At the time of admission, an International student is considered for a merit-based international scholarship. Such awards vary according to the strength of the student’s academic record and in 2017 ranged from $5,000 to $35,000 per year.

Students who accept the offer of admission must submit a $300 nonrefundable deposit to reserve a place in the entering class. (Note: The deposit is placed in a special account to provide payment for any outstanding charges for which the student is responsible at the time of graduation or upon withdrawal from the University.) At that time, the unused portion is refunded.

Admission Criteria for International Students
Students are selected for admission based on the following:

- Academic performance in secondary school, college or university Class standing
- Recommendation(s)
- SAT and TOEFL (English proficiency) scores
- Participation in extracurricular events, community service, and sports
- Essay and interview (if completed)

Financial Aid/Scholarships for International Students
International Scholarships: All international students are considered for scholarships based on their academic record that includes: grade-point average, class standing, SAT and TOEFL scores and letter(s) of recommendation. No financial assistance application is required. International student awards are available ranging from $5,000 to $30,000 per year.

Honors Scholarship: Students who are accepted into the Clarkson Honors Program receive an additional merit award. The Honors Program is aimed at providing a special environment for top students. To be considered, students need to be in the top 10% of their class and have excellent standardized test scores. For more information, please see the Honors entries in this catalog (see Academic Program Options).

Employment: International students are allowed to work on campus for up to 20 hours per week. The jobs include office worker, lifeguard, food service, etc. The number of positions available varies from year to year.

Loans: There are private lenders who offer educational loans to international students. In most cases, eligible students may borrow up to the cost of attendance less any financial aid for a given year provided they have a U.S. citizen or permanent resident co-borrower. Clarkson does not recommend any particular lender and does not offer a preferred lender list. Students are free to borrow from the lender of their choice.

English Requirements
Admission to Clarkson University requires a minimum TOEFL of 550 (paper based), 213 (computer based), or 80 (internet based) for undergraduates. Students may submit on a case-by-case basis other proof of English proficiency. Request for waiver of the TOEFL exam should be sent to the Coordinator of International Students.

I-20/Visa
U.S. Citizenship and Immigration Services (USCIS): The USCIS is the branch of the U.S. government that regulates the status of all people visiting the United States who are not citizens, including immigrants, visitors, students, and permanent residents (“green card” holders). International students attending Clarkson will be classified as nonimmigrant, subject to a number of regulations. They should take the time to understand their situation and to fulfill legal obligations. The International Students & Scholars Office will assist with Visa/I-20 issues, and can be reached by telephone at 315-268-7970 or by mail at Clarkson University, Box 5651, Potsdam NY 13699, USA.

Getting a Visa: To obtain a visa, students should submit an application and supporting documents with their passport to the U.S. Consulate or Embassy that has jurisdiction for their place of residence. Students must also submit the required SEVIS fee to the U.S. Department of Homeland Security prior to applying for their visa. Visit http://www.fmjfee.com/ for more information.

The supporting documents usually consist of the acceptance letter sent to the student by Clarkson; an I-20 for an F-1 (student) visa; evidence of ability to pay for studies; and sometimes evidence that the student does not intend to become an immigrant to the U.S. Check specific requirements for your home country.
When the Consul is satisfied with the application, the student’s passport will be returned with a visa stamped in it. This stamp allows the student to enter the U.S. only when possessing the I-20.

It is not necessary for Canadian students to obtain a visa at the Consulate. They simply present their I-20, passport and evidence of support at the border. Canadian students are required to pay the SEVIS fee prior to their arrival at the border crossing.

For a list of Consulates and Embassies, including addresses and phone numbers, visit https://www.usembassy.gov/. Further international information can be obtained at http://www.clarkson.edu/international-center.

**Accelerated Admission Graduate School Policy**

This policy is intended to encourage early consideration and preparation for graduate work at Clarkson by highly qualified students. Such students would likely participate in undergraduate research experiences and would have identified a graduate advisor before baccalaureate graduation. These students may also be interested in accelerating their course of study to graduate within three years in order to begin their graduate work as soon as possible.

Any student who completes at least two years of residential study at the University and who has received a baccalaureate degree from Clarkson will automatically be accepted into any Clarkson graduate program for a master’s degree, at minimum, if he or she meets the conditions below at the time of entry to Graduate School. Eligible students must have:

- Graduated in good standing from Clarkson within the previous year and have taken any necessary prerequisite courses for entrance to the graduate program in question;
- Exhibited the quality of character expected of an entering graduate student of Clarkson University, as indicated by a letter from their academic advisor, department chair, or the dean of the school in which their baccalaureate degree resides;
- Maintained a minimum grade-point average of 3.50 in their major; and
- Achieved a School-defined minimum score on a designated national exam; the CUSB requires the GMAT or GRE exam and all others require the GRE.

Applications for graduate admission from students receiving a Clarkson University baccalaureate degree who have not met all conditions specified above will still be considered, but admission will no longer be automatic. Please see the Graduate Catalog for The Graduate School application procedures. Exclusions to the automatic acceptance practice may be in effect per program requirement.

**Non-Degree Students**

An individual may enroll at Clarkson University for non-degree study on either a full-time or a part-time basis. Although such individuals are classified as non-matriculating, they are provided an opportunity for academic study in areas of interest. This status may be used to obtain exposure in a particular area as a foundation for further academic work. Many persons with a degree use this status to gain exposure to another discipline without pursuing a degree.
Students who are enrolled as non-degree students may not earn a degree from the University without gaining admission to a degree-granting program. Non-degree students may accumulate up to 15 hours of coursework credit while in this status and must matriculate into a Clarkson degree program to earn credit beyond this. Persons interested in admission as a non-degree student should contact Student Administrative Services. Non-degree students must obtain approval for the courses they want to take from the director of First-Year Advising and University Studies. This approval is given on the basis of the student’s academic background and personal goals. Such students have no class standing and are not eligible to participate in any extracurricular activities involving intercollegiate competition.

Part-Time Matriculated Students
A person may pursue a baccalaureate degree as a part-time matriculated student. For further information, call Student Administrative Services at 315-268-6451.

Advanced Placement/Advanced Credit
A majority of students receiving Advanced Placement credit at Clarkson have taken the Advanced Placement Examination of the College Board. The most common AP areas are listed below. Credit in most other subjects is awarded when a score of 4 or greater is received. Clarkson also grants credit based on International Baccalaureate Exams and CLEP Exams. Advanced placement credit based on tests or examinations (includes AP, CLEP, IB, etc.) will be limited to a combined 30 credit hours. For further information, contact Student Administrative Services at 315-268-6576.

<table>
<thead>
<tr>
<th>Biology</th>
<th>AP score</th>
<th>Course credit</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1, 2, or 3</td>
<td>No credit</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>BY100 Biology Elective with Lab</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>BY140/142 and BY160/162 Biology I and II with Labs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemistry</th>
<th>AP score</th>
<th>Course credit</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1, 2, or 3</td>
<td>No credit</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>CM131 General Chemistry I</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>CM131/132 General Chemistry I/II</td>
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</table>

<table>
<thead>
<tr>
<th>Computer Science A</th>
<th>AP score</th>
<th>Course credit</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1, 2, or 3</td>
<td>No credit</td>
</tr>
<tr>
<td></td>
<td>4 or 5</td>
<td>CS141 Intro. to Computer Science I</td>
</tr>
</tbody>
</table>

The Computer Science Department schedules an exam in Pascal or C for new students during the fall orientation each year. Students earning a satisfactory grade receive credit for CS141.
Introduction to Computer Science I. The exam may also be taken in other pre-approved languages. Contact the Computer Science Department for more information.

<table>
<thead>
<tr>
<th>Course Credit</th>
<th>Language and Culture</th>
<th>Literature and Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, or 3</td>
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<td>1, 2, or 3</td>
</tr>
<tr>
<td>4 or 5</td>
<td>COMM210 Theory of Rhetoric</td>
<td>LIT101 Literature and Writing</td>
</tr>
</tbody>
</table>

**Mathematics**

<table>
<thead>
<tr>
<th>Course Credit</th>
<th>Mathematics Credit</th>
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</thead>
<tbody>
<tr>
<td>Calculus AB</td>
<td>Calculus BC</td>
</tr>
<tr>
<td>1, 2, or 3</td>
<td>No credit</td>
</tr>
<tr>
<td>4 or 5</td>
<td>MA131 Calculus I</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

To be eligible for AP credit for MA 131 or MA 132, first-year students must also perform at a satisfactory level of the Math Readiness Survey (which is taken in late May) or successfully complete the on-campus advanced-standing exam given in the first week of the fall semester. For more information, see the department webpage at [www.clarkson.edu/node/36206](http://www.clarkson.edu/node/36206).

<table>
<thead>
<tr>
<th>Course Credit</th>
<th>Course Credit</th>
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<tbody>
<tr>
<td>SC141 Intro to Physics I</td>
<td>SC142 Intro to Physics II</td>
</tr>
<tr>
<td>SC141 Intro to Physics I</td>
<td>SC142 Intro to Physics II</td>
</tr>
</tbody>
</table>

Credit awarded for Physics 1 or Physics 2, non-calculus-based physics, will not substitute for PH131 and/or PH132 required by many Clarkson majors.

**Advanced Placement Credit through College Course Transfer**

Students may enter Clarkson having already taken college courses while still in high school. Such courses will be considered for academic transfer credit if a grade of C or better was earned. Students should send an official college transcript as well as a course description to Student Administrative Services as soon as available. The course(s) will be evaluated for transfer credit by the academic department responsible for the course curriculum.

**Credit by Examination**

It is possible in some cases for a new student to take a special advanced-standing exam provided by the respective department. A satisfactory grade enables a student to receive credit. The format and
availability of such exams are at the discretion of the appropriate department chairperson. Students interested in Credit by Examination are encouraged to notify the appropriate department as early as possible so a mutually convenient time to take the exam can be arranged. Note: Students who plan to take either or both the Calculus and Computer Science exams scheduled during fall orientation need make no special arrangements. Those exams are scheduled into orientation.

Clarkson will consider the following for advanced credit: AP, CLEP, GCE, A-levels IB, OACs, French Baccalaureate, Abitur, Italian Maturita and the Swiss Maturite. While credit is usually granted, there are situations, due to the technical nature of some of the programs, where it is not. Each case will be reviewed on an individual basis. Advanced placement credit based on tests or examinations (includes AP, CLEP, IB, etc.) will be limited to a combined 30 credit hours.

**Undergraduate Scholarships and Financial Assistance**

Financial assistance from Clarkson may consist of scholarships, grants, loans, and employment, either singly or in combination. The Office of Financial Aid distributes aid in such a way as to help the maximum number of qualified students enroll and continue in school until graduation. Students will not have the entire cost of education met by Clarkson; every student will be expected to pursue other sources of aid outside the University. Students are encouraged to explore state and private loan and scholarship opportunities through their high school guidance offices or state education departments.

Prospective U.S. first-year students who wish to be considered for aid from Clarkson must complete the following:

- File a completed application for admission by January 15th of the final year of secondary school
- File the Free Application for Federal Student Aid (FAFSA) no later than February 1st. The preferred and easiest method to apply is online at [www.fafsa.ed.gov](http://www.fafsa.ed.gov). The paper form may be available from high school guidance offices. Early Decision Plan applicants will receive appropriate applications and instructions directly from Clarkson’s Admission Office.

Prospective U.S. transfer students who wish to be considered for financial aid must apply for admission to Clarkson and submit the FAFSA form. Financial aid award notices are issued to transfer students on a rolling basis beginning in early March for fall admission and in early November for spring admission.

Retention requirements for financial aid vary depending upon the source and type of aid - federal, state or institutional. Students must maintain Satisfactory Academic Program for Financial Aid. Some institutional, endowed and sponsored scholarships have a minimum GPA requirement. Most institutional scholarships are limited to 8 semesters. Responsibilities of students receiving financial assistance under provisions of one or more federal programs include an annual application (FAFSA) and maintenance of Satisfactory Academic Progress for Financial Aid as published annually in the Clarkson Regulations issued to each enrolled student. These regulations are available to prospective students upon request from the Admissions Office. Please note: Clarkson is required by federal regulations to verify specific information submitted on the FAFSA application. Federal compliance procedures require that parents and/or students submit IRS Income Tax Transcripts and W-2 forms if requested by Clarkson. The eligibility schedules for federal and New York State financial assistance can be found in the annual Clarkson Regulations.
Who receives Clarkson awards?
At Clarkson almost 98 percent of all undergraduates receive some form of financial assistance which includes a variety of resources including grants, scholarships, loans and work study. Over 90 percent of first-year students receive awards directly from the University.

Clarkson Need Based Awards
Clarkson Grant
Substantial funds are available for students who show above-average promise for success at Clarkson.

Award amounts vary according to the financial need and academic achievement. Awards for the academic year are made during the preceding spring by the Office of Financial Aid. Students must file the FAFSA each year to be considered for Clarkson Grants.

Adirondack Scholars Award
Competitive scholarships are available for students who reside in one of the following counties: Clinton, Essex, Franklin, Hamilton, Herkimer, Jefferson, Lewis, St. Lawrence, Warren, or Washington. This award is based on merit and financial need. Students are required to file the FAFSA each year to be considered and/or continue to receive this award.

Clarkson Merit Based Awards
Clarkson Merit Scholarship
A limited number of merit awards are available to both new and continuing students, based solely on prior academic success and the promise of future achievement. Consideration is automatic.

Clarkson Scholarship
A limited number of Clarkson Scholarships are available and are based on the overall admission application including all component including high school GPA, Standardized Exam Scores, Extra-curricular activity, Recommendations, and Essays. Consideration is automatic.

Clarkson SAE Scholarships
Eight $6,000 scholarships are available to outstanding undergraduate students who plan to study engineering at Clarkson. Application is required. Early Decision Applications must be received by December 1 and Regular Decision Applications by January 15th.

Clarkson FIRST Scholarship
This award recognizes select high school seniors who have participated on a FIRST Robotics (FRC) or Tech Challenge (FTC) team. Scholarships range from $1,000 - $6,000 annually. Application is required. Early Decision Applications must be received by December 1 and Regular Decision Applications by January 15th.
Five-Boroughs Scholarship
This award recognizes students from the five boroughs for their hard work and commitment to academics. Recipients will receive $6,000 per year upon enrollment at Clarkson. Application is required. Early Decision Applications must be received by December 1 and Regular Decision Applications by January 15th.

Project Lead the Way
This award goes to select high school seniors who have completed three Project Lead the Way courses in their high school. Application is required. Early Decision Applications must be received by December 1st and Regular Decision Applications by January 15th.

Spirit of Innovation
This scholarship recognizes select high school seniors who have been a Spirit of Innovation participant at their high school. Application is required. Early Decision Applications must be received by December 1st and Regular Decision Applications by January 15th.

SAGE Tuition Rewards (Savings and Growth for Education)
This is a unique, private college savings program. Tuition Rewards are discounts off tuition at participating colleges that represent the minimum scholarship that an eligible student will receive if attending a member college. A student receives Tuition Rewards from multiple "sponsors" (for example, parents and grandparents). A sponsor designates the tuition rewards to the student when she/he begins her/his senior year of high school. If the student does not use the tuition rewards, they are rolled back into the sponsor's account for use by other students.

Clarkson counts Tuition Rewards as part of the normal institutional and merit scholarships. For more information on SAGE Tuition Rewards please visit https://secure.tuitionrewards.com/index.cfm.

Clarkson WACE National CO-OP Scholarship Program
Up to $6000 per year scholarship based on academic record and scholarship application. Any major may apply. Submit the scholarship application online http://www.waceinc.org/scholarship/index.html. Application is required. Early Decision Applications must be received by December 1st and Regular Decision Applications by January 15th.

Young Entrepreneurs and Young Innovators Programs
Prospective students who are selected into these programs at the Young Entrepreneurs and Innovators Business Plan Competition will receive guidance and support from faculty and alumni mentors, office space in our incubator, and will attend Clarkson without payment of tuition for their four year undergraduate career through a combination of merit-based financial aid (after accounting for other aid for which the student may be eligible) and a purchase by Clarkson of 10% equity in their firm at fair market value.
Clarkson Leadership and Achievement Award
This program annually recognizes high school juniors and community college students who demonstrate strong leadership qualities in combination with excellent academic achievement. Participating high schools and community colleges nominate one student each year for the Leadership Award. The student, upon acceptance and enrollment at Clarkson, will receive a $15,000-per-year scholarship for up to four years (total $60,000). These schools may also nominate one student each year for the Achievement Award who, upon acceptance and enrollment at Clarkson, will receive a $12,000-per-year scholarship for up to four years (total $48,000).
Tuition exchange recipients and students who receive the full tuition Clarkson employee benefit are not eligible to receive the Leadership or Achievement Awards.

Honors Program
Students of exceptional ability are accepted into the University Honors Program as entering freshmen or after their first year. All Honors students receive a scholarship as part of their Clarkson financial aid package. (See Academic Program Options).

Phi Theta Kappa Scholarship
For Transfer students only. Amounts vary.

Alpha Beta Gamma Scholarship
For Transfer Students only. Amounts vary.

Alumni Connection Awards
Holcroft Alumni Recognition Awards
Awards based on strong potential for success and the recommendation from a Clarkson alumnus/alumna. Awards are $500 per year—students can only receive one award, regardless of the number of recommendations. We suggest students contact alumni who know enough about them to provide a meaningful reference. Recommendation letters must be submitted by January 15th of the student's senior year (December 1st for Early Decision applicants).

Alumni Family Award
If you indicate on your application for admission that you have a brother, sister, aunt, uncle, or cousin who attended Clarkson, you may qualify for a $500 scholarship. Only one scholarship will be granted regardless of how many alumni family members you have.

Alumni Legacy Award
If you indicate on your application for admission that you have a mother, father, grandmother, or grandfather who attended Clarkson, you may qualify for a $1000 Alumni Legacy Scholarship. Only one scholarship will be granted regardless of how many qualifying family members you have.
New York State Tuition Assistance Program (TAP)

New York State residents may be eligible for TAP. NYS Legal Residency is required. For dependent students, parent NYS residency is also required. Awards range from $500 to $5,165 annually for up to 8 semesters. No repayment is required. Students must file a FAFSA application and an Express TAP application (ETA) each year to be considered for assistance. Awards are based on multiple factors including family size, number of siblings attending college in NYS and NYS taxable income. Students are notified directly by the New York Higher Education Authority Corporation (HESC) of their awards. TAP can only be credited toward tuition charges. For students who receive other tuition only scholarships or grants, the total of TAP and the other aid cannot exceed the tuition charge. TAP awards are credited to the student account after certification of full-time enrollment status and confirmation of satisfactory academic progress. The standards of satisfactory academic progress for TAP are indicated below.

Satisfactory Academic Progress - Effective July 1, 2011 New York State enacted revised regulations regarding satisfactory academic progress. The regulations changed the number of credits a student must accumulate and the cumulative grade point average that must be achieved each semester.

The chart that pertains to you depends upon the year you received your first TAP award and whether or not you are a HEOP student. Please refer to the charts below:

The following chart must be used by all institutions for students who received their first TAP in 2007-2008 through and including 2009-2010 and HEOP students who received their first award in 2007-2008 and thereafter:

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<thead>
<tr>
<th>Calendar: Semester Program: Baccalaureate Program</th>
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<tr>
<td>Prior being certified for this payment:</td>
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<tr>
<td>1st</td>
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<tr>
<td>A student must have accumulated this many credits:</td>
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<td>0</td>
</tr>
</tbody>
</table>

The following chart must be used by all 4 year institutions for students (excluding HEOP) who received their first TAP award in 2010-2011 and thereafter:
Calendar: Semester Program: Baccalaureate Program

Prior being certified for this payment:

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<tr>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>9th**</th>
<th>10th**</th>
</tr>
</thead>
</table>

A student must have accumulated this many credits:

| 0 | 6 | 15 | 27 | 39 | 51 | 66 | 81 | 96 | 111 |

With at least this grade point average:

| 0 | 1.5 | 1.8 | 1.8 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |

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**Other NYS Scholarships**

New York State offers others scholarships in addition to TAP. Visit [www.hesc.ny.gov](http://www.hesc.ny.gov) for more information.

**State Scholarships**

New Jersey, Pennsylvania, Rhode Island, Vermont, and many other states have state-sponsored scholarship programs which can be used at Clarkson. It is suggested students contact their high school guidance office or state education department for information on state scholarships.

**NYS Aid to Native Americans**

A member of any Native American tribe within New York State may be awarded $2,000 annually for a maximum of four years of full-time study. State aid to Native Americans is an entitlement program. There is neither a qualifying examination nor a limited number of awards. Application forms may be obtained from the Native American Education Unit, New York State Education Department, Albany, New York 12234.

**Pell Grants**

Eligibility for the federal Pell Grant is determined by the Department of Education based on the information provided on the FAFSA. Students must submit a FAFSA each academic year. Award amounts are set annually by the federal government. Pell Grants do not need to be repaid.

**Supplemental Educational Opportunity Grant (SEOG)**

This is a non-repayable federal grant, administered by the University and awarded to Pell Grant recipients. Students must submit a FAFSA each academic year. Awards are contingent based upon financial need and the availability of federal funding. Awards typically range from $300 - $600 annually.
Federal Work-Study Program
Federal Work-Study is awarded to eligible students based on the information submitted on the FAFSA. Students are given the opportunity to work at various sites on campus. The amount each work-study student may earn is predetermined by the Office of Financial Aid. The student works a specific number of hours each week during the semester to earn that amount. Students are included in the University payroll system and receive a bi-weekly paycheck. Work-study money is allocated to the University by the federal government and jobs are contingent upon funding.

Veterans Scholarship Program
The Veterans Readjustment Benefits Act of 1966 enables veterans to obtain financial aid for a college education. To be eligible, a veteran must have been released from the service since January 31, 1955, and have served more than 181 days. Information and applications are available at the local Veterans Administration Office. Clarkson provides funds for highly competitive academic awards made annually to Army and Air Force veterans who have been separated from the service for less than a year. The scholarships provide up to full tuition until completion of the degree program.

Air Force Reserve Officers’ Training Corps (ROTC) Scholarships
Merit-based tuition scholarships are available to Air Force ROTC cadets ranging from $3,000 to full tuition and fees. Below is the list of current scholarships:

- TYPE I — Tuition and fees for a full-time student
- TYPE II — $18,000 towards tuition
- TYPE III — $9,000 towards tuition
- TYPE VI — $3,000 towards tuition
- TYPE VIII — Competitive-based academic upgrade of a TYPE II, pays up to 80% of tuition and fees.

TYPE I, II, III, and VIII include a book allowance of $300 per semester, a monthly tax free stipend of: Freshman - $300; Sophomore - $350; Junior - $450, and Senior - $500 and the Clarkson ROTC Incentive Scholarship (see below).

Army Reserve Officers’ Training Corps (ROTC) Scholarships
Army ROTC Scholarship winners receive the full tuition and fee benefit of $47,950 for the 2017-2018 academic year. Winners will also receive a book allowance of $1,200 per year and a tax-free stipend of $300-$500 per month for 10 months. All Army ROTC Scholarship winners are eligible to receive the Clarkson ROTC Incentive Scholarship.

Clarkson ROTC Incentive Scholarship (Army and Air Force)
Eligible ROTC Scholarship recipients may receive the Clarkson ROTC Incentive Scholarship. This
scholarship is valued at the average cost of room and board for an academic year. Proceeds from the Clarkson ROTC Incentive Scholarship may only be used for housing and meal expenses.

**VA Yellow Ribbon Program**
Beginning in August 2009, Clarkson has been approved as a participant in the VA Yellow Ribbon Program. The Post 9/11 Veterans Educational Assistance Act provides partial tuition and fee benefits to eligible active duty, veterans and eligible dependents. As a Yellow Ribbon school, Clarkson will contribute 50% of the remaining cost of tuition and fees. The Department of Veterans Affairs will match this amount. In partnership with the Department of Veterans Affairs, Clarkson will ensure that the full cost of tuition and fees will be covered at a rate of 100%.

**Employment at Clarkson**
Each year various departments and offices on campus employ students who do not qualify for federal work study. Students may interview as the jobs become available. Student Administrative Services is able to assist interested students find employment at the University.

**Aramark (University Food Service)**
ARAMARK hires about 200 students each year. Students may inquire at the ARAMARK office when they arrive on campus.

**Clarkson Payment Plan (PP)**
Clarkson provides a 12-month payment plan, an option attractive to many families. Participation in the PP is extended to anyone with a U.S. address. The applicant determines the amount to be financed; the maximum amount is the total charges less estimated financial aid, and the minimum amount is $1,000 a semester. The PP is available with no finance or interest charges, provided payments are made in accordance with the terms of the contract.

Detailed information regarding the PP and applications are available from Student Administrative Services, Clarkson University, Box 5548, Potsdam, NY 13699-5548; 315-268-6451 or at http://www.clarkson.edu/sas/forms/index.html.

**Clarkson Endowed, Sponsored, and Share Clarkson Scholarships**
Various individuals, foundations and corporations have donated funds to establish scholarships for Clarkson students who meet certain criteria. Endowed scholarships provide assistance to students in perpetuity. Sponsored scholarships provide assistance on an annual basis. In general, these awards are made to incoming new students who show academic promise and leadership potential as well as continuing upper-class students who maintain exceptional cumulative grade point averages and meet other specified criteria. Recipients are selected by the Office of Financial Aid Scholarship Committee. Students are notified of the award by the financial aid package notification process (paper award letter for new students; on-line for continuing students) and
amounts are credited to the student’s account each semester.

Generally, students retain the award for the remainder of their undergraduate career at Clarkson to the extent of a four-year period, provided academic and financial aid satisfactory academic progress standards are maintained. Some scholarships have higher minimum GPA requirements. Scholarships established through the generosity of Clarkson benefactors are awarded with the understanding that there is a moral obligation for the student to repay the funds received. By accepting the grant award, the student accepts the moral responsibility to contribute to Clarkson when financially able to do so. By fulfilling this moral obligation, the student will help replenish the grant fund ensuring Clarkson will be able to offer institutional aid to future students. A list of endowed and sponsored scholarships follows:

**Endowed Scholarships**

- Advani Endowed Scholarship Fund Ackermann
- The Arthur, Dora and JoAnn L. Armani Endowed Scholarship Fund
- Frank and Lee Augsberry Endowed Scholarship Fund
- Azote Inc. Endowed Scholarship Fund
- Gordon W. Babcock ’46 Endowed Scholarship Fund
- Edward J. Barno ’77 Endowed Scholarship Fund
- The Gordon C. "Stub" Baker ’27 Endowed Scholarship Fund
- Raymond and Esther Baker Endowed Scholarship Fund
- The Arnold and Helen Barben Endowed Scholarship Fund
- The H. Douglas and Sara Barclay Endowed Scholarship Fund
- Professor Robert Barr Endowment Scholarship
- Charles E. Becker Memorial Scholarship Fund
- John J. Bero, Sr. Memorial Scholarship Fund
- Robert and Elaine Birrell Endowed Scholarship
- Joseph I Bishop ’61 Endowed Scholarship
- Bart Blaner ’83 Endowed Scholarship
- Andrea K. Bridge ’68 and John E. O’Beirne Endowed Presidential Scholarship Fund
- Bradford Broughton Technical Communications Endowed Scholarship Fund
- William G. Brown ’37 Memorial Endowed Scholarship Fund
- Ernest and Evelyn Bulriss Endowed Scholarship
- A. Douglas Burrow ’31 Endowed Scholarship
- Purcell J. and Edith O. Brownell Endowed Scholarship Fund
- Cala Family Endowed Scholarship Fund
- Janice L. Campbell Endowed Scholarship Fund
- Robert ’61 and Cynthia Campbell Hockey Endowment Scholarship Fund
- Robert W. Carroll Jr. ’63 Graduate Endowed Scholarship Fund
Robert W. Carroll Jr. ’63 Undergraduate Endowed Scholarship Fund
James D. Cartin Memorial Scholarship Fund
Castrinovo Endowed Scholarship
Tony /54 and Carol Cecere Endowed Scholarship
Brian Y. Changlai MD, PhD ’70, Mary C. Daye MD ’71 and Brian A. Changlai MD Endowed Scholarship Fund
John D. and Helen Chapple Endowed Scholarship Fund
Siren R. Chudgar, MD ’96 and Jennifer L. Chudgar Endowed Scholarship Fund
Edwin C. Clark Memorial Scholarship Fund
Clarkson University General Scholarship Fund Clarkson University Memorial Scholarship Fund
Clarkson University Parents Endowed Scholarship Fund
Class of 1947 Endowed Scholarship Fund
Class of 1963 Endowed Scholarship Fund
Frederick W. Cleveland North Country Merit Scholarship Fund
Thomas F. Clough ’62 Endowed Presidential Achievement Scholarship Fund
Doug and Jane Collette Endowed Scholarship Fund
Wallace H. Coulter Endowed Scholarship
Wendall O. Covell Scholarship Fund
Kristin Bandy Craig Memorial Scholarship Fund
The Crane Family Endowed Scholarship Fund
Clarkson University Pep Band Alumni Association Endowed Scholarship
Ralph S. Damon Endowed Scholarship Fund
David E. Davies ’77 Endowed Scholarship Fund
DeCrescenzo-Lupe Endowed Scholarship
Deneka Family Endowed Scholarship Fund
The Development Authority of the North Country (DANC) Endowed Scholarship Fund
R. David Diederich ’64 Memorial Endowed Scholarship
Benson G. Diefendorf Endowed Scholarship Fund
Louis ’54 and Joan Dino Endowed Scholarship
James L. Dohr Accounting Scholarship Fund
Dolphin Legacy Endowed Scholarship
Brendan Donohue ’84 Memorial Endowed Scholarship Fund Richard C. ’55 and Joy M. Dorf Endowed Scholarship Fund
John M. ’59 and Joyce A. Eikenberg Endowed Scholarship Fund
Dave ’69 M’75 and Debi Elkins Scholarship Endowed Fund
Arthur ’47 and Dorothy Engle Distinguished Scholarship Fund
Emerson Foundation Matching Grant for Endowed Presidential Scholarships
Allen ’44 and Kathleen Fales Endowed Scholarship
Famigghia Castronovo/Carrington Endowed Scholarship
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<th>Scholarship Fund</th>
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<td>Daniel P. Fellegara ’06 Memorial Endowed Scholarship</td>
<td>James E. Fassett Endowed Scholarship Fund</td>
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<td>The Samuel B. Feitelberg Physical Therapy Fellowship Endowed Scholarship</td>
<td>The Samuel B. Feitelberg Physical Therapy Fellowship Endowed Scholarship</td>
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<td>Joan and Barry S. Fischer ‘54 School of Business Endowed Scholarship Fund</td>
<td>Joan and Barry S. Fischer ‘54 School of Business Endowed Scholarship Fund</td>
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<td>Barry S. Fischer ‘54 Endowed Scholarship Fund</td>
<td>Ferris Fayette Flint Electrical Scholarship Fund</td>
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<td>J. Ronald Frazer ‘45 Endowed Fellowship</td>
<td>J. Ronald Frazer ‘45 Endowed Fellowship</td>
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<td>Walter Fuss ’51 Endowed Scholarship for Civil Engineering</td>
<td>Walter Fuss ’51 Endowed Scholarship for Civil Engineering</td>
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<td>Phil Garda ’67 Memorial Endowed Scholarship Fund</td>
<td>Phil Garda ’67 Memorial Endowed Scholarship Fund</td>
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<td>Alan W. Gibney ’69 Endowed Scholarship Fund</td>
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<td>Alan W. Gibney ’69 Endowed Scholarship</td>
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<td>Christopher W. Gilmore ‘88 Memorial Endowed Scholarship</td>
<td>Christopher W. Gilmore ‘88 Memorial Endowed Scholarship</td>
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<td>The Ruth and Sandy ‘54 Ginsberg Endowed Scholarship Fund</td>
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<td>Giromini Family Endowed Scholarship</td>
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<td>The Joel ‘57 and Lynda Goldschein Endowed Scholarship Fund</td>
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<td>Frank C. Goodrich Memorial Endowed Scholarship Fund George A. Gray Endowed Fellowship Fund</td>
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<td>Karl A. Greenhagle ’69 Endowed Scholarship Fund</td>
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<td>Anna and Frank Greenwall Scholarship Fund Frank</td>
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<td>E. Gutmann Memorial Scholarship Fund Margaret</td>
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<td>Van Hamlin Haddad Scholarship Fund</td>
<td>Van Hamlin Haddad Scholarship Fund</td>
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<td>Steven W. ’68 and Laurie Hafener Endowed Scholarship Fund</td>
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<td>David L. Hall ’65, ’68 Memorial Endowed Scholarship Erwin C. ’48 and Jeanne Hamm Scholarship Fund</td>
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<td>Hammam Endowed Scholarship</td>
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<td>Terry O. Harden ’76 Memorial Scholarship Fund Frank</td>
<td>Terry O. Harden ’76 Memorial Scholarship Fund Frank</td>
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<td>Harrison-Campbell Endowed Scholarship Fund</td>
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<td>The Lynn P. Harrison, III and Tonya P. Harrison Endowed Scholarship Fund</td>
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<td>William P. Harrison Endowed Scholarship Fund</td>
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<td>Hartman Endowed Scholarship</td>
<td>Hartman Endowed Scholarship</td>
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<td>Ralph E. ’55 and Solita Hawes Endowed Scholarship Fund</td>
<td>Ralph E. ’55 and Solita Hawes Endowed Scholarship Fund</td>
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<td>David ’83 and Sheryl Heacock Endowed Scholarship for Engineering and Management</td>
<td>David ’83 and Sheryl Heacock Endowed Scholarship for Engineering and Management</td>
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<td>Charles W. Hearl ’51 Endowed Scholarship Fund</td>
<td>Charles W. Hearl ’51 Endowed Scholarship Fund</td>
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<td>Steven Hearl ’80 Endowed Scholarship for Civil and Environmental Engineering</td>
<td>Steven Hearl ’80 Endowed Scholarship for Civil and Environmental Engineering</td>
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<td>William Randolph Hearst Endowed Scholarship Fund</td>
<td>William Randolph Hearst Endowed Scholarship Fund</td>
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</tbody>
</table>
Ellen Herrick Endowed Scholarship Fund
Barbara Hewett Lowers Endowed Scholarship
Mildred Dear Hill and Robert R. Hill ’48 Endowed Scholarship
George O. and Clara E. Hodge Endowed Scholarship Fund
Bruce ’69 and Suzanne Hoffman Endowed Scholarship
David L. ’75 and SaraAnne Baker Hopkins Endowed Scholarship
Harry and Florence P. Hull and Katherine Hull Endowed Scholarship Fund
William ’61 and Elaine Hurd Endowed Scholarship Fund
Albert C. and Ella W. Hyde Endowed Scholarship
Michael Lewis Jaeger Memorial Endowed Scholarship
Clarke H. Joy ’29 Memorial Endowed Scholarship
Sol Kaplan Scholarship Fund/ The Kardan Scholarship Fund
Peter A. Klein ’87 Memorial Endowed Scholarship
The Gary F. Kelly Endowed Scholarship Fund
Kent Family Endowed Scholarship
Kenyon Endowed Scholarship Kretis
Family Endowed Scholarship Lally
Endowed Scholarship
William H. ’53 and Beverly Lane Endowed Scholarship Fund
William H. Lane Incorporated Endowed Scholarship Fund Earl L. LaPointe ’22 Memorial Scholarship Fund
Sylvain L. Larose ’75 Endowed Hockey Scholarship Fund
Kristine M. Layn Endowed Scholarship Fund
The Howard E. ’48 and Mary Lou Lechler Endowed Scholarship Cecile and Herman Lieberman Endowed Scholarship Fund Joseph ’82 and Rachel Loo Endowed Scholarship
Barbara Hewett Lowers Endowed Scholarship Fund
The Norman ’51 and Pat Maggione Endowed Scholarship
Jason Marsden ’91 Endowed Scholarship
Egon Matijevic’ Endowed Chemistry Scholarship Fund Peter M. Mayo ’71 Endowed Scholarship
Theodore Sr. and Wanda McWharf Endowed Scholarship
Arthur, Eleanor and Jack Mietz Endowed Scholarship Fund
Gus’82 and Magda Mininberg Endowed Scholarship
Charles T. Mosier ’72 Memorial Endowed Scholarship Fund
Steve Neely Endowed Memorial Scholarship Fund
Theodore ’56 and Priscilla Nelson Endowed Honors Scholarship
J. Paul Nessler ’69 Memorial Endowed Scholarship Fund
The Ronald R. "Monk" Neugold ’52 Endowed Scholarship Fund
The Newell Family Endowed Scholarships:
Edgar A. Newell Endowed Scholarship Fund
Jean S. Newell Society of Women Engineers Endowed Scholarship Fund
W. Allan Newell Endowed Scholarship Fund
New York State Federation of Home Bureaus (St. Lawrence County) Scholarship Fund
New York State Federation of Home Bureaus (Louise Villeneuve McMahon) Scholarship Fund
Newkofsky Endowed Scholarship
Lisa Niles ’78 Memorial Endowed Scholarship Nathan
and Janet Owen Endowed Scholarship Fund
Anthony J. Palumbo ’60, and Phyllis A. Palumbo Chemical Engineering Endowed Scholarship Fund
James P. Papayanakos Scholarship
Kenneth R. and Margaret K. Parker Endowed Scholarship Fund Sara
Snell Petersen/W. Hollis Petersen Endowed Scholarship Fund
The Dick Pratt Endowed Prize Fund (PEP Fund) established by Phyllis A. Palumbo and Anthony J.
Palumbo, M.D. (1960), and Family
Ledyard H. Pfund ’40 Presidential Achievement Award Scholarship Fund
Leo ’25 and Gertrude Ploof Endowed Scholarship Fund
Harold A. and Dorothy Putnam Endowed Scholarship Fund
Peter Radding ’63 Memorial Endowed Scholarship
George H. Randall ’16 and Paul W. Randall ’92 Endowed Scholarship Fund
Stephen C. Redding ’63 Memorial Scholarship Fund
Kyle G. Reichley ’85 Memorial Endowed Scholarship Gerald
’58 and Judith Reinman Endowed Scholarship Fund Relyea
Endowed Chemistry Scholarship
Relyea Endowed Engineering Scholarship
The Ernest ’42 and Constance Richmond Memorial Endowed Scholarship Fund
Ridings Family Endowed Scholarship Fund
Robbins Pay it Forward Endowed Scholarship
Elwyn J. Rodee Endowed Scholarship Fund
Paul Rodgers Memorial Endowed Scholarship
William J. Rowley Endowed Scholarship Fund
Sackett Endowed Scholarship
Francis E. ’63 and Mona K. Sage Endowed Scholarship Fund
Albert L. and Mary S. Sayer Endowed Scholarship Fund
Joseph Scaturro Endowed Scholarship Fund
Fred Schoenhut ’78 Endowed Scholarship Fund for Hockey
Ralph and Jessie Scott Endowed Scholarship Fund
Thomas ’70 and Gayle Sette Scholarship Endowment
Willard G. ’53 and Barbara B Shafer Endowed
Scholarship Fund
Shelly Electric Endowed Scholarship Fund
Thomas E. Simpkins ’30 Endowed Scholarship Fund
John and Verna Sherrick Endowed Scholarship
William ’70 and Sandra Shusda Endowed Scholarship
F. Carlton and Ethel B. Simpson Endowed Memorial Scholarship Fund
Sisson Family Endowed Scholarship Fund
Jay P. Smee ’52 Endowed Scholarship Fund
Barry P. Smith ’65 Endowed Scholarship Fund
James T. and Grace B. Smith Endowed Scholarship Fund
William D. ’54 and Shirley Smith Endowed Scholarship Fund
John Ben Snow Foundation Endowed Scholarship
George J. Stanley Endowed Scholarship Fund
Bill ’64 and Sherrie Taylor Endowed Scholarship
Charles Thomas ’63 Adirondack Endowed Scholarship
The Thompson Family Endowed Scholarship Fund Tilling Endowed Scholarship
Fay ’62 & Nadine Tolman Endowed Scholarship Fund
Toole-O’Donnell Families and MVW Endowed Scholarship Fund
Earle E. Towson ’27 Memorial Endowed Scholarship Fund
Edward F. Tucker Endowed Scholarship Fund
Merton Van Sant/Industrial Development Agency Endowed Scholarship Fund
David A. Walsh ’67 Endowed Scholarship Fund
Melissa A. Walsh ’03, ’05 Memorial Endowed Scholarship
Mr. and Mrs. Robert N. Wagner Scholarship Fund
The Dr. John ’73 and Roberta Wasenko and Family School of Engineering Endowed Scholarship Fund
The Dr. John ’73 and Roberta Wasenko and Family Health Sciences Endowed Scholarship Fund
John ’52 and Jane Ward Endowed Scholarship
Dr. Mark W. and Beulah Welch Endowed Scholarship Fund
John “Jack” S. ’54 and Norma Welch Memorial Endowed Scholarship
Richard and Gina Weniger Memorial Endowed Scholarship
J.R. Weston Endowed Scholarship Fund
James P. Witkowski Endowed Scholarship
Nancy E. and James E. Wood ’64 Endowed Scholarship Fund
MK Woods ’82 Endowed Scholarship Fund
Clarence F. Wright Endowed Memorial Scholarship Fund
Eugene R. Yeager Jr. ’75 Memorial Scholarship Fund
Yentzer Endowed Scholarship Fund
Terry Yurkiewicz ’66 Memorial Hockey Endowed
Scholarship  Zieger Endowed Scholarship Fund
Zuman Award in Chemistry

**Sponsored Scholarships**

AAA Ehrlich Sponsored Scholarship
Barrett Paving CEM Sponsored Scholarship
Bechtel Foundation Sponsored Scholarship
Buyers Sponsored Scholarship
Donald Clark Sponsored Scholarship
Clarkson Club Sponsored Scholarship
Clarkson University General Sponsored Scholarship
Colden Corporation Sponsored Scholarship
James A. Comstock Memorial Sponsored Scholarship
Bill Cotter '73 Sponsored Scholarship
Kristin Bandy Craig Memorial Sponsored Scholarship
Crane Fund for Women and Children Sponsored Scholarship
DDS Companies Sponsored Scholarship
Delta Upsilon Sponsored Scholarship
Daniel P. Fellegara '06 Memorial Sponsored Scholarship Elkins
Sponsored Scholarship
The Brothers of Delta Tau Tau Scholarship in
memory of Michael Fahrenkopf ‘11
Sponsored Scholarship Giromini Family
Glens Falls Contractors Association Sponsored Scholarship
Kenyon Sponsored Scholarship
NewPage Corporation Sponsored Scholarship Edwin
E. Hatch Foundation Sponsored Scholarship Honors
Program Sponsored Scholarship
Hurd Sponsored Scholarship
Ralph A. Janaro Memorial Sponsored Scholarship Lally
Sponsored Scholarship
Michael Lewis Jaeger Memorial Sponsored Scholarship
Andrew Joseph Jankowiak Sponsored Scholarship
Kathleen Kafka and Reed Phillips Memorial Sponsored Scholarship
Key Bank Sponsored Scholarship
Krigman '63 MME Undergraduate Research Grant Fund Sponsored Scholarship
Joel Lerich '62 Memorial Sponsored Scholarship
Edward T. Misiaszek Sponsored Scholarship
Miss New York of the North Country Sponsored Scholarship
National Starch & Chemical Company Sponsored Scholarship
Steve Neely Memorial Sponsored Scholarship
North Country Friends Sponsored Scholarship
O'Brien & Gere Sponsored Scholarship
Karen Mazzella Olmstead ’84 Memorial Sponsored Scholarship
N I Rea Sponsored Scholarship
Gerald '58 and Judith Reinman Sponsored Scholarship
Ruston Paving Company CEM Sponsored Scholarship
Sage Scholars North Country Scholarship
David Scaringe ’01 Memorial Sponsored Scholarship
Todd Stanley Searfoss '79 Memorial Sponsored Scholarship
Sprout Foundation Sponsored Scholarship
Sprout Foundation Sponsored Scholarship #2
Stantec Consulting Services Incorporated Sponsored Scholarship
James P. Witkowski Sponsored Scholarship
Norman Westerman Thurston '63 Sponsored Scholarship
Wildwood Foundation Sponsored Scholarship
Wyeth-Ayerst Sponsored Scholarship

Share Clarkson Direct Scholarships
Gilbert and Ruth Adams Class of 2017 Share Clarkson Direct Scholarship
Dorr B. Begnal ’83 Class of 2015 Share Clarkson Direct Scholarship
Gordon Boncke '47 Class of 2016 Share Clarkson Direct Scholarship  Bruce
G. Boncke ’71 Class of 2019 Share Clarkson Direct Scholarship
David William ’88 and Kristina Art Buchwald Share Clarkson Scholarship
Bouchard/Mountjoy Class of 2013 and 2018  Share Clarkson Direct Scholarship
Amy Castronova ’04 Class of 2014 and 2019 Share Clarkson Direct Scholarship
Cecere Share Clarkson Scholarship
Bill ’73 and Carol Cotter Share Clarkson Scholarship
James M. Coughlin ’53 Share Clarkson Direct Scholarship
Sean ’89 and Lori '89 Donohoe class of 2013 and 2018 Share Clarkson Direct Scholarship
William V. ’83 and Susan Fiacco Share Clarkson Scholarship
Richard Fiesinger ’67, M’68 Share Clarkson Scholarship
Goldman Class of 2013 Share Clarkson Direct Scholarship
Joel'57 and Lynda Goldschein Class of 2014 and 2018 Share Clarkson Direct Scholarship
Fred ’61 and Selma Goldstein Share Clarkson Scholarship
Jim Greenfield ’64 M’66 Share Clarkson Scholarship
Elinore and Beecher ’50 Greenman Classes of 2014, 2015, 2016, 2017 and 2018 Share Clarkson Direct Scholarship
Rosemary A. Harrington Class of 2015 Share Clarkson Direct Scholarship
W. Jon Harrington Class of 2015 Share Clarkson Direct Scholarship
M. Hubbard Construction, Inc. Classes of 2013 and 2016 Share Direct Clarkson Scholarship
Jolyn Foundation Class of 2013, 2014 and 2018 Share Clarkson Direct Scholarship
Gerald ‘61 and Mary Kilanoski Share Clarkson Scholarship
Matthew J. Maslyn ’77 Class of 2015 Share Clarkson Direct Scholarship
Northern Lights Share Clarkson Scholarship
Francis ’85 and Christine Peverly Family Share Clarkson Scholarship
Reinman Share Clarkson Scholarship
John and Verna Sherrick Class of 2013 and 2018 Share Clarkson Direct Scholarship
Richard ’60 and Nancy Siewert, P’ 95 Share Clarkson Scholarship
Robert ’74 and Julia Storms Class of 2015 and 2018 Share Clarkson Direct
Frederick W. Swanton Jr. ’68 Share Clarkson Scholarship
Structural Associates, Inc. Class of 2013 Share Clarkson Direct Scholarship
Alissa, Donna and Steven M. ’68 Tritman Class of 2017 Share Clarkson Direct Scholarship
Susan J. and Ellsworth F. ’65 Vines Class of 2015 Share Clarkson Direct Scholarship
Rita Fadale Wagner Class of 2013 Share Clarkson Direct Scholarship
In Honor of Katherine H. Wears Class of 2019 Share Clarkson Direct Scholarship
Wolfley Family Share Clarkson Direct Scholarship

**Prize Funds**
Gregory P. Arnold ‘73 Memorial Award
Jerome D. Barnum Memorial Prize Randy Brockway ’91 Memorial Award Stephen Brunauer Memorial Award Charles M. Clark Memorial Award Frederica Clarkson Prize
Levinius Clarkson Prize
Vern Clute Memorial Academic Achievement
William Coleman Memorial Prize
Francis Deneen Prize
William Farrisee Memorial Award
Doc Jones Prize
Elizabeth A. Kissel ’90 Memorial Award
Richard Brady Legro ‘82 Memorial Award
Albert Merrill ’13 Faculty Prize
Dr. Carl Michel Prize
Fran Neragin Prize
Perkins Family Memorial Award
Kyle G. Reichley ‘85 Memorial Award for Excellence in Management
Shirley Rogers Memorial Award
Robert E. Rosati ‘52 Award for Excellence in Mechanical Engineering
John B. Russell Memorial Prize
Ilse J. Shaw Award
R. Shankar Subramanian ’69 Prize for Outstanding Scholarly Achievement in Chemical Engineering
Martin A. Welt ‘54 Family Awards

Endowed and Sponsored Prizes and Awards
Clarkson bestows prizes and awards, both monetary and nonmonetary, upon deserving Clarkson students in recognition of their outstanding contributions to the academic, athletic and extracurricular life of the institution. Amounts are credited to the student’s account. A list of prizes and awards follows:

- Raymond R. Andrews Achievement Award
- Gregory P. Arnold ‘73 Memorial Endowed Prize
- The Cathy Avadikian and David Wells Award in Engineering and Management
- Jerome D. Barnum Memorial Award
- Randy Brockway ’91 Memorial Award
- Stephen Brunauer Memorial Award for Excellence in Chemistry
- CEE Junior Faculty Endowed Prize Fund
- Charles Martin Clark Award
- Clarkson Alumni Frederica Clarkson Award
- Clarkson Alumni Levinus Clarkson Award
- Vern Clute Memorial Academic Achievement Award
- Communication & Media Sophomore Award
- Communication & Media Junior Award
- Communication & Media Senior Award
- Major William Coleman Award
- Francis DeLucia ‘66 Endowed Prize Fund Digital Arts & Sciences Sophomore Award
- Digital Arts & Sciences Junior or Rising Senior Award
- Francis Dineen Award
- The Dean William J. Farrisee Memorial Award
- John W. Graham Jr. Leadership Award
- George A. Gray Endowed Fellowship
- Doc Jones Prize Fund
- Elizabeth A. Kissel ’90 Endowed Memorial Award
- The John H. Koerner, Jr. ’76 Intramural Award
- The John H. Koerner, Jr. ’76 Memorial Award
The Martin M. Koshar ’55 Endowed Prize
Richard Brady Legro ’82 Memorial Award
Albert D. Merrill ’13 Endowed Faculty Prize Dr. Carl Michel Award
Mike Morrison ’89 Memorial Coaches Award
Fran Neragin Award
Perkins Family Memorial Award
Mike Morrison ’89 Memorial Coaches Award
Dr. Carl Michel Award
Kyle G. Reichey ’85 Memorial Alumni Award for Excellence in Business Intelligence and Data Analytics
The Shirley Rogers Residence Hall Advisor Award
Robert E. Rosati ’52 Award for Excellence in Mechanical Engineering
Keith M. Russ Memorial Award
John B. Russell Memorial Prize
Ilse J. Shaw School of Management Freshman Award
Ilse J. Shaw School of Management Sophomore Award
Sigurds Arajs Memorial Award
STAFDA Outstanding Junior Award
STAFDA Outstanding Senior Award
Arthur L. Straub Memorial Award
R. Shankar Subramanian Prize for Outstanding Scholarly Achievement in Chemical Engineering
The Peter ’90 and Chandra Wargo Digital Arts & Sciences Award
Arthur J. Wells Prize
Martin A. Welt ’54 Family Awards Loans

William D. Ford Federal Direct Loan
Federal Direct Loans including both subsidized and unsubsidized loans, are low-interest loans funded by the federal government. Maximum annual borrowing limits are: First-year students, $5,500; sophomores, $6,500; juniors and seniors, $7,500. Aggregate loan totals for combined subsidized and unsubsidized loans cannot exceed $31,000 for dependent undergraduates and $57,500 for independent undergraduates. Aggregate loan limits for subsidized loans for all undergraduate students may not exceed $23,000.

Clarkson Loan Funds
Clarkson has 23 separate loan funds from which students may borrow up to $2,000 in any semester, subject to availability and borrower qualification. These loans are available through Student Administrative Services. Repayment begins nine months after a student’s enrollment at Clarkson terminates. A list of loan funds follows:
Frederick E. Anderson Memorial Loan Fund
The Arnold and Helen Barben Scholarship Incentive Loan Fund
Beazer East Loan Fund
Clarkson University Memorial Loan Fund
ABB Combustion Engineering Scholarship Incentive Loan Fund
Arthur Vining Davis Scholarship Incentive Loan Fund
Decker/Dulude/Corning Scholars Program
Demeree-Toohey Scholarship Incentive Loan Fund
Charles A. Frueauff Scholarship Incentive Loan Fund
Kent Family Endowed Scholarship Fund
John H. Koerner, Jr., Loan Fund
Robert and Jane LaHair Scholarship Incentive Loan Fund
Lambda Phi Epsilon Student Loan Fund
Theodore Sr. and Wanda McWharf Endowed Scholarship Fund
George O. Miles Memorial Loan Fund
National Grid Scholarship Incentive Loan Fund
North Country Friends Loan Fund
Alan D. Nolet ’78 Scholarship Incentive Loan Fund
The William S. Prescott Memorial Incentive Loan Fund
Procter & Gamble Chemical Engineering Loan Fund
Elwood (Pete) Quesada Scholarship Incentive Loan Fund
N. L. and Eleanor Rea Student Loan Fund
George E. Snyder Memorial Loan Fund
Walter E. Turnbull Memorial Scholarship Incentive Loan Fund
Arthur O. and Louella K. West Memorial Loan Fund

**Satisfactory Academic Progress for Federal and Institutional Financial Aid**

The US Department of Education has issued new Satisfactory Academic Progress (SAP) requirements effective July 1, 2011. These requirements are part of the Program Integrity Final Regulations issued on October 29, 2010.

The revised Satisfactory Academic Progress (SAP) policy that follows includes the requirements of the Program Integrity Regulations and is effective at the beginning of the Fall 2011 term.

Federal regulations require institutions to evaluate Financial Aid SAP at the end of the Fall, Spring and Summer terms. Both full-time and part-time enrollment status must be evaluated as well as periods of enrollment during which the student did not receive financial aid. All students are encouraged to become familiar with the policy as eligibility for federal and institutional aid may be an important factor in being able to continue one’s education at Clarkson. Students must maintain SAP to retain eligibility for federal and institutional financial aid. SAP is comprised of three areas as required by federal regulations. A student must complete their degree within a specified period, demonstrate PACE by earning a minimum percentage of attempted credit hours and maintain a cumulative GPA that is consistent with meeting graduation requirements. Some institutional scholarships (i.e. Honors, Endowed and Sponsored Scholarships) may require higher academic achievement than the standards outlined in this section. Students with questions regarding specific scholarships are advised to contact their Student Administrative Services (SAS) representative.
Satisfactory Academic Progress Standards for Financial Aid are based on a student’s cumulative record and are separate from Academic Standing determinations. A student who is on academic warning, academic probation, or has been approved to continue after separation retains financial aid eligibility provided the Satisfactory Academic Progress Standards for Financial Aid (detailed below) are met.

1. Maximum Time Frame for Degree Completion
Federal regulations specify that a student must complete his/her degree within 150% of the published length of the program. The maximum time frame at Clarkson is measured in attempted hours. A student must earn 120 credits to receive a Bachelor’s degree. Therefore, to retain financial aid eligibility, the maximum time frame to complete the program for full time students cannot exceed 180 attempted credit hours, 6 years, or 12 terms, whichever comes first. A part-time student cannot exceed 180 attempted credit hours. A student pursuing a second Bachelor’s degree with the first Bachelor’s degree must complete the additional required coursework within the 150% time frame period. There are no appeals to the maximum time frame policy.

Credits counted in the maximum time are all attempted credits and include:
Earned hours – Passed (A-D), Pass (P)

Repeated Courses – all attempts – refer to the REPEATED COURSE section for detailed information.

Withdrawal (LW) and (W) - Maximum time frame regulations do not allow for the exclusion of courses in which a student has remained past the drop period and earned a grade of ‘W’.

Failure (F) Incomplete
(I)

All accepted transfer credits (including consortium agreements & Study-Abroad courses) & test credit (T)

All courses attempted at Clarkson, even if not used to meet degree requirements.

2. PACE Standards
PACE is defined by federal regulations as steady progress towards degree completion within the 150% time frame. Clarkson is required to measure a student’s PACE as a percentage as indicated below:

Cumulative # of Earned Hours
Cumulative # of Attempted Hours

Earned credit hours include:
Grades of A, B, C, D or P (with credit)
All accepted transfer credits and (including consortium agreements & Study Abroad courses) &
test credits (T)

**Attempted credit hours include:**

Earned hours – Passed (A-D), Pass (P)

Repeated Courses – all attempts – refer to the REPEATED COURSE section for detailed information. Withdrawal (LW) and (W) - PACE regulations do not allow for the exclusion of courses in which a student has remained past the drop period and earned a grade of ‘W’.

Failure (F)
Incomplete (I)

All accepted transfer credits (including consortium agreements & Study Abroad courses) and test credit (T)

All courses attempted at Clarkson, even if not used to meet degree requirements.

The chart below indicates the PACE required to maintain Satisfactory Academic Progress for Financial Aid.

New Transfer students are placed on the chart based on the number of transfer credits that have been accepted by Clarkson.

**PACE Chart**

<table>
<thead>
<tr>
<th>Cumulative Attempted Credit Hours</th>
<th>PACE – Minimum required percentage of earned credit hours divided by attempted credit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18</td>
<td>50%</td>
</tr>
<tr>
<td>19-36</td>
<td>50%</td>
</tr>
<tr>
<td>37-54</td>
<td>67%</td>
</tr>
<tr>
<td>55-72</td>
<td>67%</td>
</tr>
<tr>
<td>73-180</td>
<td>67%</td>
</tr>
</tbody>
</table>

3. Qualitative Standards – Cumulative Grade Point Average (GPA)

Federal regulations require the student to meet minimum cumulative GPA standards to retain eligibility for aid. As indicated in the following chart, after 4 semesters a student must maintain a 2.0 cumulative GPA to be eligible for financial aid.

Grades earned in prior attempts of repeated courses are excluded from the GPA calculation. The chart below indicates the GPA required to maintain Satisfactory Academic Progress for Financial Aid.

Transfer students are placed on the GPA chart based on the number of semesters they have attended Clarkson.
Warning Term
A student who does not meet both the PACE and GPA standards is not making Satisfactory Academic Progress for Financial Aid. The student is notified by the Financial Aid Office that he/she is on Financial Aid Warning for the subsequent term of attendance. During the Financial Aid Warning Term, the student retains eligibility for both federal and institutional aid.
A student who meets both the PACE and GPA standards at the conclusion of the Financial Aid Warning Term is again meeting Satisfactory Academic Progress for Financial Aid and is eligible for federal and institutional aid for the subsequent term of attendance.
A student who does not meet both the PACE and GPA standards at the conclusion of the Financial Aid Warning Term is notified by the Financial Aid Office that he/she is not making Satisfactory Academic Progress for Financial Aid and is ineligible for federal and institutional aid. The student is also notified of the Appeal Process.
A student may have more than one Financial Aid Warning Term; however they may not be consecutive.

Appeal Process
A student may file an appeal based on catastrophic or extraordinary circumstances “beyond the student’s control,” such as personal illness or injury, or the death, illness or injury of a family member, relative or close personal friend. A student is allowed to appeal once based on a change of major and once due to severe adjustment issues as a freshman or new transfer student provided that the appeal is needed based on performance after the first two terms of attendance.

There are 3 required elements of an appeal:
1. A written statement from the student - Federal regulations require a student who is requesting an appeal to submit a written statement explaining:
   Why the student was not able to meet the satisfactory academic progress standards.
   What has changed that will allow the student to meet the standards at the conclusion of the academic plan (see #3 below).
2. Supporting documentation - A student requesting an appeal must submit supporting documentation such as a physician’s written statement to substantiate illness or accident, a copy of a death certificate or newspaper obituary, a written statement from clergy, family member(s), or other third party familiar with the student’s situation, or a

<table>
<thead>
<tr>
<th>End of Semester</th>
<th>Minimum GPA – Required at the end of Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>1.00</td>
</tr>
<tr>
<td>Second</td>
<td>1.40</td>
</tr>
<tr>
<td>Third</td>
<td>1.75</td>
</tr>
<tr>
<td>Fourth-Twelfth</td>
<td>2.00</td>
</tr>
</tbody>
</table>
written statement from an academic advisor, professor or counselor.
3. Development of an Academic Plan - As part of the appeal, the student must work
with a Program Administrator to develop an academic plan. The academic plan is
designed to enable the student to meet both PACE and GPA standards at the
conclusion of the plan. An academic plan may entail one or more terms and includes
specific requirements the student must achieve. Although the student is not making
satisfactory academic progress, federal and institutional aid is reinstated for one
term.

A student interested in filing an appeal must begin the process by contacting the Dean of
Students at least two weeks prior to the beginning of the term he/she wishes to receive
financial aid.

A student filing an appeal must authorize the release of pertinent information as part of an
investigation of the facts concerning the failure to meet satisfactory academic progress
standards.

Each appeal will be investigated and reviewed by the Dean of Students in conjunction with
faculty members from the student’s program of study as well as other Clarkson University
personnel as necessary.

The Dean of Students will make a recommendation to approve or deny the appeal and notify
the Office of Financial Aid. The Director of Financial Aid will make the final decision to approve
or deny the appeal.

The Office of Financial Aid will notify the student by letter or e-mail of the final decision. Upon
approval of an appeal including an academic plan the student is placed on Financial Aid
Probation for the next term of attendance.

At the end of the Financial Aid Probationary term, the student will be evaluated according to
the requirements specified in the academic plan. Provided that the student is successfully
meeting the conditions of the plan, the student may continue to receive federal and
institutional aid for the subsequent term. In cases in which an academic plan includes more
than one term, the student will be evaluated at the end of each term. If the student continues
to meet the requirements of the plan, the student remains eligible for financial aid.
A student who does not meet the conditions of the academic plan or whose appeal is denied is
no longer eligible for federal and institutional aid at Clarkson until both standards are met. A
student who is ineligible for aid may regain eligibility by:

1. Taking courses at Clarkson without receiving federal or institutional aid that raises their GPA
to the minimum standards and/or increases earned hours to the minimum PACE
requirements. The student must contact their SAS representative at the end of the term to request an evaluation of their financial aid satisfactory academic progress standing and financial aid eligibility.

2. Transferring in course credit - A transferred course must count toward degree requirements. A minimum of a “C” is required for transfer credits. Transfer credits are included in both attempted and earned hours. Transfer credits for repeated courses may have an effect on the GPA. Transfer credits for non-repeated courses have no effect on the GPA.

Repeated Courses
Courses in which a grade of F or W is recorded on a student’s transcript may be repeated a maximum of 2 times.

The earned hours are counted once. The attempted hours are counted each time and may be used to establish full-time enrollment status.

The student may receive financial aid for these course repeats. Courses in which a student has previously earned credit (A, B,C,D) Federal regulations allow a student to repeat a course once if the student previously earned credit for the course. The repeated course(s) will be used toward full-time enrollment status and are eligible for financial aid. Courses repeated more than once will not count toward enrollment status and are ineligible for financial aid. More than one course may be repeated per term. This does not apply to students receiving International Scholarships.

The attempted hours are counted each time. The earned hours are counted once. The grade from the prior completion(s) is excluded from the GPA calculation.

Academic Grade Changes and Incompletes
For purposes of determining SAP for federal and institutional financial aid, all grade changes including incompletes must be submitted to SAS prior to the 10th day of the subsequent term. This deadline may differ from academic departmental guidelines. The student must contact their SAS representative to request a recalculation of SAP.

Readmitted Students
A student who has left the University for one or more terms and has been readmitted will have Satisfactory Academic Progress for Financial Aid reviewed at the time of readmission. Transfer credits must be received prior to the 10th day of the term in order to be included in the SAP determination.

If the student is determined to be meeting SAP, federal and institutional aid will be offered provided the student meets all other eligibility requirements.

If it is determined that the student is not meeting SAP, the student will be notified by letter of his/her status and the appeal process. There is no guarantee that a readmitted student will receive the same type or amount of institutional aid they received during prior terms.
Total withdrawal from The University & Federal Title IV and Institutional Aid

There are occasions when a student may leave the University prior to the completion of a semester. If a student officially withdraws from the University, takes a leave of absence, unofficially withdraws or is dismissed during the semester, for the purposes of financial aid each of these situations is treated as a withdrawal.

A student intending to leave the University must contact Student Administrative Services to begin the official withdrawal process.

The law specifies how Clarkson must determine the amount of Title IV program assistance a student has earned as of the date of the withdrawal. The Title IV programs that are covered by this law are: Federal Pell Grants, Iraq and Afghanistan Service Grants, Federal Direct Student Loans, PLUS loans, Federal Supplemental Educational Opportunity Grants (FSEOG) and Federal Perkins Loans.

When a student withdraws from the University during the term, the amount of Title IV program assistance that the student has earned up to that point in time is determined by a specific formula. If the student received less assistance than the amount that earned, the student may be able to receive those additional funds. If the student received more assistance than earned, the excess funds must be returned to the US Department of Education.

The amount of assistance that the student has earned is determined on a pro rata basis. The formula is based upon the number of days the student has attended as a percentage of the total number of days in the term. For example, if the student completed 30% of the term, the students earns 30% of the assistance originally awarded. Once the student has completed more than 60% of the term, the student has earned all of the assistance awarded for the term. Federal regulations require this calculation if the student officially or unofficially withdraws, is dismissed or otherwise leaves the University during a term.

Student transcripts are reviewed at the conclusion of each term. If a student received all “F” grades during a term, federal regulations require the Office of Financial Aid to obtain additional information from the Academic Department(s). If the Academic Department(s) determines that the student completed yet failed to meet the course objectives in at least one course, no changes to the student’s financial aid for that term is required. If however, the Academic Department(s) determines that the student did not complete all courses (i.e. stopped attending all courses); the student is considered to have unofficially withdrawn from the University. In this case, the last date of an academic related activity (i.e. documented attendance in class, submission of a homework assignment or the taking of an exam) is used to determine the date of the unofficial withdrawal. If the last date of an academic related activity is after the 60% date of the term, no adjustment to a student’s financial aid for that term is required. If however, the date occurs prior to the 60% date, a Title IV refund calculation is required and necessary adjustments to a student’s financial aid for the term will be made. In absence of a documented last date of an academic related activity, federal regulations require Clarkson to use the midpoint (50%) of the term.
The Federal Title IV Refund Procedure is separate and distinct from the Office of Student Account’s refund policy for tuition, fees and other charges at Clarkson. Therefore, a student may still owe funds to cover unpaid institutional charges.

Clarkson scholarships, grants and loans may be reduced based on individual circumstances, the date of withdrawal and the Student Accounts Refund Policy Satisfactory Academic Progress for students who return to the University for a subsequent term will be reviewed and a determination will be made based on the Maximum Time Frame, PACE and GPA standards as stated above.

**Student Accounts**

**Expenses**

Tuition and other charges at Clarkson are set at the minimum permissible for financially responsible operation, and are considerably below actual costs. Gifts and grants received through the generosity of alumni, industry, foundations, and friends play an important part with regards to the difference.

**University Charges**

The summary of annual fixed University charges for the 2018-2019 academic year follows:

**Fixed Charges: 2018-2019**

**Tuition**

- Undergraduate full-time charge (12 to 19 credit hours) $48,194
- Undergraduate Credit Hour Rate (11 hours or less) $1,606
- Undergraduate students registered for 12 to 19 credit hours (inclusive) are designated as full-time students and are charged at the full term rate. Students exceeding the time load of 19 credits will be charged at the credit-hour rate for each credit hour in excess of 19 in addition to the full-time tuition rate charge.

- Room (based on two person in freshman housing) $8,008
- Meal Plans $6,900

**Fees Per Year**

- Undergraduate Students $1,250
- Clarkson School Students $1,800

- Undergraduate Full-Time Direct Costs $64,352

Other expenses, such as travel, books, and spending money, vary. An estimated figure is approximately $3,830 for one academic year.

**Clarkson University Student Association (CUSA) Activity Fee**

Assessed by CUSA on all undergraduate students carrying a minimum of 6 credit hours per
Semester and distributed to clubs & organizations.

**Clarkson University Student Association (CUSA) Campus Improvements Fund Fee**
Assessed by CUSA on all undergraduate students carrying a minimum of 6 credit hours per semester for capital projects as identified by students.

**Health, Wellness & Recreation Facilities Fee**
Assessed to all full-time undergraduate students for the operation of the recreational facilities, fitness center and the health center services.

**The Clarkson School Event Fee**
Assessed to The Clarkson School students to assist in covering various student activities such as field trips. In addition, a portion of the fee provides for any guest lectures and special meals sponsored by The Clarkson School.

**Health Insurance**
Health insurance is mandatory at Clarkson University for non-distance program students. All students must either have health insurance coverage under their own policy or be covered by their parent’s policy or enroll in Clarkson’s contracted insurance. The rate for 2018-2019 is $1,993 for coverage from 8/1/18 – 7/31/19. To assure clearance for check-in, students need to complete an e-form in their Student Center in PeopleSoft on a yearly basis.

**Payment**
Payment in full for all tuition, fees, residence and dining expenses must be made on or before the financial clearance deadline published at the beginning of each term in the pamphlet of Financial Information, which is sent to students with the first tuition invoice for the term. Check-in cannot be completed and the student cannot be admitted to class unless satisfactory payment is made. All accounts will be assessed a late fee charge of 1% of the unpaid balance monthly. Enrollment indicates that the student agrees to pay all attorney’s fees and other reasonable collection costs necessary for the collection of any amount not paid when due and will be added to the unpaid balance. It is the University’s policy to withhold transcripts and diplomas until the balance of the account is paid in full.

**Refund Policy**
All refunds will be based on the last recorded day of attendance as determined by and attested to by the Student Administrative Services Office. A student who withdraws within the first 20 class days of the term is eligible to receive a refund using the following refund calculation:

**Semester/Trimester (Fall/Spring) Program Students**

<table>
<thead>
<tr>
<th>Days of Classes</th>
<th>Refund Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the 1st day of the term</td>
<td>100% refund</td>
</tr>
<tr>
<td>Day 1 – Day 5 of Classes</td>
<td>90% refund</td>
</tr>
<tr>
<td>Day 6 – Day 10 of Classes</td>
<td>75% refund</td>
</tr>
<tr>
<td>Day 11 – Day 15 of Classes</td>
<td>50% refund</td>
</tr>
<tr>
<td>Day 16 – Day 20 of Classes</td>
<td>25% refund</td>
</tr>
<tr>
<td>Day 21 – Last day of the term</td>
<td>0% refund</td>
</tr>
</tbody>
</table>
The corresponding refunds calculations above will be applied to tuition, CUSA Activity Fee, CUSA Campus Improvements Fund Fee, Health, Wellness & Recreation Facilities Fee, The Clarkson School Event Fee, Room & Meals (consumption is not taken into consideration).

- There will be no refund of the Student Health Insurance Premium if the coverage is in force.
- This refund policy has been established in conformance with the Higher Education Act of 1992, as amended in April & November of 1994 and by GEN-95-22 (Dear Colleague Letter) of April of 1995.
- An exception to the Refund Policy has been made for students that are enlisted and active (prior to the start of the term) in the military that are forced to withdraw during a term due to a military deployment or a change of assignment. Official documentation of the deployment or change of assignment may be requested by Clarkson University from the student for the exception to the Refund Policy to take effect. The following adjustments to the student’s account can be expected if the student meets the aforementioned criteria:
  - 100% refund of tuition, fees and room
  - This exception to the Refund Policy does not apply to Board or Student Health Insurance.
The School of Arts & Sciences offers an array of major programs. Some are in traditional disciplinary areas such as Biology, Chemistry, Mathematics, History, and Psychology, while others, such as Biomolecular Science and Digital Arts & Sciences, integrate knowledge from several disciplinary areas to address recently emerging issues. All benefit from Clarkson’s strengths in engineering and business, and all are focused on preparing students for graduate school, professional programs, and careers.

All Clarkson students complete the Clarkson Common Experience, which includes courses in science, mathematics, technology, and the humanities and social sciences. These are critical components of every degree program in the University, and through them students acquire the quantitative reasoning, critical thinking, and effective communication skills and the basic scientific knowledge that are essential in their major programs and in their development as responsible citizens, effective professionals, and technological leaders.

Our rapidly changing and increasingly complex world makes it desirable for students to extend their education beyond the boundaries of their particular major. The School of Arts & Sciences provides students in all areas of the University the opportunity to do so through its numerous minor programs.

Faculty

Biology
Tom A. Langen Chair. Professors: Tom A. Langen, Thomas Lufkin, Michael R. Twiss, Craig Woodworth; Associate Professors: Damien Samways, Kenneth Wallace; Assistant Professors: Andrew David, Cintia Hongay, Petra Marion Kraus, Stefanie Kring, Shantanu Sur, Susan Bailey; Adjunct Professor: Marcia Anne Blackman; Adjunct Assistant Professor: Jr-Shiuan Lin, William Walter Reiley, Alexei V Tumanov; Instructor: Michael Tighe

Chemistry and Biomolecular Science
Devon Shipp Chair. Professors: Silvana Andreescu Egon Matijević Chair in Chemistry, Dan Goia CAMP Distinguished Professor, Evgeny Katz Milton Kerker Chair and Professor in Colloid Science, Richard E Partch Senior University Professor, Devon Shipp; Associate Professors: Phillip A. Christiansen, Costel Darie, Artem Melman, Galina Melman, James C. Peploski; Assistant Professors: Daniel Andreescu, Ryan Brown, Xiaocun Lu, Mario Wriedt; Adjunct Assistant Professor: Mohammad Rahman; Research Assistant Professor: Alisa Genevieve Woods; Distinguished Emeritus Professor: Petr Zuman
Communication and Media
Jason Schmitt Chair. Professors: Stephen Farina, Johndan Johnson-Eilola; Associate Professors: Bill Karis, Alex Lee, Steven Pedersen, Jason Schmitt; Assistant Professor: Eric York; Instructors: Dan Dullea, Danielle Johns, Courtney Johnson-Woods, Zachary Miller; Emeritus Professors: William Dennis Horn

Computer Science
Christopher Lynch Chair. Professor: Christopher Lynch; Associate Professors: Alexis Maciel, Jeanna Matthews, Christino Tamon; Assistant Professors: Natasha Banerjee, Sanjib Banerjee, Yaoqing Liu; Emeritus Faculty. Professor: James Lynch; Instructor: Jan Searleman

Humanities and Social Sciences
Bill Vitek Chair. Professors: Stephen Casper, Jonathan Goss, Sarah Melville, Bill Vitek, Sheila F. Weiss; Associate Professors: Stephen Bird, Ellen C. Caldwell, Laura E. Ettinger, Michael Garcia, Alastair Kocho-Williams, Christopher C. Robinson, Annegret Staiger, Christina Xydias; Assistant Professors: Jennifer Ball, Camille Frazier, Brian Hauser, Claudia Hoffmann, Matt Manierre, Lisa Brady, David M. Craig, Lewis P. Hinchman, John N. Serio, Jan Wojcik

Mathematics
Joseph Skufca Chair. Professors: Erik Bollt, Kathleen Fowler, Scott Fulton, Joseph Skufca; Associate Professors: Sumona Mondal, Guohui Song, Jie Sun, Guangming Yao; Assistant Professors: Prashant Athavale, Marko Budisic, Ying He, Jonathan Martin, Diana White; Instructors: Michael Felland, Christopher Martin, Sara Morrison, Brad Smith; Visiting Assistant Professor: D. Kumudu Arachchi

Physics
Dipankar Roy Chair. Professors: Daviel ben-Avraham, Dip Roy, Lawrence Schulman, Associate Professor: Maria Gracheva; Assistant Professors: Dmitriy Melnikov, Michael Ramdsell, Jan Scrimgeour, Joshua Thomas; Professor Emeritus: M. Lawrence Glasser

Psychology
Andreas Wilke Chair. Professor: Robert Dowman; Associate Professor Jennifer Knack, Lisa Legault, Andreas Wilke; Assistant Professor: Elizabeth Pienkos

BS IN APPLIED MATHEMATICS & STATISTICS
Joseph Skufca, Program Chair
jskufca@clarkson.edu

Applied mathematics is a problem-solving profession. Mathematical and statistical methods provide the tools for the analysis and solution of real-world problems which can be formulated quantitatively. While all technical fields require a solid foundation in mathematics, students of applied mathematics and statistics dig deeper, developing expertise both in mathematical methods and in the applications areas which interest them.
The BS in Applied Mathematics and Statistics is designed for students who wish to develop their mathematical skills and apply them to challenging problems. In addition to gaining a solid and broad education in applied mathematics and statistics, students also choose applications electives in areas of engineering, science, or business that give rise to significant applications of mathematics. The program is sufficiently flexible that students can also complete a minor or double major in another field, such as computer science, physics, biology, or business. Students are encouraged to participate in research projects with faculty, starting as early as their freshman year. Graduates work in industry, business, research laboratories, or government agencies as applied mathematicians, statisticians, and actuaries. Some continue their education in graduate programs in applied mathematics, statistics, or applications areas.

The applied math and statistics curriculum is designed so that students learn to:

- Reason clearly, logically, and analytically;
- Demonstrate a solid understanding of the core material and a deeper understanding of at least one area of mathematics;
- Work effectively with standard mathematical software packages and write mathematical programs using a high-level computer language;
- Apply mathematical knowledge to solve real-world, open-ended problems;
- Read mathematical texts and literature and write mathematical proofs;
- Communicate effectively, both orally and in writing; and
- Work effectively both individually and in teams.
- In addition to the major in Applied Mathematics and Statistics, the mathematics department offers a separate major in Mathematics, with more emphasis on abstract mathematics and proof; this major may be more appropriate for students whose primary interest is in the mathematics itself or are planning graduate study in mathematics or statistics.

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>Mathematics and Statistics*</td>
<td>44</td>
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<tr>
<td>Computer Science (CS141)</td>
<td>4</td>
</tr>
<tr>
<td>Physics (PH131 and PH132)</td>
<td>8</td>
</tr>
<tr>
<td>Science (BY, CM, or PH)</td>
<td>3</td>
</tr>
<tr>
<td>First-Year Seminar (FY100)</td>
<td>1</td>
</tr>
<tr>
<td>The Clarkson Seminar (UNIV190)</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge Area/University Courses</td>
<td>15</td>
</tr>
<tr>
<td>Application Electives**</td>
<td>15</td>
</tr>
<tr>
<td>Free electives***</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
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</tbody>
</table>

*Required courses: MA131, MA132, MA200, MA211, MA231, MA232, MA339, MA363, MA377,
MA499, and STAT383; three courses from the list MA331, MA332, STAT381, STAT382, STAT384; plus either MA451 or MA453.

**Application Electives are chosen from an approved list of courses from other departments; check with the department for details.

***Up to 12 credit hours of advanced (300- or 400-level) coursework in Aerospace Studies or Military Science may count toward graduation requirements. Aerospace Studies or Military Science credits at the 100 and 200 levels do not count toward the required 120 hours. Other restrictions may apply; check with the department for details.

### Applied Mathematics & Statistics Sample Curriculum

#### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA132</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>PH131</td>
<td>Physics I</td>
<td>4</td>
<td>PH132</td>
<td>Physics II</td>
<td>4</td>
</tr>
<tr>
<td>CS141</td>
<td>Computer Science I</td>
<td>4</td>
<td>MA200</td>
<td>Math Modeling &amp; Software</td>
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<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
<td>3</td>
<td></td>
<td>Knowledge Area Course</td>
<td>3</td>
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<tr>
<td>FY100</td>
<td>First-Year Seminar</td>
<td>1</td>
<td></td>
<td>Free Elective (CS142 rec.)</td>
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#### SOPHOMORE YEAR

<table>
<thead>
<tr>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA211</td>
<td>Foundations</td>
<td>3</td>
<td>MA231</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>MA232</td>
<td>Differential Equations</td>
<td>3</td>
<td>MA339</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Science Elective</td>
<td>3</td>
<td>STAT383</td>
<td>Probability and Statistics</td>
<td>3</td>
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<td></td>
<td>Knowledge Area Course</td>
<td>3</td>
<td></td>
<td>Knowledge Area Course</td>
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</tr>
<tr>
<td></td>
<td>Application Elective</td>
<td>3</td>
<td></td>
<td>Application Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>15</strong></td>
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#### JUNIOR YEAR

<table>
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<tr>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA377</td>
<td>Numerical Methods</td>
<td>3</td>
<td>MA363</td>
<td>Mathematical Modeling</td>
<td>3</td>
</tr>
</tbody>
</table>
BS IN BIOLOGY
Tom Langen, Program Chair
tlangen@clarkson.edu

Biology is the study of life in all of its unique forms and complexity. Modern biology spans numerous research areas that explore the diversity of life at multiple levels of organization: molecules, cells, organ systems, species, ecosystems, and biosphere. The foundation of the Biology Program is a core curriculum of interactive classroom and laboratory experiences covering fundamental knowledge in biodiversity, cellular and molecular biology, genetics, microbiology, anatomy, physiology, and ecology. Biology majors typically pursue career paths in biotechnology, ecology and environmental science, or health-related professions. The course curriculum for the Biology Major is designed to realize the following learning outcomes: Achieve proficiency in biology by mastering the core knowledge of the discipline and specializing in one or more subfields of the life sciences.

- Acquire scientific skills through inquiry-based laboratories and practical learning experiences that include the opportunity for directed study and thesis research guided by a professor.
- Develop the ability to think critically and solve problems though exposure to quantitative laboratory- and field-based research, primary research literature, and the history of biological science. Learn how to use appropriate technology, methodology and informational tools that accelerate progress in the workplace such as computer software, bioinformatics, genetic engineering, cell culture,
- Master oral and written communication skills essential for work in all fields of biology and the health professions.
- Develop social skills of interpersonal interaction including an awareness and appreciation of cultural diversity that enhances progress and enriches the pursuit of scientific endeavors.
- Gain strong appreciation of the importance of professional ethical behavior in society and the workplace.
- Obtain insight to current issues of bioethical concern ranging from preservation of global biodiversity to the improvement of human health through modern advances in biotechnology. Learn about career opportunities in the life sciences in preparation for seeking professional employment after graduation.

Upper-level Biology majors choose from a variety of elective courses that build upon fundamental principles and allow students to explore areas of personal interest. We encourage students to complement a program of bioscience courses drawn from research and teaching strengths of the department with relevant courses in other basic sciences, mathematics, engineering, business, and humanities. Students may also take advantage of courses offered through the Associated Colleges Program or the Clarkson Trudeau Biomedical Scholars Program (see below) to broaden their educational experience. The large array of choices in biological sciences can be used to tailor a customized career plan leading to graduate school or a professional degree program. Students interested in a more specialized background may consider interdisciplinary studies in chemistry, biomolecular engineering, mathematics, physics, psychology, environmental engineering, environmental science and policy, and environmental and occupational health.

Specific course requirements of the Biology Major are listed below, along with a suggested schedule. Students are guided throughout the year with personal advising and mentoring by Biology faculty members. Undergraduate participation in basic or applied research is highly encouraged and available through work in faculty laboratories, the senior thesis, summer research programs, and internships.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY 140</td>
<td>Biology I: Inheritance, Evolution &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>BY 142</td>
<td>Biology I Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BY 160</td>
<td>Biology II: Cell and Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BY 162</td>
<td>Biology II Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BY 214</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BY 401</td>
<td>Professional Assessment</td>
<td>0</td>
</tr>
<tr>
<td>CM 131</td>
<td>Structure and Bonding &amp; Chemistry Lab I</td>
<td>4</td>
</tr>
<tr>
<td>(Or CM 103 &amp; CM 105)</td>
<td>General Chemistry I</td>
<td>3,2</td>
</tr>
<tr>
<td>CM 132</td>
<td>Equilibrium and Dynamics &amp; Chemistry Lab II</td>
<td>4</td>
</tr>
<tr>
<td>(Or CM 104 &amp; CM106)</td>
<td>General Chemistry II</td>
<td>3,2</td>
</tr>
<tr>
<td>CM 241</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
</tbody>
</table>
Each of the following elective categories must be satisfied:

- **Biology Electives**: 21-23
- **Lab Electives**: 4-6
- **Math and Computer Science Electives**: 9
- **Professional Experience**: 0

### Elective Categories:

- **Biology Electives**: Any course under the “BY” subject area
- **Lab Elective**: Students must take two BY lab courses (200-level or higher), excluding BY 405 and BY 410
- **Math and Computer Science Elective**: Three math or computer science courses (100-level or higher), including 1 calculus course and 1 statistics course
- **Professional Experience**: One of the following courses: BY 405, BY 410, BY 495, BY 498, BY 499

The following is a typical course sequence for the biology curriculum. Not all students will complete these courses in the outlined order.

### The Suggested Course Sequence for Biology Students

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>BY 140</td>
<td>Biology I</td>
</tr>
<tr>
<td>BY 142</td>
<td>Biology I Lab</td>
</tr>
<tr>
<td>CM 131</td>
<td>General Chemistry I</td>
</tr>
<tr>
<td>MA 180</td>
<td>Intro to College</td>
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<tr>
<td>UNIV</td>
<td>The Clarkson</td>
</tr>
<tr>
<td>FY 100</td>
<td>Freshmen Seminar</td>
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<tr>
<td><strong>17</strong></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
<td><strong>Cr. Course</strong></td>
</tr>
<tr>
<td><strong>Course</strong></td>
<td>Organic Chemistry I</td>
</tr>
</tbody>
</table>
Science has undergone a remarkable transformation over the last few years, and nowhere has the impact been so dramatic as at the interface between biology and chemistry — the biomolecular sciences. Recent developments in biotechnology, biofuels, pharmaceuticals, genetic engineering and medicine have been truly astounding and will only continue throughout the 21st century. Few sciences will have the impact on our lives as this one, and few offer the opportunities for individuals to make such a vast variety of contributions. Clarkson University's program in Biomolecular Science is designed to:

- Provide students with the knowledge base to meet the challenges of professional careers spanning the full range of the chemical and biosciences.
- Provide an intellectually stimulating environment, including exposure to open-ended problems of the type encountered in industry, graduate school and professional programs in the health sciences.
- Provide an environment that ensures students the opportunities to develop communication skills and professional relationships.
This is a truly interdisciplinary program, building on strong foundations in both chemistry and biology, and finishing with capstone courses and labs in biochemistry, molecular biology and biotechnology. Professional and free electives allow students to build specializations and to participate in faculty-directed research, a “trademark” of science education at Clarkson.

Careers span the full range of the chemical and biological sciences, with exceptional opportunities in the pharmaceutical and medical industries, in biotechnology and genetic engineering, biofuels, forensics and the health sciences. The program at Clarkson is also excellent preparation for entrance into professional schools in medicine and dentistry, or for the Doctor of Physical Therapy or Physician Assistant programs at Clarkson.

**CORE REQUIREMENTS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY140</td>
<td>Biology I: Inheritance, Evolution and Diversity</td>
<td>3</td>
</tr>
<tr>
<td>BY160</td>
<td>Biology II: Cellular and Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BY162</td>
<td>Biology II Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BY214</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BY412</td>
<td>Molecular Biology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BY450</td>
<td>Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BY451</td>
<td>Biochemistry II</td>
<td>3</td>
</tr>
<tr>
<td>BY470</td>
<td>Biochemistry &amp; Biotechnology Laboratory</td>
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</tr>
<tr>
<td>CM103</td>
<td>Structure and Bonding</td>
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</tr>
<tr>
<td>CM105</td>
<td>Chemistry Laboratory I</td>
<td>2</td>
</tr>
<tr>
<td>CM104</td>
<td>Chemical Equilibrium and Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>CM106</td>
<td>Chemistry Laboratory II</td>
<td>2</td>
</tr>
<tr>
<td>CM221</td>
<td>Spectroscopy</td>
<td>3</td>
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<td>CM223</td>
<td>Spectroscopy Laboratory</td>
<td>3</td>
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<td>CM241</td>
<td>Organic Chemistry I</td>
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<td>CM242</td>
<td>Organic Chemistry II</td>
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<td>CM244</td>
<td>Organic Chemistry Laboratory I</td>
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<td>CM371</td>
<td>Physical Chemistry I</td>
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<td>CM372</td>
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<td>MA131</td>
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</tr>
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<td>MA132</td>
<td>Calculus II</td>
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<tr>
<td>PH131</td>
<td>Physics I</td>
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<tr>
<td>PH132</td>
<td>Physics II</td>
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Clarkson and First-Year Seminars- 4 Credits
Knowledge Areas- 12 Credits
Total -120 Credits
## Biomolecular Science Sample Curriculum

### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>CM103</td>
<td>Structure and Bonding</td>
<td>3</td>
<td>CM104</td>
<td>Equilibrium and Dynamics</td>
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</tr>
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<td>CM105</td>
<td>Chemistry Lab I</td>
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<td>CM106</td>
<td>Chemistry Lab II</td>
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</tr>
<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA132</td>
<td>Calculus II</td>
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</tr>
<tr>
<td>BY140</td>
<td>Biology I</td>
<td>3</td>
<td>BY160</td>
<td>Biology II</td>
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<td></td>
<td></td>
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<td>KA Elective</td>
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### SOPHOMORE YEAR

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### JUNIOR YEAR

<table>
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<td><strong>TOTAL</strong></td>
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### 4+1 Plan for Masters of Basic Science (MBS) & Interdisciplinary Bioscience & Biotechnology (IBB-MS) MS Degree Programs

**Objectives:** Provide academically-strong Clarkson undergraduates a head-start and rapid track to a bioscience M.S. degree.

**Outcomes:**

4+1 M.S. Degree Students will

1) Complete all of the requirements and meet the outcomes of the M.S. graduate program in which they matriculate.
2) Complete the M.S. degree after one year of additional classwork beyond the B.S. degree.

**Program Prerequisite:**
Students will apply in the junior year (5th or 6th semester) at Clarkson University.

**Requirements:**
1) Either a Clarkson University Biology or Biomolecular Science Major or else another Clarkson University major that has taken the introductory biology core (BY 140, 142, 160, 162) and genetics (BY 214).
2) GPA minimum of 3.25 overall and for Biology courses.
3) Likelihood of completing undergraduate degree requirements plus two additional graduate courses during the senior year (7th and 8th semesters).
4) Short essay explaining why the student is motivated to pursue a MS degree.
5) Specification of which M.S. program the student plans to pursue.

**Program:**
During the senior year (7th and 8th semesters), a student in the 4+1 MS program will take minimally three-credits (typically one course) graduate-level bioscience coursework each semester (500 or 600 level course with a BY designator). This graduate coursework will not count toward the undergraduate degree; it is in addition to the required 40 credits of BY designated coursework for the undergraduate degree. At the end of the senior year (upon graduation) the student will have completed at least 6 credits of the 30 credits required for a M.S. degree.
If the student has made adequate progress in the graduate coursework (grades B or better), the student will be immediately matriculated into the M.S. degree program and be granted graduate student status. During the 5th year (9th and 10th semesters) the student will be expected to complete all additional coursework and research / project requirements of the graduate program (MBS or MS-IBB). This will require 12 credit hours each of the two semesters to complete the degree requirements.

**BS IN CHEMISTRY**

*Devon Shipp, Program Chair*

dshipp@clarkson.edu

Chemistry is the most central of sciences. It deals with the properties, composition and structure of matter, with the changes that occur in matter and with energy relationships involved in those changes. Chemistry has been at the forefront of virtually all recent advances in materials, medicine and renewable fuels. The chemistry program at Clarkson has been designed to: Provide students with a core knowledge base to meet the challenges of professional careers spanning the full range of the chemical sciences.

- Ensure that students have the opportunity to develop strong professional communication skills.
- Provide a stimulating intellectual environment with exposure to open-ended problems likely to be encountered in industry, graduate schools and professional programs.

It is a rigorous degree program and students completing the requirements may be certified by the American Chemical Society if so desired. At the same time, it has the flexibility to allow students to develop the specialties that best meet their career goals.

The small laboratory learning environment provides strong interaction between students and with instructors and the laboratory, as well as research experiences provide students ample opportunities to develop communication skills through small group presentations and reports. The chemistry faculty are internationally known for the quality of their research, and undergraduates are encouraged to become involved in research with the faculty and graduate students as early as their freshman year.

A major in chemistry provides an excellent foundation for careers in health related fields. Pre-health sciences advising programs are available for students interested in medical school or health-care fields. A pre-PT undergraduate concentration is available, preparing students for the entry into the Doctor of Physical Therapy degree program. A pre-PA concentration leading to the Masters of Physician Assistant Studies degree program is also available.
### Requirements

- **Chemistry (45 credits)**
- CM103/105 *Structure and Bonding with Lab*
- CM104/106 *Equilibrium and Dynamics with Lab*
- CM121 *Freshman Seminar*
- CM221/223 *Spectroscopy with Lab*
- CM241/242 *Organic Chemistry I and II*
- CM244 *Organic Chemistry Lab*
- CM105 *Chemistry Lab I*
- MA131/132 *Calculus I and II*
- MA132 *Calculus II*
- MA232 *Differential Equations*
- CM223 *Spectroscopy Lab*
- PH131/132 *Physics I and II*
- CM345 *Advanced Lab*
- CM300 *Instrumental Lab*
- CM312 *Inorganic Chemistry*
- CM320 *Separations and Electrochemistry*
- CM344 *Organic Chemistry Lab*

- **Biology Elective (3 credits)**
- **Physics and Math (20 credits)**
- **Statistics**
- **Clarkson and First-Year Seminar, Knowledge Areas, University**
- **Course and Professional Experience**
- **Free Electives (29 credits)**

### Chemistry Sample Curriculum

#### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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<td>CM104</td>
<td>Equilibrium and Dynamics¹</td>
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#### SOPHOMORE YEAR

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<tr>
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**JUNIOR YEAR**

**First Semester**

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<tr>
<td>CM345</td>
<td>Advanced Laboratory</td>
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<td>CM371</td>
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<td>CM320</td>
<td>Separations and Electrochemistry</td>
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<td>Professional Experience</td>
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**Second Semester**

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<td>Survey of Inorganic Chemistry</td>
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<td>CM372</td>
<td>Physical Chemistry II</td>
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<td>Biology Course</td>
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**SENIOR YEAR**

(Standard Option)

**First Semester**

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**Second Semester**

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(Thesis Option)

**First Semester**

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<td>Free Electives²</td>
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**Second Semester**

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<tr>
<td>CM492</td>
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</table>
With the permission of the department chair, CM131-132 may be accepted in lieu of CM103-106 for a student who wishes to transfer into the Department of Chemistry after having completed the first year in another department.

Those students wishing to satisfy the requirements for an American Chemical Society-accredited BS degree will need at least six credit hours in advanced chemistry electives, including Biochem I. Thesis can count for only three such credits. Those students electing the standard option need at least one credit hour of an elective chemistry laboratory course.

**BS IN COMMUNICATION**

*Jason Schmitt, Chair*

jschmitt@clarkson.edu

**Program Goals**

Clarkson’s Communication degree integrates communication, design and technology. Students develop a repertoire of communication skills and a solid understanding of communication theory and practice. Together these prepare students to pursue professional careers or graduate programs in this dynamic field.

Starting with a set of five required courses, students develop abilities which are the foundation of any successful 21st century career in communication: writing, speaking, graphic design, media design, and teamwork and communication theory. Students then enhance and deepen these abilities through seven additional communication courses, which can be focused in areas like new media, UX Design, video production, or online content creation. Students may select specific courses or, in conjunction with Communication & Media faculty, design independent study projects to further personal and professional interests. Our faculty takes advantage of Clarkson’s technological environment to provide instruction in writing, speaking, graphic design, digital video, digital audio, web design, information design, usability testing, public relations, environmental communication, and social media. Students work with C&M faculty in experiential learning projects, ongoing research activities, and regular classes to learn, design and experiment with the latest communication practices.

- **Outcome 1:** Students will develop informative and persuasive communication skills.
- **Outcome 2:** Students will develop competencies in a range of communication technologies.
- **Outcome 3:** Students will develop an ability to work effectively and ethically in the professional workplace.
- **Outcome 4:** Students will develop the ability to critically analyze language and media use in society and the workplace.

**Program Requirements**

Communication majors take five required COMM courses: COMM 210 Rhetoric for Business, Science and Engineering, COMM 217 Introduction to Public Speaking, a COMM 300 level professional communication course and a COMM 400 level communication theory course chosen from lists maintained by the Communication & Media Department, COMM 490 Communication Internship, and seven other elective COMM courses, such as, COMM 100 2D Digital Design, COMM 219 Intro to Social Media, COMM 229 Principles of User-Experience Design, COMM 310 Mass Media & Society, COMM 327 Digital Video 1, COMM 322 Typography & Design, COMM 329 Front-End Development for the Web and COMM 360 Sound Design.
In addition, the general requirements for the BS in Communication ensure that students have substantial exposure to mathematics, science, technology, computing, and liberal arts. Communication majors are also required to obtain 15 credit hours in an external field (e.g., computer science, digital arts, history, business, information technology, psychology) which often provides them with a secondary field for further personal or professional development. Students can use the remaining credits required for graduation to pursue individual interests or career goals. COMM 490 (Internship) serves as a bridge to industry or to advanced study in the field. Students complete their internship by doing professional communication work for offices on campus or for off-campus businesses and organizations.

Students may earn a double major by fulfilling the requirements for the BS in Communication and another discipline at Clarkson, often without overload coursework.

Students pursuing other majors may acquire a minor in Communication.

**Degree Requirements:** Along with meeting the requirements of the Clarkson Common Experience, Communication majors must fulfill the following requirements:

**COMMUNICATION REQS: 36 hrs.**

<table>
<thead>
<tr>
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<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td>Mathematics Courses (include. Stat 282)</td>
<td>COMM210 Theory of Rhetoric for Business, Science and</td>
<td>3</td>
</tr>
<tr>
<td>Science Courses (includes lab course)</td>
<td>COMM3xx From C&amp;M List</td>
<td>3</td>
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<tr>
<td>Computer Courses</td>
<td>COMM 217 Intro to Public Speaking</td>
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<td>Add'l Math, Science, or Computer Course</td>
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<td>FY100, First-Year Seminar</td>
<td>COMM490 Communication Plus 7 Communication Courses</td>
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</table>

**EXTERNAL FIELD: 15 hours**

Five courses to be chosen in consultation with advisor in a subject area outside the Communication major, such as the following:

- Business Intelligence & Data
- Chemistry Information Technology
- Computer Science Information Systems
- Digital Arts & Sciences Mathematics
- Environmental Science & Policy Physical Therapy
- History Psychology
- Political Science

**FREE ELECTIVES: 43 Hours**
Students choose the remaining hours to fulfill remaining Knowledge Areas, to take additional Communication courses, or additional liberal arts, engineering, business, or science courses; to pursue another external field; to transfer credit from junior and community colleges; to double major; or to design individual areas of study.

The Communication program is designed to be flexible. In most cases, students work closely with faculty to arrange an appropriate sequence of courses. The following eight-semester plan is typical only in that it indicates students should take the general requirements before pursuing the external field requirement. Since all courses are not offered each semester, and since some courses in the external field may have prerequisites, students should seek guidance from the Communication and Media Department in planning their academic programs.

### Communication Sample Curriculum

#### FIRST YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
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<tbody>
<tr>
<td><strong>Course</strong></td>
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<td>MA180</td>
<td>Intro to College Math</td>
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<td>BY130</td>
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#### SOPHOMORE YEAR

<table>
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<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
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<td>COMM Elective</td>
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### JUNIOR YEAR

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<tr>
<td><strong>Course</strong></td>
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### SENIOR YEAR

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<td>Electives</td>
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</table>
Computer technology plays a critical role in virtually every business and institution. It is an essential tool in every branch of science and engineering. Many forms of art and entertainment are centered on computer technology. Computer scientists are professionals who understand the technology and have the skills to develop and apply it.

Many computer scientists work as software developers who design, implement, test and maintain computer software. They can also work as information technology specialists who deploy and manage information technology, including computer systems, computer networks, database systems and web technology. Some are researchers who invent new technology or study its theoretical foundations.

The Computer Science major is organized into four options. The General option is the most flexible. It allows students to tailor their program of study to a wide variety of professional and personal goals. The other three options prepare students for the specific career paths mentioned above: Software Design and Development, Information Technology and Research. The requirements of the General option are shown below. The first five semesters of the sample schedule shown below are common to all options of the CS major. In addition to the requirements specific to the CS major, students must also satisfy the requirements of the Clarkson Common Experience.

The Computer Science major is designed so that by the time they graduate, students should be able to:

- demonstrate a solid understanding of the core concepts of computer science and some advanced topics in computer science;
- reason clearly and analytically about software and computing systems;
- work effectively with a variety of programming languages, software tools and computing environments;
- solve substantial real-world problems;
- communicate effectively orally and in writing;
- work effectively in teams; and
- use computer science literature and other similar resources for independent study or to research the solution to a computing problem.
In addition to the general undergraduate requirements, students majoring in Computer Science must complete the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 141*</td>
<td>Intro to Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>CS 142*</td>
<td>Intro to Computer Science II</td>
<td>3</td>
</tr>
<tr>
<td>CS 241*</td>
<td>Computer Organization</td>
<td>3</td>
</tr>
<tr>
<td>CS 242*</td>
<td>Adv Programming Concepts in Java</td>
<td>3</td>
</tr>
<tr>
<td>CS 341</td>
<td>Programming Languages</td>
<td>3</td>
</tr>
<tr>
<td>CS 344</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CS 345</td>
<td>Automata Theory and Formal Languages</td>
<td>3</td>
</tr>
<tr>
<td>CS 350</td>
<td>Software Design &amp; Development</td>
<td>3</td>
</tr>
<tr>
<td>CS 444</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 499</td>
<td>Professional Experience</td>
<td>0</td>
</tr>
<tr>
<td>MA 131</td>
<td>Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>MA 132</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>MA 211</td>
<td>Foundations</td>
<td>3</td>
</tr>
<tr>
<td>MA 339</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or MA 239</td>
<td>Elementary Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>STAT 383</td>
<td>Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>or MA 381</td>
<td>Probability</td>
<td>3</td>
</tr>
<tr>
<td>Science Electives</td>
<td>One 2-course lecture/lab sequence in CM or PH, plus 4 additional credits in CM, PH, or BY</td>
<td>12</td>
</tr>
<tr>
<td>CS Electives I (3 courses)</td>
<td>Any 3-credit CS 400-level course (excluding CS 407, 408, 411, 412, 497, 498)</td>
<td>9</td>
</tr>
<tr>
<td>CS Electives II (2 courses)</td>
<td>Any 3-credit CS 400-level course, EE 368, EE 466, IS 314</td>
<td>6</td>
</tr>
</tbody>
</table>

- *Or equivalent
- Up to 12 credit hours of advanced (300- or 400-level) coursework in Aerospace Studies or Military Science may count toward graduation requirements. Aerospace Studies or Military Science credits at the 100 and 200 levels do not count toward the required 120 hours. Other restrictions may apply; check with the department for details.

The following is a typical course sequence for the computer science curriculum. Not all students will complete these courses in the outlined order.
The Suggested Course Sequence for Computer Science Students

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
<td>Second Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS141</td>
<td>Intro to Comp Sci I</td>
<td>4</td>
<td>CS142</td>
<td>Intro to Comp Sci II</td>
<td>3</td>
</tr>
<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA132</td>
<td>Calculus II</td>
<td>3</td>
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<tr>
<td>Science Sequence Course I</td>
<td>Science Sequence Course I</td>
<td>4</td>
<td></td>
<td>Knowledge Area Elective</td>
<td>3</td>
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<tr>
<td>UNIV 190</td>
<td>The Clarkson Seminar</td>
<td>3</td>
<td></td>
<td>Free Elective</td>
<td>3</td>
</tr>
<tr>
<td>FY100</td>
<td>Freshmen Seminar</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Semester</td>
<td></td>
<td></td>
<td>Fourth Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 242</td>
<td>Advanced Programing Concepts</td>
<td>3</td>
<td>CS 241</td>
<td>Computer Organization</td>
<td>3</td>
</tr>
<tr>
<td>MA 211</td>
<td>Foundations</td>
<td>3</td>
<td>CS 344</td>
<td>Algorithms and Data Structures</td>
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<td></td>
<td></td>
<td></td>
<td>MA 339</td>
<td>Applied Linear Algebra</td>
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</tr>
<tr>
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<td>Science Elective</td>
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<td>Knowledge Area Elective</td>
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<td>Knowledge Area Elective</td>
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<td>Free Elective</td>
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<td></td>
<td></td>
<td>16</td>
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<tr>
<td>Fifth Semester</td>
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<td>Sixth Semester</td>
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<tr>
<td>CS 341</td>
<td>Programming Languages</td>
<td>3</td>
<td>CS 444</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 345</td>
<td>Automata Theory</td>
<td>3</td>
<td>STAT 383</td>
<td>Probability and Statistics</td>
<td>3</td>
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<tr>
<td>CS 350</td>
<td>Software Des &amp; Dev</td>
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<td>CS Elective</td>
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<td>Knowledge Area Elective</td>
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<td>15</td>
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<tr>
<td>Seventh Semester</td>
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<td>Eighth Semester</td>
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<td>CS Electives</td>
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<td>CS Electives</td>
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</tr>
<tr>
<td>Free Electives</td>
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<td>9</td>
<td>Free Electives</td>
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<tr>
<td>CS499 Professional Experience</td>
<td></td>
<td>0</td>
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<td></td>
<td></td>
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<td>15</td>
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</tr>
</tbody>
</table>
BS IN DATA SCIENCE
Joseph Skufca, Program Chair
jskufca@clarkson.edu

Across business, industry, government, and nearly all scientific efforts, the explosion of data and data collection drives a growing need to manage, analyze, and extract insight and knowledge from the data produced. Not only must scientists and engineers grapple with vast volumes of data, but throughout business and industry, from entry-level technician to executive, the ability to reason effectively using data continues to grow in importance. The skillset required to excel in that environment lies at the intersection of mathematics, statistics, and computational science. The emerging discipline of Data Science addresses that interdisciplinary space, and the National Academy of Science, Engineering, and Medicine (NASEM) has identified this discipline as a critical enabler for tackling many real-world problems.

The BS in Data Science provides students the opportunity to develop an interdisciplinary, data-focused skillset and then apply those skills to real-world challenges. The program provides strong preparation in critical aspects of working with data by thorough grounding in mathematics and statistics and the foundations of computer science as related to data and data processing. The program provides an early focus on foundational competencies across the spectrum of the science of data. Once that baseline is established, students are expected to apply those skills in specific domains of interest to them, with a significant component of the curriculum based on team projects and experiential learning.

The data science curriculum prepares students to:
- Apply analytic thinking and quantitative reasoning skills to relevant problems;
- Demonstrate the ability to communicate technical results with clarity and precision;
- Understand a number of computer programming constructs and develop the ability to quickly assimilate the skills required to use new and emerging programming languages;
- Solve real-world, open-ended problems;
- Explore at least one area of application-specific domain knowledge;
- Work effectively both individually and in teams;
- Understand the ethical implications of data-driven methods in the modern, data-enabled society.

In addition to the major in Data Science, the Mathematics Department offers separate majors in:

1. Mathematics, with more emphasis on abstract mathematics and proof, including coursework that helps students to prepare for graduate study in math or statistics.
2. Applied Mathematics and Statistics, which provides a broader range of courses applicable to many business, engineering, and industrial math applications.

The courses from these other majors are available to the Data Science major. An interested student can leverage these other offerings to prepare themselves across the full spectrum of opportunities in the mathematical sciences.
<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics and Statistics&lt;sup&gt;1&lt;/sup&gt;</td>
<td>35</td>
</tr>
<tr>
<td>Data Science (DS241, DS392)</td>
<td>6</td>
</tr>
<tr>
<td>Computer Science (CS141, CS142, CS344, CS449)</td>
<td>13</td>
</tr>
<tr>
<td>Science (BY, CM, or PH)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>8</td>
</tr>
<tr>
<td>Information Systems (IS314, IS415, IS426)</td>
<td>9</td>
</tr>
<tr>
<td>First-Year Seminar (FY100)</td>
<td>1</td>
</tr>
<tr>
<td>The Clarkson Seminar (UNIV190)</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge Area/University Courses</td>
<td>15</td>
</tr>
<tr>
<td>Application Electives&lt;sup&gt;3&lt;/sup&gt;</td>
<td>6</td>
</tr>
<tr>
<td>Free electives&lt;sup&gt;4&lt;/sup&gt;</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>

<sup>1</sup> Required courses: MA131, MA132, MA200, MA211, MA231, MA339, MA499, and STAT381, STAT382, STAT383, STAT384, STAT385, STAT488 (2 credits).

<sup>2</sup> Science requirement must include at least two courses with labs.

<sup>3</sup> Application Electives are courses from outside the MA, STAT, CS, and IS course designations that provide depth of knowledge in some domain. Students must take two 3-credit courses at the 200 level or higher, both from the same subject area, with the particular pairing approved by the Mathematics Department.

<sup>4</sup> Up to 12 credit hours of advanced (300- or 400-level) coursework in Aerospace Studies or Military Science may count toward graduation requirements. Aerospace Studies or Military Science credits at the 100 and 200 levels do not count toward the required 120 hours. Other restrictions may apply; check with the Mathematics Department for details.
# Data Science Sample Curriculum

## FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA132</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Science Elective</td>
<td>4</td>
<td></td>
<td>Science Elective</td>
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</tr>
<tr>
<td>CS141</td>
<td>Computer Science I</td>
<td>4</td>
<td>MA200</td>
<td>Math Modeling &amp; Software</td>
<td>3</td>
</tr>
<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
<td>3</td>
<td></td>
<td>Knowledge Area Course</td>
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</tr>
<tr>
<td>FY100</td>
<td>First-Year Seminar</td>
<td>1</td>
<td>CS142</td>
<td>Computer Science II</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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</table>

## SOPHOMORE YEAR

<table>
<thead>
<tr>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>MA211</td>
<td>Foundations</td>
<td>3</td>
<td>MA231</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>STAT383</td>
<td>Probability and Statistics</td>
<td>3</td>
<td>MA339</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>DS241</td>
<td>Intro to Data Science</td>
<td>3</td>
<td>CS344</td>
<td>Algorithm and Data Structure</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Knowledge Area Course</td>
<td>3</td>
<td></td>
<td>Knowledge Area Course</td>
<td>3</td>
</tr>
<tr>
<td>IS314</td>
<td>Database Design and Management</td>
<td>3</td>
<td>IS415</td>
<td>Data Warehousing for Analytics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td></td>
<td><strong>Total</strong></td>
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</table>

## JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>CS449</td>
<td>Computational Learning</td>
<td>3</td>
<td>STAT381</td>
<td>Probability</td>
<td>3</td>
</tr>
<tr>
<td>IS426</td>
<td>Big Data Architecture</td>
<td>3</td>
<td>DS392</td>
<td>Ethics of Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>KA/University Course</td>
<td>3</td>
<td></td>
<td>KA/University Course</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Free Elective</td>
<td>3</td>
<td></td>
<td>Free Elective</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
### SENIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>STAT385 Bayesian Data Analysis</td>
<td>STAT384 Advanced Applied Statistics</td>
</tr>
<tr>
<td>Application Elective</td>
<td>STAT488 Statistics Projects</td>
</tr>
<tr>
<td>Free Electives</td>
<td>Application Elective</td>
</tr>
<tr>
<td>MA499 Professional Experience</td>
<td>Free Electives</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>14</td>
</tr>
</tbody>
</table>

Note: STAT382 and STAT384 are offered alternating years; third- and fourth-year students take whichever course is offered during that particular semester.

### BS IN DIGITAL ARTS & SCIENCES

*Steven Pedersen, Director, Digital Arts & Sciences*

Digital Arts & Sciences (DA&S) is a multidisciplinary BS degree spanning the boundaries between the sciences and the arts. DA&S students benefit from an education in both the artistic and scientific aspects of digital media. The program prepares students for career opportunities in a wide range of fields — such as working with film and video gaming companies, mobile and web application design and development, computational science research (scientific visualization and simulation), interactive display systems and immersive experience design.

Students take advantage of programs in digital art, math, computer science and communication & media. The program’s objective is to combine artistic and scientific skills and interests to develop creative talent with a strong technical foundation.

The curriculum for the Digital Arts & Sciences Major is designed to achieve the following outcomes:

- Develop a strong interdisciplinary foundation in the digital arts, mathematics, and computer science fields
- Specialize in one or more areas of advanced study in the program
- Acquire artistic and scientific skills through project-based assignments that include the opportunity for directed study and thesis projects guided by a professor
- Experience working in a collaborative, team-based atmosphere for large-scale projects that are designed to emulate real-world situations and problems
- Learn how to utilize technological, traditional and experimental methods of creative and analytical problem-solving
- Master oral, visual, and written communication skills essential for work in all fields of the arts and sciences
• Learn about career opportunities in the arts and sciences in preparation for seeking professional employment or advanced academic study after graduation
• Create a portfolio of artistic and scientific research which demonstrates the knowledge gained as a student in the program

DA&S students benefit from small classes and personal attention. The DA&S major is strengthened by Clarkson’s technology-rich environment. Students have access to state-of-the-art facilities and experiences such as:

• Eastman Kodak Center for Excellence in Communication
• Usability Testing Laboratory
• Virtual Reality Discovery Laboratory
• Clarkson Open Source Institute
• Digital Art Software and Programs
• Digital Arts Visualization Lab
• Digital Arts Experimental Studio
• Industry Standard Art & Design Software
• Digital Video and Audio Equipment
• 2D and 3D Printing Technology
• Audio Production Studio Motion Capture Equipment
• Field Trips to International Digital Arts Festivals, Conferences and Companies

Digital Art Portfolio Development
DA&S students develop their research and creative abilities through an extensive portfolio development process spanning multiple semesters. The culminating project, a digital art portfolio, requires each DA&S student to demonstrate his or her creative ability and technical prowess in a variety of media choices, using a wide range of digital tools. The portfolio will tangibly demonstrate a student’s skills and potential, and will prove to be a key first-step in leading to job opportunities and/or entry to graduate school. In addition to the general undergraduate requirements (see below*), students majoring in Digital Arts & Sciences must complete the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA 100</td>
<td>Introduction to Digital Art: Time &amp; Image</td>
<td>3</td>
</tr>
<tr>
<td>DA 110</td>
<td>Drawing</td>
<td>3</td>
</tr>
<tr>
<td>DA 120</td>
<td>Elements of Design</td>
<td>3</td>
</tr>
<tr>
<td>DA 140</td>
<td>Introduction to Digital Art: Form &amp; Code</td>
<td>3</td>
</tr>
<tr>
<td>DA 212</td>
<td>Art in Context</td>
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<tr>
<td>2 x DA 2__ level or higher</td>
<td>DA Electives</td>
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<tr>
<td>2 x DA 3__ level or higher</td>
<td>DA Electives</td>
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<tr>
<td>DA 491</td>
<td>Professional Practice</td>
<td>3</td>
</tr>
<tr>
<td>DA 492</td>
<td>Senior Studies</td>
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<tr>
<td>CS 141</td>
<td>Intro to Computer Science I</td>
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</tr>
<tr>
<td>CS 142</td>
<td>Intro to Computer Science II</td>
<td>3</td>
</tr>
</tbody>
</table>
MA 131  Calculus I  3
MA 230  3-D Space and Projective Geometry  3
MA 239  Linear Algebra  3
MA 277  Elementary Numerical Methods  3
3 x MA/CS  Electives  9

General Undergraduate Requirements
STAT 282/381/383  Probability and Statistics  3
PH 131/141  Science course with lab PH 131/141 required  4
NAT SCI  Science course  3
Electives  Free Electives*  42
UNIV 190  University Course  3
FY 100  First Year Seminar  1

Free Electives will cover Knowledge Area courses as needed

Additional Requirements

Additional credits in electives to bring total credits to 120.

Students must also meet the Common Experience requirements for communication points and a technology course, though it is anticipated that the required courses will satisfy these. MA231 Calculus III satisfies the MA230 requirement for double majors or changes of major.

Digital Arts & Sciences Sample Curriculum

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>DA110</td>
<td>Drawing</td>
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<td>DA100</td>
<td>Intro to Digital Art</td>
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<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA230</td>
<td>3-D Space &amp; Proj. Geom</td>
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<tr>
<td>DA120</td>
<td>Elements of Design</td>
<td>3</td>
<td>DA140</td>
<td>Intro to Digital Art: Form &amp; Code</td>
<td>3</td>
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**SECOND SEMESTER**

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## SOPHOMORE YEAR

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<td>MA239</td>
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## JUNIOR YEAR

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<td>MA277       Elementary Numerical Methods</td>
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<td>PH131/1</td>
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<td>MA/CS       Elective</td>
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<td>DA492       Senior Studies</td>
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15  15
BS IN HISTORY

Bill Vitek, Program Chair
wvitek@clarkson.edu

Program Goals
History examines human experience, confronting students with facets of human life in the past and in the present. The history major at Clarkson provides students with the opportunity to learn about lives, times, and places distant from their own, and it provides them with the tools to think about them critically.

Students majoring in History will:
- Appreciate history as an interpretive discipline
- Have a broad understanding of history
- Demonstrate mastery of appropriate research methodologies in history by producing a capstone research paper
- Gain expertise in using technology to explore historical problems

History majors work closely with their advisors to develop a coherent program of study. In addition to courses in American History and Gender & Sexuality studies, students have the unique opportunity to develop areas of expertise generally unavailable at liberal arts colleges, by taking sets of history courses focused on Science, Medicine, Technology, and Society; War Studies; and the Ancient, Medieval and Renaissance World. Through their History major at Clarkson, students will also gain the ability to:

- Write clearly and persuasively
- Speak effectively in a group setting
- Think critically
- Understand and analyze complex problems
- Examine and interpret evidence
- Organize and synthesize large amounts of information
- Approach current issues with historical perspective

Program Requirements*
120 credit hours, including:
- 1 credit Introduction to the Liberal Arts pre-seminar
- 9 courses in history, including:
  - 6 courses at the 300-level or above
  - 1 course in pre-modern history
  - 1 course in modern history
- Humanities/Social Sciences Research Seminar
- 5 courses in a pre-professional external field
- Fulfillment of the requirements of the Clarkson Common Experience

Students majoring in History are required to take at least five courses in a pre-professional
external field, such as pre-law, pre-med, pre-physical therapy, business or communications and media. This concentration provides students with opportunities to increase career choices while at the same time exploring a wide variety of interests through their major. Finally, history majors will be encouraged:

- To Study Abroad. Students who study abroad should take at least one course in the history of their host country.
- Do Historical Internships, for example, at local historical museums.

*Courses taken to fulfill requirements for a Humanities/Social Sciences Major cannot be used to fulfill requirements for a Humanities and Social Sciences Minor.

**History Sample Curriculum**

**FIRST YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td><strong>Course</strong></td>
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<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
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<tr>
<td>HSS/120</td>
<td>Introduction to Liberal Arts Common Experience Math Requirement (MA180 recommended)</td>
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<td>Pre-professional Concentration or</td>
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<td>FY100</td>
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15 15

**SOPHOMORE YEAR**

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<td><strong>Course</strong></td>
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<tr>
<td>HIST MAJOR COURSE</td>
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<tr>
<td>Knowledge Area Course</td>
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**JUNIOR YEAR**

First Semester

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**SENIOR YEAR**

First Semester

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<td>HSS RESEARCH</td>
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</table>
BS IN HUMANITIES, INTERDISCIPLINARY LIBERAL STUDIES, AND
INTERDISCIPLINARY SOCIAL SCIENCES

Bill Vitek, Program Chair
wvitek@clarkson.edu

Program Goals
Clarkson offers interdisciplinary Bachelor of Science degrees in Humanities, Social Sciences and Liberal Studies. Students can also minor in these areas, as well as in interdisciplinary thematic areas.

The Humanities, Interdisciplinary Social Sciences and Interdisciplinary Liberal Studies programs challenge students to think critically and incisively about ideas, people, society and the human condition. Students learn about, think about, and come to understand the issues and problems of the contemporary world and of the past. They learn about the diversity and the complexity of social life, past and present. They learn how the human condition and human experience have been captured in literature and art. And they learn the ways in which people have sought to understand their lives through philosophical inquiry.

These degree programs offer a great deal of flexibility, allowing a student substantial elective choice. Each student works closely with an advisor to select both major and elective courses that meet his or her educational and career goals. Students minoring in the department also choose the courses in their programs in consultation with their advisors. Courses in the Interdisciplinary Social Sciences, Humanities or Liberal Studies majors at Clarkson offer students intellectually challenging opportunities to help them:

- Gain critical perspectives on themselves and the world
- Understand the complexities of open-ended human problems
- Achieve awareness of cultural and social diversity
- Assess the ethical and social implications of science, technology and business
- Engage in and appreciate the creative process

Through their Interdisciplinary Social Science, Humanities or Liberal Studies major at Clarkson, students will also gain the ability to:

- Write clearly and persuasively
- Speak effectively in a group setting
- Think critically
- Understand and analyze complex problems
- Examine and interpret evidence
- Organize and synthesize large amounts of information

Program Requirements*
120 credit hours, comprising:

- 1 credit Introduction to the Liberal Arts pre-seminar
- 8 courses with an appropriate topical or thematic focus
- The Humanities/Social Sciences Research Seminar
- 5 courses in a pre-professional external field
- Fulfillment of the requirements of the Clarkson Common Experience
- Students majoring in Interdisciplinary Social Science, Humanities or Liberal Studies at
Clarkson are required to take at least five courses in a pre-professional external field, such as pre-law, pre-med, pre-physical therapy, business, or communications and media. This pre-professional concentration provides students with opportunities to increase career choices, while at the same time exploring a wide variety of interests through their major.

Courses taken to fulfill requirements for a Humanities/Social Sciences Major cannot be used to fulfill requirements for a Humanities and Social Sciences Minor.

Sample Curriculum for Humanities, Interdisciplinary Liberal Studies and Social Sciences

| FIRST YEAR | | |
|---|---|
| **First Semester** | **Second Semester** |
| **Course** | **Title** | **Cr. Hrs.** | **Course** | **Title** | **Cr. Hrs.** |
| UNIV190 | Clarkson Seminar | 3 | MAJOR COURSE* | 3 |
| HSS120 | Introduction to Liberal Arts | 1 | STAT282 | Statistics | 3 |
| | Common Experience | | | Common Experience | |
| | Math Requirement | 4 | | Science Requirement | 3 |
| | (MA180 recommended) | | | Common Experience | |
| | HIST MAJOR COURSE at 200 Level | 3 | | Pre-professional | |
| | Free Elective | 3 | | Concentration or | |
| FY100 | First-Year Seminar | 1 | Free Elective | 3 |
| | | 15 | | | 15 |

| SOPHOMORE YEAR | | |
|---|---|
| **First Semester** | **Second Semester** |
| **Course** | **Title** | **Cr. Hrs.** | **Course** | **Title** | **Cr. Hrs.** |
| MAJOR COURSE | | 3 | MAJOR COURSE | | 3 |
| Common Experience | | | Common Experience | | |
| Knowledge Area Course | | 3 | Knowledge Area Course | | 3 |
| Pre-professional | | | Pre-professional | | |
| Concentration | | 3 | Concentration | | 3 |
| Free Elective | | 3 | Free Elective | | 3 |
| Common Experience | | | Free Elective | | 3 |
| Science Requirement | | 4 | | | 15 |
| | | 16 | | | |

| JUNIOR YEAR | | |
|---|---|
| **First Semester** | **Second Semester** |
| **Course** | **Title** | **Cr. Hrs.** | **Course** | **Title** | **Cr. Hrs.** |
| MAJOR COURSE* | | 3 | MAJOR COURSE* | | 3 |
| Or | | | | | |
MAJOR COURSE * Or Free Elective
Free Elective 3 Common Experience
Common Experience Knowledge Area or
Knowledge Area or University Course 3
University Course 3 Pre-professional
Pre-professional Concentration 3
Concentration 3 Free Elective or Common
Free Elective or Common Experience Technology and
Experience Technology and Humanity Course 3
Humanity Course 3 15
15

*Major courses are those designated Anthropology, Film, History, Literature, Philosophy, Political Science, Social Sciences, Science Technology and Society Sociology.

SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<th>Course</th>
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Concentration in Gender & Sexuality Studies

The Concentration in Gender & Sexuality studies is a curricular option available within either the BS in Interdisciplinary Social Sciences or the BS in Interdisciplinary Liberal Studies degree programs. To complete this concentration, all students must:

1. Satisfy the requirements for the BS in Interdisciplinary Social Sciences or the BS in Interdisciplinary Liberal Studies degree programs (10 courses in the major—one Introduction to Liberal Arts, one Major Research Seminar, and eight content courses).
2. Take 15 credit hours (five courses) in Gender and Sexuality Studies, structured as
follows:

a. Students must take SS 220, Introduction to Gender, or SS 221, Introduction to Sexuality, as well as four courses from an approved list of Gender and Sexuality Studies courses maintained by the Humanities and Social Sciences department.

b. Three of the five Gender and Sexuality Studies courses may be used to substitute for three of the required content courses in the major. The other two Gender and Sexuality Studies courses may be used to satisfy undesignated electives.

Students who complete the Gender & Sexuality Studies Concentration will have this noted on their transcripts.

BS IN MATHEMATICS

Joseph Skufca, Program Chair
jskufca@clarkson.edu

Mathematics is the study of numbers, functions, geometrical forms, and abstract logical structures and their associated relationships. In addition to providing an essential foundation for scientific and technical fields, mathematics is studied both for its own intellectual appeal and challenge and for its application to real-life problems. Students of mathematics also develop critical thinking and analytical skills useful for a wide variety of careers.

The mathematics program at Clarkson is rigorous and demanding, yet flexible enough to allow students to sample many disciplines or focus on a special interest. Many mathematics students also complete a minor or double major in a field such as computer science, physics, biology, or business. Students are encouraged to participate in research projects with faculty, starting as early as their freshman year. Graduates work in industry, business, or government agencies as mathematicians, statisticians, and actuaries. Many continue their education in graduate programs in mathematics or related fields; some become mathematics teachers or professors.

The mathematics curriculum is designed so that students learn to:

- Reason clearly, logically, and analytically;
- Demonstrate a solid understanding of the core material and a deeper understanding of at least one area of mathematics;
- Work effectively with standard mathematical software packages and write mathematical programs using a high-level computer language;
- Apply mathematical knowledge to solve real-world, open-ended problems;
- Read mathematical texts and literature and write mathematical proofs;
- Communicate effectively, both orally and in writing; and
- Work effectively both individually and in teams.

The mathematics major has two options. The mathematics option (detailed below) is designed for students with a general interest in mathematics and is excellent preparation for graduate school. The statistics option replaces some mathematics courses in the junior and senior years with statistics courses, and is designed to prepare students for careers as statisticians or actuaries. The department also offers a separate major in Applied Mathematics and Statistics.
Program Requirements

<table>
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<th>Area of Study</th>
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<tr>
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<td>Physics (PH131 and PH132)</td>
<td>8</td>
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<tr>
<td>Science (BY, CM, or PH)</td>
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<tr>
<td>First-Year Seminar (FY100)</td>
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<td>The Clarkson Seminar (UNIV190)</td>
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<tr>
<td>Knowledge Area/University Courses</td>
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<tr>
<td>Free electives**</td>
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120

*Required courses: MA131, MA132, MA200, MA211, MA231, MA232, MA321, MA339, MA499, and STAT383, plus either MA451 or MA453. The Math Option also requires two of MA311, MA313, MA314, and MA322; the Statistics Option also requires STAT381, STAT382, STAT384, and STAT488.

**Up to 12 credit hours of advanced (300- or 400-level) coursework in Aerospace Studies or Military Science may count toward graduation requirements. Aerospace Studies or Military Science credits at the 100 and 200 levels do not count toward the required 120 hours. Other restrictions may apply; check with the department for details.

Mathematics Sample Curriculum

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Course</th>
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<td>PH131</td>
<td>Physics I</td>
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<td>PH132</td>
<td>Physics II</td>
<td>4</td>
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<td>CS141</td>
<td>Computer Science I</td>
<td>4</td>
<td>MA200</td>
<td>Math Modeling &amp; Software</td>
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<td>UNIV190</td>
<td>Clarkson Seminar</td>
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<td>Knowledge Area Course</td>
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<td>Free Elective (CS142 rec.)</td>
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15 16
**SOPHOMORE YEAR**

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<thead>
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<th>First Semester</th>
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<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
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<tr>
<td>MA211</td>
<td>Foundations</td>
</tr>
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<td>MA232</td>
<td>Differential Equations</td>
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**JUNIOR YEAR**

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<tr>
<td><strong>Course</strong></td>
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</tr>
<tr>
<td>MA321</td>
<td>Advanced Calculus I</td>
</tr>
<tr>
<td></td>
<td>(or MA314 Number Theory)</td>
</tr>
<tr>
<td>MA311</td>
<td>Abstract Algebra (or)</td>
</tr>
<tr>
<td></td>
<td>MA313 Abs. Lin. Alg.)</td>
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<td>Free Elective</td>
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**SENIOR YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tr>
<td><strong>Course</strong></td>
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<tr>
<td>MA/STAT Elective</td>
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</tr>
<tr>
<td>MA499</td>
<td>Professional Experience</td>
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</table>
Physics, the most fundamental of the sciences, deals with the behavior and interaction of matter, energy, space and time. It is in Physics where the basic concepts, laws and measuring techniques have been developed in the broad areas of mechanics, heat and thermodynamics; wave motion, acoustics, optics, electricity and magnetism; and the structure of matter. The concepts and techniques of Physics are the foundations of the other Sciences and of Engineering. Clarkson’s Physics curriculum has been designed to meet the following goals:

- Present the fundamental knowledge needed for professional work in industry or graduate school, while including many free electives.
- Offer a flexible curriculum to satisfy diverse career objectives and make it possible to double major in Physics and other fields.
- Provide plenty of opportunity to get involved in active research as an undergraduate.

A double major with physics at Clarkson can be completed within four years. In addition to providing a flexible double major program, the Physics curriculum strongly emphasizes undergraduate research. Students often identify research projects in their areas of concentration and continue to work on the project until graduation. Student research frequently leads to publication in internationally recognized scientific journals. The typical length of the Physics BS is eight semesters (four years).

Three-Year Accelerated Degree Program
This program is available to students who arrive at Clarkson University with excellent preparation from high school. Its challenging pace requires harder work than the standard program and special dedication, but offers the opportunity to complete a degree in a shortened time span. Students in this accelerated program may save educational costs and enter the job market earlier.

Requirements
Specific course requirements of the Physics Major are listed below, along with a sample (tentative) 8-semester plan.

<table>
<thead>
<tr>
<th>Area</th>
<th>Cr. Hrs.</th>
<th>Area</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Year Seminar</td>
<td>1</td>
<td>Communications Elective(^3) (C2)</td>
<td>3</td>
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<tr>
<td>Clarkson Seminar</td>
<td>3</td>
<td>Knowledge Area and University</td>
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</tr>
<tr>
<td>Physics(^1) (or equivalent)</td>
<td>35</td>
<td>Course Electives</td>
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<tr>
<td>Mathematics(^2)</td>
<td>18</td>
<td>Concentration Electives(^4)</td>
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<td>Chemistry</td>
<td>8</td>
<td>Information Technology Elective</td>
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<tr>
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<td>Technology Elective</td>
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<td></td>
<td></td>
<td>Free Electives</td>
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</tr>
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<td></td>
<td></td>
<td>[including a C1 course(^5)]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>120*</td>
</tr>
</tbody>
</table>
(1) Includes *Physics Professional Requirement* courses: PH 121, PH 232, PH 327, PH 331 (part of the Core Curriculum), and 3 credits from a list of 400 level PH courses (Physics Professional Electives), which includes: PH 445, PH 446 and PH 470-477. PH 327 also satisfies Statistics requirement.

(2) Mathematics courses for a Physics Major include: MA 131, MA 132, MA 231, MA 232, plus 3 credits of Probability/Statistics (recommended) from: MA 381, STAT 381, STAT 383, MA 381, etc.

(3) At least 6 Communication Points (C-1/C-2 courses combined) are required. At least 2 Communication Points (two C-1 or one C-2) must be earned in Physics through courses at the 300- or 400-level (PH 327, PH 445-446).

(4) All of these must be in one area outside of Physics; an area need not be a department. Concentration electives allow students to explore another field of interest outside physics. These classes, combined with free electives, can be used toward fulfilling the core course requirements for a double major.

(5) At least one of the free electives should be a [C1] or [C2] designated Communication Intensive Course unless a [C1] course is already included in the Biology or Concentration electives.

* Some non-credit courses in Physical Education, Aerospace Studies and/or Military Science might be required for graduation.

**Sample Physics Curriculum (Core Option)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td>PH131</td>
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<td>PH132</td>
<td>Physics II</td>
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<td>MA132</td>
<td>Calculus II</td>
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<tr>
<td>MA131</td>
<td>Calculus I</td>
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<td>CM132</td>
<td>Chemistry II</td>
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<tr>
<td>CM131</td>
<td>Chemistry I</td>
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<tr>
<td>PH121</td>
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**FIRST YEAR**

16

**Second Semester**

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<td>Recommend PH157</td>
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<td></td>
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107
### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<th>Course</th>
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<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td>PH231</td>
<td>Modern Physics</td>
<td>3</td>
<td>PH221</td>
<td>Theoretical Mechanics</td>
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</tr>
<tr>
<td>PH232</td>
<td>Modern Physics Lab</td>
<td>1</td>
<td>MA231</td>
<td>Calculus III</td>
<td>3</td>
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<tr>
<td>MA232</td>
<td>Differential Equations</td>
<td>3</td>
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<td>Biology Elective</td>
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<td>KA/UC Elective</td>
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<td>Information Tech.</td>
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<td>Elective</td>
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### JUNIOR YEAR

<table>
<thead>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td>PH325</td>
<td>Thermal Physics</td>
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<td>PH331</td>
<td>Quantum Physics I</td>
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<td>PH380</td>
<td>Electromagnetic Theory I</td>
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<td>MA381</td>
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<td>KA/UC Elective</td>
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<td>PH327</td>
<td>Exper. Phys. I</td>
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<td>Free Elective</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(recommended</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PH341/455)</td>
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### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td>PH</td>
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<td>PH435</td>
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<td>KA/UC Elective</td>
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<td>Concentration Elective</td>
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<tr>
<td>PH</td>
<td>Professional Elective</td>
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<td>Free Electives</td>
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</tr>
</tbody>
</table>

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**Double Major Curricula should be planned in consultation with student’s academic advisors from both major fields.**
BS IN POLITICAL SCIENCE

Bill Vitek, Program Chair
wvitek@clarkson.edu
315-268-4424

Political Science investigates the institutions, practices, traditions, concepts and rules by which human beings organize their lives in common and govern themselves.

Courses in Political Science enable students to use empirical analyses and theoretical constructs to understand political aspects of their world, both in the United States around the globe. Students majoring in Political Science will acquire:

- A comprehensive understanding of politics, political institutions, and the processes involved in translating values and information into public policy and legislation.
- A critical grasp of the leading theories and disputes animating the various subfields of Political Science.
- An appreciation of the facets of citizenship needed to participate fully in political life.

Through their Political Science major at Clarkson, students will also gain the ability to:

- Write clearly and persuasively
- Speak effectively in a group setting
- Think critically
- Understand and analyze complex problems
- Examine and interpret evidence
- Organize and synthesize large amounts of information

Program Requirements*

120 credit hours, including:

- 1 credit Introduction to the Liberal Arts pre-seminar
- 9 courses in political science ideally including one each in
  - American Politics
  - Political Theory
  - International and Comparative Politics
  - Law and Public Policy
- The Humanities/Social Sciences Research Seminar
- 5 courses in a pre-professional external field
- Fulfillment of the requirements of the Clarkson Common Experience
- Political Science majors will take a series of courses chosen in consultation with their advisors to develop a coherent program of study. Students have the opportunity to develop areas of expertise in American Politics, Public Policy, Political Theory, Environmental Politics, or International Politics.

Students majoring in Political Science are required to take at least five courses in a pre-professional external field, such as pre-law, pre-med, pre-physical therapy, business or communications and media. This concentration provides students with opportunities to increase career choices, while at the same time exploring a wide variety of interests through their major.
* Courses taken to fulfill requirements for a Humanities/Social Sciences Major cannot be used to fulfill requirements for a Humanities and Social Sciences Minor.

# Sample Curriculum for the BS in Political Science

## FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Cr. Hrs.</th>
<th>Course Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>Clarkson Seminar</td>
<td>3</td>
<td>PSCI MAJOR COURSE</td>
<td>3</td>
</tr>
<tr>
<td>Introduction to Liberal Arts</td>
<td>1</td>
<td>Statistics Common Experience</td>
<td>3</td>
</tr>
<tr>
<td>Common Experience</td>
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<td>Science Requirement</td>
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</tr>
<tr>
<td>Math Requirement</td>
<td>4</td>
<td>Common Experience</td>
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<tr>
<td>(MA 180 recommended at 200 Level)</td>
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<td>Knowledge Area Course</td>
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<tr>
<td>PSCI MAJOR COURSE</td>
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<td>Pre-professional Concentration</td>
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<td>Free Elective</td>
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</tr>
<tr>
<td>First-Year Seminar</td>
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## SOPHOMORE YEAR

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<td>PSCI MAJOR COURSE</td>
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<td>PSCI MAJOR COURSE</td>
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<tr>
<td>Common Experience</td>
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<td>Common Experience</td>
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<tr>
<td>Knowledge Area Course</td>
<td>3</td>
<td>Knowledge Area Course</td>
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<tr>
<td>Pre-professional Concentration</td>
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<td>Pre-professional Concentration</td>
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<td>Free Elective</td>
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<td>Free Elective</td>
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<tr>
<td>Common Experience</td>
<td>3</td>
<td>Free Elective</td>
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<td>Science Requirement</td>
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### JUNIOR YEAR

<table>
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<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td><strong>Course Title</strong></td>
<td><strong>Cr. Hrs.</strong></td>
</tr>
<tr>
<td>PSCI MAJOR COURSE</td>
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</tr>
<tr>
<td>or Free Elective</td>
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</tr>
<tr>
<td>Common Experience</td>
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</tr>
<tr>
<td>Knowledge Area or</td>
<td>3</td>
</tr>
<tr>
<td>University Course</td>
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</tr>
<tr>
<td>Pre-professional</td>
<td>3</td>
</tr>
<tr>
<td>Concentration</td>
<td></td>
</tr>
<tr>
<td>Free Elective or</td>
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<tr>
<td>Common Experience</td>
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<tr>
<td>Technology and</td>
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| Total | 15 |

### SENIOR YEAR

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<td><strong>Course Title</strong></td>
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<td>Pre-professional</td>
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</tr>
<tr>
<td>Concentration or</td>
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</tr>
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<td>Free Elective</td>
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<td>Knowledge Area or</td>
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<td>University Course</td>
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<tr>
<td>Free Electives</td>
<td>6</td>
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</table>

| Total | 15 |
Psychology is the study of mind and behavior. Its explorations span an enormous breadth, ranging from the activity of individual brain cells to the complex interactions between individuals and society. Psychology investigates how people develop and learn; how we perceive the world; how relationships are formed; how stress affects our health and impairs our performance; and why conflict is so much a part of the human experience. Psychologists also try to understand the nature and causes of abnormality and search for effective treatments to relieve the suffering it causes.

The Psychology program at Clarkson aims to provide each student with a solid foundation in the fundamental areas of psychology, as well as the opportunities to develop the problem solving, critical thinking, and communication skills that are critical in the workplace. We also strive to help students find interesting and rewarding careers related to psychology. To this end, each Psychology major is given lots hands-on learning opportunities. These include the directed research, where the student works closely with a faculty member on an experiment of mutual interest; clinical internships, where the student works with a therapist in a clinical environment; and industrial/organizational psychology internships where, the student works with psychologists in business settings. Students graduating with a BS degree in psychology from Clarkson will:

- be able to critically evaluate information and apply it to a problem or question
- be able to apply psychological principles to real-world problems
- have content expertise in the areas of psychology represented by the psychology faculty
- be able to write clearly and effectively
- In addition to satisfying the Clarkson Common Experience, the BS in Psychology degree program requires:

### Required Psychology Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>PY151</td>
<td>Introduction to Psychology</td>
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<tr>
<td>PY253</td>
<td>Social Psychology</td>
</tr>
<tr>
<td>PY255</td>
<td>Cognitive Psychology</td>
</tr>
<tr>
<td>PY456</td>
<td>Experimental Psychology</td>
</tr>
<tr>
<td>PY457</td>
<td>Experimental Psychology Laboratory</td>
</tr>
<tr>
<td>PY496</td>
<td>Directed Research</td>
</tr>
<tr>
<td>PY401-3</td>
<td>Internship</td>
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### Physiological Psychology Requirement (choose 1)

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<tr>
<td>PY454</td>
<td>Physiological Psychology</td>
</tr>
<tr>
<td>PY458</td>
<td>Cognitive Neuroscience</td>
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Cognitive Psychology Requirement (choose 1)

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<th>Course Title</th>
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<tr>
<td>PY357</td>
<td>Human Cognitive Evolution</td>
<td>PY360</td>
<td>Learning and Memory</td>
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<tr>
<td>PY358</td>
<td>Animal Learning and Cognition</td>
<td>PY461</td>
<td>Judgment and Decision Making</td>
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<tr>
<td>PY359</td>
<td>Perception</td>
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Psychology Electives (choose 3)

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<tbody>
<tr>
<td>PY246</td>
<td>Educational Psychology</td>
<td>PY453</td>
<td>Advanced Topics in Social Psychology</td>
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<tr>
<td>PY286</td>
<td>Organizational Behavior I</td>
<td>PY459</td>
<td>Neuroscience Society</td>
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<td>PY310</td>
<td>Human Sexuality</td>
<td>PY462</td>
<td>Abnormal Psychology</td>
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<td>PY311</td>
<td>Cyberpsychology</td>
<td>PY463</td>
<td>Health Psychology</td>
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<tr>
<td>PY315</td>
<td>Personal Relationships</td>
<td>PY480</td>
<td>Directed Study in Psych.</td>
</tr>
<tr>
<td>PY317</td>
<td>Psychology of Psychoactive Drugs</td>
<td>PY481</td>
<td>Directed Study in Social Psych.</td>
</tr>
<tr>
<td>PY319</td>
<td>Current Readings in Animal Behavior</td>
<td>PY482</td>
<td>Directed Study in Physiological Psych.</td>
</tr>
<tr>
<td>PY321</td>
<td>Consumer Behavior</td>
<td>PY483</td>
<td>Directed Study in Cognitive Psych.</td>
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<tr>
<td>PY335</td>
<td>Personality</td>
<td>PY491</td>
<td>Directed Research in Health Psych.</td>
</tr>
<tr>
<td>PY340</td>
<td>Behavioral Ecology and Sociobiology</td>
<td>PY492</td>
<td>Directed Research in Psychophysiology</td>
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<tr>
<td>PY370</td>
<td>Developmental Psychology</td>
<td>PY498-499</td>
<td>Senior Thesis</td>
</tr>
<tr>
<td>PY411</td>
<td>Counseling Psychology</td>
<td></td>
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</tr>
<tr>
<td>PY412</td>
<td>Psychiatric Center Professional Exp</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mathematics: 3 college level math courses to include at least one calculus course and one statistics course.

The Professional & Professional Experience and Information Technology requirements are distributed throughout the Psychology Curriculum. PY456 satisfies the Technology Serving Humanity requirement.
## Sample Curriculum

### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs</th>
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<tr>
<td>PY151</td>
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<td>PY255</td>
<td>Cognitive Psychology</td>
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<td>UNIV190</td>
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<td>Social Psychology</td>
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<td></td>
<td>Science Course</td>
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<tr>
<td>FY100</td>
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### SOPHOMORE YEAR

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<td>Psychology Cognitive</td>
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<td>Biostatistics</td>
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<td>STAT318</td>
<td>KA/UC</td>
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### JUNIOR YEAR

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<th>Title</th>
<th>Cr. Hrs</th>
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<td>&amp; Lab</td>
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<td>Technology Elective</td>
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SENIOR YEAR

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<th>Title</th>
<th>Cr. Hrs.</th>
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<td>Directed Research/Internship</td>
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<tr>
<td>KA/UC</td>
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<td>3</td>
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<td>15</td>
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<tr>
<td></td>
<td>Free Electives</td>
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<td></td>
<td>15</td>
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</table>

**Professional Concentration in Health Psychology**

The Professional Concentration in Health Psychology is aimed at Psychology majors interested in careers in health science. The Professional Concentration in Health Psychology can be obtained by completing any 6 of the courses listed below (18-21 credits). Note that 3 of these courses must be used as undesignated free elective courses and cannot be used for the Psychology major.

- PY454 Physiological Psychology
- PY458 Cognitive Neuroscience
- PY463 Health Psychology
- PY310 Human Sexuality
- PY317 The Psychology of Psychoactive Drugs
- PY462 Abnormal Psychology
- PY253 Social Psychology
- PY361 Motivation and Emotion
- PY360 Learning and Memory
- PY412 Psychiatric Center Professional Experience

**BS IN SOFTWARE ENGINEERING**

Details of the BS in Software Engineering degree may be found in the Interdisciplinary Program pages of this catalog.

**Minors in Arts and Sciences**

**Minor in Biology**

A minor in Biology is available to students who take at least 19 credit hours in Biology. Core Courses (9 credits): Students must take BY140 Biology I (3 cr.) and BY160 Biology II (3 cr.) and at least one of the following:

- BY214 Genetics (3 cr.)
- BY222 Ecology (3 cr.)
- BY320 Microbiology (3 cr.)
- BY360 Comparative Physiology (3 cr.)
- BY471 Human Anatomy and Physiology I (3 cr.)
BY472  Human Anatomy and Physiology II (3 cr.)

*Elective Courses (9 credits): Students must take at least 9 credits of Biology courses numbered 300 or above. Laboratory Requirement (1-2 credits):

Students must take at least one of the following laboratory courses:

BY224  Ecology Laboratory (2 cr.)
BY142  Biology II Laboratory (2 cr.)
BY162  Biology II Laboratory (2 cr.)
BY322  Microbiology Laboratory (2 cr.)
BY362  Comparative Physiology Laboratory (2 cr.)
BY473  Human Anatomy and Physiology I Laboratory (2 cr.)
BY474  Human Anatomy and Physiology II Laboratory (2 cr.)

*Students should consult with the Biology Chair to determine whether AP Biology will satisfy the BY140 and BY160 requirement.

**Minor in Biology, Behavior, and Society (BiBS)**

A diverse group of disciplines attempt to document and explain the origins and functions of human cognition, social behavior, and social organization: anthropology, biology, economics, history, psychology, and sociology each include a disciplinary focus on the origins and current consequences of individual and group behavior and social outcomes. However, among disciplines - and even within disciplines - there is disagreement about the relative importance of genes, natural environment, individual rational-choice, and sociocultural-construction on individual and group behavior, cultures, and social institutions. Historical views have ranged from strong biopsychological determinism, to environmental determinism & individual rational choice, to strong sociocultural determinism. Views on the origins and current functions of behavior, culture, and society can and often do affect social policy; extreme views have provided the intellectual rationale for eugenics, racism, sexism, imperialism, laissez-faire capitalism, and collectivization and ‘cultural revolution’. On a positive note, interdisciplinary progress at understanding the origins and functions of human behavior and human cultures & societies has contributed to progressive reforms in the areas of mental health, public health, laws and criminal justice, education, intercultural understanding, and programs to provide economic and social opportunity for the underprivileged. Views on questions of ‘human nature’ have tended to become polarized between the ‘biological’ (biology, evolutionary psychology, biological anthropology) and the ‘social science’ (social psychology, cultural anthropology, history, sociology) poles. This dialectical relationship between the social and biological sciences and the corresponding dialogue between both, forces both sides in this rich debate to refine their positions and expose students to a deeper understanding of the foundations of the respective disciplines and their impact on the world. Our minor in Biology, Behavior, and Society (BiBS) will expose students to these diverse disciplinary traditions and their conflicts and debates in the present and past. This minor provides students the knowledge and skills to become informed, critical, and reflective citizens that can make balanced decisions about the imbricate relationship of biology, psychology, culture and society.
The BiBS minor is intended for students who want to acquire an interdisciplinary and comprehensive overview of the different perspectives on human behavior, human cultural evolution, and human social organization. The objective of this minor is for students to understand the theoretical and empirical foundations of multiple disciplines that contribute to understanding human behavior and be able to knowledgeably weigh the perspectives of each. An aspirational outcome is that students can develop a synthetic, informed understanding of the origins and function of human behavior, cultures, and societies. We believe that this minor will attract students who are interested in biology, psychology, social sciences, health careers, law, politics, and economics and provide them with bio-cultural literacy critical to evaluating the multiplicity of scientific claims about ‘human nature’.

The four core course requirements within this degree program provide the interdisciplinary foundation of psychology, biology, and social science. The three additional electives will provide a student with depth in specific areas while continuing to confront an interdisciplinary set of perspectives.

Requirements for the Biology, Behavior, and Society Minor
A minor in Biology, Behavior, and Society is available to students in all degree programs. To obtain a minor, students must complete 20 credits:

**Required courses (11 credits):**

HIST270 Introduction to Culture, Society & Biology (3 credit) [CSO/STS, C1]
BY/PY340 Behavioral Ecology and Sociobiology (3 credit) [IG]
BY/PY357 Human Cognitive Evolution (3 credit)
SA&S300 Arts and Sciences Seminar (1 credit)
SA&S499 Biology, Behavior and Society Minor Portfolio (1 credit)

*A student, to complete the minor, will take SAS499 as an independent study course under the mentorship of the student’s minor advisor. The student will provide a portfolio based on (a) term papers or equivalent products from the three major required courses, (b) representative course material that shows mastery of subject matter area, and (c) will use the portfolio and materials from other courses taken for the BiBS minor to prepare a 10 page self-reflective essay on what the student has learned about the biological, psychological, and socio-cultural influences on human behavior, human cultural evolution, and human social organization.*

**Electives (9 credits):** Electives must be from outside your declared major, and include at least three credits from each of the two categories:

**Category 1 Electives**
ANTH220: Understanding the Americas [UNIV/CSO/STS, C1]
ANTH225: Global Perspectives on Sexuality [UNIV/CGI/STS]
ANTH230 Introduction to Race and Ethnicity [UNIV/CGI/CGI]
ANTH270 Environment, Technology and Society [STS]
ANTH325: Sex and Commerce [UNIV/IG/CGI, C2]
ANTH330: Men and Masculinities [CSO]
HIST320: Medicine and Society in America [UNIV/CSO/STS, C1]
HIST326: Modern Sex [UNIV/CSO/STS]
HIST327: History of Women and Gender in America [UNIV/CSO/IG, C1]
HIST328: History of Gender and Sex [UNIV/CSO/IG]
HIST329: History of the American Family [UNIV/CGI/CSO, C1]
HIST342: War and Gender [UNIV/CSO/IA, C1]
HIST350: History of Nazi Germany [UNIV/CSO/IG, C1]
HIST351: History of the Holocaust
SOC330: Health, Wealth, Inequality and the Environment [UNIV/CGI/STS, C1]
POL/SOC350: International Development and Social Change [EC]
SOC385: Food and Society [UNIV/CGI/STS]
SS220 Introduction to Gender [UNIV/CGI/IG]

Category 2 Electives
BY/PY319 Current Readings in Animal Behavior
BY/PY358 Animal Learning and Cognition
BY 460 Neurobiology
BY420 Evolution
EC384 Game Theory and Economic Strategy
HIST/PY459 Neuroscience and Society [STS, C1]
OS286/PY286 Organizational Behavior 1 [IG]
PY253 Social Psychology
PY310 Human Sexuality [UNIV/CGI/IG]
PY315 Personal Relationships [C1]
PY453 Advanced Topics in Social Psychology [C2]
PY360 Learning and Memory
PY461 Judgment and Decision Making
PY463 Health Psychology [C1]

Minor in Chemistry
Students pursuing the minor in Chemistry must complete the following requirements. The minor is not open to students majoring in Chemistry or Biomolecular Science.

First Year – Prerequisites:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM103, CM104, CM105 and CM106</td>
<td>10</td>
</tr>
<tr>
<td>Or CM131 and CM132</td>
<td>8</td>
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</table>
Students must take five of the following 14 courses, including at least one of the labs:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CM221</td>
<td>Spectroscopy</td>
<td>3</td>
</tr>
<tr>
<td>CM223</td>
<td>Spectroscopy Lab</td>
<td>3</td>
</tr>
<tr>
<td>CM241</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CM242</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CM244</td>
<td>Organic Chemistry Lab</td>
<td>3</td>
</tr>
<tr>
<td>CM300</td>
<td>Instrumental Lab</td>
<td>3</td>
</tr>
<tr>
<td>CM312</td>
<td>Survey of Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CM320</td>
<td>Separations and Electrochemistry</td>
<td>3</td>
</tr>
<tr>
<td>CM345</td>
<td>Advanced Lab</td>
<td>4</td>
</tr>
<tr>
<td>CM371</td>
<td>Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CM372</td>
<td>Physical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CM460</td>
<td>Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CM461</td>
<td>Biochemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CM470</td>
<td>Biochemistry/Biotechnology Lab</td>
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</table>

Total Credits 23 or 25

**Minor in Cognitive Neuroscience**

Required Basic Science Courses (29 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PY151</td>
<td>Introduction to Psychology (3 cr.)</td>
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</tr>
<tr>
<td>BY140</td>
<td>Biology I: Inheritance, Evolution and Diversity (3 cr.)</td>
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<tr>
<td>BY142</td>
<td>Biology I Laboratory (2 cr.)</td>
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</tr>
<tr>
<td>BY160</td>
<td>Biology II: Cellular and Molecular Biology (3 cr.)</td>
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<tr>
<td>CM131</td>
<td>General Chemistry I (4 cr.)</td>
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</tr>
<tr>
<td>CM132</td>
<td>General Chemistry II (4 cr.)</td>
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<tr>
<td>PH141</td>
<td>Physics for Life Sciences I (4 cr.)</td>
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</tr>
<tr>
<td>PH142</td>
<td>Physics for Life Sciences II (4 cr.)</td>
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Required Cognitive Neuroscience Courses (9 credits)

<table>
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<tr>
<td>BY/PY458</td>
<td>Cognitive Neuroscience (3 cr.)</td>
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<tr>
<td>BY/PY454</td>
<td>Physiological Psychology (3 cr.)</td>
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<tr>
<td>BY/PY460</td>
<td>Neurobiology (3 cr.)</td>
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Elective Psychology Courses: 2 courses (6 credits) chosen from the following:

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>PY317</td>
<td>Psychology of Psychoactive Drugs (3 cr.)</td>
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</tr>
<tr>
<td>BY/PY358</td>
<td>Animal Learning and Cognition (3 cr.)</td>
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<tr>
<td>PY359</td>
<td>Perception (3 cr.)</td>
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<tr>
<td>PY360</td>
<td>Learning and Memory (3 cr.)</td>
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</tr>
<tr>
<td>PY462</td>
<td>Abnormal Psychology (3 cr.)</td>
<td></td>
</tr>
</tbody>
</table>
Elective Biology Courses: 2 courses (6 credits) chosen from the following:

BY360  Physiology (3 cr.)  
BY214  Genetics (3 cr.)  
BY310  Developmental Biology (3 cr.)  
BY350  Comparative Anatomy (3 cr.)  
BY471  Anatomy and Physiology I  
BY472  Anatomy and Physiology II  
BY480  Advanced Cell Biology

1CM103/105 and CM104/106 will also satisfy the Chemistry requirement.  
2PH131 and PH132 will also satisfy the Physics requirement.  
3Biology majors taking the cognitive neuroscience minor cannot use PY/BY454 as one of their Biology elective courses.

Minor in Communication

Clarkson University offers a minor in Communication that is available to all undergraduate students with the exception of Communication majors. Courses used to fulfill the requirements of the minor include writing, speaking, graphic design, and theory. To achieve a minor in Communication, students must achieve a 2.0 grade average in six three-credit courses, distributed in the following fashion:

Students must take one course from each of the four groups below, plus any other two communication courses. The currently available courses in each group are listed below. Contact the Communication & Media departmental office for further information.

Writing

COMM210  Theory of Rhetoric for Business, Science and Engineering  
COMM219  Introduction to Social Media  
COMM226  Short Film Screenwriting  
COMM312  Public Relations  
COMM313*  Professional Communication  
COMM 326  Feature Film Screenwriting  
COMM330  Science Journalism
COMM428* Environmental Communication

**Speaking**
- COMM217 Introduction to Public Speaking
- COMM312 Public Relations
- COMM313* Professional Communication
- COMM417 Business and Professional Speaking

**Design**
- COMM100 2D Digital Design
- COMM229 Principles of User-Experience Design
- COMM322 Typography and Design
- COMM327 Digital Video Production I
- COMM329 Front-End Development for the Web
- COMM345 Information Design
- COMM360 Sound Design
- COMM427 Digital Video Production II

**Theory**
- COMM310 Mass Media and Society
- COMM410 Theory and Philosophy of Communication
- COMM412 Organizational Communications and Public Relations Theory
- COMM428* Environmental Communication

*Course may be used for one of two groups but not both.

**NOTE:** Students may transfer no more than six off-campus credits towards the minor. The chair of the Department of Communication & Media must approve transfer courses.
Minor in Computational Science
The Minor in Computational Science is available to students in any major. The minor allows students to develop an expertise in Computational Science while pursuing a conventional major, which provides the context wherein they apply their computational skills. To complete the minor the student must achieve a grade-point average of at least 2.0 in courses totaling at least 21 credits, distributed as follows:

MA377 Numerical Methods
At least two of:
- MA232 Elementary Differential Equations
- MA239 Elementary Linear Algebra or MA339 Applied Linear Algebra
- STAT282 General Statistics or STAT383 Probability and Statistics

Application area electives to make a total of 21 credits

Application area electives are computational courses in departments other than Mathematics, typically drawn from the student’s major. The current list of approved courses is maintained by the Mathematics Department.

Minor in Computer Science
A minor in Computer Science is available to all students except those majoring in Computer Science or Software Engineering.

1. Core courses:
   - CS141 Introduction to Computer Science I
   - CS142 Introduction to Computer Science II
   - MA211 Foundations
   - CS344 Algorithms and Data Structures

2. Electives:
   Three additional CS courses, one numbered 200 or higher, one numbered 300 or higher, and one numbered 400 or higher. Each course must be worth at least three credits.
   Certain courses cannot be used for the minor and some substitutions are acceptable.
   Contact the Department of Computer Science for details.

Exclusion: The Minor in Computer Science is not open to students majoring in Computer Science or Software Engineering.

Minor in Gender & Sexuality Studies
All students choosing a minor in Gender and Sexuality Studies must complete 15 credit hours (five courses) and satisfy the following requirements:
1. Either SS 220, Introduction to Gender, or SS 221, Introduction to Sexuality
2. Four of the following Gender and Sexuality Studies courses:
   As of July 2015, the list of approved Gender and Sexuality Studies courses includes:
   
   Either SS 220 or SS 221 (whichever one was not taken to satisfy requirement #1)
   ANTH 225 Global Perspectives on Sexuality
   ANTH 325 Sex and Commerce
   ANTH 330 Men & Masculinities
   HIST 326 Modern Sex: Sexualities and Genders in Modern America
   HIST 327 History of Women and Gender in America
   HIST 328 History of Gender and Sexuality in the Transatlantic World
   HIST 329 History of the American Family
   HIST 338 Women, Gender, and Science in American History
   HIST 342 War and Gender: The Modern Period
   LIT 240 Gender and Popular Culture
   POL 355 Women and Politics
   SOC 310 Women and Religion
   SOC 330 Health, Wealth, Inequality, and the Environment
3. SS 499 Zero-credit Minor Portfolio, as required of the other minors in the Department of Humanities and Social Sciences.

Advising for the minor takes place in the Department of Humanities and Social Sciences.

**Minor in Law Studies**
Please see the Law Studies Minor content located in the David D. Reh School Business section of the Catalog for more information.

**Minor in Information Technology**
A minor in Information Technology is available to students in any degree program. The requirements are 21 credits consisting of:
1. two courses in problem solving and programming: CS141 or EE261, and CS142 or EE361
2. one course in computer systems: CS241 or EE360
3. one course in database administration: IS314*
4. one course in computer networks: EE407/CS455
5. two courses concerned with Web technologies and administration: COMM442 and COMM444
   * For School of Business Majors for whom IS314 is not a required course, IS211 may be used to fulfill this requirement.

**Minor in Mathematics**
The Minor in Mathematics is open to all students except those majoring in Mathematics or in Applied Mathematics and Statistics. To complete the minor the student must achieve at least a grade-point average of at least 2.0 in seven three-credit courses from the following list:
MA131 Calculus I  
MA132 Calculus II  
MA200 Introduction to Mathematical Modeling and Software  
MA211 Foundations  
MA230 3-D Space and Projective Geometry  
MA231 Calculus III  
MA232 Elementary Differential Equations  
MA239 Elementary Linear Algebra  
Any Clarkson University 3-credit MA or STAT course at the 300-level or above.

Any CS course which is double-listed as an MA course at the 300-level or above also counts toward the minor; check with the Mathematics Department for details.

**Minor in Medicine and Healthcare**

A minor in *Medicine and Healthcare* is available to students in all degree programs. To obtain a minor, students must complete 23 credits:

**Required courses** (14 credits):
1. BY 471 Anatomy and Physiology I [Fall]
2. PY463 Health Psychology [C1, Fall]
3. *Either* PHIL 241 Medical Ethics [UNIV/CGI/IG, Odd Springs]  
   *Or* BIE 400 Responsible Conduct of Research [STS, Spring]
4. *Either* HIST 335 History of Medicine in Europe and North America [UNIV/CGI/STS, C1, Fall]  
   *Or* HIST 321 History of Public Health in America [UNIV/CSO/STS, C1, Spring?]
5. SAS 200 Medicine & Healthcare Profession Seminar (new course, 1 credit, Spring?)
6. SAS 405 Experiential Learning in Healthcare (new course, 1 credit, every semester)

**Electives** (9 credits): *Electives include at least three credits from each of the three categories*:

**Category 1 Electives – Biomedical Science & Engineering**
BY 315 Bioinformatics for Disease Research [TECH]
BY 324 Parasitology
BY 383 Molecular Genetics & Human Disease
BY 416/ EHS 415 Principals of Toxicology & Epidemiology
BY 419 Immunology [C1]
BY 363 Pharmacology of Infectious Disease
BY 440 Introduction to Biomedical Rehabilitation Engineering & Science
BY 448 Medical Microbiology [C1]
BY 452 Pharmacology
BY 455 Cell & Molecular Biology of Cancer [C1]
BY 472 Anatomy and Physiology II
BY 473 Anatomy and Physiology I Lab
BY 474 Anatomy and Physiology II Lab [TECH]
BY 476 Current Topics in Biology & Medicine [C1]
BY 485 Neural Engineering
BY 488 Stem Cells & Regenerative Medicine
BR 200 Intro to Biomedical & Rehabilitation Engineering [STS/C2]
CM 444 Medicinal Chemistry
CM 453 Introduction to Biomaterials
CM 460 Biochemistry I
PY 462 Abnormal Psychology

Category 2 – Healthcare & Social Sciences
HS 200 Health Coaches I
PY 310 Human Sexuality [UNIV/CGI/IG]
PY 317 Psychology of Psychoactive Drugs [UNIV/CGI/IG]
PY 363 Judgment and Decision Making for the Biomedical Sciences
PY 411 Counseling Psychology: Theory and Practice
SOC 330 Health, Wealth, Inequality and the Environment [UNIV/CGI/STS, C1]
POL 431 Health Care Policy [UNIV/EC/STS C1]

Category 3 – Healthcare & the Humanities
ANTH 330 Men and Masculinities [CSO]
Either PHIL 241 Medical Ethics [UNIV/CGI/IG, Odd Springs]
   Or BIE 400 Responsible Conduct of Research [STS, Spring] – whichever not used
to fulfill the required course.
HIST 270 Introduction to Society, Culture & Biology [UNIV/CSO/STS]
HIST 338 Women, Gender and Science in American History [UNIV/CSO/STS C1]
HIST 353 Medicine & Ethics, 3rd Reich [UNIV/IG/STS C1]
HIST 331 Ancient Medicine and Magic [STS]
HIST 459 Neuroscience & Society [STS C1]
Either HIST 335 History of Medicine in Europe and North America [UNIV/CGI/STS, C1]
   Or HIST 321 History of Public Health in America [UNIV/CSO/STS, C1] – whichever not used
to fulfill the required course.
POL/PHIL 380 The Law and Bioethics [CGI, C1]
SS 221 Introduction to Sexuality [UNIV/CSO/IG C1]

Minor in Physics
A minor in Physics is available to students in any degree program. To obtain a minor, a student must complete the following core courses:
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH131</td>
<td>Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PH132</td>
<td>Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PH231</td>
<td>Fundamentals of Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PH331</td>
<td>Quantum Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

One of the following intermediate courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH221</td>
<td>Theoretical Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PH230</td>
<td>Physics III</td>
<td>3</td>
</tr>
</tbody>
</table>

One of the following basic courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH121</td>
<td>Physics Freshman Seminar</td>
<td>1</td>
</tr>
<tr>
<td>PH232</td>
<td>Modern Physics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PH435</td>
<td>Physics Seminar</td>
<td>1</td>
</tr>
<tr>
<td>PH470</td>
<td>Directed Study Experimental</td>
<td>1</td>
</tr>
<tr>
<td>PH474</td>
<td>Directed Study Theoretical</td>
<td>1</td>
</tr>
</tbody>
</table>

Any two 3-credit Physics or equivalent courses approved by the department at the 300-400 level (6 credits).

**Minor in Psychology**
A minor in Psychology is available to students in any degree program except Psychology. To obtain a minor in Psychology a student must complete six courses: PY151 (Introduction to Psychology) and any 5 Psychology courses numbered 200 or above (only one of which can be one of the directed research or internship courses).

**Minor in Software Engineering**
A minor in Software Engineering is available to students in any degree program with the exception of the Software Engineering and Computer Science degree programs. To obtain a minor, a student must complete the following course requirements:
   a) (CS141, CS142, and CS344) or (EE261, EE361, and EE363)
   b) CS242 or EE408
   c) EE368 or CS350
   d) EE465/CS452, CS455/EE407, EE468/CS460, or other course approved by the Software Engineering Program Committee
Minor in Statistics
The minor in Statistics is open to all students except those majoring in Mathematics (statistics option) or in Applied Mathematics and Statistics. To complete the minor the student must achieve at least a 2.0 grade-point average in courses totaling at least 21 credits, distributed as follows:

- One calculus course (MA181 or MA131 or equivalent)
- One linear algebra course (MA239 or MA339 or equivalent)
- One introductory statistics course (STAT282 or STAT383 or equivalent)
- A least 12 additional credits from statistics courses or projects including at least two statistics courses or projects from departments other than Mathematics. The current list of approved courses is maintained by the Mathematics Department.

Minors in Humanities and Social Sciences*
The Department of Humanities and Social Sciences offers minors that consist of a coherent set of five courses beyond the Clarkson Seminar, plus completion of a Minors Portfolio. There are three different types of minor: Thematic Minors, Disciplinary Minors, and Student-Designed Minors.

Thematic Minors
These interdisciplinary minors consist of five related humanities and social sciences courses that address a common theme. The currently available thematic minors are:

1. International and Cross-Cultural Perspectives
2. Literature and the Arts
3. Science, Technology and Society
4. War Studies

Disciplinary Minors
These minors consist of five courses in one of the disciplinary areas in the Department of Humanities and Social Sciences, for example, Anthropology, History, Sociology, Literature, Philosophy, and Political Science. A list of disciplinary areas, as well as other information about these minors, is available from the Department of Humanities and Social Sciences.

Student Designed Minors
Students propose these minors through the office of the Department of Humanities and Social Sciences to a faculty committee for approval. The proposal lists the courses that a student will take for his or her minor and articulates the coherence among the courses. Students are encouraged to design their minor in collaboration with a faculty advisor in the Department of Humanities and Social Sciences. Guidelines for developing and submitting a proposal for a student-designed minor are available from the department office.

Minor Portfolio
Under the guidance of a faculty advisor in the Department of Humanities and Social Sciences, a student completing one of the above minors will compile a portfolio that represents his or her
learning experience in the minor. The portfolio will be completed within the appropriately designated 499, “Humanities/Social Sciences Minor Portfolio,” a zero-credit hour course under the direction of the student’s minor advisor in the department. A student must receive a P in the minor portfolio in order to complete the requirements for the minor. Additional information about the Minors Portfolio is available from the Department of Humanities and Social Sciences office, Snell 265.

*Courses taken to fulfill requirements for a Humanities/Social Science Minor cannot be used to fulfill requirements for a Humanities and Social Science Major.

OTHER CURRICULAR OPPORTUNITIES

The Adirondack Semester
For description of this program see the Institute for Sustainable Environment in the Interdisciplinary section.

Bachelor of Professional Studies
An entering first-year or transfer student may create, in consultation with an academic advisor, a program uniquely tailored to meet special occupational or career objectives through the Bachelor of Professional Studies (BPS) degree.

Clarkson Trudeau Biomedical Scholars Program
Damien Samways, Director, dsamways@clarkson.edu

The Clarkson Trudeau Biomedical Scholars Program is an intensive Spring semester-long living and learning experience (the “Trudeau Semester”) that takes place off campus at the renowned Trudeau Institute in Saranac Lake, New York.

The 15-credit program Trudeau Semester is an undergraduate program designed to provide a select group of undergraduate students the opportunity to learn multidisciplinary aspect of bioscience related to the human health field. The program is specifically designed for students from the majors of Biology, Biomolecular Science, Chemistry, and Chemical and Biomolecular Engineering, and also serves as a professional experience. The Trudeau Semester is taught by Clarkson and Trudeau Institute faculty who are respective experts in their field. The academic program provides a range of disciplines that by design will each contribute to a related topic that is the focus of a semester-long, integrative project that aims to demonstrate how technology serves humanity, a core Clarkson value. Students study and conduct a research project at the Trudeau Institute located approximately one mile from their townhouse residences in Saranac Lake. At the Trudeau Institute there is dedicated laboratory space for instruction and study offices, as well as an office for a faculty member. Each course is 3 weeks in duration, with the exception of the Term Integrated Research Project, which the students are involved with the entire semester. Students present their research findings at the
Symposium for Undergraduate Research Experiences conference that takes each semester on the Clarkson University Campus, in addition to a public presentation.

**Social Documentation: Communication and Humanities/Social Sciences Double Major**

This innovative option invites students to combine their interests in learning and using cutting-edge technology with a solid base in the social sciences (history, political science, anthropology and sociology) or the humanities (literature, film and philosophy).

Social Documentation (SD) emphasizes creativity, flexibility and versatility, allowing students to pursue a broad span of interests leading to careers in filmmaking, writing, web-based technologies, radio and TV, or governmental and non-governmental agencies. Guided by their SD advisor, students choose courses in both their majors that reflect their own interests and future plans; additionally, they take a series of core courses in common with all other SD majors to gain the research, technical and rhetorical skills they will need for career success. (For further information, see the Social Documentation section under Interdisciplinary Undergraduate Programs.)

**Science Studies**

Many students approach their first year having found all of their secondary school science courses fascinating and wishing to explore several fields more deeply before declaring a major. These students may choose to participate in the Science Studies option which provides students with an opportunity to learn more about programs within the School of Arts & Sciences prior to selecting a final program for continued study. Students taking advantage of this option work with an advisor to develop an individualized course schedule for the first semester, designed to facilitate explorations and to keep options open. These individualized programs may involve trade-offs in later course selection, but will not extend time required to obtain a degree. With assistance from their academic advisor, undergraduates will select an approved program which best suits their individual goals and objectives. Science Studies students are fully matriculated students at Clarkson University. For more information, contact the Science Studies advisor at 315-268-6544.
THE DAVID D. REH SCHOOL OF BUSINESS
Augustine Lado, Dean of the David D. Reh School of Business
Luciana Echazu, Associate Dean of Programs and Operations

The Clarkson University David D. Reh School of Business provides a valuable and interesting array of educational opportunities for students interested in careers that are aligned with the challenges and opportunities that face the business leaders of today. Managing innovation, the supply chain, customers, and flows of information and financial capital across global boundaries requires a set of knowledge and skills that become ingrained in our students. The proof is in the employment statistics of our graduates, who enjoy placement rates, starting salaries, and career mobility and flexibility that are among the best in the nation.

The mission of the Clarkson University David D. Reh School of Business is to combine scholarly research and teaching excellence to create and advance knowledge at the intersection of business, technology, and society. We educate and develop students who think analytically, communicate effectively, act ethically, span disciplinary boundaries, seek innovative solutions through creative problem solving, and lead in a global environment.

In an effort to achieve this mission, the Reh School of Business has built a world-class faculty and created a curriculum that requires hands-on learning, provides ample opportunities to develop leadership skills, and builds professional networks inside and outside the classroom. The Reh School of Business has fostered an innovative and supportive culture where students and faculty enjoy working hard and seeing results.

We focus our resources on areas that span the traditional functional boundaries: Global Supply Chain Management, Engineering & Management, Innovation and Entrepreneurship, Financial Information and Analysis, and Business Intelligence and Data Analytics. In doing so, our curriculum allows students to develop expertise in the traditional business disciplines – accounting, finance, marketing, management, operations, and data analytics – and then to clearly see how they fit together in the real world. This gives our graduates a balance of disciplinary expertise and an understanding of the "big picture" that is, how the functional parts of organizations must work together to create value and wealth. This combination of detail-oriented expertise with a broad, system-wide perspective is something that our employers helped us create. Our approach has proven to be effective and beneficial to employers and has helped us to earn national rankings in both Supply Chain Management, Innovation and Entrepreneurship.

The secret to implementing these ideas is simple to explain, but difficult for most schools to imitate. We offer an innovative first-year program for undergraduates, in which students invent and then plan a real business; we offer multiple opportunities for hands-on learning; we help students build a professional network; we offer an integrated, technology-infused curriculum; and we start all of this early, at the beginning of the Clarkson experience. The result is a connected, knowledgeable graduate prepared for success in the business world and in the community. We can do this, and do it well, because of a combination of our size, our faculty, our alumni, our location, and our heritage.
The strength of our curriculum is driven by the quality of our faculty. Faculty use active learning approaches to bring the curriculum to life. Small-group discussions, real-life case studies, field projects, student consulting teams, and simulation exercises are examples of the teaching methods woven into courses. These experiences help develop students who can lead, be effective team members, and work well with customers, suppliers, colleagues, and the community. Written, oral, and technological communication skills are integrated into the entire curriculum. Frequent visits by executives and managers link the classroom to the business world. To extend and broaden learning and development beyond the classroom, all School of Business students are required to have an international experience (either a traditional semester abroad, a two- to three-week faculty-led trip, or an international summer internship), and a professional experience (such as an internship or a work co-op). Additionally, all students are encouraged to participate in campus organizations and professional societies. Clarkson University's strong programs in engineering and science provide special opportunities for students who wish to combine management and technical interests.

The David D. Reh School of Business’s undergraduate and graduate programs are accredited by AACSB, the most prestigious national accrediting body for business programs. Fewer than 25 percent of the nation’s business programs share this distinction, which is based on an institution’s ability to deliver a comprehensive and unique business-related educational experience to its students.

**Faculty**

**Consumer and Organizational Studies**

*Professors* Larry Compeau, Augustine A. Lado; *Associate Professors* Jay Carlson, Stephen Sauer, Sandra Fisher, Michael Wasserman; *Assistant Professors* Floyd Ormsbee, Ty Mackey, Jane Oppenlander, Zhaleh Semnani-Azad, Anju Sethi; *Instructors* Alan Belasen, Marc Compeau, Melvin Chudzik

**Economics and Financial Studies**

*Professor* Diego Nocetti; *Associate Professors* Bebonchu Atems, John DeJoy, Luciana Echazu, Zhilan Feng, Martin Heintzelman, Alasdair Turnbull, Allan Zebedee; *Assistant Professors* Joseph Andriano, Wentau Wu; *Instructor* Gasper Sekelj

**Engineering & Management**

*Professor* Michelle Crimi; *Associate Professor* R. John Milne; *Assistant Professors* H. Cecilia Martinez Leon, Golshan Madraki, Seyedamirabba Mousavian, Ha Ta; *Professor of Practice*, Marshall Issen

**Operations and Information Systems**

*Professors* R. Alan Bowman, Boris Jukic, Farzad Mahmoodi, Weiling Ke; *Associate Professors* Santosh Mahapatra, Somendra Pant, Dennis Yu; *Assistant Professors* William MacKinnon, Chester Xiang; *Instructors* Bret Kauffman, Jesse Sherman, Carl Strang
Undergraduate Business Programs
Common First & Second-Year Curricula

The undergraduate business program’s first two years are designed to provide flexibility so students are exposed to a variety of courses. Students will have formal and informal opportunities to learn about the majors, minors, and career opportunities so that they can make an appropriate choice about their academic path. With the exception of Engineering & Management, courses students take are virtually identical for all Reh School of Business students during those first two years, so a student need not declare a major until the sophomore year. Freshmen who enroll as undecided business majors are considered to be fully matriculated in the School of Business. Within the first two years, students will select a specific program of interest.

We have undergraduate integrated majors that result in the Bachelor of Science degree:

- Global Supply Chain Management
- Innovation & Entrepreneurship
- Financial Information & Analysis
- Business Intelligence & Data Analytics
- Engineering & Management

We also offer a range of minors including Corporate Innovation, Economics, Law Studies, Human Resource Management, Product Design & Marketing, and Quality-Based Project Management. All Bachelor of Science degree candidates must successfully complete the Clarkson Common Experience, all requirements of their major, and 120 credits. Additionally, all Bachelor of Science degree candidates must complete an international educational experience and a professional experience.

The Common First- and Second-Year Curriculum (non-Engineering & Management majors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC150</td>
<td>Principles of Microeconomics</td>
<td>3</td>
<td>EC151</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>SB113</td>
<td>Entrepreneurship and Business Innovation I*</td>
<td>3</td>
<td>AC202</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
<td>3</td>
<td>--</td>
<td>Non-Business Elective***</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Science Course</td>
<td>3</td>
<td>--</td>
<td>Experience Knowledge Area</td>
<td>3</td>
</tr>
<tr>
<td>MA180</td>
<td>Intro College Math or Non-Business**</td>
<td>3</td>
<td>MA181</td>
<td>Basic Calculus (pre-req: MA180 or MA120)</td>
<td>3</td>
</tr>
<tr>
<td>FY100</td>
<td>First Year Seminar</td>
<td>1</td>
<td>--</td>
<td>Science Course</td>
<td>3</td>
</tr>
</tbody>
</table>

TOTAL 16

TOTAL 15

1

1 All Bachelor of Science degree candidates must successfully complete the Clarkson Common Experience, all requirements of their major, and 120 credits. Additionally, all Bachelor of Science degree candidates must complete an international educational experience and a professional experience.
Successful completion of a minor requires completion of all prerequisites and courses designated for the minor. It is the student responsibility to declare a minor early enough to complete all requirements.

Second Year — First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS211</td>
<td>Introduction to ERP</td>
<td>3</td>
<td>OS286</td>
<td>Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>AC203</td>
<td>Managerial Accounting</td>
<td>3</td>
<td>MK32</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>LW270</td>
<td>Law and Society I</td>
<td>3</td>
<td>OM33</td>
<td>Operations and Supply Chain</td>
<td></td>
</tr>
<tr>
<td>PHIL243</td>
<td>Business Ethics</td>
<td>3</td>
<td>Management</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(recommended, or other non-business elective)</td>
<td>3</td>
<td>EC311</td>
<td>Introduction to Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>STAT282</td>
<td>Statistics</td>
<td>3</td>
<td></td>
<td>Non-Business Elective to satisfy Clarkson Common Experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Knowledge Area ****</td>
<td>3</td>
</tr>
</tbody>
</table>

TOTAL 15

Second Year — Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
</table>

TOTAL 15

*Transfer students are required to take an upper-level School of Business elective in place of SB113.

** Students must complete a basic calculus course (MA181). MA 131-Calculus I can be substituted for MA181.

*** Students considering the Business Intelligence and Data Analytics major should take IS110.

****Students wishing to major in Business Intelligence and Data Analytics should take IS237 Introduction to Programming and Application Development in the sophomore year, or CS141 Introduction to Computer Science (4 credits), or EE261 Introduction to Programming and Software Design.

BS IN GLOBAL SUPPLY CHAIN MANAGEMENT (GSCM)
The principles behind supply chain management focus on developing seamless flows of raw materials, products/services, information, and financial capital. The supply chain starts at the initial design process and includes raw material sourcing and logistics and continues through the delivery of that product or service to the end customer with a goal of creating customer satisfaction at optimal cost. The GSCM curriculum takes a systems approach, which includes concepts and faculty from operations management, marketing, information systems, human resource management, strategic management, and economics woven together in a seamless curriculum. Concepts emphasized include:
• Integration through ERP (Enterprise Resource Planning)
• A process management approach to quality
• A global orientation
• E-commerce based strategies
• Employing IT as a decision-making tool
• People and organizational skills for implementing GSCM solutions
• Incorporating environmental sustainability perspectives

Students earning a degree in Global Supply Chain Management must complete 120 credits including the following: 33 credits of Clarkson Common Experience requirements (including the Clarkson Seminar, two mathematics courses (calculus and statistics), two science courses (one of which must include a lab), five knowledge area courses, and a technology course); 42 credits of foundation coursework in business; 27 credits of specialized business courses to satisfy the major requirements; and 18 credit hours of electives. Since 50% of coursework must be taken outside the School of Business (no more than 3 economics and 2 statistics courses can count as non-business courses), most electives, depending on courses chosen to fulfill the requirements of the Clarkson Common Experience, will be non-business courses taken in other schools at Clarkson University.

**Required courses include:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC451</td>
<td>Industrial &amp; Supply Chain Economics</td>
<td>OM371 Strategic Sourcing Management</td>
</tr>
<tr>
<td>IS428</td>
<td>Information Systems for Supply Chain Management</td>
<td>SB441 Advanced Topics in Global Supply Chain Management</td>
</tr>
<tr>
<td>SB381</td>
<td>Logistics Management</td>
<td>OS466 Negotiations &amp; Relationship Management</td>
</tr>
<tr>
<td>OM341</td>
<td>Supply Chain Design &amp; Management</td>
<td>OM451 Quality Management &amp; Lean Enterprise</td>
</tr>
</tbody>
</table>

**Students choose one professional elective from the following list:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS314</td>
<td>Database Design &amp; Management</td>
<td>OM 476 Management of Technology</td>
</tr>
<tr>
<td>LW471</td>
<td>Law &amp; Society II</td>
<td>AC 305 Cost Accounting</td>
</tr>
<tr>
<td>MK332</td>
<td>Marketing Research</td>
<td>MK 436 Creativity, Innovation &amp; New Product Development</td>
</tr>
<tr>
<td>OM380</td>
<td>Project Management</td>
<td></td>
</tr>
</tbody>
</table>
The following would be the typical third- and fourth-year plan. There is enough flexibility that students studying abroad during the third year should still be able to complete the degree requirements.

### JUNIOR YEAR

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS466</td>
<td>Negotiations &amp; Relationship Management</td>
<td>3</td>
</tr>
<tr>
<td>OS352</td>
<td>Strategic Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>FN361</td>
<td>Management I</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Free or Non-Business Elective</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Non-Business Elective: Knowledge Area Requirement</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

#### Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS428</td>
<td>Information Systems for Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>OM341</td>
<td>Supply Chain Design &amp; Management</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Free Elective</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Professional Elective</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Non-Business Elective: Knowledge Area Requirement</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM451</td>
<td>Quality Management &amp; Lean Enterprise</td>
<td>3</td>
</tr>
<tr>
<td>SB441</td>
<td>Advanced Topics in Global</td>
<td>3</td>
</tr>
</tbody>
</table>
BS IN ENGINEERING & MANAGEMENT
Michelle Crimi Program Director, mcrimi@clarkson.edu
Misty Spriggs, Associate Director, mspriqgs@clarkson.edu
Adrienne Boswell, Academic Advisor/Office Mgr., aboswell@clarkson.edu

Clarkson’s Engineering & Management (E&M) program is ideal for those who desire breadth and flexibility in a career centered on leadership and technology. The major was established in 1954 to meet the growing needs of industry for individuals with strong skill sets in both engineering and business. Graduates are prepared to integrate the rapidly changing technical and managerial aspects of an organization.

The E&M program utilizes Clarkson’s traditional strengths, stressing engineering principles and technical problem solving in conjunction with quantitative and qualitative managerial decision making. Students receive a balanced education involving course requirements from each of the major disciplines of engineering, business, science and liberal arts. The carefully planned curriculum is taught by faculty within their respective areas of expertise.

The Program Educational Objectives of the E&M program are to prepare students who within a
few years of graduation:

- Apply technical problem solving skills to develop innovative, effective, and sustainable solutions to complex problems;
- Lead multi-disciplinary teams to success by managing team dynamics;
- Effectively communicate information for decision-making both orally and in writing to both technical and non-technical audiences;
- Continuously balance simultaneous demands of today’s global environment through multi-tasking capabilities of planning, organizing, managing and controlling resources;
- Combine engineering and business core knowledge and apply quantitative and qualitative methods to process analysis in business systems;
- Make timely, ethical and useful decisions in response to organizational challenges.

Typically, E&M students are people oriented, at ease with science and mathematics, and anticipate increasing managerial responsibilities over the course of their careers. Problem solving, communication and teamwork permeate the E&M curriculum. By design, the environment is one of collaborative teamwork and is known for strong mutual support among students. E&M graduates are recognized as leaders and facilitators who possess the ability to initiate new ideas and change.

The E&M program maintains two professional organizations and an E&M Student Advisory Council. Sigma Tau Iota, the E&M honorary society, consists of students enrolled in the program who display consistent academic excellence. The Student Association for Engineering Management (SAEM) regularly hosts business leaders and representatives who engage students in discussions that range from career opportunities to current industry trends and issues. The Student Advisory Council serves as a curricular advisory group and aids in assessment of the program outcomes.

**Curriculum**

The Engineering & Management program confers the Bachelor of Science (BS) degree upon completion of the 120 credit-hour program requirements. A candidate for the bachelor’s degree must not only pass all prescribed courses in the E&M curriculum, but must also meet all other graduation requirements and Clarkson Common Experience requirements stated in the Academic Requirements section of this catalog.

The Engineering & Management student is encouraged to use program professional electives to focus on specific career objectives. Students work closely with their advisor to select electives that best suit these objectives. Students often choose to pursue a minor in project management, a concentration in global supply chain management, or courses in construction management.
## Engineering & Management Curriculum

### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM205</td>
<td>Intro to Financial &amp; Managerial Acct.</td>
<td>3</td>
<td>EM211</td>
<td>Intro to Enterprise Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>EM120</td>
<td>Team-Based Design &amp; Innovation(^1,3)</td>
<td>3</td>
<td>EM121</td>
<td>Technological Entrepreneurship(^1,3)</td>
<td>2</td>
</tr>
<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
<td>3</td>
<td>PY151</td>
<td>Intro to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA132</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>CM131</td>
<td>Chemistry I</td>
<td>4</td>
<td>CM132</td>
<td>Chemistry II or</td>
<td>4</td>
</tr>
<tr>
<td>FY100</td>
<td>First-Year Seminar</td>
<td>1</td>
<td>BY160</td>
<td>Cellular and Molecular Biology(^5)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total:** 17

### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC350</td>
<td>Economic Principles &amp; Engineering Economics</td>
<td>3</td>
<td>ES220</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>LW270</td>
<td>Law &amp; Society</td>
<td>3</td>
<td>--</td>
<td>University Course</td>
<td>3</td>
</tr>
<tr>
<td>MA232</td>
<td>Differential Equations</td>
<td>3</td>
<td>EM380</td>
<td>Project Management</td>
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</tr>
<tr>
<td>EM286</td>
<td>Organizational Behavior</td>
<td>3</td>
<td>STAT383</td>
<td>Applied Statistics I</td>
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<tr>
<td>PH131</td>
<td>Physics I</td>
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<td>PH132</td>
<td>Physics II</td>
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**Total:** 16

### JUNIOR YEAR
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>ES330</td>
<td>Fluid Mechanics</td>
<td>3</td>
<td>FN361</td>
<td>Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>EM333</td>
<td>Operations Research</td>
<td>3</td>
<td>EM331</td>
<td>Operations &amp; Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>MK320</td>
<td>Principles of Marketing</td>
<td>3</td>
<td>ES250</td>
<td>Electrical Science</td>
<td>3</td>
</tr>
<tr>
<td>MA231</td>
<td>Calculus III</td>
<td>3</td>
<td>EM451</td>
<td>Quality Management &amp; Lean Enterprise</td>
<td>3</td>
</tr>
<tr>
<td>ES260/</td>
<td>Materials Science or Strength of</td>
<td>3</td>
<td>--</td>
<td>Professional Elective</td>
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<tr>
<td>ES222/</td>
<td>Materials Science or Strength of</td>
<td>3</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE264</td>
<td>Digital Design¹</td>
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**SENIOR YEAR**

**First Semester**

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>ES340</td>
<td>Thermodynamics</td>
<td>3</td>
<td>--</td>
<td>Professional Elective</td>
<td>3</td>
</tr>
<tr>
<td>EM432</td>
<td>Organizational Policy &amp; Strategy¹</td>
<td>3</td>
<td>--</td>
<td>Knowledge Area</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Knowledge Area</td>
<td>3</td>
<td>--</td>
<td>Free Elective</td>
<td>3</td>
</tr>
<tr>
<td>--</td>
<td>Professional Elective</td>
<td>3</td>
<td>EM456</td>
<td>Process Engineering &amp; Design¹,³,⁴</td>
<td></td>
</tr>
<tr>
<td>COMM217</td>
<td>Public Speaking¹</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

¹ Communications intensive (CI) – Students must earn a minimum of six (6) CI points outside of UNIV190 to meet graduation requirements.
² Information technology-based courses
³ Technology course that meets CCE requirement
⁴ Students must take EM456 or another senior capstone design course approved by the Director of E&M.
⁵ Students who take BY160 rather than CM132 will need to complete one more credit of coursework to reach 120 credits.

See Academic Requirements for details of the Clarkson Common Experience including the First-Year Seminar, the Clarkson Seminar, Knowledge Area (KA) courses, University Courses (UC), and related requirements. Students are required to take five courses which cover four of the six specified CCE knowledge areas; one University course (UC) must span two Knowledge Areas.

All students will participate in a project-based professional experience such as co-op, internship, directed research or community project related to the student’s professional goals.
BS INNOVATION AND ENTREPRENEURSHIP
The Innovation and Entrepreneurship (I&E) major is designed to leverage existing strengths in innovation and entrepreneurship by offering students a cross-disciplinary, flexible major that provides them with the knowledge and skills to:

- Develop and manage the innovation process;
- Plan and commercialize innovations;
- Evaluate and manage innovation opportunities;
- Participate in and manage ideation and the new product development process;
- Understand the legal and policy issues associated with new ventures; and
- Stimulate and manage the creation of new business enterprises both within an existing corporate structure and as start-up enterprises.

Toward this end, students are required to have fundamental knowledge of the creative process, market analysis and research, consumer behavior, commercialization, and organizational design. Students may choose to deepen their knowledge by further study in negotiations, e-business, venture finance, management of technology, and project management. Students earning a degree in Innovation and Entrepreneurship must complete 120 credits including the following: 33 credits of Clarkson Common Experience requirements (including the Clarkson Seminar, two mathematics courses (calculus and statistics), two science courses (one of which must include a lab), five knowledge area courses, and a technology course); 42 credits of foundation coursework in business; 30 credits of specialized business courses to satisfy the major requirements; and 15 credit hours of electives. Since 50% of coursework must be taken outside the School of Business (no more than 3 economics and 2 statistics courses can count as non-business courses), most of the electives, depending on courses chosen for the Clarkson Common Experience, will need to be taken in other schools within Clarkson University.

Required courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC370</td>
<td>Economics of Innovation</td>
<td>MK436</td>
</tr>
<tr>
<td>SB322</td>
<td>Designing and Leading Innovative Ventures</td>
<td>SB437</td>
</tr>
<tr>
<td>MK321</td>
<td>Consumer and Buyer Behavior</td>
<td>SB440</td>
</tr>
<tr>
<td>MK332</td>
<td>Marketing Research</td>
<td></td>
</tr>
</tbody>
</table>

Students choose three Professional Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC305</td>
<td>Cost Accounting</td>
<td>LW471</td>
</tr>
<tr>
<td>AC407</td>
<td>Taxation of Business Entities</td>
<td>OM476</td>
</tr>
<tr>
<td>FN455</td>
<td>Venture Capital and Private Equity</td>
<td>OM380</td>
</tr>
</tbody>
</table>

140
The following would be the typical third- and fourth-year plan. There is enough flexibility so that students studying abroad during the third year should still be able to complete the degree requirements.

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Title</strong></td>
<td><strong>Course Title</strong></td>
</tr>
<tr>
<td>MK321 Consumer and Buyer Behavior</td>
<td>MK332 Marketing Research</td>
</tr>
<tr>
<td>EC370 Economics of Innovation</td>
<td>SB322 Designing &amp; Leading</td>
</tr>
<tr>
<td></td>
<td>Innovative Ventures (or OS352)</td>
</tr>
<tr>
<td>OS352 Strategic Human Resource</td>
<td><strong>--</strong> Professional Elective</td>
</tr>
<tr>
<td>Management (or SB322)</td>
<td></td>
</tr>
<tr>
<td>FN361 Financial Management I</td>
<td><strong>--</strong> Non-Business Elective</td>
</tr>
<tr>
<td><strong>--</strong> Non-Business Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>--</strong> Non-Business Elective</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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<td><strong>15</strong></td>
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</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Title</strong></td>
<td><strong>Course Title</strong></td>
</tr>
<tr>
<td>MK436 Creativity, Innovation and</td>
<td>SB437 Commercializing Innovation</td>
</tr>
<tr>
<td>New Product Development</td>
<td></td>
</tr>
<tr>
<td><strong>--</strong> Professional Elective</td>
<td>SB440 Innovation and</td>
</tr>
<tr>
<td></td>
<td>Entrepreneurship Strategy</td>
</tr>
<tr>
<td><strong>--</strong> Non-Business Elective:</td>
<td>OS432 Organizational Policy and</td>
</tr>
<tr>
<td>Knowledge Area</td>
<td>Strategy</td>
</tr>
<tr>
<td><strong>--</strong> Free or Non-Business</td>
<td><strong>--</strong> Non-Business Elective</td>
</tr>
<tr>
<td>Elective</td>
<td>Clarkson Common Experience Knowledge Area requirement</td>
</tr>
<tr>
<td><strong>--</strong> Non-Business Elective</td>
<td><strong>--</strong> Professional Elective</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
BS IN FINANCIAL INFORMATION AND ANALYSIS

The field of Financial Information and Analysis (FIA) provides students with expertise in the wide range of issues common to both finance and accounting. This includes the role of accounting as the basic language of business, the importance of accounting information systems in organizational decision making, and the use of this information by financial decision makers in managing assets and investments. The knowledge and skills developed through our unique curriculum provide graduates with the ability to succeed in a workplace through integration of the traditional functions of finance and accounting.

The FIA curriculum gives each student a fundamental knowledge of managerial and cost accounting, and financial statement analysis. Career opportunities for graduates in FIA can be found in the fields of management accounting, accounting information systems design, financial management, investment management, financial services, and corporate financial planning.

Students who are interested in pursuing a career in Accounting and preparing for their CPA, can select the accounting concentration. Students in the accounting concentration would take all six courses required for the FIA major (three accounting courses and three finance courses) and would fill their remaining professional electives plus one free elective with accounting courses. The following courses are required for the concentration; AC407 – Taxation of Business Entities, AC421 – Accounting Information Systems, AC431 – Advanced Accounting: Invest. & Ownership Interests, and AC436 – Auditing.

Students earning a degree in Financial Information and Analysis must complete 120 credits including the following: 33 credits of Clarkson Common Experience requirements (including the Clarkson Seminar, two mathematics courses (calculus and statistics), two science courses (one of which must include a lab), five knowledge area courses, and a technology course); 42 credits of foundation coursework in business; 27 credits of specialized business courses to satisfy the major requirements; and 18 credit hours of electives. Since 50% of coursework must be taken outside the School of Business (no more than 3 economics and 2 statistics courses can count as non-business courses), most of the electives, depending on courses chosen for the Clarkson Common Experience, will need to be taken outside the School of Business.

An undergraduate student who successfully earns a degree in Financial Information and Analysis can apply to the Masters of Business Administration program at Clarkson. Successful completion of the MBA program, with an emphasis on accounting, allows a student to fulfill the 150 credit hour requirement necessary to sit for the certified public accounting licensure examination.

**Required courses include:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC305</td>
<td>Cost Accounting</td>
<td>FN464</td>
<td>Financial Management II</td>
</tr>
<tr>
<td>AC311</td>
<td>Intermediate Financial</td>
<td>FN470</td>
<td>Strategic Financial Management</td>
</tr>
<tr>
<td></td>
<td>Accounting I</td>
<td></td>
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</table>
Students choose three Professional Electives from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr.</th>
<th>Course</th>
<th>Title</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC407</td>
<td>Taxation of Business Entities</td>
<td></td>
<td>FN455</td>
<td>Venture Capital and Private Equity</td>
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</tr>
<tr>
<td>AC421</td>
<td>Accounting Information Systems</td>
<td></td>
<td>FN467</td>
<td>International Finance</td>
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<tr>
<td>AC431</td>
<td>Advanced Accounting: Investment &amp; Auditing</td>
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<td>FN474</td>
<td>Models for Financial Analysis</td>
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<tr>
<td>AC436</td>
<td>Auditing</td>
<td></td>
<td>FN575</td>
<td>Professional Fund Management 1</td>
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<tr>
<td>FN/EC468</td>
<td>Financial Markets and Institutions</td>
<td></td>
<td>FN576</td>
<td>and II (must total at least 3 credits)*</td>
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<tr>
<td>OS352</td>
<td>Strategic Human Resource Mgmt.</td>
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<td>FN/EC468</td>
<td>Financial Markets and Institutions</td>
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<tr>
<td></td>
<td>Free Elective</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Non-Business Elective: Knowledge Area</td>
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<tr>
<td></td>
<td>Non-Business Elective</td>
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</table>

*FN575/576 may be used for only one professional elective.
The following would be the typical third- and fourth-year plan. There is enough flexibility so that students studying abroad during the third year should still be able to complete the degree requirements.

JUNIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Title</td>
</tr>
<tr>
<td>--</td>
<td>Non-Business Elective: Knowledge Area</td>
</tr>
<tr>
<td>OS352</td>
<td>Strategic Human Resource Mgmt.</td>
</tr>
<tr>
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<td>Free Elective</td>
</tr>
<tr>
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</table>
## SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
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<th>Cr.</th>
<th>Course</th>
<th>Title</th>
<th>Cr.</th>
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<tbody>
<tr>
<td></td>
<td>First Semester</td>
<td></td>
<td>Second Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--</td>
<td>-- Non-Business</td>
<td>3</td>
<td>OS432</td>
<td>Org. Policy &amp; Strategy</td>
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</tr>
<tr>
<td></td>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FN464</td>
<td>Financial Mgmt II</td>
<td>3</td>
<td>FN470</td>
<td>Strategic Fin. Management</td>
<td>3</td>
</tr>
<tr>
<td>AC312</td>
<td>Fin. Reporting &amp; Analysis II</td>
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<td>--</td>
<td>Professional Elective</td>
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</tr>
<tr>
<td></td>
<td>Professional Elective</td>
<td>3</td>
<td>--</td>
<td>Non-Business Elective: Knowledge Area</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Professional Elective</td>
<td>3</td>
<td>--</td>
<td>Non-Business Elective</td>
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</tr>
</tbody>
</table>
BS IN BUSINESS INTELLIGENCE AND DATA ANALYTICS

Business intelligence and data analytics involves tools and practices that drive access, analysis, and interpretation of business data. This analysis leads to improved decision making and performance across the value chain. These tools and skills are essential in today’s data driven economy. The Bachelor of Science in Business Intelligence and Data Analytics (BIDA) degree will help create process-oriented information managers with the ability to develop keen data-driven insights into business problems and solutions. Graduates will be able to work effectively with a range of organizational stakeholders with varying knowledge and skill bases - from data scientists to field salespeople. Graduates will be able to identify and use proper data and analysis tools for effective problem solving and importantly, will be able to communicate information effectively across the organization to promote and support clear, balanced, and transparent decision-making. Students graduating with the BIDA major will have the following knowledge and skills:

- An understanding of the components of information systems: Enterprise Resource Planning platforms, business intelligence, database management systems, data analytics technologies, and emerging innovations in the field.
- An understanding of, and experience with, the software application design, development, and deployment process.
- The ability to use industry-recognized business systems such as SAP ERP and analysis tools such as Microsoft Excel.
- An understanding of the business requirements underlying all data collection and analysis. The ability to work closely with business practitioners across all disciplines to help provide the data and analysis that is necessary and relevant for organizational decision makers.
- A working knowledge of databases, including structure and usage in multiple business contexts across disciplines, industries, and organizations, and fundamental knowledge of tools such as SQL (Structured Query Language).
- A working knowledge of data collection methods, including structured and unstructured data, and the process by which the data is extracted, transformed, and loaded into the various types of information systems for analysis.
- The ability to perform a variety of data analyses, such as pivot table analysis, optimization, and statistical analysis.
- The ability to communicate the results of data analysis to organizational decision makers and other stakeholders in different forms, including reports, tables, graphs, as well as real-time visualization tools and dashboards.

Graduates with a BIDA degree will have a great deal of flexibility upon graduation. They may become data acquisition experts or analysts, database administrators, or pursue a graduate degree in the data science field. They may also pursue a career in the more traditional information systems field such as IT project managers or enterprise system consultants.
Students earning a degree in Business Intelligence and Data Analytics must complete 120 credits including the following: 33 credits of Clarkson Common Experience requirements (including the Clarkson Seminar, two mathematics courses (calculus and statistics; MA131 is recommended, followed by STAT282 and MA239, Elementary Linear Algebra, as a non-business elective), two science courses (one of which must include a lab), five knowledge area courses, and a technology course); 42 credits of foundation coursework in business; 21 credits of specialized courses to satisfy the major requirements; and 6 credit hours of professional electives.

Note that 50% of coursework must be taken outside the School of Business (no more than 3 economics and 2 statistics courses can count as non-business courses), so most of the electives will need to be taken outside the School of Business, depending on courses chosen for the Clarkson Common Experience.

The following seven (7) courses are required:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS110</td>
<td>Introduction to Business Intelligence and Data Analytics</td>
</tr>
<tr>
<td>IS237</td>
<td>Introduction to Application Development</td>
</tr>
<tr>
<td>CS141</td>
<td>Introduction to Computer Science</td>
</tr>
<tr>
<td>EE261</td>
<td>Introduction to Programming and Software Design</td>
</tr>
<tr>
<td>IS314</td>
<td>Database Design and Management</td>
</tr>
<tr>
<td>IS400</td>
<td>Process and System Analysis and Modeling</td>
</tr>
<tr>
<td>IS415</td>
<td>Data Warehousing for Analytics</td>
</tr>
<tr>
<td>IS426</td>
<td>Big Data Architecture</td>
</tr>
<tr>
<td>IS437</td>
<td>Data Analytics Project: Planning, Development, and Data Analysis</td>
</tr>
</tbody>
</table>

Students choose two (2) Professional Electives from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS428</td>
<td>Information Systems for Supply Chain Management</td>
</tr>
<tr>
<td>AC421</td>
<td>Accounting Information Systems</td>
</tr>
<tr>
<td>COMM345</td>
<td>Information Design</td>
</tr>
<tr>
<td>OM380</td>
<td>Project Management</td>
</tr>
<tr>
<td>CS460/EE468</td>
<td>Database Systems</td>
</tr>
<tr>
<td>EM333</td>
<td>Elements of Operations Research</td>
</tr>
</tbody>
</table>

(note that pre-requisite courses include MA131, MA 132, and STAT383)
The following would be the typical third- and fourth-year plan. There is enough flexibility so that students studying abroad during the third year should still be able to complete the degree requirements. Note that for this major, IS237 Introduction to Programming and Application Development, or CS141 Introduction to Computer Science I or EE261 should be taken prior to the junior year.

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
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<td>OS352</td>
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<td>FN361</td>
<td>Financial Management</td>
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<tr>
<td>IS314</td>
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**SENIOR YEAR**

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<td>IS400</td>
<td>Process and System Analysis and Modeling</td>
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<td>IS426</td>
<td>Big Data Architecture</td>
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<td>Professional Elective</td>
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<td>Free or Non-Business Elective</td>
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<td>--</td>
<td>Non-Business Elective</td>
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<tr>
<td><strong>Total</strong></td>
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MINOR & CONCENTRATIONS IN BUSINESS

The minor in business is designed for students with a major outside of the Reh School of Business who wish to pursue a collateral area in business. Completion of the minor provides broad exposure to the foundations of major business functions. These areas include accounting, economics, finance, law, organizational behavior, operations management and marketing. All students choosing to minor in business must complete 18 credit hours, or six courses, from among the following:

- **EC150 or EC350** - Principles of Microeconomics or Economic Principles and Engineering Economics
- **EC151 or EC350** - Principles of Macroeconomics or Economic Principles and Engineering Economics
- **AC205** - Introduction to Accounting for Decision Analysis
- **LW270** - Law and Society I
- **OS286** - Organizational Behavior
- **FN361** - Financial Management I
- **OM331** - Operations & Supply Chain Management
- **MK320** - Principles of Marketing

* Students who complete EC350 – Economic Principles and Engineering Economics are exempt from taking EC150 and EC151. EC350 covers material from both EC150 and EC151. EC350 will satisfy one course towards the minor. Students must then choose their remaining five classes from AC205, LW270, OS286, FN361, OM331 or MK320.

** Students choosing to take either OM331 or MK320 must also complete IS200 Computer Application Fundamentals (1 credit) or IS211 Intro to ERP Tools and Applications (3 credits) either as a prerequisite or a co-requisite.

Corporate Innovation Minor

Students taking this minor will learn and gain experience in Corporate Innovation. Corporate Innovation includes a variety of processes and tools that companies use to invent new products and processes, improve existing products and processes, and bring these new and improved products/processes to market.

This minor will provide students with the ability to recognize opportunities for invention and improvement. Students will develop creative thinking, analytical, and problem solving skills to invent new or improve existing methods/products/processes within the resource base and constraints of organizations. There will be opportunities to address unstructured and ill-defined problems, take informed risks, and manage those risks knowledgeably in an effort to move inventions & improvements into the marketplace. Students will develop persuasion and selling
skills to convince others inside and outside medium/large organizations to support and/or adopt the innovation.

All students choosing to minor in Corporate Innovation must complete **15 credit hours (five courses)**, maintain a 2.0 average in minor courses, and satisfy the requirements indicated below.

**Required:**
- SB236 Introduction to Customer-Focused Design

**Choose one of two:**
- SB437 Commercializing Innovation
- MK436 Creativity, Innovation, and New Product Development

**Choose one course from each of three areas:**

**Problem Solving in Organizations**
- OM/EM476 Management of Technology
- OM/EM451 Quality Management & Lean Enterprise
- OM/EM380 Project Management
- MK332 Marketing Research
- EC370 Economics of Innovation
- PY/MK321 Consumer Behavior

**Persuasion**
- OS466 Negotiation and Relationship Management
- MK306 Professional Sales
- PY253 Social Psychology

**Experiential Invention (analyzing and solving an unstructured problem)**
Any of the School of Engineering Senior Design Courses, including but not limited to:
- ME445 Integrated Design I, Civil Engineering Senior Design: CE492 (Arch/Build), CE493 Transportation), etc.
  - EM456 Capstone Design Project for E&M seniors
  - SB356 Invention Development & Protection

A student may substitute up to one course within the three elective areas immediately above with a similar course encompassing innovation as its core focus. This course could focus on designing novel solutions to engineering, technical, or social problems or the analysis, design, and implementation of operational improvements at a company. This course can come from any department on campus, and can be substituted subject to approval by the CUSB Dean’s Office or a faculty member appointed by the Dean.

**Minor in Economics**
The development of an understanding in economics is not only necessary for all managers but also for all those seeking to understand how and why economic forces affect and shape the
society and the world we live in. The success of any business ultimately depends on the decisions its managers make concerning the allocation of resources under differing market and economic conditions. Successful decision making requires a good understanding of markets and the central role that economic incentives play within and outside the firm. The Clarkson economics minor is designed to give students the basic tools and analytical background in economic analysis. The minor in economics can complement almost any major, whether in arts and sciences, business or engineering. The minor in economics consists of 18 credit hours of economic courses as follows:

EC150 or EC350* Principles of Microeconomics or Economic Principles and Engineering Economics
EC151 or EC350* Principles of Macroeconomics or Economic Principles and Engineering Economics
EC311** Intro to Econometrics

Three or four electives (9 credit hours) of 300- or 400-level EC designated courses if a student has taken EC150 and EC151. Four electives (12 credit hours) of 300- or 400-level EC designated courses if a student has taken EC350.

*A student may not take EC150 or EC151 if a student has taken EC350. Entry to EC350 is limited to students who have declared a major in Engineering and Management or a major in the School of Engineering.

** Students who have completed Stat 383 – Probability and Statistics are exempt from EC311 but will have to complete another upper level Economics course to replace EC311.

Minor in Human Resource Management
The Human Resource Management (HRM) minor is available for students in all majors who want to prepare themselves for managerial, human resources, or consulting careers. The HRM minor provides an in-depth foundation for managing people in organizations, drawing upon relevant theories of organizational behavior, research evidence on HRM practices and systems, and recent HRM innovations. Students will develop capabilities in key HR areas such as selection, training and development, performance measurement, compensation, and HR metrics, among others. The HRM minor emphasizes the strategic aspects of HRM, with a focus on enhancing organizational outcomes for multiple stakeholder groups, including shareholders and employees. All students choosing to minor in Human Resource Management must complete the following courses totaling 15 credits:

- OS286/PY286/EM286 Organizational Behavior
- OS352 Strategic Human Resource Management
- OS452 Advanced Human Resource Management
- And two of the following courses:
Minor in Law Studies
The minor in Law Studies is designed for students with an interest in studying law. The minor is beneficial for students who wish to structure their academic program to help prepare for law school. The minor will also serve the needs of students such as those who have an interest in human resource management, political science, construction management and supply chain management who want to learn more about the field of law and its many diverse issues and perspectives. All students choosing to minor in Law Studies must complete 18 credit hours (six courses), maintain a 2.0 average in minor courses and satisfy the requirements indicated below.

Perspectives of the Law (required)
- LW 270 Law and Society I - intended to be the first class taken in the minor
- POL 400 Constitutional Law (CGI) - intended to be the last class taken in the minor

Law Studies Minor Portfolio (0 credits) (required)
- LW 499 Law Studies Minor Portfolio

The lists below includes current selected minor courses. For the complete list, contact either the Associate Dean of Arts & Sciences at 315-268-6411 or the Associate Dean of Business at 315-268-2300.

Areas of Law (take two of the following)
- LW 466 The Law of the Workplace
- LW 471 Law and Society II
- POL 371 Environmental Law (CGI)
- LW 352 Reading for the Law: Legal Issues in Non-Fiction Literature (CGI/C1)
- POL 380 Law and Bioethics (STS)
- POL 362 Human Rights Law and Politics (CGI: C1)

Policy/Social Issues (take one of the following)
- ANTH 332 Cities and Social Justice
- COMM 310 Mass Media and Society (Univ: CGI/STS)
- COMM 428 Public Debate and the Environment (Univ:STS & CGI)
- LIT 335/POL 335 Violence & Reconciliation (Univ:GGI & IA: C1)
- PHIL 243 Business Ethics (CGI)
- PHIL 310 World Religions & Contemporary Issues (Univ: GCI & IG: C1)
- PHIL 405 Sustainability Theory & Practice (STS: C1)
POL 372 Biofuel & Farm Policy (Univ: STS & EC)
POL/SOC 470 Environmental Policy (STS: C1)
POL 471 Energy Policy (Univ:STS & EC:C1)
SOC 330 Health, Wealth, Integrity & Environment (Univ:STS & EC)
LW 490 Internship (subject to availability)

Communication (take one of the following)
COMM 210 Theory of Rhetoric for Business, Science and Engineering (C2)
COMM 217 Introduction to Public Speaking (C2)
COMM 410 Theory and Philosophy of Communication (IG: C1)
PHIL 330 Logic for Critical Thinking (IG)
COMM 417 Business and Professional Speaking (C2)

Product Design & Marketing Minor
This minor is for students interested in exploring concepts and tools associated with the design and marketing of new products. Courses support four dimensions of product development: a) new product planning - plan and develop the entire lifecycle of a product, b) understanding the social and environmental impact of technical solutions, c) establishing functional, technical, and aesthetic components of product design, and d) generating virtual and physical prototypes.

Coursework in this minor also supports learning about marketing new products, including crafting a clear message, identifying appropriate distribution channels, customer acquisition and engagement, customer co-innovation, and using social media and analytics to manage messaging. All students choosing to minor in Product Development and Marketing must complete 18 credit hours (six courses), maintain a 2.0 average in minor courses and satisfy the requirements indicated below.

Four required (12 credits) courses include:
Either SB236 Introduction to Customer-Focused Design or COMM229 Principles of User Experience Design plus:
MK/PY321 Consumer Behavior (Prereq MK320)
MK332 Marketing Research (Prereq MK320 and MA/STAT282 or MA/STAT383)
MK436 Creativity, Innovation, New Product Development (Prereq MK320)

Two courses (6 credits) from the following choices:
COMM100/DA100 2D Digital Design
COMM210 Theory of Rhetoric for Business, Science, and Engineering
COMM219 Introduction to Social Media
EC370 Economics of Innovation Fall Sophomore standing (EC150)
COMM 345 Information Design (COMM 229)
**Required: New Product Development and Marketing Portfolio (0 credits)**

MK 419 - New Product Development and Marketing Portfolio (0-credit, Pass/Fail)

Students must complete a 0-credit new product development and marketing portfolio (MK419) to maintain a repository of work from the minor classes related to work during their time at Clarkson. The portfolio will include material from four (4) design projects completed by the student during their Clarkson experience.

**Minor in Quality Based Project Management**

Clarkson University offers a minor in Project Management that is available to all undergraduate students. This minor is intended for students in all majors who want to prepare themselves for potential careers in project-centered work. A unique benefit of this minor is that students can pursue certification through the Project Management Institute (PMI)™ after completing the requirements of minor. PMI’s Certified Associate of Project Management (CAPM) ® is considered the pathway to the Project Management Professional (PMP) ® certification that is rapidly emerging as one of the fastest growing professional certifications in many industries and career areas. Additionally, certain students may opt to sit for the American Society for Quality’s “Certified Quality Improvement Associate” exam since the Quality Management course covers the body of knowledge for that particular certification. Students who pursue the minor are under no obligation to sit for the CAPM ® or CQIA ®, which require an application and separate fee, completed and paid for by the student.

To achieve a minor in “Quality-based Project Management,” students must maintain a 2.0 average in the five (5) three-credit courses, distributed in the following fashion:

**Both of these courses:**

- OM/EM380 Project Management
- OM/EM451 Quality Management and Lean Enterprise

**One of these courses:**

- OM/EM484 Advanced Project Management
- EM482 Systems Engineering and Management

**Elective Courses (Choose any pair):**

- OS/EM286 Organizational Behavior
- OS352 Strategic Human Resource Management
- OS/EM286 Organizational Behavior
- OS466 Negotiations and Relationship Management
- OM/EM331 Operations and Supply Chain Management
**OM/EM476 OR** Management of Technology OR  
**EM482* OR** Systems Engineering and Management OR  
**OM/EM484*** Advanced Project Management  
*Whichever was not selected previously*

**Concentration in Global Supply Chain Management for E&M MAJORS**

The principles behind supply chain management focus on developing seamless flows of raw materials, products/services, information, and financial capital. The supply chain starts at the initial design process and includes raw material sourcing, logistics and continues through the delivery of that product or service to the end customer, with a goal of creating customer satisfaction at optimal cost.

A concentration in Global Supply Chain Management offered through the School of Business is available to E&M students. It requires 15 or more credit hours of specified coursework. Completion of an approved concentration is indicated on a student’s transcript.

Students must take these classes:

- EM 341 Global Sourcing & Supply Chain Design  
- EM 381 Logistics Management  
- IS 428 Info. Systems for Supply Chain Mgmt.

Additionally, students must choose two courses from the following:

- EM 451 Quality Mgmt. & Lean Enterprise  
- OS 466 Negotiations & Relationship Mgmt.  
- EM 361 Supply Chain Environmental Mgmt.

**Co-ops, Internships, and Professional Experiences**

Students interested in gaining work experience and fulfilling their professional experience requirement are encouraged to participate in the University Co-op or Internship Program. Please refer to the Career Center for more details on these programs. Additionally, the School of Business may approve internships arranged by a student as fulfilling the professional experience requirement.

**Global Study Requirement**

All business majors are required to complete a global studies requirement. Students interested in cultural and trade relations between the United States and other countries may participate in the University International Student Exchange Program. It is expected that qualified students will complete a study exchange for at least one semester. Please refer to the International Center for more details on this program. If a student is not eligible for the Student Exchange Program, there
are other options available for the student to fulfill the global study requirement, including participation in a two- or three-week faculty led trip (UNIV399 Global Business Experience) to a foreign country.

**Pre-Law**
Joseph Andriano, and Christopher Robinson, *Advisors*
Please see the Pre-Professional Program section of the catalog for more information.

**The Reh Center for Entrepreneurship**
*Daved Barry, Reh Family Endowed Chaired Professor*
dbbarry@clarkson.edu

A resource center located within the Clarkson University School of Business, the Reh Center for Entrepreneurship helps small business owners and entrepreneurs develop and manage sustainable micro enterprises through partnerships with universities and government support programs.

The Center builds upon the University's nationally recognized expertise in entrepreneurial education and long-standing commitment to boost regional economies through small business development.

The goal of the Center is to serve as a national model for enhancing regional economic development by focusing on micro enterprises. Additionally, increased hands-on learning opportunities provide students with tremendous learning opportunities in marketing, management and finance.
WALLACE H. COULTER SCHOOL OF ENGINEERING
“Technology Serving Humanity”

William Jemison, Dean, bjemison@clarkson.edu
John Moosbrugger, Associate Dean for Academic Programs, jmoosbru@clarkson.edu

In our modern technological society, engineers and scientists must work together with a variety of other professionals in seeking solutions to complex problems. Revolutionary advances in applied science and technology have broadened the horizons of engineering. At the same time, these advances have created a multitude of challenging multidisciplinary problems in virtually every sphere of human activity.

The role of engineers in today’s society has become more and more critical. Engineers require not only a knowledge of fundamentals for finding solutions to problems, but they must be aware of the broad social, economic, political, and environmental implications of their ventures. The engineering programs at Clarkson are designed to provide students with a foundation in science, engineering, humanities, and management. Our goal is to make sure Clarkson graduates are highly competent in their chosen fields while at the same time they are alert on their responsibilities to society and truly practice “technology serving humanity.”

In preparing students to become effective contributors to society and industry, Clarkson University has developed an award-winning program called SPEED (Student Projects for Engineering Experience and Design). The current seventeen SPEED projects, including FIRST Robotics and Mini-Baja, encompass multidisciplinary and socially responsible approaches to solving real-world problems. Not only do the SPEED projects involve design and fabrication, they also incorporate marketing, public relations, communications, and management resulting in teams being made up of engineering, business, science, and liberal arts students. The Coulter School also provides opportunities for research experience for undergraduates (REU) involving participation of students in faculty research labs. These programs offer opportunities for students to amass the necessary "real-world" experiences and professional skills through several engineering design projects and research experiences.

In spring 2002, Clarkson announced that the Wallace H. Coulter Foundation had made a $30 million commitment to the University in support of ongoing excellence in its engineering and science programs. This gift reinforces and broadens Clarkson’s most successful learning and research activities in support of the theme “Technology Serving Humanity.”

Clarkson’s School of Engineering has been named the Wallace H. Coulter School of Engineering in recognition of the Foundation’s generous gift and the late Wallace Coulter’s dedication to the University as a trustee. Wallace H. Coulter was a renowned inventor and entrepreneur. He became acquainted with Clarkson through his collaboration with colloid scientists on the faculty. In 1979 he received an honorary doctorate, and he served as a trustee of the University from 1983 to 1989. Through the years he maintained close connections with Clarkson, supporting research projects and establishing an endowed scholarship.
The grant funds funded five key areas: team project-based learning activities; endowed chairs and endowed fellowships; a new programs in rehabilitation biomedical engineering; upgrades of laboratory facilities; and scholarships for both minority students and women pursing a degree in engineering. Growth in these evolving areas will complement and reinforce the programs and curricula described in this catalog.

The Coulter School of Engineering comprises the Departments of Chemical and Biomolecular, Civil and Environmental, Electrical and Computer, and Mechanical and Aeronautical Engineering. Faculty and students also participate in the interdisciplinary Engineering and Management, Software Engineering, and Undergraduate Interdisciplinary Minors. More information can be found in the Interdisciplinary Program section of the catalog.

**Undergraduate Programs**

The eight-semester undergraduate degree granted in engineering is the Bachelor of Science (BS), with specialization in one of the eight programs are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org:

- Aeronautical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Engineering & Management
- Mechanical Engineering
- Software Engineering
- Environmental Engineering

A candidate for the bachelor’s degree must not only pass all prescribed courses in one of the eight-semester engineering curricula, but must also meet all of the other graduation requirements and Clarkson Common Experience requirements.

**Minors and Professional Concentrations**

Clarkson’s engineering curricula contain a number of elective courses. Furthermore, many students have room for additional courses through advanced placement, overloading, and by taking courses in the summer. Therefore, engineering students, in consultation with their advisors, have an opportunity to formulate academic programs that reflect individual interests, career goals, and areas of professional specialization. See Professional Concentrations in Engineering and Minors and Concentrations.

**Engineering Studies**

Some students entering the School of Engineering are not sure which academic discipline to pursue. These students may choose the Engineering Studies Program. A Director of Engineering Studies and support faculty serves as advisors to these students, and assists assisting them in selecting curricula. For additional information, consult with the Associate Dean of Engineering for Academic Programs at 315-268-6446. The Engineering Studies classification provides affords students with an opportunity to learn more about various programs within the School of Engineering prior to selecting a specific program. Undergraduates may choose between; Aeronautical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environmental Engineering, Mechanical Engineering and Software Engineering.
Combined BS Engineering MBA or ME/MBA Programs
By proper selection of electives, in five years a Clarkson student can receive a BS in engineering and a master’s degree in business administration. This may require course overloads in some semesters and/or attendance at summer school. Interested students should contact the School of Business regarding the five-year BS/MBA option. Students with a B.S in engineering also have an option to earn both a master’s degree in engineering and a master’s degree in business administration in two years. For information on the two-year joint ME/MBA program, see the description of the program in the Graduate Engineering Programs section of the Catalog.

Pre-law
Please see the Pre-Professional Program section of the catalog for more information.

Engineering Student Organizations and Design Competitions
In addition to the University organizations, Clarkson has student-led chapters of the following professional organizations:

- American Institute of Chemical Engineers
- American Society of Civil Engineers
- Institute of Electrical and Electronic Engineers
- American Society of Mechanical Engineers
- Society of Women Engineers
- Association of General Contractors
- American Institute of Aeronautics
- American Indian Science and Engineering Society
- National Society of Black Engineers
- Society of Automotive Engineers
- New York Water Environment Association
- Society for Hispanic Professional Engineers

Each department has an honorary society, and there is an all-engineering honorary society. Students can participate in national competitions, often times for course credit through the Multidisciplinary Project (MP) or Multidisciplinary Team (MT) course system, via the following:

- Concrete Canoe
- Construction Management
- Clean Snowmobile
- Zero Emission Snowmobile
- Mini-Baja SAE
- Steel Bridge
- Timber Bridge
- Bridges to Prosperity (B2P)
- Human Powered Vehicle
- Revolutionary Aerospace Systems Concepts Academic Linkage (RASCAL)

Formula SAE Electric

- Chem E Car
- Design, Build, Fly
- Engineers Without Borders for International Sustainability
- Environmental Design
- FIRST Robotics
- Formula SAE
- Mini-Baja SAE
- Steel Bridge
- Timber Bridge
- Bridges to Prosperity (B2P)
- Human Powered Vehicle
- Revolutionary Aerospace Systems Concepts Academic Linkage (RASCAL)
Transfer Programs
Both 2+2 and 3+2 transfer programs are available at Clarkson.

Faculty
Chemical and Biomolecular Engineering
Elizabeth Podlaha-Murphy and John B. McLaughlin — Chairs; Professors S.V. Babu, Ruth Baltus, John B. McLaughlin Sitaraman Krishnan, Elizabeth Podlaha-Murphy, David Mitlin, Eunsu Paek, Don H. Rasmussen, Marco Aurelio Satyro, Ross Taylor, William R. Wilcox; Associate Professors Richard J. McCluskey, Sitaraman Krishnan Selma Mededovic; Assistant Professors, Yuncheng Du, Selma Mededovic Ensu Paek, Zijie Yan; Adjunct Professor Ian I. Suni; Research Associate Professor Xinli Jia

Civil and Environmental Engineering
John Dempsey James Edzwald, Professor and Chair of Civil and Environmental Engineering; Professors James S. Bonner, John P. Dempsey, Andrea R. Ferro, Stefan J. Grimberg, Thomas M. Holsen, Feng-Bor Lin, Kerop D. Janoyan, Levon Minnetyan, Susan E. Powers, Weiming Wu, Poojitha D. Yapa; Associate Professors Narutoshi Nakata, Sulapha Peethamparan, Shane Rogers, Steven Wojtkiewicz; Assistant Professors, Ian Knack, Jiaqi Ma, Tyler Smith, Khiem Tran; Distinguished Research Professor in Hydraulic Engineering Hung Tao Shen; Research Professor Hayley H. Shen; Instructor and Director of Construction Engineering Management Erik Backus; Adjunct Associate Professor, Brooks Washburn; Instructor, William Olsen, Milani S. Sumanasooriva; Adjunct Instructor Cory McDowell, Adjunct Instructor Jared Heinl; Professor Emeritus Norbert L. Ackermann, Gordon B. Batson

Electrical and Computer Engineering
William Jemison David Crouse — Professor and Chair of Electrical and Computer Engineering; Professors Cetin Cetinkaya, Paul B. McGrath, Thomas H. Ortmeyer, Ming-Cheng Cheng, Daqing Hou, Charles Robinson, Stephanie Schuckers,; Lie Wu; Associate Professors, James J. Carroll, Chuan He, Daqing Hou, Abul N. Khondker, Chen Liu, Jack Kopolowitz, Lei Wu, Jeanna Mathews; Assistant Professors, Mahesh Krishna Banavar, Melike Erol Kantarcı, Burak Kantarcı, Jie Li, Chen Chen Liu, Yu Liu, Sanjib Kumar Banerjee, Chee—Keong Tan; Tuyen Vu Distinguished Research Professor Liya L. Regel; Visiting Instructor Timothy Fanelli, Daniel Rissacher, Instructor Ajay Sonar; Teaching Track Assistant Professor Natalie Kurgan Sonar

Mechanical and Aeronautical Engineering
Brian Helenbrook Daniel Valentine Professor and Chair of Mechanical and Aeronautical Engineering; Professors Goodarz Ahmadi, Daryush K. Aidun, Cetin Cetinkaya, Suresh Dhaniyala, Brian Helenbrook, John Moosbrugger, Kenneth Willmert; Associate Professors Ajit Achuthan, Doug Bohl, Kevin Fite, Kathleen Issen, Laurel Kuxhaus Ronald S. LaFleur, Marcias Martinez, Pat Piperni, Kenneth D. Visser, Steven W. Yurgartis; Assistant Professors Byron Erath, Ioannis Mastorakos, Craig Merett, Arthur Michalek, Parisa Mirbod, Philip Yuya; Instructor Ronald Buckingham; Adjunct Professors William Arnold, David Wells
Undergraduate Engineering Programs

Common First-Year Engineering Curriculum

For all majors except Engineering & Management, the first two semesters are identical in the undergraduate engineering curricula. Therefore, students may defer the selection of a major field of study until the beginning of the sophomore year. Beginning with the junior year, a significant amount of specialized material is incorporated into each curriculum. In the senior year, coursework is concentrated in the student’s chosen field. Courses in humanities and social sciences are taken throughout the four-year program as part of the Clarkson Common Experience.

The Common First-Year Curriculum in Engineering*

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<tr>
<td><strong>Course</strong></td>
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<tr>
<td>CM131 Chemistry I</td>
<td>CM132 Chemistry II (or BY 160 Biology II**) or CS141 Introduction to Computer Science I**</td>
</tr>
<tr>
<td>PH131 Physics I</td>
<td>PH132 Physics II</td>
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<td>MA131 Calculus I</td>
<td>MA132 Calculus II</td>
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<td>UNIV190 Clarkson Seminar</td>
<td>ES110 <em>Engineering and Society or Equivalent</em>**</td>
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<tr>
<td>FYPE100 First-Year Seminar</td>
<td>ES100 Introduction to Engineering Use of the Computer</td>
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<td><strong>16 (15)</strong></td>
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*This is a typical curriculum sequence, listing courses that are required of all engineering majors, except Engineering and Management. Not all students will complete these courses in the first year. For example, some students will take ES 110 in lieu of PH 131 in the first semester, then PH 131 in the second semester and PH 132 in the third semester.

**Mechanical, and Aeronautical, Electrical, Computer, and Software Engineering majors can substitute BY 160 for CM 132. Students who do not also take BY 162 (Biology II Laboratory) should consult with their advisor to insure they will meet the 120 credit hour requirement. Chemical, Civil and Environmental Engineering require CM132. Electrical, Computer, and Software Engineering require CS141.

*** ES 110 or equivalent is a required Knowledge Area course. A total of five Knowledge Area courses must be taken, and these five courses must cover at least four of the six knowledge areas. At least one of these courses must be a university course. University courses are interdisciplinary courses that cover two or more knowledge areas. One of the knowledge area electives must be an economics course, EC350 is required for most degrees.
BS IN AERONAUTICAL ENGINEERING

The objectives of the Aeronautical Engineering program are tailored so that graduates:

1. will competently apply engineering methods to solve professional problems associated with the design, manufacture, and maintenance of aircraft and related systems and understand the social, ethical, and environmental context of their work;
2. will communicate clearly, collaborate competently in teams, and assume leadership roles;
3. and will have the habit of continuous professional development.

The program outcomes are the generic abilities that graduates will demonstrate that they have acquired. The defining characteristics of professional problems and the process used to solve them lead directly to these generic program outcomes:

- An ability to apply knowledge of mathematics, science, and engineering, an ability to design and conduct experiments, as well as to analyze and interpret data. (ABET a & b)
- An ability to design a system, component, or process to meet desired needs with realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, and an ability to function on multidisciplinary teams. (ABET c & d)
- An ability to identify, formulate, and solve engineering problems, and an understanding of professional and ethical responsibility. (ABET e & f)
- An ability to communicate effectively, and the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social context. (ABET g & h)
- A recognition of the need for, and an ability to engage in life-long learning, and a knowledge of contemporary issues. (ABET i & j) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. (ABET k)

The Aeronautical engineering program expects that graduates have a knowledge of aerodynamics, aerospace, structures, propulsion, flight mechanics, and stability and control. It is also expected that graduates have design competence that includes integration of various disciplines within aeronautical engineering.

Curriculum Overview: The 120-credit program contains 87 credit hours of required technical courses, 33 credit hours of electives (including two professional electives, one undesignated elective and five Knowledge Area/University Course, KA/UC, electives).

Required Technical Courses: The first two years of the curriculum cover mathematics, physics, chemistry and engineering science courses (including basic principles of statics, dynamics, solid mechanics, electrical circuits, materials and the use of computers).

In the third and fourth years, students take specialized courses on topics such as aerodynamics and flight mechanics. These courses provide knowledge and skills that strongly support the second outcome listed above, which is a key element in aircraft design. The laboratory components of the first-year physics and chemistry courses introduce study of the relationship...
between theory and reality. This fosters the development of the student’s technical intuition. Aeronautical engineering laboratory courses add to this development.

Training in professional problem-solving begins in the spring of the second year, with the first course in engineering design. The first course to train students formally in the solution process, it lays the foundation for the fourth-year capstone design course. In the capstone course, students work in teams to design an aircraft. Thus, they learn to apply the solution process to a real professional problem. Students may acquire additional professional experience by participating in the Design, Build, and Fly Competition team. Or they may participate in the Formula SAE, Mini-Baja, Clean Snowmobile, or other team competitions, which are open to any student.

Common Curriculum Requirements: Plans of study must include a total of five Knowledge Area (KA) courses. Students will select these so that at least one is a designated University Course, and so that together these five courses cover four knowledge areas. Communication intensive course requirement will be fulfilled by a combination of courses having one or two communication points each, with a total of six points required for graduation. At least two of these six points will be earned through 300- or 400-level courses required in the major.

Professional and Undesignated Electives: The professional electives must meet criteria in the Mechanical and Aeronautical Engineering (MAE) Department Student Handbook1. The undesignated elective may be any college-level course that does not contain a significant amount of material already covered in other courses New York State. It could be chosen to enrich the student’s technical or nontechnical background. Advanced (200-level or above) Aerospace Studies or Military Science courses may be used as undesignated electives.

Sample Curriculum

**FIRST YEAR**
*(See Common First-Year Curriculum in Engineering)*

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Cr. Hrs.</strong></td>
</tr>
<tr>
<td>MS/AS Military</td>
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</tr>
<tr>
<td>Science/Aerospace</td>
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</tr>
<tr>
<td>Studies (if elected)</td>
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### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>ES220</td>
<td>Statics</td>
</tr>
<tr>
<td>ES250</td>
<td>Electrical Science</td>
</tr>
<tr>
<td>ES260</td>
<td>Materials Science</td>
</tr>
<tr>
<td>MA232</td>
<td>Elementary Differential Equations</td>
</tr>
<tr>
<td>KA/UC Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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### JUNIOR YEAR

<table>
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<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>ES330</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>ES340</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>AE/ME350</td>
<td>Aircraft Structures</td>
</tr>
<tr>
<td>AE/ME455</td>
<td>Mechanical Vibrations and Control</td>
</tr>
<tr>
<td>AE301</td>
<td>Mechanical Engineering</td>
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<td>KA/UC Elective</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>163</strong></td>
</tr>
</tbody>
</table>
### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE450</td>
<td>Aircraft Design I</td>
<td>3</td>
<td>AE451</td>
<td>Aircraft Design II</td>
<td>3</td>
</tr>
<tr>
<td>AE430</td>
<td>Stability Control of Aerospace Vehicles</td>
<td>3</td>
<td>AE427</td>
<td>Design of Propulsion Systems</td>
<td>3</td>
</tr>
<tr>
<td>AE/ME431</td>
<td>Gas Dynamics</td>
<td>3</td>
<td>Professional Elective</td>
<td></td>
<td>3</td>
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<tr>
<td></td>
<td>Professional Elective</td>
<td>3</td>
<td>KA/UC Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Economics Elective</td>
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<td>3</td>
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<tr>
<td></td>
<td></td>
<td>15</td>
<td></td>
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<td></td>
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</tbody>
</table>

** or MA331 and STAT383

For professional concentrations see Professional Concentrations in Engineering.

### BS IN CHEMICAL ENGINEERING

A BS degree in Chemical Engineering is a good foundation for many diverse careers. The objectives of the program are to produce graduates who are able to:

1. Practice chemical engineering in traditional and emerging fields.
2. Be successful at pursuing advanced degrees.
3. Be motivated to continuously develop their knowledge and skills.
4. Contribute to society and maintain ties to the University.

Chemical engineers deal with many aspects of an industrial society, especially those challenges involving chemistry. Chemical engineers engage in a spectrum of manufacturing, sales, and research activities in a variety of industries ranging from specialty chemicals to semiconductors and food processing. Therefore, it is essential that they master the fundamentals of chemistry, physics, mathematics, and engineering science. Courses in these fundamentals constitute most of the first year and sophomore year. Junior-year courses concentrate on the application of mathematics, physics, and chemistry to the physical operations and chemical processes required to obtain a desired product on an industrial scale. The senior year is composed chiefly of capstone design and laboratory courses plus electives, permitting students to concentrate on areas in which they have developed a special interest. In the capstone courses, students work in teams on open-ended projects that illustrate how engineering design concepts, introduced in the sophomore and junior chemical engineering courses, are applied in professional practice.

The basic four-year curriculum prepares graduates for immediate employment in a large number of industrial and government organizations as well as for graduate work in chemical engineering or related fields. The positions traditionally filled by chemical engineers involve the design, construction, and management of chemical, petrochemical, pharmaceutical, biochemical and electronics manufacturing plants; research and development of new processes and products; improvement of existing processes and
products; design and development of control systems; economic evaluation of new plants and processes; air and water pollution control; energy conservation and energy resource development; and materials engineering. The student is encouraged to develop a special interest and to take a concentration of courses in that area.

The chemical engineering curriculum is designed to offer sufficient flexibility to satisfy the interests and needs of many different individuals. The curriculum provides students with a solid background for continuing their education to the MS, ME, or PhD degree in chemical engineering, environmental engineering, materials science, and other technical areas. By appropriate selection of electives, the student can also use the chemical engineering program as preparation for graduate work in law, management, medicine, or biotechnology. Personal faculty advising is provided to assist students in the selection of electives that best suit their career goals.

Chemical Engineering Curriculum

FIRST YEAR
(See Common First-Year Curriculum in Engineering )
First-year students in chemical engineering may substitute CM103, 104, and 105 for CM131 and 132. This enables them to take chemistry laboratories with the first-year students majoring in chemistry.

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>CH210</td>
<td>Molecular Properties</td>
</tr>
<tr>
<td>CH220</td>
<td>Mass Balances</td>
</tr>
<tr>
<td>CM241</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>MA231</td>
<td>Calculus III</td>
</tr>
<tr>
<td>Elective (ES)¹</td>
<td></td>
</tr>
</tbody>
</table>

¹ Elective courses can vary based on individual interest and career goals.
OR PH132 Physics II Elective (ES)  
OR PH132 Physics II Elective (ES)  
OR PH132 Physics II

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JUNIOR YEAR

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<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Titile</strong></td>
</tr>
<tr>
<td>CH320</td>
<td>Phase Equilibria</td>
</tr>
<tr>
<td>CH330</td>
<td>Transfer Process Fundamentals</td>
</tr>
<tr>
<td>CM244</td>
<td>Organic Chemistry Lab</td>
</tr>
<tr>
<td>Elective (Engineering) 1</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Technical) 1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
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</table>

SENIOR YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Titile</strong></td>
</tr>
<tr>
<td>CH410</td>
<td>Chemical Engineering Lab II</td>
</tr>
<tr>
<td>CH420</td>
<td>Process Economics &amp; Conceptual Design</td>
</tr>
<tr>
<td>Elective (ES) 1</td>
<td>3</td>
</tr>
<tr>
<td>KA/UC Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Engineering) 1</td>
<td>3</td>
</tr>
<tr>
<td>ES499</td>
<td>Professional Experience</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

1The eight elective courses must be approved by the student’s faculty advisor and must be distributed as follows:
Two courses (each from a different field) among materials science, electrical science, and mechanics; one course in mathematics; three courses in engineering, two courses in engineering, science, or mathematics; two undesignated electives. An “undesignated elective” is any course that does not contain a significant amount of material already covered in the student’s program.

2 Six credits of Military Science or Aerospace Studies may be used to satisfy the requirement for two of the undesignated electives.

Professional Specializations
Students can develop a specialty by proper selection of electives. One very effective choice is a concentration or a minor in another field such as Biomolecular Engineering, Chemistry, Environmental Health Science, Biomedical Engineering, Sustainable Energy Systems, Communication, Environmental Engineering, Materials Engineering, or Business. Not all courses listed are offered every year. See Professional Concentrations in Engineering and Undergraduate Minors in Engineering.

Chemical Engineering Honors Program
Chemical engineering students with a GPA of 3.5 or better and aiming for an academic or industrial research career may apply to the Honors Program at the end of the sophomore year. Course requirements in addition to the regular curriculum include: CH490 Transport Phenomena

Two math electives (the present elective plus one more) to be chosen from the following list:
- CH561 Chemical Engineering Analysis
- ES505 Design of Experiments and Analysis of Data
  (only one of the above two may be chosen)
- MA331 Fourier Series and Boundary Value Problems
- MA339 Applied Linear Algebra
- MA377 Numerical Methods
- MA381 Probability
- STAT383 Probability and Statistics

BS IN CIVIL ENGINEERING
Civil engineers plan, design, and construct our nation’s physical infrastructure and take a leadership role in the responsible development and protection of our natural resources. Accordingly, the field of civil engineering encompasses several distinct disciplinary themes, including architectural engineering, construction engineering, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources engineering, among others.

Civil engineers always have been at the forefront of such activities as designing and constructing bridges, buildings, water and wastewater treatment facilities, hydropower stations, storm drainage systems, airports, aerospace structures, and other public works. They also have taken a leadership role in eliminating the hazardous and solid wastes of society, responsibly developing surface and groundwater resources for beneficial use, managing environmental
quality and minimizing the effects of pollutants, mitigating earthquake damage in large structures, and using artificial intelligence to improve the operation of transportation systems. Within the context provided by the broad profession of civil engineering described above, the mission of the Civil and Environmental Engineering Department, formally stated, is to educate talented and motivated men and women to become successful professionals through quality undergraduate and graduate programs that place a high priority on student access and interaction with faculty. This mission statement establishes the educational framework for the civil engineering degree program at Clarkson, and the curriculum objectives given below provide more detail about the program.

Curriculum Objectives
With an appreciation for the disciplinary diversity of Civil Engineering, Clarkson’s Department of Civil and Environmental Engineering actively pursues the educational goal of providing talented and motivated men and women with the knowledge and intellectual tools required to become successful civil engineers. It does so by permitting students to pursue individual disciplinary interests or to remain broadly based in all areas of Civil Engineering while obtaining an accredited BSCE degree (Bachelor of Science in Civil Engineering). The program objectives may be stated as shown below:

- Develop students whose engineering knowledge can meet the challenges of a successful professional career.
- Ensure students acquire good communication and leadership skills.
- Foster an intellectually stimulating environment for professional development.
- Develop a relationship between students and faculty that produces a personal interest in the student’s education and professional development.

Moreover, the Department’s approach to the achievement of these objectives may be summarized as:

- Offering a quality undergraduate program that places a high priority on student access and faculty interaction within an environment that is intellectually stimulating and encourages professional development,
- Providing its graduates with the engineering knowledge needed to meet the life-long challenges of a successful professional career, and valuing good communication and leadership skills. It is expected that graduates from the BSCE program will demonstrate achievement of these objectives within a few years after completing the program. Science and engineering-science courses form the majority of the curriculum in the first two years. These courses provide the base for the professionally oriented courses in the junior and senior years. The curriculum is designed to provide all graduates with a theoretical foundation as well as design experiences in structural, geotechnical, water resources, and environmental engineering. This foundation is typically achieved in the junior year, enabling students to use the senior year to select elective courses in areas where their particular interests have developed. In the senior year a capstone design course culminates the development of design skills that were first introduced in the sophomore year and enhanced in subsequent courses. Students can select elective courses in areas beyond the required courses, such as construction and transportation, or can use the elective portion of the curriculum to concentrate in selected areas such as construction engineering, including the infrastructure and architectural engineering tracks, structural engineering, water resources engineering, minor in environmental engineering, materials engineering, or communications.
The guiding principle is that the student and faculty advisor together create a program of study that best satisfies the student’s individual career objectives.

**Civil Engineering Curriculum**

**FIRST YEAR**

*(See Common First-Year Curriculum in Engineering)*

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>ES220</td>
<td>Statics</td>
</tr>
<tr>
<td>CE212</td>
<td>Intro. to Engineering Design</td>
</tr>
<tr>
<td>MA231</td>
<td>Calculus III</td>
</tr>
<tr>
<td>CE301</td>
<td>Geospatial Science w/lab</td>
</tr>
<tr>
<td></td>
<td>KA/UC Elective</td>
</tr>
<tr>
<td></td>
<td>or PH132</td>
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<td></td>
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</table>

**JUNIOR YEAR**

<table>
<thead>
<tr>
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<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>STAT383</td>
<td>Probability &amp; Statistics</td>
</tr>
<tr>
<td>CE320</td>
<td>Structural Analysis w/lab</td>
</tr>
<tr>
<td>CE330</td>
<td>Water Resources w/lab</td>
</tr>
<tr>
<td>CE461</td>
<td>Transportation System Design</td>
</tr>
<tr>
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<td>KA/UC Elective</td>
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<tr>
<td></td>
<td>or PH132</td>
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</table>
### SENIOR YEAR

<table>
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<tr>
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<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
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<tr>
<td>EC350</td>
<td>Econ Principles &amp; Engineering Economics</td>
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<tr>
<td>CE490</td>
<td>CE491, or CE492</td>
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<tr>
<td>KA/UC Elective Professional Electives</td>
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<table>
<thead>
<tr>
<th>Electives</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

<sup>1</sup>Eligible ES electives are: ES223 Rigid Body Dynamics, ES250 Electrical Science, ES260 Material Science, ES340 Thermodynamics I. A total of 16.5 design credits are required to be accumulated. Required courses provide 11.5 design credits.

### Professional Specializations

Through the selection of electives, students can achieve proficiency in particular areas of interest. Elective courses can be selected from those offered by the Civil and Environmental Engineering Department and by other departments. Those electives considered especially appropriate to the various areas of specialization in civil engineering are provided in the following topical listings. Not all courses are offered each year or each semester (see annual Courses publication). All 500-numbered courses are graduate level. Undergraduate students enrolled in 500-level courses must have a cumulative grade-point average of at least 3.0, and permission of their advisor and their department chair. To enroll in a 600-numbered course, undergraduates must have a cumulative grade-point average of at least 3.0, and must have permission of their advisor, department chair, and the dean of Engineering. See Professional Concentrations in Engineering.

### Professional Concentrations in Civil Engineering

#### CONSTRUCTION ENGINEERING MANAGEMENT

- CE411 Construction Materials
- CE415/515 Foundation Design CE441
- Reinforced Concrete Design CE442
- Steel Design

Choose at least one of the following non-CE courses:

- OS286 Organizational Behavior
- EM/OM380 Project Management (EC)
- EHS330 Safety Analysis
- LW466 Law of the Workplace
- COMM417 Business & Professional Speaking (C2)

- FN361 Financial Management
- EM/OM451 Quality Mngmnt & Lean Enterprise
- LW270 Law and Society I
- COMM217 Public Speaking (C2)
AND Completion of at least one of these Tracks

Construction/Infrastructure Track:

Choose at least two of the following:

- CE315 Geology for Engineers
- CE406 Construction Engineering
- CE407 Construction Estimating and Scheduling
- CE408 BIM/IPD
- CE409 Fund. Of Building Systems
- CE410/510 Sustainable Infrastructure and Building
- CE453/553 Properties & Performance of Concrete Materials

Architectural Engineering & Building Construction Track:

Choose at least two of the following:

**STRUCTURAL ENGINEERING**

- CE 420/520 Computer Methods of Structural Analysis
- CE 415/515 Foundations Design
- CE 441 Reinforced Concrete Design
- CE 442 Steel Design
- CE 490 or CE 492 Senior Design

Choose at least two of the following:

- CE 401/501 Fracture Mechanics of Concrete Structures
- CE 411 Construction Materials
- CE 421/521 Composite Mechanics and Design
- CE 453/553 Properties and Performance of Concrete Materials
- CE 408 BIM/IPD
- CE448 Intro to Architectural Engineering
- CE 455/555 Structural Damage, Rehabilitation, and Repair
- CE 438 or CE 538 Finite Element Methods
- CE 444/544 Advanced Concrete Design
- CE 457/557 Environmental Degradation of Concrete Structures
- CE512 Fundamentals of Dynamics and Vibrations

**WATER RESOURCES ENGINEERING**

- CE430 Water Resources Engineering II
- CE470 Stream Riparian System and Fluvial Morphology
- CE479 Water and Wastewater Treatment Processes
- CE490/491/492 Senior Design with Water Resources Focus

Plus any two courses from the following:

- CE315 Geology for Engineers
- CE340 Intro to Environmental Engineering
- CE380 Fundamentals of Environmental Engineering
- CE434 Sustainable Development Engineering
- CE435 Groundwater Hydrology & Geochemistry
CE478 Solid Waste Management & Landfill Design
CE481 Hazardous Waste Management Engineering
CE482 Environmental Systems Analysis & Design

And at least one of the following:

BY/EV330 Great Lakes Water Protection  BY431
Limnology
ES436 Global Climate Change: Science, Engineering & Policy
COMM 428 Environmental Communication
EV305 Sustainability and the Environment
POL/SOC470 Environmental Policy
Civil Engineering majors may also sign up for a minor in Environmental Engineering

Standard Length of BS in Civil Engineering - Four years or eight semesters

BS IN COMPUTER ENGINEERING
The objective of the undergraduate program in computer engineering is to prepare students for careers as professional engineers and to provide a base for graduate study and for lifelong learning in new and developing specialties. We expect that within a few years after completing the program our Graduates will become:

Contributing Professionals
Graduates are expected to have advanced their careers as professionals who apply fundamental engineering knowledge and analytical problem solving skills in a wide variety of practical applications.

Well-Rounded Citizens
Graduates are expected to have become well-rounded citizens who rely on their engineering education to serve society with an understanding of their professional and ethical responsibilities.

Effective and Responsible Collaborators
Graduates are expected to have become effective and responsible collaborators who function well in diverse team environments. Some graduates will have emerged as leaders in their field.

Intellectual Growth
Graduates are expected to have exhibited intellectual growth and pursue continual innovation in their field. Those graduates who are motivated to pursue a graduate degree should be successful at entering and completing graduate studies.

The degree program in computer engineering fosters the achievement of these objectives in two ways. First, the curriculum as a whole is comprised:

- a coherent program of required courses in basic science, mathematics, and engineering science, including laboratory experience in the use of modern equipment;
• education in the humanities, social sciences, ethical principles and management, with special attention to the development of effective written and oral communication skills;
• elective coursework in several of the major sub disciplines of electrical, computer and software engineering, to encourage the pursuit of individual interests and to provide opportunity to gain further knowledge in these sub disciplines; and experiences that facilitate the development of problem-solving, teamwork and engineering design skills with the aid of modern analysis and design tools, and experiences that encourage students to become active alumni and to develop a commitment to lifelong learning.

Basic and required courses are taken during the first two years, along with some introductory professional courses, including an engineering laboratory. Laboratory courses are required in both of these years with a strong emphasis on engineering design. The third and fourth years include both required and elective technical courses.

The Clarkson Common Experience is addressed in the first year with the Clarkson Seminar and ES110 Engineering and Society. Five knowledge area courses including a university course are required over the four years of study. One of these knowledge area courses must be in economics and one must be ES110. The Clarkson Common Experience is designed, in part, to develop communication, problem-solving, and critical-thinking skills and an understanding of the social, ethical and economic implications of an engineer’s work.

Second, the computer engineering program is constructed so that each student develops a working knowledge of engineering design based on a broad spectrum of concepts, principles, and techniques balanced in hardware, software, and systems, along with a strong set of communication and teamwork skills. This is done through a program of study with the following characteristics:

• In the required courses, students are expected to master fundamentals of hardware and software design. Sound software engineering principles are introduced and reinforced with required courses that treat object-oriented design, data structures, standardized components, and system software. Hardware design principles are introduced in a course that treats hardware concepts and analysis that is followed by work in logic design and laboratory experiences in which students must design and build small systems using standard logic circuits and programmable logic devices. Elements common to hardware and software are stressed and hardware/software tradeoffs are addressed in this segment of the curriculum.

• Students gain experience working in modern software development environments and using modern design tools. In the required course sequence, students learn C/C++ and Java in the context of modern integrated development environments, gain experience in embedded and FPGA system design and industry standard simulation, synthesis, debug and verification tools in their design projects.

• Students develop their teamwork and communication skills. They do so in part through course work that requires them to communicate effectively in written form and in part through course-work involving team-based design, written communication of their design decisions, and oral presentation of their work. The design experiences require that students work in teams of varying size, collaborating with others on teams whose composition is
determined by their instructors. By participating in team-based problem solving of this kind, with individuals whom they did not choose as teammates, students learn to work with individuals in multiple situations, thereby developing their teamwork skills.

- Students develop the ability to design an integrated hardware/software system to meet desired specifications. They engage in a major design experience that emulates an industrial design environment. In this design experience, students design and implement the hardware and software components of a digital system. This team-oriented task demands that students learn to work with others in completing a system design that meets specifications on time. The system specifications often require that students interact with individuals from other disciplines to design an acceptable product.

- Students engage in activities that foster an appreciation for the importance of extracurricular and community involvement. They are actively encouraged to become involved with professional societies, service organizations, and other extracurricular activities and also to take advantage of the close interpersonal environment that the department fosters. We require our students to obtain professional experience prior to graduation, either through an internship or by participating in the co-op program. Further, we encourage our students to participate in engineering projects on campus, through undergraduate research, suitable on-campus work experience, and technical extracurricular activities such as the US First Robotics competition.

**Computer Engineering Curriculum**

**FIRST YEAR**

*(See Common First-Year Curriculum in Engineering)*

Computer Engineering students should select CS141 from the available list of Second Semester Science/CS elective courses numbered CM132/BY160/CS141.

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td><strong>Course</strong></td>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>MA232</td>
<td>Differential Equations</td>
</tr>
<tr>
<td>ES250</td>
<td>Electrical Science</td>
</tr>
<tr>
<td>EE264</td>
<td>Intro to Digital Design</td>
</tr>
<tr>
<td>EE262</td>
<td>Intro to Object Oriented Programming and Software Design</td>
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<td></td>
<td></td>
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<tr>
<td>Course</td>
<td>Title</td>
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<td>Software Components and Generic</td>
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<td>Programming</td>
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<tr>
<td>EE365</td>
<td>Advanced Digital Circuit Design</td>
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<tr>
<td>STAT383</td>
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**JUNIOR YEAR**

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**SENIOR YEAR**

15

15
1 Knowledge Area or University Course Electives
There are a total of five courses which must be taken to cover at least four knowledge areas. At least one of these courses must be a University course. University courses are interdisciplinary courses that cover two or more knowledge areas. One of the knowledge area electives must be an economics course, EC350 is recommended, and one must be ES110.

2 The Computer Science Elective must be selected from computer science courses numbered 300 or higher or CS 242.

3 The Professional Electives are ECE courses numbered 300 or higher, or other engineering course if approved by the ECE Department.

4 The Undesignated Electives are fulfilled by college level courses that do not contain a significant amount of material already covered elsewhere in the student's program.

5 The Engineering Science Elective is satisfied by the selection of an ES course approved by the ECE Department.

See Academic Requirements for details of the Clarkson Common Experience including the First-Year Seminar, the Clarkson Seminar, Knowledge Area (KA) courses, University Courses (UC), and related requirements and professional experience.

Professional Specializations

The courses offered by the Department of Electrical and Computer Engineering can be grouped into subdisciplines, with each subdiscipline including a combination of required and elective courses at the undergraduate level. Note that a number of these courses cross subdiscipline boundaries. A complete description of all courses can be found online on the Student Administrative Services website.

Qualified undergraduate students are encouraged to take graduate level courses within their area of interest. Undergraduate students enrolled in 500-level courses must have a cumulative grade-point average of at least 3.0, and permission of their advisor and their department chair. To enroll in a 600-numbered course, undergraduates must have a cumulative grade-point average of at least 3.5, and must have permission of their advisor, department chair, and the dean of Engineering. See Professional Concentrations in Engineering.

Biomedical Engineering

BR400 Introduction to Biomedical Rehabilitation Engineering and Science
EE465 Computer Graphics
EE466 Computer Architecture
EE468 Database Systems
EE485 Neural Engineering
Communications Systems and Signal Processing

EE401 Digital Signal Processing
EE404 Wireless Networks
EE407 Computer Networks
EE427 Introduction to Digital Image Processing
EE470 Coding and Information Transmission
EE471 Principles of Digital and Data Communications

Electronics and Circuits

EE441 Electronic Devices for IC Simulation
EE442 CMOS IC Design
EE446 Instrumentation
EE447 VLSI Design
EE448 Solar Cells
EE449 Fundamental of Antenna Engineering

Computer Engineering

EE361 Fundamentals of Software Engineering
EE363 Software Components and Generic Programming
EE365 Advanced Digital Circuit Design
EE368 Software Engineering
EE404 Wireless Networks
EE407 Computer Networks

Control Systems

EE450 Control Systems
EE451 Digital Control
EE452 Optimization Techniques in Engineering

Power Engineering

EE333 Power System Engineering
EE430 High-voltage Techniques and Measurements
EE431 Power Distribution and Utilization
EE438 Alternate Energy Systems
EE439 Dielectrics
The objective of the undergraduate program in electrical engineering is to prepare students for careers as professional engineers and to provide a base for graduate study and lifelong learning in new and developing specialties. We expect that within a few years after completing the program our graduates will become:

**Contributing Professionals**
Graduates are expected to have advanced their career as professionals who apply fundamental engineering knowledge and analytical problem-solving skills in a wide variety of practical applications.

**Well-Rounded Citizens**
Graduates are expected to have become well-rounded citizens who rely on their engineering education to serve society with an understanding of their professional and ethical responsibilities.

**Effective and Responsible Collaborators**
Graduates are expected to have become effective and responsible collaborators who function well in diverse team environments. Some graduates will have emerged as leaders in their field.

**Intellectual Growth**
Graduates are expected to have exhibited intellectual growth and pursue continual innovation in their field. Those graduates who are motivated to pursue a graduate degree should be successful at entering and completing graduate studies.

The degree program in electrical engineering fosters the achievement of these objectives in two ways. First, the curriculum as a whole is comprised of:

- a coherent program of required courses in basic science, mathematics, and engineering science, including laboratory experience in the use of modern equipment;
- education in the humanities, social sciences, ethical principles and management, with special attention given to the development of effective written and oral communication skills;
- elective coursework in several of the major sub disciplines of electrical and computer engineering, to encourage the pursuit of individual interests and to provide opportunity to gain further knowledge in these sub disciplines;
• experiences that facilitate the development of problem solving, teamwork, and engineering design skills with the aid of modern analysis and design tools; and
• experiences that encourage students to become active alumni and to develop a commitment to lifelong learning.

Basic and required courses are taken during the first two years, along with some introductory professional courses, including an engineering laboratory. The third and fourth years include both required and elective technical courses.

The Clarkson Common Experience is addressed in the first year with the Clarkson Seminar and ES110 Engineering and Society. Five knowledge area courses including a university course are required over the four years of study. One of these knowledge area courses must be in economics and one must be ES110. The Clarkson Common Experience is designed, in part, to develop communication, problem-solving, and critical-thinking skills and an understanding of the social, ethical and economic implications of an engineer’s work.

Second, the electrical engineering program is constructed so that each student develops depth of knowledge in the discipline that is built upon mastery of material in fundamental required courses, a base of experience using state of the art software and engineering tools, the ability to design an engineering system to meet desired specifications, and the ability to communicate effectively and work as a member of an engineering team. This is done through a program of study with the following characteristics:

• In the initial required courses, students are expected to master the essential topics that are needed in the courses that follow. In these courses, students are expected to gain a firm grounding in basic electrical and computer engineering (reinforced with laboratory experience) and then take a set of intermediate courses that treat topics in systems and signal processing energy conversion, electromagnetic fields, and microelectronics. Each student then develops his or her own interests further by taking a pair of advanced courses in a chosen area of the discipline to gain depth in that area while also taking courses in other areas of the discipline to ensure breadth of coverage.
• Students gain experience in using state-of-the-art software and engineering tools. They encounter C/C++ programming, MATLAB, Pspice, FPGA and embedded system design early in their program of study and continue to use these methods throughout many of their required courses. Students develop their teamwork and communication skills. They do so in part through course work that requires them to communicate effectively in written form and in part through course work involving team-based design, written communication of their design decisions, and oral presentation of their work. The design experiences require that students work in teams of varying size. By participating in team-based problem solving of this kind, with individuals whom they may not have
• chosen as teammates, students learn to work with individuals in multiple situations, thereby developing their teamwork skills.
• Students develop the ability to design an engineering system to meet desired
specifications. They engage in a major design experience in which they design and build an engineering system. The specific type of system varies, as projects are chosen from various application areas relevant to the discipline. These team-oriented tasks demand that students learn to work with others in completing a system design that meets specifications on time. The system specifications may require that students interact with individuals from other disciplines to design an acceptable product.

- Students engage in activities that foster an appreciation for the importance of extracurricular and community involvement. They are actively encouraged to become involved with professional societies, service organizations, and other extracurricular activities and also to take advantage of the close interpersonal environment that the department fosters. We require our students to obtain professional experience prior to graduation, either through an internship or by participating in the co-op program. Additionally, we encourage our students to participate in engineering projects on campus, through undergraduate research, suitable on-campus work experience, and technical extracurricular activities such as the US First Robotics competition.

### Electrical Engineering Curriculum

**FIRST YEAR**

*(See Common First-Year Curriculum in Engineering)*

Electrical Engineering student should select CS141 from the available list of Second Semester Science/CS elective courses numbered CM132/BY160/CS141.

### SOPHOMORE YEAR

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<tr>
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<td>Differential Equations</td>
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<td>Electrical Science</td>
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<td>EE262</td>
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<td>Intro to Object Oriented Programming and Software Design</td>
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## JUNIOR YEAR

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<td>Energy Conversion</td>
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## SENIOR YEAR

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Knowledge Area or University Course electives. There are a total of five courses which must be taken to cover at least four knowledge areas. At least one of these courses must be a University course. University courses are interdisciplinary courses that cover two or more knowledge areas. One of the knowledge area electives must be an Economics course, EC350 is recommended and one must be ES110.

There are five Area Electives which must be selected as follows: At least two from a single area of concentration within the electrical and computer engineering discipline, and one from a different area of electrical and computer engineering. The remainder may be chosen in any combination from any of the areas of electrical and computer engineering. A list of appropriate courses within those areas is available from the ECE Department and is contained in the ECE Undergraduate Student Handbook.

The Mathematics Elective may be MA211 or numbered 300 level or higher and must include a significant amount of mathematical theory.

The Engineering Science Electives are satisfied by ES courses approved by the ECE Department.

The Undesignated Electives are fulfilled by college level courses that do not contain a significant amount of material already covered elsewhere in the student’s program. See Academic Requirements for details of the Clarkson Common Experience including the First-Year Seminar, the Clarkson Seminar, Knowledge Area (KA) courses, University Courses (UC), Professional Experience, and related requirements.

Professional Specializations
The courses offered by the Department of Electrical and Computer Engineering can be grouped into sub disciplines, with each sub discipline including a combination of required and elective courses at the undergraduate level. A complete description of all courses can be found online on the Student Administrative Services website. Undergraduate students enrolled in 500-level courses must have a cumulative grade-point average of at least 3.0, and permission of their advisor and their department chair. To enroll in a 600-numbered course, undergraduates must have senior standing, a grade-point average of at least 3.5, and must have permission of their advisor, department chair, and the Dean of Engineering. See Professional Concentrations in Engineering.

Biomedical Engineering

<table>
<thead>
<tr>
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<tr>
<td>BR400</td>
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<td>Introduction to Biomedical Engineering &amp; Science</td>
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<td>Control Systems</td>
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Communications Systems and Signal Processing

EE401 Digital Signal Processing
EE404 Wireless Networks
EE407 Computer Networks
    Image Processing
EE470 Coding and Information Transmission
EE471 Principles of Digital and Data Communications

Electronics and Circuits

EE441 Electronic Devices for IC Simulation
EE442 CMOS IC Design
EE446 Instrumentation
EE447 VLSI Design
EE448 Solar Cells
EE449 Fundamental of Antenna Engineering

Computer Engineering

EE361 Fundamentals of Software Engineering
EE363 Software Components and Generic Programming
EE365 Advanced Digital Circuit Design
EE368 Software Engineering
EE404 Wireless Networks
EE407 Computer Networks
EE408 Software Design for Visual Environments
EE410 Computer and Network Security
EE461 Many-Core Architecture and Programming Model

EE450 Control Systems
EE451 Digital Control
EE452 Optimization Techniques in Engineering

Power Engineering

EE333 Power System Engineering
EE430 High-voltage Techniques and Measurements
EE431 Power Distribution and Utilization
EE438 Alternate Energy Systems
EE439 Dielectrics
BS IN ENVIRONMENTAL ENGINEERING
Environmental engineers provide the knowledge, leadership, and guidance needed to improve the quality and insure the sustainability of our natural world — from the water we drink, to the air we breathe, to the soil that produces our life-sustaining vegetation. Environmental engineers play a major — and increasingly proactive — role in prevention and control of pollution of all kinds and in efforts to deal with global warming.

Environmental engineers develop and implement technologies to solve problems like meeting clean water supply needs and protecting public health, addressing the air pollution issues of acid rain and global warming, and reducing pollution while maintaining and improving the quality of life we enjoy.

The mission of the Civil and Environmental Engineering Department, formally stated, is to educate talented and motivated men and women to become successful professionals through quality undergraduate and graduate programs that place a high priority on student access and interaction with faculty. This mission statement establishes the educational framework for the environmental engineering degree program at Clarkson, and the curriculum objectives given below provide more detail about the program.

Curriculum Objectives
The Environmental Curriculum is designed for a career in environmental research, system modeling, or process design. All Environmental Engineering majors are provided with a theoretical foundation as well as design experience in the area of water resources, environmental quality, systems, hazards and treatment processes. This foundation is typically achieved in the junior year and enables students to use the senior year to select elective courses in areas where their particular interests have developed. In the senior year a capstone design course culminates the development of design skills.

The BSEnvE degree (Bachelor of Science in Environmental Engineering) program objectives may be stated as shown below: Develop students whose engineering knowledge can meet the challenges of a successful professional career.

- Ensure students acquire good communication and leadership skills.
- Foster an intellectually stimulating environment for professional development.
- Develop a relationship between students and faculty that produces a personal interest in the student’s education and professional development.

Moreover, the approach to the achievement of these objectives may be summarized as:
- offering a quality undergraduate program that places a high priority on student access and faculty interaction within an environment that is intellectually stimulating and encourages professional development; providing its graduates with the engineering
knowledge needed to meet the lifelong challenges of a successful professional career; and
• valuing good communication and leadership skills.

It is expected that graduates from the BSEnvE program will demonstrate achievement of these objectives within a few years after completing the program.

Science and engineering-science courses form the majority of the curriculum in the first two years. These courses provide the base for the professionally oriented courses in the junior and senior years. Through the selection of electives, students can take courses in an area of environmental engineering that is not covered by required courses, such as Air Pollution Control and Industrial Hygiene. Courses acceptable as professional electives are listed under Professional Concentrations in Engineering. The Environmental Engineering curriculum provides for six professional electives. These electives courses enable students to create programs of study unique to each individual as well as provide both depth and breadth in the student’s preparation for professional practice. In the senior year a capstone design course culminates the development of design skills that were first introduced in the sophomore year and enhanced in subsequent courses. The guiding principle is that the student and faculty advisor together create a program of study that best satisfies the student’s individual career objectives.

**Environmental Engineering Curriculum**

**FIRST YEAR**
*(See Common First-Year Curriculum in Engineering)*

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**JUNIOR YEAR**

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</table>

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Core Professional Courses must include three of these courses:
- CE482/582 Systems (3)
- CE46 Ind Ecology (1) ES432 Risk Analysis
- CE481 Haz Waste

Earth Science Elective must be one of: CE435/535 Groundwater Hydrology and Geochemistry; CE315 Geology for Engineers (1), ES426 Global Climate Change: Science, Engineering and Policy (odd springs), CE477 Atmospheric Chemistry (even springs)

Four courses (12 credits) of the Professional Electives must be in Engineering Topics.
A total of 16.5 design credits are required to be accumulated. Required courses provide 9 or 10 design credits.

Standard Length of BS in Environmental Engineering- Four years or eight semesters

BS IN MECHANICAL ENGINEERING

The objectives of the Mechanical Engineering program are that graduates:

1. Will competently apply engineering methods to solve professional problems associated with the design, manufacture, and maintenance of electromechanical systems and
understand the social, ethical, and environmental context of their work;
2. Will communicate clearly, collaborate competently in teams, and assume leadership roles;
3. Will have the habit of continuous professional development.

The program outcomes are the generic abilities that graduates will demonstrate that they have acquired. The defining characteristics of professional problems and the process used to solve them lead directly to these generic program outcomes.

- **An ability to apply knowledge of mathematics, science, and engineering, and an ability to design and conduct experiments, as well as analyze and interpret data. (ABET a& b)**
- **An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, and an ability to function on multidisciplinary teams. (ABET c & d)**
- **An ability to identify, formulate, and solve engineering problems, and an understanding of professional and ethical responsibility. (ABET e & f)**
- **An ability to communicate effectively, and the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social context. (ABET g & h)**
- **A recognition of the need for, and an ability to engage in life-long learning, and a knowledge of contemporary issues. (ABET i & j)**
- **An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. (ABET k)**

The Mechanical engineering program expects the student to graduate with the ability to: apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes; and work professionally in both thermal and electromechanical systems.

**Curriculum Overview**
The 120-credit program contains 84 credit hours of required technical courses, 36 credit hours of electives (including two professional electives, two undesignated electives and five Knowledge Area/University Course, KA/UC, electives).

**Required Technical Courses**
The first two years of the curriculum cover mathematics, physics, chemistry and engineering science courses (including basic principles of statics, dynamics, solid mechanics, electrical circuits, materials and the use of computers). In the third and fourth years, students take specialized courses on topics such as fluid mechanics and mechanical vibrations and control. These courses provide knowledge and skills that strongly support the second outcome listed above, which is a key element in thermo-mechanical systems design. The laboratory components of the first-year physics and chemistry courses introduce study of the relationship between theory and reality. This fosters the development of the student’s technical intuition. Mechanical engineering laboratory courses add to this development.
Training in professional problem-solving begins in the spring of the second year, with the first course in engineering design. The first course to train students formally in the solution process, it lays the foundation for the fourth-year capstone design course. In the capstone course, students work in teams to design and evaluate thermo-mechanical systems that meet real needs. Thus, they learn to apply the solution process to a real professional problem. Students may acquire additional professional experience by participating in Formula SAE, Mini-Baja, Clean Snowmobile, or other team competitions, which are open to any student.

Common Curriculum Requirements
Plans of study must include a total of five Knowledge Area (KA) courses. Students will select these so that at least one is a designated University Course, and so that together these five courses cover the four knowledge areas. Communication intensive course requirement will be fulfilled by a combination of courses having one or two communication points each, with a total of six points required for graduation. At least two of these six points will be earned through or 400-level courses required in the major.

Professional and Undesignated Electives
The professional electives must be advanced-level courses chosen according to criteria in the Mechanical & Aeronautical Engineering (MAE) Department Student Handbook. However, the two undesignated electives may be any college-level courses that do not contain a significant amount of material already covered in other courses. They could be chosen to enrich the student’s technical or nontechnical background. Advanced (200-level or above) Aerospace Studies or Military Science courses may be used as undesignated electives.

Mechanical Engineering Curriculum

FIRST YEAR
(See Common First-Year Curriculum in Engineering)

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SOPHOMORE YEAR

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<td></td>
<td></td>
<td><strong>16</strong></td>
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<td><strong>16</strong></td>
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</tbody>
</table>

**JUNIOR YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES330</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>ES340</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME342</td>
<td>Intro Numerical Methods</td>
<td>3</td>
</tr>
<tr>
<td>MA330</td>
<td>Adv. Engineer. Math.</td>
<td>1</td>
</tr>
<tr>
<td>ME301</td>
<td>Mech. Engineer. Lab II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>KA/UC Elective</td>
<td>3</td>
</tr>
<tr>
<td>ME455</td>
<td>Mechanical Vibrations</td>
<td>16</td>
</tr>
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</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME326</td>
<td>Intermediate Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>ME341</td>
<td>Mech. of Machine Elements</td>
<td>3</td>
</tr>
<tr>
<td>ME 445</td>
<td>Integrated Design I</td>
<td>3</td>
</tr>
<tr>
<td>ME401</td>
<td>Mech. Engineer. Lab III</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Economics Elective</td>
<td>3</td>
</tr>
<tr>
<td>ME310</td>
<td>Thermodynamic Sys. Eng.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Or</td>
<td>16</td>
</tr>
<tr>
<td>ME455</td>
<td>Mechanical Vibrations and Control</td>
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</table>

**SENIOR YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>ME442411</td>
<td>Intro to Heat Transfer Engineering</td>
<td>3</td>
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<tr>
<td></td>
<td>Analysis</td>
<td></td>
</tr>
<tr>
<td>ME4456</td>
<td>Integrated Design II</td>
<td>3</td>
</tr>
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<td>AE, ES, or ME Prof. Elective</td>
<td>3</td>
</tr>
<tr>
<td>ME 324</td>
<td>Dynamical Systems</td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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<tbody>
<tr>
<td></td>
<td>Professional Elective</td>
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<td>Professional 1 Elective</td>
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<tr>
<td>ME446</td>
<td>Integrated Design II</td>
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<td>Economics Elective</td>
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<td></td>
<td>Undesignated Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AE, ES, or ME Prof. Elective</td>
<td></td>
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</tbody>
</table>

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Specializations
Students may select electives from one or more of the following categories. Not all courses are offered each year or each semester\(^1\). Courses required for the aeronautical engineering degree are offered on a regular basis and may be taken by mechanical engineering students as electives.

Computer Applications
ME428 Computational Fluid Mechanics
ME443 Optimal Engineering
ME444 Computer-Aided Engineering

Fluid and Thermal Sciences
AE/ME425 Aerodynamics
AE/ME427 Design of Propulsion Systems
AE/ME431 Gas Dynamics
ME437 Particle Transport, Deposition, and Removal I

Manufacturing
ME390 Additive Manufacturing
ME492 Welding Metallurgy

Solid Mechanics and Materials
ME452 Advanced Strength of Materials
ME455 Mechanical Vibrations and Control
ME457 Composite Mechanics and Design
OM480 Project Management

\(^1\) See Table 5.3 of the *Mechanical & Aeronautical Engineering Department Student Handbook.*
MINORS AND CONCENTRATIONS IN ENGINEERING

Minor in Biomedical Engineering
As various fields of medicine and health care increasingly depend upon advances in technology, graduates who possess combined expertise in engineering principles and knowledge of biological sciences at all levels will be in high demand. The minor in Biomedical Engineering enhances opportunities for Clarkson's students to meet this need, while they graduate with a traditional engineering degree. This minor is connected closely with the minor in Biomedical Science and Technology. Students from both minors participate in shared core courses along with a multidisciplinary capstone design course. Students can take only one (not both) of the two minors.

A foundation knowledge of Calculus I & II (MA131/132), Physics I & II (PH131/132), and Biology II: Cell and Molecular Biology (BY160) is required for this minor.

Requirements:
Physiology/Anatomy Requirement
BY471 Anatomy and Physiology I

BY473 Anatomy and Physiology I Laboratory
or
BY472 Anatomy and Physiology II
BY474 Anatomy and Physiology II Laboratory
or
BY360 Comparative Physiology
BY362 Comparative Physiology Laboratory

BR200 Introduction to Biomedical and Rehabilitation Engineering, Science and Technology
BR450 Biomedical Engineering, Science, and Technology Capstone Design I or equivalent engineering design course with a BEST approved project
BR400 Biomedical Engineering Fundamentals

Engineering Depth Elective
Choose 1 (3 credits) from the approved list of upper division biomedical engineering related courses.

Breadth Elective
Choose 1 (3 credits) from the approved list of upper division biomedically related courses.

Minor in Biomedical Science and Technology
As various fields of medicine and health care increasingly depend upon advances in technology, graduates who possess combined expertise in engineering principles and knowledge of biological sciences at all levels will be in high demand. The minor in Biomedical Science and Technology enhances opportunities for Clarkson's non-engineering students to meet this need. This minor is connected closely with the minor in Biomedical Engineering. Students from both minors participate in shared core courses along with a multidisciplinary capstone design course.
Students can take only one (not both) of the two minors.

A foundation knowledge of Biology II: Cell and Molecular Biology (BY160) is required for this minor.

**Biology Fundamentals: Required (4 credits):**
BY471 Anatomy and Physiology I
BY473 Anatomy and Physiology I Laboratory
OR
BY472 Anatomy and Physiology II
BY474 Anatomy and Physiology II Laboratory
OR
BY360 Comparative Physiology
BY362 Comparative Physiology Laboratory

**Engineering Fundamentals (3 credits)**
BR200 Introduction to Biomedical and Rehabilitation Engineering, Science and Technology

**Intersecting BEST courses, Required (3 credits)**
BR450 BEST Capstone Design I (3 credits) or equivalent engineering design course with a BEST approved project

**Specialty Tracks: Choose one (2 course - 6 credits) track**

**Track I Genetic Engineering**
BY214 Genetics
And choose one of
BY412 Molecular Biology Laboratory (4 credits)
BY/CM314 Bioinformatics

**Track II Neuroscience**
BY/CM460 Neurobiology (BY160 or BY360 or consent)
BY485 Neural Engineering
PY458 Cognitive Neuroscience (PY151 or junior/senior standing)

**Breadth Elective:**
Choose 1 (3 credits) from approved list of upper division biomedically related courses

Total: 19 credits (plus 3 credits cell biology)

**Minor in Electrical Engineering**
A minor in Electrical Engineering is available to students in any degree program. To obtain the Electrical Engineering minor, a student must complete the four required courses and two of the five elective courses from the following list:

**Required Courses: 4**
EE331  Energy Conversion

**Elective Courses: 2 of 5**
EE221  Linear Circuits
Minor in Engineering Science
The School of Engineering offers a minor in Engineering Science for students who satisfy a minimum of 20 credit hours as outlined below:

- Satisfy prerequisites (MA131, MA132, PH131, PH132, MA232, CM131 or equivalents) for the three core ES courses — ES220, ES250, ES260
- 1 Scientific Programming Course (minimum two Crs. ES100 or equivalent)
- 3 Engineering Electives (minimum nine Crs. — any ES, ME, AE, CE, CH, EE courses for which the candidate has the prerequisites, except ES238, ES300, EE268, BR200)

*not open to School of Engineering majors or Engineering & Management majors

Minor in Environmental Engineering
A minor in Environmental Engineering is available to all students except those majoring in Environmental Engineering. To obtain a minor, a student must successfully complete the following required courses:

1. **one of:**
   - CE340 Introduction to Environmental Engineering (3 cr.)
   - CH220 Chemical Engineering Principles II: Material Balances (3 cr.)
   - CH250 Chemical Process Calculations (3 cr.) (class of 2011 and 2012 only)

2. **one of:**
   - CH210 Chemical Engineering Principles I: Material Balances (3 cr.)
   - CM241 Organic Chemistry I (3 cr.)
   - CM371 Physical Chemistry I (3 cr.)

3. **one of:**
   - BY222 Ecology (3 cr.) and BY224 Ecology Laboratory (2 cr.)
   - or
   - BY320 Microbiology (3 cr.)
   - or
   - BY240 Environmental Science and Policy of American Rivers (3 cr.)

4. **one of:**
   - CE491 Senior (Water Resources/Environmental) Design (3 cr.)
   - MP401 Multidisciplinary Course (Environmental Remediation Design) (3 cr.)
   - MP444 EPA P3 Sustainable Design Competition (3 cr.)

**Plus any two courses from the following:**

- CE430 Water Resources Engineering II (3 cr.)
- CE477 Atmospheric Chemistry (3 cr.)
- CE435 Groundwater Hydrology and Geochemistry
- CE478 Solid Waste Management and Landfill Design (3 cr.)
- CE479 Water and Wastewater Treatment Processes (3 cr.)
Clarkson University offers a minor in Sustainable Energy Systems Engineering to all students who meet the prerequisite requirements. Our reliance on energy-rich sources of fossil fuels has enabled growth of modern society, increasing our mobility, industrial growth, domestic comfort, abundant food supply, and economic prosperity. Engineers are among the many types of professionals that need to understand the limits of our present energy systems and lead us to a future in which we can continue to provide reasonable energy resources for human quality of life. This minor emphasizes that all engineering disciplines are necessary to develop and assess technologies to both increase the efficiency of our energy use and advance renewable and alternative energy sources.

A total of 21 credits is required for this minor. Depending upon the student’s major, between 9 – 12 hours of this 21 credit total are in addition to the major’s core requirements. A student must complete the course requirements as follows:

**Required Courses (3 credits each)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Introduction to Energy Systems</td>
<td>ES238</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>ES340, CH340 or CH260</td>
</tr>
</tbody>
</table>

A minimum grade-point average of 2.0 is required in the courses taken for the minor. At least one quarter of the total credit hours required must be completed at Clarkson, unless the Dean of the Coulter School of Engineering approves an exception.
Capstone Design (or energy related research) (one of: AE451, CE490, CE491, CE492, CH482 EE412, ES456, ME446, ES443

(With specific Energy Focus)

**Environmental Impacts Choice, one of:**

- Industrial Ecology: CE486
- Global Climate Change: Science Engineering and Policy: ES436
- Sustainability and the Environment: EV305

**Policy Choice, one of:**

- Environmental Law: POL375
- Biofuels and Farm Policy: POL372
- Environmental Policy: POL470
- Environmental Economics: EC360
- Energy Policy: POL471
- Sustainability Theory and Practice: PHIL405
- Environmental Ethics: PHIL370

**Technology Choice, TWO of:** (at least one must focus on energy technologies)

- *Energy technology related research project* e.g. ES443
- *Alternative Energy Systems* EE438
- *Energy Conversion* EE331
- Power Systems Engineering: EE333
- *Fundamentals of Building Systems* CE409
- Sustainable Infrastructure and Building: CE410
- *Sustainability Project Experience* EV390
- *Thermodynamic System Engineering* ME310
- Industrial Ecology: CE486
- Global Climate Change: Science Engineering and Policy: ES436
- Air Pollution Control: CH434

1If not taken as an environmental impacts choice

2 applicability of this class changes annually based on specific class topic

*at least one of the two technology choice classes must have this designator

**Minor in Sustainable Solutions for the Developing World**

Clarkson’s minor in Sustainable Solutions for the Developing World is available to students in
any degree program. The minor seeks to employ humanitarian principles toward sustainable solutions that address the conflict that often occurs between economic development and environmental justice predominant in the developing world. A goal of the curriculum is to provide students with the tools to understand issues concerning social justice and sustainability to be used when designing and implementing solutions for the developing world. To obtain the minor, a student must complete courses within four categories (sustainability, culture, business and technical tools for development) and a project-based global experience. Examples of courses that meet the criteria of each of these categories, as well as the number of required credits within each category are listed below.

1. **Three credit total from the following list of courses (3cr. total):**
   - ANTH 381 Consumption and Culture (3 cr.)
   - CE 434 Sustainable Development Engineering (3 cr.)
   - EV 305 Sustainability and the Environment (3cr.)
   - EV 300 Environmental Leadership (3 cr.)
   - EV 390 Sustainability Project Experience
   - PHIL 370 Environmental Ethics (3 cr.)
   - PHIL 405 Sustainability Theory and Practice: A Critical Assessment (3cr.)
   - POL 350 International Development and Social Change (3cr.)

2. **Two of the following courses (6 cr. total)**
   - ANTH 201 Introduction to Anthropology (3cr.)
   - ANTH 351 Global Forces, Local Outcomes (3 cr.)
   - COMM 428 Public Debate and the Environment: Reading & Writing Environmentally (3 cr.)
   - LIT 250 World Literature (3 cr.)
   - LIT 251 Understanding Vietnam (3 cr.)
   - LIT 353 African Literature (3cr.)
   - PHIL 310 World Religious and Contemporary Issues (3 cr.)
   - POL 250 Politics in Cross National Perspective (3 cr.)
   - POL 251 Introduction to International Politics (3 cr.)
   - POL 362 Human Rights Law and Politics (3 cr.)
   - SOC 330 Health, Wealth, Inequality, and the Environment (3cr.)

3. **Two of the following courses (6 cr. total)**
   - MK 436 Creativity, Innovation and New Product Development (3cr.)
   - SB 396 Global Business Strategies (3cr.)
   - MK 320 Principles of Marketing (3 cr.)
   - OM 476 Management of Technology (3 cr.)
   - EC 360 Environmental Economics (3 cr.)
   - ES 438 Alternative Energy Systems (3 cr.)
4. One of the following courses (3 cr.)
UNIV 399 Global Experience (with Sustainable Solutions for the Developing World emphasis), recommended for all students; OR a Multidisciplinary project course (with Sustainable Solutions for the Developing World emphasis) if approved by the director of the minor and the chair or advisor for the student’s major program of study.

The multidisciplinary project is intended to serve as the Capstone, Senior Design, or other culminating project based experience that is normally completed within the student’s major program of study. Students participating in the minor will engage in a multidisciplinary project developed by students with the minor faculty who support the minor OR the student may participate in related experiences and opportunities within the student’s major program of study that are thematically linked to this minor. For example, if a student’s senior design course within their major has a multidisciplinary them and relates to strategies employable in developing world, the student can obtain approval from the director of the minor for the course to serve as the minor required course.

Architectural Engineering Professional Concentration

A professional concentration in Construction Engineering Management (CEM) with an Architectural Engineering & Building Construction Track is available to students who are planning a career in building design, including architectural, structural, construction, foundation and environmental aspects. The CEM professional concentration with the Architectural Engineering and Building Construction track allows students to satisfy the accreditation requirements in civil engineering while selecting professional electives appropriate for a career in architectural engineering and building construction.

Please refer to the Construction Engineering Management (CEM) concentration for the designated courses.

Biomolecular Engineering

A professional concentration in Biomolecular Engineering has been designed for chemical engineering majors who desire a strong background in biochemical engineering and biology. This will benefit students pursuing careers in medicine, biomedical engineering or in the following industries: consumer products, food processing, and pharmaceuticals. The decision to obtain this concentration is made optimally in the sophomore year.

The professional concentration in Biomolecular Engineering offers a chemical engineering major an alternative path for obtaining a BS degree in Chemical Engineering. Students must take BY160 Cellular & Molecular Biology (3 Cr. Hrs.) and BY162 Cellular & Molecular Biology Lab (2 Cr. Hrs.) in spring semester of the sophomore year. BY160 is a Requirement for all chemical engineering students; students pursuing the concentration must also take the BY162 laboratory course. The required mathematics elective must be a suitable statistics course (STAT383 Applied Statistics) and technical and engineering electives are replaced with the required courses CM460 Biochemistry I and CH465 Biochemical Engineering. An undesignated elective is replaced with a course selected from the following list of courses relevant to biomolecular engineering: BR200 Introduction to Biomedical
Rehabilitation Engineering and Science, BY214 Genetics, BY320 Microbiology, BY360/362 Comparative Physiology with Lab, BY412 Molecular Biology Laboratory, BY419 Immunobiology, BY450 Advanced Cell BiologyBY471/473 Anatomy and Physiology I with Lab, BY485 Neural Engineering, , CM453 Intro to Biomaterials, EHS416 Toxicology, ES380 Biomechanics or ES452 Biomaterials and Biomedical Engineering Applications.

Further information on this concentration is available in the Department of Chemical Engineering office. By successfully completing the courses recommended above, upon graduation, students receive a bachelor’s degree in Chemical Engineering with a Dean’s Certificate indicating a “Professional Concentration in Biomolecular Engineering” and a notation to that effect on their transcript.

**Construction Engineering Management**

A professional concentration in Construction Engineering Management (CEM) is available to permit civil engineering majors to focus their electives on courses pertinent to the field of construction engineering and management. Electives used to satisfy the requirements of the concentration include a set of courses that reflect the sub discipline of Construction Engineering as defined by the Accreditation Board of Engineering and Technology (ABET). The CEM concentration has two tracks: (1) Construction/Infrastructure track for students planning a career in heavy construction management, and (2) Architectural Engineering & Building Construction track for students planning a career in sustainable building design and construction management.

To obtain a Professional Concentration in Construction Engineering Management, a student must choose required and professional electives in order to complete the following seven courses:

- CE411 Construction Materials
- CE415/515 Foundation Design
- CE442 Reinforced Concrete Design
- CE442 Steel Design

*At least one of the following non-CE courses:*

- COMM217 Public Speaking (C2)
- COMM417 Business & Professional Speaking (C2)
- EHS330 Safety Analysis
- EM/OM 451 Quality Management & Lean Enterprise
- EM/OM380 Project Management (EC)
- FN361 Financial Management
- LW270 Law & Society 1
- LW446 Law of the Work Place
- OS286 Organizational Behavior (IG)

*Construction/Infrastructure Track:*

At least two of the following CE courses:

- CE315 Geology for Engineers
- CE 406 Construction Estimating
- CE407 Construction Estimating & IPD Scheduling
- CE453/553 Properties and Performance of Concrete Materials
- CE408 BIM &
CE410/510 Sustainable Infrastructure & Building

*Architectural Engineering & Building Construction Track:*

At least two of the following CE courses:
- CE409 Fundamentals of Building Systems
- CE408 BIM & IPD
- CE448 Intro to Architectural Engineering
- CE410/510 Sustainable Infrastructure
- CE407 Construction Estimating & Scheduling & Building

Students should meet with their academic advisor to select the most appropriate CEM courses according to their career objectives.

By successfully completing the courses recommended above, upon graduation, students receive a bachelor’s degree in their major with a Dean’s Certificate indicating a “Professional Concentration in Construction Engineering Management” and a notation to that effect on their transcript.

**Electrical Power Engineering Concentration**

Clarkson University offers a professional concentration in Electric Power Engineering that is available to electrical engineering majors. The concentration consists of:

- EE 331 Energy Conversion
- EE 333 Power System Engineering
- EE 431 Power Transmission and Distribution
- 2 Power elective courses
- 1 Breadth elective course

**Typical power electives:**

- EE 430 High Voltage Techniques and Measurements
- EE 439 Dielectrics
- EE 438 Alternate Energy Systems
- ES 340 Thermodynamics
- Any power engineering graduate course w/dept. approval

**Typical Breadth electives:**

- EE 450 Control Systems
- EE 451 Digital Control
- EE 401 Digital Signal Processing
- EE 446 Instrumentation
- EE 407 Computer Networks
- EE 365 Advanced Digital Circuit Design

Courses not on these lists must be approved by the ECE Department. By successfully completing the concentration, upon graduation, students receive a BS in Electrical Engineering with a Dean’s Certificate indicating a “Professional Concentration in Electric Power Engineering” and a notation to that effect on their transcript.

**ENGINEERING STUDIES**
Some students entering the School of Engineering are not sure which academic discipline to pursue. These students may choose the Engineering Studies Program. A Director of Engineering Studies and support faculty serves as advisors to these students and assists them in selecting curricula. For additional information, consult with the Associate Dean of Engineering for Academic Programs at 315-268-6446. The Engineering Studies classification provides students with an opportunity to learn more about various programs within the School of Engineering prior to selecting. Undergraduates may choose between; Aeronautical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environmental Engineering, Mechanical Engineering and Software Engineering.

MATERIALS ENGINEERING
Many engineers and scientists are employed in the materials processing and manufacturing industries. Increasing demands on the mechanical and environmental durability of national infrastructure require improving the strength and useful life of steels, concrete, ceramics and other engineering/structural materials. Space exploration and miniaturization of electronic devices, for example, are made possible by the development and processing of nanostructured composite materials through nanotechnology.

To help students improve employment opportunities in materials-related areas, Clarkson University is offering a concentration in Materials Engineering.

A Clarkson student can qualify for a Certificate from the dean of the Coulter School of Engineering verifying satisfactory completion of the coursework necessary to create a Professional Concentration in Materials Engineering. To attain this, the student must complete five (5) courses, which include two (2) required courses and three (3) electives from the list given. The required courses are:

- ES260 Materials Science and Engineering I
- ES360 Materials Science and Engineering II

The three elective courses must be chosen from the following list of materials engineering and science courses:

- CE411 Construction Materials Eng.
- CM430 Colloids and Interfaces
- CM450 Introduction to Polymer Chemistry
- EE439 Dielectrics
- ES357 Microelectronic Circuit Fabrication
- ES361 Fine Particle Technology
- ES365 Polymer Materials
- ES452 Biomaterials and Biomedical Engineering Application
- ES464 Corrosion Engineering
- PH341 Solid State Physics I
- PH442 Solid State Physics II
- ME390 Manufacturing Processes
- ME393 Analysis of Materials Processing
- ME457 Composite Mechanics
- ME492 Welding Metallurgy
- ME591 Selected Topics in Materials Engineering: “Micro- & Nano-Systems Eng.” (Spring)

Structural Engineering Concentration
A professional concentration in Structural Engineering is available to civil engineering students
to increase their ability to modernize and increase the effectiveness of the nation’s physical infrastructure. This challenge involves the design and construction of new physical systems such as our highways, harbors and waterways, bridges, buildings, and water treatment facilities. This effort requires a variety of specialized talents that can in part be developed through the selection of professional electives.

To obtain a Professional Concentration in Structural Engineering, a student must choose required and professional electives in order to complete the following seven courses:

- CE 420/520 Computational Methods of Structural Analysis
- CE 415/515 Foundations Design
- CE 441 Reinforced Concrete Design
- CE 442 Steel Design
- CE 490 or CE 492 Senior Design

**Choose at least TWO of the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 401/501</td>
<td>Fracture Mechanics of Concrete Structures</td>
</tr>
<tr>
<td></td>
<td>CE 455/555 Structural Damage, Rehabilitation, and Repair</td>
</tr>
<tr>
<td>CE 411</td>
<td>Construction Materials</td>
</tr>
<tr>
<td>CE 421/521</td>
<td>Composite Mechanics and Design</td>
</tr>
<tr>
<td>CE 453/553</td>
<td>Properties and Performance of Concrete Materials</td>
</tr>
<tr>
<td>CE 457/557</td>
<td>Environmental Degradation of Concrete Structures</td>
</tr>
<tr>
<td>CE 408</td>
<td>BIM/IPD</td>
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<tr>
<td></td>
<td>CE 512 Fundamentals of Dynamics and Vibrations</td>
</tr>
</tbody>
</table>

It is of particular importance for transfer students to be aware of the sequence of prerequisite courses required to complete Steel and Reinforced Concrete Design for the Structural Engineering concentration. This sequence consists of ES220, ES222, CE320, CE441 (Fall), CE442 (Spring) and requires five semesters if transfer students have not taken ES220 Statics before entering Clarkson. In special circumstances ES222 and CE320 can be taken concurrently.

By successfully completing the courses recommended above, upon graduation, students receive a bachelor’s degree in their major with a Dean’s Certificate indicating a “Professional Concentration in Structural Engineering” and a notation to that effect on their transcript.
INSTITUTE FOR A SUSTAINABLE ENVIRONMENT
Susan E. Powers, Director and the Spence Professor in Sustainable Environmental Systems;
Alan Rossner, Associate Director

The Clarkson Institute for a Sustainable Environment (ISE) is home to Clarkson's environmental activities associated with research, interdisciplinary graduate and undergraduate degree programs, and outreach programs. The Institute was established to support Clarkson's long-standing expertise in this field and to increase interdisciplinary collaboration among faculty.

The Institute for a Sustainable Environment is a collaborative and multidisciplinary community that serves as the hub for the University’s drive toward a sustainable world. We facilitate high impact learning experiences, foster transformative scholarship, and engage the campus and broader community in order to understand and address environmental and sustainability challenges.

Recognizing that environmental problems increasingly require the expertise of many disciplines and points of view, the Institute promotes partnerships and interdisciplinary activities that enable the integration of basic and applied research, providing the increased understanding about environmental systems that is needed for informed decisions and policies. Fostering links among its members to facilitate environmental activities, ISE sponsored workshops, seminars, and small grants programs.

BS IN ENVIRONMENTAL SCIENCE & POLICY
Alan Rossner, Director

Concerns about environmental issues and how sustainable our natural and human resources will be in the future are increasingly at the forefront of governmental policy, corporate planning, and the day-to-day choices of families like yours. Government-supported research focuses on important topics such as climate change, depletion of the ozone layer, habitat destruction, and acid rain. Corporations seek new production methods and materials to decrease industrial pollution. At home, we recycle our garbage and purchase products with less packaging.

Cleaning up the pollution of the past and confronting contemporary environmental challenges requires creative and multidisciplinary solutions. Those most successful in addressing these complex issues will be trained in a variety of backgrounds. They will understand the basic concepts in the life sciences and their application to real-world problems. They will appreciate the history and complexity of social and political systems. And they will be knowledgeable in environmental regulation and policy. Clarkson’s Environmental Science and Policy (ES&P) program prepares its graduates to become effective leaders by providing a broad-based, interdisciplinary background.

Clarkson undergraduates experience hands-on learning that includes assisting the faculty with research projects and working on independent projects. The coursework is challenging but flexible, and the ES&P degree allows students significant freedom in choosing their emphasis in an environmental area. The curriculum is also well suited as a preparatory degree for students...
interested in pursuing a degree in the health sciences, including medicine, dentistry, and veterinary science.

Programs can be tailored to meet the interests of the student. To this end, Clarkson offers both a minor and a major in Environmental Science & Policy. Upon successful completion of the major, a student will be awarded a Bachelor of Science (BS) degree. The major allows students to pursue their study of the environment in an interdisciplinary fashion.

There are required courses in biology, ecology, business, chemistry, liberal arts, and mathematics. Using these as a foundation, students can use professional electives to investigate environmentally related issues of interest in more depth.

Students, in completing the Clarkson's ES&P program, are expected to meeting the following goals:

- Develop a foundation in natural sciences
- Understand how technology has impacted the environment, and how technology can also be a solution to environmental challenges
- Understand how science and public values guide policy
- Understand how policy influences scientific endeavors
- Understand how policy impacts the environment and public health
- Develop quantitative and qualitative analysis skills
- Develop skills for communicating complex scientific information to nonscientists
- Complete an independent ES&P research experience
- Practice ES&P through a professional experience

Requirements

A. 120 credit hours total
B. Two math courses (one must be calculus)
C. One statistics course
D. Minimum of 11-17 credit hours in Chemistry depending on the chosen concentration
E. Minimum of 15 credit hours in Biology
F. Additional minimum of 12 credit hours in Science and/or Engineering
G. Four credit hours in Physics
H. Minimum of eight credit hours of EHS courses
I. Three credit capstone research project
J. Minimum of 15 credit hours in policy
K. Complete the university requirements for knowledge areas, communication points, technology serving humanity course, and the professional experience

Environmental Science & Policy Sample Curriculum
### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY140</td>
<td>Biology I</td>
<td>3</td>
<td>BY160</td>
<td>Cellular &amp; Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BY142</td>
<td>Biology I Lab</td>
<td>2</td>
<td>BY162</td>
<td>Cellular Biology Lab</td>
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<tr>
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<tr>
<td>UNIV190</td>
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#### TOTAL
16
15

### SECOND YEAR

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<td>General Ecology</td>
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<td>EHS309</td>
<td>Intro to Industrial Hygiene</td>
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<td>BY224</td>
<td>General Ecology Lab</td>
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<td>Sustainability &amp; the Environment</td>
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<td>POL470</td>
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<td>PH131/141</td>
<td>Physics I</td>
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<td>CM</td>
<td>Organic Chemistry</td>
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<td>STAT318/282</td>
<td>Biostatistics or General Statistics</td>
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<td>EV280</td>
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<td>PHIL 405</td>
<td>KA/UC Sustainability: Theory &amp; Practice¹,²</td>
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**THIRD YEAR**

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<td>EC360</td>
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<td>Energy Policy¹,²</td>
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<td>SE301</td>
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<td>Free Elective</td>
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<td>Capstone Project</td>
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1. Various environmental policy courses will meet knowledge area requirements
2. Or suitable Policy Elective
3. Or suitable Biology/Chemistry/Engineering course
4. EC 150 or EC 350 is required as a prerequisite for Environmental Economics (EC 360) and will satisfy a knowledge area requirement

NOTE: Some electives may require additional prerequisites. Students must be registered for at least 14 credits to qualify for Dean’s List or as a Presidential Scholar.

**Professional Electives**

Professional Electives are defined as courses appropriate to the professional and career objectives of students and the ES&P Program. Professional electives are typically upper-level courses (300-level or above) chosen with the advice and consent of the student’s advisor, and focused on a minor, concentration or double major (in Biology, Chemistry, Environmental Engineering, Environmental Health Science, Law, or Communication, for example). The following courses are considered professional electives. Additional courses may be taken pending permission from the director of the program. Some professional electives require additional prerequisites.

**SCIENCE**

<table>
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<tr>
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<td>BY300</td>
<td>Recent Advances in Biological</td>
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<td>BY314</td>
<td>Bioinformatics</td>
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<td></td>
<td>Research</td>
<td></td>
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<tr>
<td>BY302</td>
<td>Plant Science of Northern New</td>
<td></td>
<td>BY320</td>
<td>Microbiology</td>
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</tr>
<tr>
<td></td>
<td>York</td>
<td></td>
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<tr>
<td>BY312</td>
<td>Adirondack Ecology and Environmental Science</td>
<td></td>
<td>BY322</td>
<td>Microbiology Lab</td>
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206
<table>
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<tr>
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<tr>
<td>BY425</td>
<td>Biological Systems and Environmental Change</td>
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<tr>
<td>BY340</td>
<td>Behavioral Ecology and Sociobiology</td>
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<tr>
<td>BY358</td>
<td>Animal Learning and Cognition</td>
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<tr>
<td>BY412</td>
<td>Molecular Biology Lab</td>
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<tr>
<td>BY451</td>
<td>Biochemistry II</td>
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<tr>
<td>CM242</td>
<td>Organic Chemistry II</td>
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<td>CM244</td>
<td>Organic Chemistry Lab</td>
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<tr>
<td>EHS406</td>
<td>IH Control Methods</td>
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<td>PH142</td>
<td>Physics for Life Sciences II</td>
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<tr>
<td>BY214</td>
<td>Genetics</td>
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<td>PH132</td>
<td>Physics II</td>
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<tr>
<td>BY328</td>
<td>Conservation Biology</td>
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<td>BY420</td>
<td>Evolution</td>
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<td>BY431</td>
<td>Limnology</td>
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<td>BY432</td>
<td>Limnology Lab</td>
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<td>BY450</td>
<td>Bio statistics</td>
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<td>CM221</td>
<td>Spectroscopy</td>
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<td>CM223</td>
<td>Spectroscopy Lab</td>
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<td>EHS405</td>
<td>Methods and Analysis</td>
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<td>CM460</td>
<td>Biochemistry</td>
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<tr>
<td>EHS416</td>
<td>Principles of Toxicology &amp; Epidemiology</td>
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**ENGINEERING**

Pre-requisites may be required

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<th>Course Code</th>
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<tr>
<td>CE380</td>
<td>Fundamentals of Environmental Engineering Senior Design</td>
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<tr>
<td>CE491</td>
<td>Intro to Environ. Engineering</td>
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<tr>
<td>CE340</td>
<td>Solid Waste Mgmt. and Landfill Design</td>
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<tr>
<td>ES436</td>
<td>Climate Change: Science, Eng. &amp; Policy</td>
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<tr>
<td>CE477</td>
<td>Atmospheric Chemistry</td>
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<tr>
<td>CE479</td>
<td>Water and Wastewater Treatment Design</td>
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<td>CE481</td>
<td>Hazardous Waste Management</td>
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<td>CE486</td>
<td>Industrial Ecology</td>
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<td>EV/CE435</td>
<td>Groundwater Hydrology and Geochemistry</td>
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**BUSINESS**

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<td>Game Theory and Economic Strategy</td>
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<tr>
<td>OM331</td>
<td>Operations &amp; Supply Chain Management</td>
</tr>
<tr>
<td>ANTH370</td>
<td>Env., Tech., &amp; Society</td>
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<tr>
<td>POL220</td>
<td>American Politics</td>
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<td>LW466</td>
<td>The Law of the Workplace</td>
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<tr>
<td>OS286</td>
<td>Organizational Behavior</td>
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<tr>
<td>OM380</td>
<td>Project Management</td>
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<tr>
<td>OM451</td>
<td>Quality Management &amp; Lean Enterprise</td>
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**HUMANITIES & SOCIAL SCIENCES**

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<td>POL230</td>
<td>Global Politics</td>
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<tr>
<td>ANTH/SOC285</td>
<td>Food and Society or What to Think About What You Eat</td>
</tr>
<tr>
<td>POL400</td>
<td>Constitutional Law</td>
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<td>COMM310</td>
<td>Mass Media and Society</td>
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<td>COMM412</td>
<td>Organizational Communications and Public Relations Theory</td>
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<td>Intro to Public Policy</td>
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<td>Health, Wealth, Inequality and the Environment</td>
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<td>Intl. Development and Social Change</td>
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<td>PHIL243</td>
<td>Business Ethics</td>
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<td>PHIL243</td>
<td>American Environmentalism</td>
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BS IN ENVIRONMENTAL HEALTH SCIENCE

Alan Rossner, Director

Environmental Health Sciences (EHS) is a multidisciplinary program at Clarkson University focused on the study of how the natural and built environment impacts human health. In this continually evolving field, students study human exposure to chemicals, indoor air quality, water quality, air quality assessments in communities downwind of factories or busy highways, hazardous waste site assessment, and environmental sustainability. EHS practitioners anticipate, measure, and control hazardous biological, chemical, and physical agents. EHS specialists work closely with engineers, occupational health physicians, nurses, safety specialists, and physical therapists to identify the chemical and physical agents responsible for disease in our living environments, as well as hazard control and management strategies.

The EHS curriculum is rigorous and effectively prepares students to work in the important area of environmental health and safety. In addition, the EHS curriculum is well suited as a preparatory degree for students interested in pursuing a professional degree in health sciences, including physical therapy, medicine, dentistry, and veterinary school. The program in Environmental Health Science stresses a strong background in the basic sciences, specific course work in environmental health and safety, and industrial hygiene experience gained through laboratory exercises in environmental monitoring, field trips, co-op and internships.

The goal of Clarkson University's Environmental Health Science Program is to promote the prevention of illness and injury due to environmental and occupational hazards through education, training, and applied research.

Objectives

- Recognize and evaluate types of occupational and environmental health hazards present in modern workplace and community environments.
- Study methods used to detect and quantify hazards, and the technologies used to control health hazards.
- Understand biological responses from exposures to hazardous agents.
- Describe and evaluate regulations and policies associated with environmental health.
- Develop the skills to manage and control hazards and risks.
- Complete and independent EHS research experience.
- Prepare students for a career in Environmental Health Science with a coordinated multidisciplinary education using a curriculum based on a strong foundation in mathematics, physical sciences, biology, engineering and health sciences such as toxicology and epidemiology.
Requirements

A. 120 credit hours total
B. Two math courses (one must be calculus)
C. One statistics course
D. Minimum of 11-17 credit hours in Chemistry depending on the chosen concentration
E. Minimum of 13 credit hours in Biology
F. Six credits of Engineering courses
G. Additional minimum of 6 credit hours in Science and/or Engineering
H. Eight credit hours in Physics
I. Minimum of 18 credit hours of EHS courses
J. Three credit capstone research project
K. Complete the university requirements for knowledge areas, communication points, technology serving humanity course, and the professional experience

Environmental Health Science Sample Curriculum

First Year

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<thead>
<tr>
<th>Course</th>
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<th>Course</th>
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<tr>
<td>BY140</td>
<td>Biology I</td>
<td>3</td>
<td>BY160</td>
<td>Biology II</td>
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<td>BY142</td>
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<td>BY162</td>
<td>Biology II Lab</td>
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Second Year

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209
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<tr>
<td>CM221</td>
<td>Spectroscopy&lt;sup&gt;1&lt;/sup&gt;</td>
<td>3</td>
<td>EHS309</td>
<td>Intro to Industrial Hygiene</td>
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<tr>
<td>CM223</td>
<td>Spectroscopy&lt;sup&gt;1&lt;/sup&gt; Lab</td>
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<td>EHS310</td>
<td>Intro to Industrial Hygiene</td>
<td>2</td>
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<tr>
<td>EHS405</td>
<td>Methods &amp; Analysis</td>
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<td>STAT318/282</td>
<td>Biostatistics&lt;sup&gt;3&lt;/sup&gt; or General Statistics</td>
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<td>EHS406</td>
<td>Industrial Hygiene</td>
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<td>BY/CM/Eng</td>
<td>Elective&lt;sup&gt;4&lt;/sup&gt;</td>
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<td>CE340</td>
<td>Intro to Env. Eng.&lt;sup&gt;2&lt;/sup&gt;</td>
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<sup>1</sup> Or suitable Biology/Chemistry/Engineering course  
<sup>2</sup> Or other suitable Engineering elective  
<sup>3</sup> Or other suitable Statistics course  
<sup>4</sup> Or other suitable Elective course

### Fourth Year

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<td>Risk Analysis&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>EV401</td>
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<td>EHS481</td>
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1. Or suitable Biology/Chemistry/Engineering course  
2. Or other suitable Engineering elective  
3. Or other suitable Statistics course
4. 200 level course or above
   NOTE: Some electives may require additional prerequisites. Students must be registered for at least 14 credits to qualify for Dean’s List or as a Presidential Scholar.

MINORS & CONCENTRATIONS IN ISE

EHS Concentration in Environment and Security
A concentration in Environment and Security requires 20 or more credits in the following specified areas. Completion of an approved concentration will be designated on the student’s transcript.

Students must take the following:

CM 221 Spectroscopy (3 Credits)
CM 223 Spectroscopy Laboratory (3 Credits)
BY 320 Microbiology I & Lab (3 Credits)
BY 322 Microbiology Lab (2 Credits)
EV400/401 Capstone Project related to Environment and Security (4 Credits)
(as selected professional or free electives) In addition students must select 2 of the following from SUNY Canton:

JUST 230 Fundamentals of Homeland Security (3 Credits)
JUST 326 Threats to Homeland Security (3 Credits)
JUST 420 The Corporate Role in Homeland Security (3 Credits)
EHS 401 Chem, Bio, & Rad Forensics and Terrorism Threats (3 credits)

- Other suitable course Criminal Justice/Homeland security courses can be approved by the Director of the ISE or designee.

EHS Concentration in Ergonomics
A concentration in Ergonomics requires 16 or more credits in the following specified areas. Completion of an approved concentration will be designated on the student’s transcript.

Students must take the following:

BR 200 Introduction to Biomedical Rehabilitation (3 Credits)
EHS 330 Occupational Safety & Ergonomics(3 Credits)
EV400/EV 401 Capstone Project – Ergonomics – related (4 Credits)

In addition students must select at least 2 of the following courses:

BY 460 Neurobiology (3 Credits)
BY 471 Anatomy & Physiology I (3 Credits)
BY 472 Anatomy & Physiology II (3 Credits)*
ME 380 Special topics Biomechanics (3 Credits)*
BY 360 Comparative Physiology (3 Credits)
BY 350 Comparative Anatomy (3 Credits)
Other suitable course Ergonomics related courses can be approved by the Director of ISE or designee.

*Note: BY 472 requires BY 471 as a pre-requisite.

*ME 380 requires: MA 132 and PH 131 as pre-requisites.

**EHS Concentration in Industrial Hygiene**

A concentration in Industrial Hygiene requires 19 or more credits in the following areas. Completion of an approved concentration will be designated on the student’s transcript.

**Students must take the following:**
- CM 221 Spectroscopy (3 Credits)
- CM 223 Spectroscopy Laboratory (3 Credits)
- EHS 330 Safety Analysis (3 Credits)
- EV 400/401 Capstone Project (4 Credits)

**In addition students must select 2 of the following courses:**
- CE 301 Geographical Information Systems
- CE 340 Intro to Environmental Engineering (3 Credits)
- CE 435 Groundwater and Hydrology and Geochemistry (3 Credits)
- CE 477 Atmospheric Chemistry (3 Credits)
- CE 479 Water and Wastewater Treatment Process (3 Credits)
- CE 481 Hazardous Waste Management Engineering (3 Credits)
- CE 486 Industrial Ecology (3 Credits)
- CM 242 Organic Chemistry (3 Credits) OR
- CM 244 Organic Chemistry Lab (3 Credits)
- CM 371 Physical Chemistry I (3 Credits)
- CM 320 Separations and Electrochemistry (3 Credits)
- CM 300 Instrumental Laboratory (3 Credits)

Other suitable course Industrial hygiene or chemistry related courses can be approved by the Director of the EHS program

**Minor in Environmental Health Science**

A minor in Environmental Health Science is available to all students except those majoring in this program. To obtain a minor, a student must successfully complete the following courses:

**A. Required Courses**

- EHS309 Introduction to Industrial Hygiene 3
- EHS310 Introduction to Industrial Hygiene Lab 2
- EV280 Environmental Science 3

**B. Select any two courses:**

- EHS405 Methods & Analysis 4
EHS406 Industrial Hygiene Control Methods 3
EHS416 Principles of Toxicology & Epidemiology 3
EHS330 Safety Analysis 3
EHS481 Advanced Topics in Environmental Health 3
ES432 Risk Analysis 3

C. Select one of the following or students can substitute in an additional course from the previous Section B.

CE340 Introduction to Environmental Engineering 3
CE380 Fundamentals of Environmental Engineering 3
CE481 Hazardous Waste Management Engineering 3
CE479 Water and Wastewater Treatment Processes 3
CE477 Atmospheric Chemistry 3
CE580 Environmental Chemistry 3
CM371 Physical Chemistry I 3
BY320 Microbiology 3
BY350 Comparative Vertebrate Anatomy 3
BY360 Comparative Physiology 3
BY425 Biological Systems and Environmental Change 3
BY471 Human anatomy and Physiology I/II 4

In addition to the required courses, it is recommended that STAT 282 or STAT 383 or BY 318 be taken as a mathematics elective course for this minor. A minimum grade point average of 2.0 is required in the courses taken for the minor.

**Minors in Environmental Science or Environmental Policy**

Minors in Environmental Science or Environmental Policy are split between environmental science and environmental policy elective choices. The courses listed here offer examples; substitute courses may be taken to fulfill the minor requirements with permission from the director.

For the Environmental Science Minor:
1. 15 credits of environmental science, nine credits of which must be in the 300 level or higher courses. Courses are selected from Category I. *EV280 Environmental Science* is required for the science minor.
2. Six credits of environmental policy. Courses are selected from Category II.
3. One option from Category III.

No more than six (6) credits of the engineering classes can be applied towards an Environmental Science Minor. Note: Please check for pre-requisites for many of these courses.

For the Environmental Policy Minor:
1. 15 credits of environmental policy, nine of which must be in the 300 hundred level or higher courses. Courses are selected from Category II.
2. Six credits of environmental science. Courses are selected from Category I.
3. Three credits spread across the following areas:
   A. An independent research project (1 credit)
B. An ES&P Multidisciplinary Project Course (1 credit)
C. One option from Category III.

**Category I:**
**Course offerings in Environmental Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY140 General Bio I</td>
<td>BY160 General Bio II</td>
</tr>
<tr>
<td>BY222 General Ecology</td>
<td>CM221 Spectroscopy</td>
</tr>
<tr>
<td>BY224 General Ecology Lab</td>
<td>CM223 Spectroscopy Lab</td>
</tr>
<tr>
<td>BY314 Bioinformatics</td>
<td>CM371 Phys. Chem</td>
</tr>
<tr>
<td>BY320 Microbiology</td>
<td>CM476 Atmospheric Chem.</td>
</tr>
<tr>
<td>BY322 Microbiology Lab</td>
<td>CM434 Air Pollution Controls</td>
</tr>
<tr>
<td>BY328 Conservation Biology</td>
<td>EHS309 Industrial Hygiene</td>
</tr>
<tr>
<td>BY340 Behavioral Eco. and Sociobiology</td>
<td>EHS310 Intro to Ind. Hygiene Lab</td>
</tr>
<tr>
<td>BY420 Evolution</td>
<td>EHS405 Methods and Analysis</td>
</tr>
<tr>
<td>BY/EV330 Great Lakes Water Pollution</td>
<td>EV314 Adirondack Integrated Research Project</td>
</tr>
<tr>
<td>BY431 Limnology</td>
<td>EV/CE 435 Groundwater</td>
</tr>
<tr>
<td>BY/EV312 Adirondack Ecology &amp; Env Science</td>
<td>ES432 Risk Analysis</td>
</tr>
<tr>
<td>EV316 Adirondack Env. Science</td>
<td>EV314 Adirondack Integrated Res. Project</td>
</tr>
<tr>
<td>CE340 Intro to Env. Engineering</td>
<td>CE301 Geographical Info Systems</td>
</tr>
<tr>
<td>CE479 Water &amp; Wastewater Trtmnt Proc.</td>
<td>CE380 Fundamentals of Environmental Engineering</td>
</tr>
<tr>
<td>CE491 Senior Design Proj.</td>
<td>CE481 Hazardous Waste Mgmt</td>
</tr>
<tr>
<td>CE486 Industrial Ecology</td>
<td>CE482 Env. Systems Analysis</td>
</tr>
</tbody>
</table>

**Category II:**
**Courses in Environmental Policy**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL405 Sustainability: Thry. and Pract.</td>
<td>PHIL270 American Env</td>
</tr>
<tr>
<td>COMM429 Issue Analysis and Advocacy</td>
<td>PHIL410 Where the Wild Things Are</td>
</tr>
</tbody>
</table>
A minor in Sustainable Solutions for the Developing World is available to students in any degree program. The minor seeks to employ humanitarian principles toward sustainable solutions that address the conflict that often occurs between economic development and environmental justice predominant in the developing world. A goal of the curriculum is to provide students with the tools to understand issues concerning social justice and sustainability to be used when designing and implementing solutions for the developing world.

To obtain the minor, a student must complete courses in four categories. The specific courses available in these areas vary from semester to semester. The Director of the minor program can approve alternative courses.

1. The purpose of this category of course work is for students to develop a comprehensive understanding of sustainability principles. Select one class (3cr. total):

   - **BY 330** Great Lakes Water Protection  
   - **BY 425** Biological systems and Environmental Change  
   - **BY 328** Conservation Biology  
   - **BY 445** Biological Oceanography  
   - **CE434** Sustainable Development Engineering  
   - **CE486** Industrial Ecology  
   - **ES 436** Global Climate Change: Science, Energy, Policy  
   - **EV 305** Sustainability and the Environment  
   - **EV390** Sustainability Project Experience

   **Category III:**

   One of the following: EV 100, EV305, or ADK Semester.
3. The purpose of this category of course work is for students to develop an understanding of the cultural, political, and social character of countries around the world. Select 2 classes (6 cr. total):

ANTH 201 Introduction to Cultural Anthropology  
COMM 428 Public Debate and the Environment  
HIST 332 Documenting Social Activism  
LIT 250 World Literature  
LIT 353 African Literature  
PHIL 310 World Religious and Contemporary Issues  
POL 250 Politics in Cross-National Perspective  
POL 251 Introduction to International Politics  
POL 335 Violence and Reconciliation  
POL 362 Human Rights Law and Politics  
SOC 330 Health, Wealth, Inequality, and the Environment

4. The purpose of this category of course work is for the students to develop an understanding of key principles of innovation and entrepreneurship. Select two of the following courses (6 cr. total):

EC 360 Environmental Economics  
EC 370 Economics of Innovation  
ES 438 Alternative Energy Systems  
MK 320 Principles of Marketing  
MK 436 Creativity, Innovation and New Product Development  
OM/EM 476 Management of Technology  
OM 380 Project Management  
SB 396 Global Business Strategies

4. Students in the minor are expected to engage in a multidisciplinary immersion experience related to the concepts addressed in this minor. Although travel to a developing country is encouraged, there are several approaches to meet this requirement. In all cases, the experience should be approved by the director of the minor in advance and experience be documented for credit toward the minor. Example opportunities include:

- UNIV 299 Global Service (1 credit, requires an additional report to count for SSDW minor)
- UNIV 349 International Service Learning
- UNIV 399 Global Experience (with SSDW emphasis)
• A multidisciplinary capstone project course (with SSDW emphasis)
• Non-credit international travel with community service (e.g., with Engineers for International Sustainability, Doctors w/o Borders) (requires an additional report to count for SSDW minor)

Knowledge Areas:
CGI  Contemporary/Global Issues
EC  Economics/Organizations
STS  Science, Technology, and Society
CSO  Cultures and Societies
IA  Imaginative Arts
UNIV  University Course
1C/2C  Communication Point

THE ADIRONDACK SEMESTER
Stephen Bird, Faculty Director

Adirondack Semester

Through its Institute for a Sustainable Environment, Clarkson University offers an off-campus, semester-long study in sustainability. The interdisciplinary and community-based program housed at Paul Smith’s College, examines the affairs of society and the natural environment of New York’s Adirondack State Park. The Park is a living experiment in sustainability where nature, people and policy have come together in the largest protected area in the contiguous United States. Created by New York State in 1892, it is an unusual complex of over six million acres with approximately half of it owned by the citizens of New York State and the other half held privately.

In the ADK semester, a group of 10-16 students are in session with a diverse group of Clarkson faculty with specific interests, experience and scholarly work directly related to the Adirondack Park. Students and faculty engage with a professional network of people, businesses and agencies that shape policy, conduct business, and lobby at local and state levels. Students enjoy a classroom learning experience with professors and guest lecturers, which is complemented by scientific research in the field.

The semester consists of five, three-credit courses providing the student with 15, 300-level credits. The courses offered each semester vary slightly. Students experience the challenges and rewards of working cooperatively to research, analyze data and to generate answers to these problems. They seek out alternative methods and designs, emerging technologies and provide solutions that are innovative and/or unconventional. Paramount to the cause is a commitment to sustainability for society and nature.
ISE Research
Three of Clarkson University’s interdisciplinary research Centers are housed in the Institute: Center for Air Resources Engineering and Science (CARES), Center for Sustainable Energy Systems (CSES), and the Great Rivers Center.
INSTITUTE FOR STEM EDUCATION

Peter R. Turner, Director, pturner@clarkson.edu
Catherine E. Snyder, Chair of Education Department, csnyder@clarkson.edu
Kathleen R. Kavanagh, Associate Director, kkavanagh@clarkson.edu
Cindy L. Smith, Operations Manager, csmith@clarkson.edu

The Institute for STEM Education changes the way the world does Science, Technology, Engineering, and Mathematics (STEM) education by combining disciplinary rigor with pedagogical science in outreach, teacher training, and graduate student and faculty professional development. STEM Ed programs include the Master of Arts in Teaching (MAT), and advanced certificate programs in teaching and the undergraduate Pre-Teaching minor. Please see the Graduate Catalog for more information.

STEM Ed’s current objectives include coordination and expansion of Clarkson’s STEM Education activities:

1. MAT teacher credentialing program, with growth at CRC, and developing programs in North Country and NYC
2. Expand the TA training “boot camp” both internally and externally
3. Outreach projects and new grant opportunities resulting from the adoption of CRC
4. Informal education, especially as represented by the Hudson River Estuarium at Pier 26
5. Academic Retention programs (First Year Council etc.)
6. Bring the (mostly CRC-based) expertise in academic assessment and evaluation
7. Dissemination of Scholarship of Teaching and Learning both on campus and in publications
8. Establish a Teaching Fellow program for Clarkson faculty for major education project support
9. Develop MAT for Higher Education, MATHE, for Clarkson TA’s and other grad students wanting to pursue academic careers

Through all of this, STEM Ed will further enhance Clarkson's reputation on the national and international stage.
INTERDISCIPLINARY PROGRAMS

In recent years, Clarkson University has built on its existing strengths in business, engineering, liberal arts, and the sciences to develop an increasing number of new interdisciplinary majors that combine learning from two or more traditionally distinct areas. Today, many of the most profound advances in knowledge are occurring at the intersections of previously separate academic disciplines and industrial fields. These innovative programs reflect not only the strength of the University’s academic faculty and resources, but also the flexibility and vitality of Clarkson’s highly collaborative academic environment. The Institute for a Sustainable Environment houses two interdisciplinary undergraduate degree programs: the BS in Environmental Health Science and the BS in Environmental Science & Policy, and the Reh School of Business holds the Engineering and Management Program. For information about these programs see the relevant Undergraduate programs section of the Catalog.

Undergraduate Interdisciplinary Program Courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Required Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>Clarkson Common Experience</td>
<td>18</td>
</tr>
<tr>
<td>Biology/Environmental Science</td>
<td>Technology course</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics &amp; Statistics</td>
<td>Professional Electives</td>
<td>12</td>
</tr>
<tr>
<td>Physics</td>
<td>Free Electives</td>
<td>11-13</td>
</tr>
<tr>
<td>EHS/Industrial Hygiene</td>
<td>Capstone Research</td>
<td>3</td>
</tr>
<tr>
<td>Policy Course</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>120</td>
</tr>
</tbody>
</table>

BS in Mathematical Economics

Mathematical economics is the application of advanced mathematical methods to microeconomics and macroeconomics. Students will participate in a rigorous course of study in mathematics, economics, and the interaction between these two disciplines. Students will learn a broad range of economic theories and mathematical techniques that, together, will enable the students to apply rigorous analytical (empirical and/or theoretical) techniques to contemporary issues in economics, finance and beyond. Beyond core classes in each area, students have the freedom to direct their study towards areas of their own interest, including: Economic Theory, Data Analytics, Financial Analysis, and others. Students are able to fulfill the complete set of core Business classes as well, in which case they are well-prepared for managerial careers in the private sector, as well as for the pursuit of graduate education in business, in addition to their expertise in Economics and Mathematics.

Students who choose to major in Mathematical Economics will be able to:

- apply advanced mathematical methods to problems in the economic sciences
- use statistical and econometric techniques to analyze data related to economic and other phenomena
- build and analyze theoretical models which provide guidance in discussions about economic and other policies
critically read the scientific literature in the economic sciences

They will be prepared for, among other things:

- advanced graduate study in the fields of mathematics and/or economics
- careers in economic policy and consulting
- training in the field of actuarial sciences
- careers in applied mathematics and statistics
- careers as quantitative financial analysts

Program Requirements:

Students must complete 120 credits in course work including satisfaction of the University General Education and Common Experience Requirements, as well as the major requirements cited below. All course work must be completed in accordance with the academic procedures of the University and the College governing undergraduate scholarship and degrees.

Minimum Grade Requirements

A grade of ‘C-’ or better must be achieved in each MA and EC course applied towards the degree requirements. Students must obtain a grade point average of 2.0 or higher in all MA and EC courses combined.

Writing Proficiency/Writing Intensive Requirement

Mathematical economics majors must register for a technical writing/writing intensive course. All majors must satisfy this requirement, even if they are not subject to the University General Education and/or Common Experience Requirements.

Mathematics requirements (at least 27 credit hours)

- MA 131 -- Calculus I: Cr. 3
- MA 132 -- Calculus II: Cr. 3
- MA 200 -- Introduction to Mathematical Modeling & Software: Cr. 3
- MA 211 -- Foundations: Cr. 3
- MA 231 -- Calculus III: Cr. 3
- MA 232 -- Elementary Differential Equations: Cr. 3
- MA 339 -- Applied Linear Algebra: Cr. 3
- STAT 383 -- Introduction to Probability and statistics: Cr. 3
- At least one additional MA course numbered above 300

Economics requirements (at least 24 credit hours)

- EC 150 -- Principles of Microeconomics: Cr. 3
- EC 151 -- Principles of Macroeconomics: Cr. 3
- EC 357 -- Intermediate Microeconomics: Cr. 3
- EC 358* -- Intermediate Macroeconomics: Cr. 3
- EC 311 -- Introduction to Econometrics: Cr. 3
- EC 313* -- Mathematical Economics: Cr. 3
- At least two additional courses with an EC course prefix.
Recommended courses

Recommended MA electives:

- MA331 – Fourier Series & Boundary Value Problems: Cr. 3
- MA332 – Intermediate Differential Equations: Cr. 3
- STAT381 – Probability: Cr. 3
- STAT382 – Mathematical Statistics: Cr. 3
- STAT384 – Advanced Applied Statistics: Cr. 3

Recommended EC electives:

- EC 360 – Environmental Economics
- EC 367 – International Economics
- EC 370 – Economics of Innovation/Entrepreneurship
- EC 384 – Game Theory and Economic Strategy
- EC 451 – Industrial and Supply Chain Economics
- EC 468 – Financial Markets and Institutions
- EC 475 – Personnel Economics

Students who intend to pursue a career in actuarial sciences or a graduate career in economics are encouraged to take additional mathematics and economics courses. Recommended mathematics courses are any of the above MA courses. Recommended economics courses are any of the above EC courses.

Mathematical Economics Curriculum

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC150</td>
<td>Principles of Microeconomics (EC)</td>
<td>3</td>
<td>EC151</td>
<td>Principles of Macroeconomics (EC)</td>
<td>3</td>
</tr>
<tr>
<td>MA131</td>
<td>Calculus I</td>
<td>3</td>
<td>MA200</td>
<td>Math Modelling and Software</td>
<td>3</td>
</tr>
<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
<td>3</td>
<td>MA132</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Science Course</td>
<td>3</td>
<td></td>
<td>Knowledge Area Course</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Knowledge Area Course</td>
<td>3</td>
<td></td>
<td>Science Course w/lab</td>
<td>3</td>
</tr>
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<td></td>
<td>First-Year Seminar</td>
<td>1</td>
<td></td>
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<td><strong>16</strong></td>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>15</strong></td>
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**SECOND YEAR**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>EC313</td>
<td>Mathematical Economics</td>
<td>3</td>
<td>EC358</td>
<td>Intermediate Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>STAT383</td>
<td>Probability and Statistics</td>
<td>3</td>
<td>EC311</td>
<td>Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>MA231</td>
<td>Calculus III</td>
<td>3</td>
<td>MA232</td>
<td>Elementary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Free Elective (TECH)</td>
<td>3</td>
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<td>Free Elective</td>
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### THIRD YEAR

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<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>MA211</td>
<td>Foundations (C2)</td>
<td>3</td>
<td>MA339</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>EC357</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
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<td>Economics Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Knowledge Area Course</td>
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<td></td>
<td>Free Elective (C1)</td>
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### FOURTH YEAR

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<th>Cr. Hrs.</th>
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<tr>
<td></td>
<td>Mathematics Elective</td>
<td>3</td>
<td></td>
<td>Economics Elective</td>
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<td>Free Elective</td>
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<tr>
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<td></td>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

BS IN SOFTWARE ENGINEERING

_Daqing Hou, Program Director, dhou@clarkson.edu, 315-268-7675_

The discipline of software engineering is concerned with the application of engineering principles to the construction of computer software. It addresses critical issues across the life cycle of a software product, beginning with a proposal to develop an application that requires computing resources for execution, and continuing through the development, testing, operation, and maintenance of the software product until it is retired.

The software engineer plays the role of the architect of a complex system. He or she takes into account the user requirements and needs, feasibility, cost, quality, reliability, safety, security, and time constraints. To do this, the software engineer has to be able to understand the application area that is the target of the desired software system, develop the software and ensure that it is reliable, and manage the project so that it is produced in an economical, timely manner.

**Objectives of the Clarkson Software Engineering Program**

Software engineering graduates should be well prepared for a lifetime of professional activity, and the objective of our program is to build a foundation on which graduates can build successful careers. This means that, within a few years after completing the program, we expect that our graduates will be contributing professionals, effective and responsible.
collaborators. They should also have continued to grow intellectually and as well rounded citizens.

This means graduates are expected to have:

- advanced their careers as contributing professionals who apply fundamental engineering knowledge and analytical problem solving skills in a wide variety of practical applications
- become well-rounded citizens who rely on their engineering education to serve society in an ethical and professional manner
- become effective and responsible collaborators who function well in diverse team environments, with some graduates having emerged as leaders in their field
- exhibited intellectual growth and pursued continual innovation in their field, while those graduates who are especially talented and motivated to pursue a graduate degree should be or have been successful at entering and completing graduate studies
- To attain these objectives, the curriculum is structured so that when a student graduates from the Software Engineering program, he or she will have gained the knowledge, skills, and attributes that provide a foundation on which a successful career in the Software Engineering profession rests. Our graduates will attain the following student outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions and an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

In the context of the software engineering discipline, this means that graduates of the program will:

- have a fundamental understanding of computer systems
- be able to apply engineering principles to software design and construction, having developed the ability to:
  - develop software requirements and functional specifications
  - use proven techniques to design software structure before it is implemented
  - apply established verification and validation techniques
understand the importance of constructing large software systems using standardized components and reusing existing code (modules) where possible,

- use software tools as effective aids in all phases of software development
- design, develop, and deliver software in a cost effective manner

- have experience with issues encountered at every stage in the software life-cycle
- understand how to manage the development of software intensive systems
- be able to work on an interdisciplinary team of software components of a system
- have good interpersonal and communication skills
- be able to readily assimilate new technologies
- understand the impact their discipline has on society

Curriculum
To accomplish these goals, the curriculum is structured around a group of required courses in science, mathematics, and computer science and engineering. A variety of courses in the engineering sciences are included in the curriculum in order to provide exposure to application areas. Although there is ample opportunity for students to participate in team-based activities throughout the curriculum, each student’s program of study includes a major design experience in the senior year in which the student is required to bring together knowledge gained in a wide variety of courses to solve realistic problems, building significant applications in a team-based environment.

An Interdisciplinary Approach
Software Engineering is distinctive at Clarkson because it is interdisciplinary: We combine the expertise, knowledge, and experience of faculty from both the Electrical and Computer Engineering Department and the Computer Science Department. That benefits the students because they master the application of theory as well as knowledge and understanding of software processes as they gain the ability to develop effective and cost-efficient software systems. Clarkson’s program is also designed to help students build interpersonal and communication skills that can launch a successful career in today’s world.

Software Engineering Curriculum

**FIRST YEAR**
(See Common First-Year Curriculum in Engineering)

Software Engineering students must select CS141 from the available list of Second Semester Science/CS elective courses numbered CM132/BY160/CS141.

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Second Semester</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA232</td>
<td>Differential Equations</td>
<td>3</td>
<td>MA231</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>EE262</td>
<td>Intro to Object Oriented Programming</td>
<td>3</td>
<td>EE221</td>
<td>Linear Circuits or ES or Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>
There are a total of five courses which must be taken to cover at least four knowledge areas. At least one of these courses must be a University course. University courses are interdisciplinary.

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT383</td>
<td>Probability and Statistics or Probability</td>
<td>3</td>
<td>CS344</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>MA381</td>
<td>Probability</td>
<td>3</td>
<td>EE361</td>
<td>Fundamentals of Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EE363</td>
<td>Generic Programming &amp; Software Components</td>
<td>3</td>
<td>EE368</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EE407</td>
<td>Computer Networks</td>
<td>3</td>
<td>EE466</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>EE408</td>
<td>Software Design for Visual Environments</td>
<td>3</td>
<td>EE468</td>
<td>Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>KA/UC Elective(^1)</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE418</td>
<td>Senior Design (TECH)(C2)</td>
<td>3</td>
<td>CS444</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE462</td>
<td>Software Systems Architecture</td>
<td>3</td>
<td>CS458</td>
<td>Formal Methods for Program Verification</td>
<td>3</td>
</tr>
<tr>
<td>CS341</td>
<td>Programming Languages</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Professional Elective(^2)</td>
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<td></td>
<td>3</td>
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<tr>
<td></td>
<td>Professional Elective(^1)</td>
<td>3</td>
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<td>3</td>
</tr>
<tr>
<td></td>
<td>KA/UC Elective(^1)</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ES499</td>
<td>Professional Experience</td>
<td>0</td>
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<td></td>
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</tr>
</tbody>
</table>

\(^1\) Knowledge Area or University Course Electives

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There are a total of five courses which must be taken to cover at least four knowledge areas. At least one of these courses must be a University course. University courses are interdisciplinary.
courses that cover two or more knowledge areas. One of the knowledge area electives must be an economics course, EC350 is recommended, and one must be ES110.
2 Professional Electives may be any course numbered EE 300+, CS 300+, MS 300+, AS 300+, BR 400, ME 444, COMM 341, COMM 395, or CS 242.
3 The Undesignated Electives are fulfilled by college level courses that do not contain a significant amount of material already covered elsewhere in the student’s program.

See Academic Requirements for details of the Clarkson Common Experience, including the First-Year Seminar, the Clarkson Seminar, Knowledge Area (KA) courses, University Courses (UC), and related requirements and professional experience.

**BS IN SOCIAL DOCUMENTATION DOUBLE MAJOR**

Jason Schmitt, jschmitt@clarkson.edu, 315-268-2314
Jennifer Ball, jbball@clarkson.edu, 315-268-4208, Co-Directors

Students, whose interests are broad and flexible, with a wide span of interests, should consider Clarkson's double major in Social Documentation (SD), combining majors in the Social Sciences (history, political science, anthropology and sociology) or Humanities (literature, film and philosophy) with a major in Communication & Media.

SD students combine social, political or creative perspectives with mastery of sophisticated communication and recording technologies. They may be interested in historical preservation of the creative arts or creating oral and video histories of people or groups of people; they may be social or political activists who want to create the sound and video recordings and products that most effectively put their ideas before a contemporary audience.

Social Documentation emphasizes critical inquiries into societal issues as well as the study of recording and documenting theories, techniques and technologies. A substantive knowledge base in a social sciences or humanities discipline enables students to ground their communication degree in an area of interest that will also give them a distinctive perspective.

Likewise, the critical thinking, persuasive, and media production skills learned from the communication program will empower the social science or humanities major to more effectively create products that can influence, entertain or educate. During their years at Clarkson, students will develop the ability to use sophisticated recording and communication technologies in order to better understand or advance a set of social, historical, political or creative interests or concerns.

**Curriculum**

Students choosing this double major will begin with the Clarkson Common Experience, as detailed in the Clarkson Catalog. Additionally, they will satisfy all the requirements for each major, also as detailed in the catalog. The following requirements are specific to Social Documentation, but most will also count as one of the requirements for one of the majors:

- History of Social Documentation, a three-credit hour gateway course to the major,
will
- introduce basic concepts and stress the connections between the two majors;
- One three-credit hour research methods course, chosen from a list of approved courses;
- One three-credit hour film course, chosen from a list of approved courses;
- Two three-credit hour video production and digital design courses, chosen from a list of approved courses.
- Two senior capstone courses, SD480 and SD490, will generally be taken sequentially.
- Students enrolled in SD480 will be folded into that semester's HSS480 cohort. SD480 normally involves the research project planning, while SD490 focuses on execution/production.

The sample curriculum below indicates some examples of the kinds of courses that might be chosen by Social Documentation double majors, though individuals will personalize their curricula in order to meet their specific educational and career goals.

**Social Documentation Sample Curriculum**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 210</td>
<td>Theory of Rhetoric for Business, Science and Engineering</td>
<td>3</td>
<td>COMM 217</td>
<td>Introduction to Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>SD200</td>
<td>History of Social Documentation</td>
<td>3</td>
<td>COMM310</td>
<td>Mass Media and Society</td>
<td>3</td>
</tr>
<tr>
<td>MA180</td>
<td>Into College Mathematics</td>
<td>4</td>
<td>HIST391</td>
<td>Documenting Social Activism</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Common Experience Science Course</td>
<td>3</td>
<td>STAT282</td>
<td>General Statistics</td>
<td>3</td>
</tr>
<tr>
<td>UNIV190</td>
<td>Clarkson Seminar</td>
<td>3</td>
<td></td>
<td>Common Experience Science Course</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td>16</td>
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<tr>
<td>SS120</td>
<td>Introducing the Liberal Arts</td>
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<tr>
<td>FY100</td>
<td>First-Year Seminar</td>
<td>1</td>
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Total Credits: 18

**FIRST YEAR**

**SECOND SEMESTER**
### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH200</td>
<td>Intro. to Culture and Society</td>
<td>3</td>
<td>ANTH320</td>
<td>Racial Inequity in the US</td>
<td>3</td>
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<tr>
<td>COMM327</td>
<td>Digital Video Production I</td>
<td>3</td>
<td>COMM3xx</td>
<td>From Communication &amp; Media List</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>COMM427</td>
<td>Digital Video Production II</td>
<td>3</td>
</tr>
<tr>
<td>HIST320</td>
<td>Medicine and Society in America</td>
<td>3</td>
<td>FILM340</td>
<td>World in a Frame</td>
<td>3</td>
</tr>
<tr>
<td>PY151</td>
<td>Intro to Psychology</td>
<td>3</td>
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<td>Free Elective</td>
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### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH385</td>
<td>Food and Society</td>
<td>3</td>
<td>COMM100</td>
<td>Digital Design</td>
<td>3</td>
</tr>
<tr>
<td>COMM</td>
<td>Elective</td>
<td>3</td>
<td>COMM4XX</td>
<td>From Communication &amp; Media List</td>
<td>3</td>
</tr>
<tr>
<td>COMM</td>
<td>Elective</td>
<td>3</td>
<td>HIST395</td>
<td>Voices of the Past</td>
<td>3</td>
</tr>
<tr>
<td>POL351</td>
<td>Globalization</td>
<td>3</td>
<td></td>
<td>Common Curriculum Technology Course</td>
<td>3</td>
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<tr>
<td>Computer Course</td>
<td></td>
<td>3</td>
<td></td>
<td>Free Elective</td>
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</tr>
<tr>
<td></td>
<td></td>
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</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD480</td>
<td>Research Project and Internship</td>
<td>3</td>
<td>SD490</td>
<td>Research Project and Internship</td>
<td>3</td>
</tr>
<tr>
<td>COMM</td>
<td>Elective</td>
<td>3</td>
<td></td>
<td>Free Electives</td>
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<tr>
<td>SOC350</td>
<td>International Development and Social Change</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Free Electives</td>
<td>6</td>
<td></td>
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</tr>
</tbody>
</table>
Minor in Software Engineering
A minor in Software Engineering is available to students in any degree program with the exception of the Software Engineering and Computer Science degree programs. To obtain a minor, a student must complete the following course requirements:
- CS141, CS142, and CS344) or (EE261, EE361, and EE363)
- CS242 or EE408
- EE368 or CS350
- EE465/CS452, CS455/EE407, EE468/CS460, or other course approved by the Software Engineering Program Committee.

NON-DEGREE GRANTING DEPARTMENTS
Reserve Officers’ Training Corps

ROTC at Clarkson University is an elective course of study that provides college-trained officers to the United States Army and Air Force. Upon graduation and successful completion of either the Army program in Military Science or the Air Force program in Aerospace Studies, students receive appointments as commissioned officers at the rank of second lieutenant. Each program provides a Basic Course in the first and sophomore years, and an Advanced Course in the junior and senior years. Sophomores who did not participate during their first two years may qualify for admission into the Army Advanced Course by attending a special, expenses-paid, four-week Leader’s Training Course in the summer prior to their junior year. There are other entry options available for veterans and graduate students. Students may enroll in the ROTC Basic Course without incurring any military service obligation.

Admission to junior and senior (300- and 400- ) level classes is contingent upon successful completion of first-year and sophomore curriculum (or its equivalent) and qualifications in leadership, academic proficiency, and physical fitness. In special situations, students may qualify for admission into 300- and 400-level curriculum by meeting other criteria. Academic credit toward graduation requirements for Military Science and Aerospace Studies courses is determined by the individual schools at Clarkson. Interested individuals should contact the Professor of Military Science or the Professor of Aerospace Studies.

Uniforms and equipment required for ROTC courses are furnished free of charge to students in the Basic and Advanced Courses. Advanced-course students are currently paid a $450-500 per month (tax-free) stipend on a 10-month-per-year basis to offset living costs. Additionally, qualified students are eligible to compete for Army and Air Force scholarships.

MILITARY SCIENCE (ARMY ROTC)
Lieutenant Colonel Michael Athanasakis, Chair & Professor of Military Science, mathanas@clarkson.edu, 315-268-7705
Mr. Scott Toth, Enrollment Officer, stoth@clarkson.edu, 315-268-7705
The Clarkson University Army ROTC Golden Knight Battalion was founded in 1936 to enable Clarkson students to earn commissions as second lieutenants in the United States Army. Since then, it has commissioned over 1,300 leaders into the Active Army, Reserve, and National Guard components. Today, the Golden Knight Battalion continues to commission high-quality officers not only from Clarkson, but also from St. Lawrence University, SUNY Potsdam, and SUNY Canton.

The goal of the department is to develop outstanding scholar-athlete-leaders. The specific training you receive in Army ROTC will teach you leadership development, ethics, military law, training management, communications and fitness. This will take place both in the classroom and hands-on in the field, but you will have a normal daily schedule like all college students.

Army ROTC is an integral part of campus life, and cadets are active in all campus activities, including student government, varsity athletics, and Greek organizations. The battalion is approximately 100 cadets strong, and its focus remains on the development and training of America’s future leaders.

The Program

The ROTC program complements the traditional college curriculum by emphasizing development of the student’s leadership, management and interpersonal skills through dynamic instruction and challenging, experiential training. This is accomplished through a two-stage curriculum: Army ROTC Basic Course and Advanced Course.

The first stage, or Basic Course, takes place during your first two years in college as elective courses. It involves one elective class and lab each semester. You will learn basic military skills, the fundamentals of leadership and start the groundwork toward becoming an Army leader. You can take Army ROTC Basic Courses without a military commitment.

The second stage, or Advanced Course, takes place during your last two years in college as elective courses. It includes one elective class and lab each semester, plus a summer leadership course. You will learn advanced military tactics and gain experience in team organization, planning and decision-making. Entering the Advanced Course requires a commitment to serve as an Officer in the U.S. Army after you graduate.

Every Army ROTC cadet who enters into the Advanced Course attends the Leadership Development and Assessment Course. It is a four-week summer camp to evaluate and develop all Army ROTC cadets. This camp takes place between your junior and senior years of college, and is conducted at Fort Lewis, Washington. Cadets also attend a weekly leadership lab that complements classroom instruction with experiential learning. Leadership labs focus on the practical application of recent instruction. Labs include a leadership reaction course, land navigation, rappelling, small unit tactics, and drill and ceremonies. Once each semester, cadets may participate in an extended two-day field training exercise, designed to challenge each cadet’s leadership and military skills.
The Golden Knight Battalion also sponsors other events during the year such as a military ball and athletic events. Cadets may also compete to attend the Airborne, Air Assault, Mountain Warfare, and Northern Warfare schools during the summers. After the junior year, cadets may volunteer for summer training internships in locations throughout the United States, Europe and Korea.

Upon graduation and satisfaction of ROTC requirements, cadets are commissioned as second lieutenants into one of 16 specialized branches in Active Army, Army Reserve or National Guard.

Scholarships
Army ROTC offers a wide range of scholarships for interested and competitive students. Four-, three- and two-year scholarships are awarded to students on a merit basis. Students may apply for four-year scholarships while still in high school, as well as two three-year and four-year scholarships once on campus. These scholarships include:

- full tuition and educational fees;
- $1,200 per year for textbooks and classroom supplies;
- $300-500 per month (tax-free) spending money for up to 10 months per year; and
- Clarkson offers all scholarship recipients a Clarkson ROTC Incentive Scholarship to be used to defray the costs of room and board.

Scholarship applicants are evaluated on a number of areas that include: SAT/ACT performance, high school or college grade-point average, athletic ability and performance, participation in extracurricular activities, and leadership potential.

Facilities and Equipment
The Golden Knight Battalion has access to special equipment and training facilities that are second to none. On campus, cadets train in a 47-acre area of wooded forest, containing a rappel tower, grenade assault course, land navigation course, and field leadership reaction course. Additionally, students train at Fort Drum, New York, the home of the Army’s 10th Mountain Division, located just 60 miles from the Clarkson campus.

Other Activities
There are many extracurricular activities open to ROTC cadets, including the Ranger Challenge Team and Club, Color Guard, Cadet Association, Army 10-Miler Team, Clarkson Guard and Intramural Teams. Some of these groups compete against other universities and ROTC programs in military and athletic competitions. The Cadet Color Guard performs at home hockey games, commissioning and graduation ceremonies, and other official events.

Leadership Training
No other college programs offer leadership training that is comparable to Army ROTC. An Army ROTC student knows how to lead, manage and work with people. Whether you decide on the Army as a career, or use it as a stepping stone to other goals in life, you will have a competitive advantage because you will learn what it takes to lead!
## Military Science Curriculum*

### FIRST YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS111</td>
<td>Leadership &amp; Personal Development</td>
<td>1</td>
<td>MS112</td>
<td>Introduction to Tactical Leadership</td>
<td>1</td>
</tr>
</tbody>
</table>

### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS221</td>
<td>Innovative Team Leadership</td>
<td>2</td>
<td>MS222</td>
<td>Foundations of Tactical Leadership</td>
<td>2</td>
</tr>
</tbody>
</table>

*Courses may be applicable as free electives in some majors where noted. Consult individual

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
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</thead>
<tbody>
<tr>
<td>MS331</td>
<td>Adaptive Tactical Leadership</td>
<td>3</td>
<td>MS332</td>
<td>Leadership in Changing Env.</td>
<td>3</td>
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</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
<th>Course</th>
<th>Title</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS441</td>
<td>Developing Adaptive Leaders</td>
<td>3</td>
<td>MS442</td>
<td>Leadership in a Complex World</td>
<td>3</td>
</tr>
</tbody>
</table>

### For More Information

If you have any questions or would like to speak with someone about Army ROTC, contact the Golden Knight Battalion at 315-265-2180 or 315-268-7705 or e-mail armyrotc@clarkson.edu.
AEROSPACE STUDIES (AIR FORCE ROTC)
Lt Col Wesley Nims, Chair and Professor of Aerospace Studies, wnims@clarkson.edu
Air Force Reserve Officer Training Corps (AFROTC) combines college study with military leadership, discipline, and training to produce officers and leaders for the United States Air Force. Upon graduation with at least a bachelor’s degree, students are commissioned as second lieutenants in the active duty Air Force. A commission is an appointment as a military officer by the President of the United States.

Curriculum
AFROTC is normally a four-year program divided into two parts, the General Military Course (GMC) for freshmen and sophomores, and the Professional Officer Course (POC) for juniors and seniors. All students also complete Leadership Laboratory (LLAB) each semester.

General Military Course (GMC)
The GMC involves a one credit hour course and a two-hour Leadership Laboratory each semester. The freshman curriculum introduces the Air Force mission and organization, covers the basics of military customs and courtesies, military correspondence styles, and drill and ceremonies. The sophomore curriculum focuses on the history of air power, starting with the Wright Brothers’ first flight at Kitty Hawk, and traces the evolution of aircraft and Air Force missions throughout WWI, WWII, Korea, Vietnam, the Gulf War, and recent operations around the world such as Afghanistan and Iraq.

Leadership Evaluation and Development (LEAD) Summer Training
After successful completion of the GMC, students are scheduled to attend LEAD during the summer between the sophomore and junior year. LEAD is an intense, three-week, hands-on leadership challenge. Cadets are evaluated on their leadership ability, mastery of military customs and courtesies, and drill and ceremonies. Cadets are exposed to a variety of challenges which forces them to work as a team, critically evaluate situations, and perform under stress. LEAD is often a life-changing experience that builds self-confidence and fine-tunes leadership skills.

Professional Officer Course (POC)
After successfully completing LEAD, cadets are sworn in to the POC and are enlisted in the inactive reserves while they complete their final two years of college. The junior curriculum focuses on an in-depth study of leadership and management concepts. The senior curriculum continues to emphasize leadership, but introduces national security concepts and issues, cultural awareness, military law, the law of armed conflict, and preparation for entrance into the active duty Air Force. POC cadets are placed in leadership positions and are charged with running the cadet wing.
Leadership Laboratory (LLAB)

LLAB is a hands-on leadership training program. During LLAB, cadets are instructed in skills they will need for a thriving military career. POC members are responsible for planning and executing LLAB, as well as other extracurricular activities like formal dinners and awards ceremonies. Cadets are challenged in the classroom, and their jobs in the cadet wing require them to put the theories into practice. Cadets are also expected to participate in 2 hours of Physical Training (PT) per week during each semester.

Scholarships

Merit-based tuition scholarships are available to AFROTC cadets, however they are not required to join the program. Scholarships vary from $18,000 to full tuition. Below is a list of current scholarships.

- **TYPE I** — Full tuition and fees scholarship
- **TYPE II** — $18,000 towards tuition and fees

All scholarships include the following:

- Free room and board (Clarkson incentive)
- Monthly Stipend during the academic year
- Book allowance

For more details, contact the Aerospace Studies Department at det536af@clarkson.edu or 315-268-7989.

Aerospace Studies Curriculum*

<table>
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**FIRST YEAR**

**SOPHOMORE YEAR**

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SENIOR YEAR

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*Course may be applicable as free electives in some majors where noted. Consult individual departments for details.
Sponsored Research Services
Gina-Lee Glauser, Vice President for Research and Scholarship
gleelauser@clarkson.edu

Sponsored Research Services (SRS) is the central office charged with overseeing the conduct and promotion of research activities at Clarkson University. It is the philosophy of the University that research supports and enhances its educational mission. The DOR strives to provide and constantly enhance services to the Clarkson community as well as individuals and companies that come in contact with the Division. Examples of such services include proposal development for faculty and staff; administration of grants and contracts established under federal, state, and private awards on behalf of the University; assurance of compliance with federal, state, private, and other regulations pertaining to grant sponsorship activities at the University; and the creation, submission, or provision of analyses, reports or policies as required. Through these activities, the DOR promotes innovation and creativity, thereby increasing knowledge and making the knowledge available and useful for scholarship and education.

Some typical areas of sponsored research in engineering and science include: crystal growth, aerosol kinetics and scavenging, light scattering, stability of colloidal dispersion, strength of materials, metallic systems, ceramic surfaces, phase transitions, bio-engineering, heat transfer and mass transfer, thin film adsorption, film flow stability, transition and turbulence and active flow control, nonlinear wave motion, dynamical systems, chaos and control, computational applied math, optimization and numerical p.d.e.s., wave forces, surface shear viscosity, nutrient regeneration in lakes, flow slides, copper and zinc protein, nanotechnology, artificial intelligence, oxygenation of metal complexes, asynchronous networks, communication networks, detection of random signals, renewable energy production, power transmission, energy conversion, plasma deposition, osmotic work, and corrosion.

In the business area, studies have been conducted relative to dispute settlement techniques, scientific and technical information systems, effects of organizational changes, economic impact of environmental damage from acid rain, marketing approaches, pricing environmental alternatives, banking systems, and monetary policies.
The Center for Advanced Materials Processing (CAMP) is a Center for Advanced Technology (CAT) funded by New York’s Empire State Development Division of Science Technology and Innovation (ESD-NYSTAR).

CAMP’s mission is to offer companies, industries and entrepreneurs a vibrant, collaborative, trusted environment in which to engage in focused applied research and technology development activities intended to advance innovation, improve products, solve manufacturing challenges and/or develop new products. CAMP’s overarching goal is to contribute significantly to economic growth in NYS. Our main objectives are to:

1) Form collaborative relationships with industry, corporations and entrepreneurs in NYS to assist them in accelerating innovation, discovering and implementing next generation materials, addressing real-world challenges and fostering growth of their businesses.

2) Perform applied research, technology development and technology transfer activities related to the synthesis, processing and design of advanced materials to benefit industry and corporations.

3) Develop the next-generation, high tech workforce by providing excellent education and real-world research/development experiences needed by NY industry and companies.

CAMP relies on faculty and students in four core capability areas: 1) materials synthesis and functionalization, 2) materials processing, 3) materials-by-design, and 4) chemical mechanical planarization (CMP), underpinned by materials characterization and computational modeling and simulation.

CAMP’s industry-sponsored research program provides numerous materials science and engineering research opportunities to enrich undergraduate and graduate students’ educational experience.

The presence of contaminants in the environment can have a wide variety of negative effects including impacting public health, limiting visibility, deteriorating buildings and monuments, acidifying lakes and rivers, and damaging forests and crops. The negative health effects of breathing atmospheric contaminants also impact the indoor environment since ambient air is
transported indoors along with its pollutants where indoor sources can add to the problems. Although we have substantially improved the ambient air quality over the past 40 years, there are still a number of problems that are attributed to air pollution. Recent studies have found strong correlations between changes in particle concentrations and increased mortality. There has been a sharp rise in childhood asthma, and many areas of the country continue to fail to meet national ambient air quality standards. Worldwide much of the world’s air quality fails to meet the quality specified by the World Health Organization’s guidelines.

Clarkson University has significant resources in people and equipment that focus on the management of air, water and soil pollution. CARES is the center that brings together this world-class expertise focused on multi-media sampling and analysis, receptor modeling, atmospheric deposition, and the application of experimental and computational fluid dynamics to pollution problems. In addition, we are developing new modeling, measurement, and flow management tools that can provide critical information to state and federal regulatory authorities that will help to improve environmental quality. CARES laboratory and office space, and equipment including an aerosol wind tunnel, a high-speed aeronautical wind tunnel, a Beowulf computer cluster, field sampling systems, and world class analytical equipment are available to programs at Clarkson. Specific analytical instruments include high-resolution gas and liquid chromatographs, high resolution instruments for trace metals analysis, mercury analytical instrumentation, ion chromatographs and sample preparation instrumentation. Additional information can be found at https://www.clarkson.edu/cares

Center for Rehabilitation Engineering, Science, & Technology (CREST)
Charles Robinson, Director
crobins2@clarkson.edu

The Center for Rehabilitation Engineering, Science and Technology was established at Clarkson University in 2005. Its mission is to educate, mentor and train students to be able to integrate and apply a combined scientific, analytic, technological and business approach to emerging biomedical engineering and biomedical science areas. It is of note that biomedical engineering is the most rapidly growing field of engineering, with outstanding biomedical job prospects, and with half of the undergraduates being female, a ratio that exists in no other engineering discipline.

The Center for Rehabilitation Engineering, Science and Technology takes a unique approach to the study of rehabilitation problems. First, through its focus on biomedical engineering, the Center studies how the nervous and skeletal muscle systems of the human body normally work. Secondly, through its rehabilitation science and technology components, it models the mechanisms by which these systems become impaired through disease or injury. Within its rehabilitation technology aspects, the Center investigates how technology can help to restore or replace functions such as hearing, speaking, seeing or moving through the use of artificial assistive or substitutive devices. Through a clinical link with Clarkson’s Physical Therapy and
Occupational Therapy programs, the Center investigates the outcome of the applications of this assistive technology. The Center also organizes and presents seminars, campus lectures and classroom discussions by visiting leaders in the field of rehabilitation.

Medical and health care have become increasingly technology-based in recent years, with an increased demand for engineers with skills that integrate engineering principles with an understanding of the human physical and psychosocial characteristics. The Center for Rehabilitation Engineering, Science and Technology offers a Minor in Biomedical Engineering to meet this need. Combining a traditional engineering degree with this BmE Minor is an attractive opportunity for engineering students who have a strong desire to use their talents to improve the quality of life for people with medical conditions or disabilities. Clarkson offers this Minor to augment a degree from a traditional engineering department. A similar Minor in Biomedical Science and Technology (BS&T) is available to non-engineers. Both Minors are multi-disciplinary, and will include courses from multiple schools or departments across the University. The Biomedical Engineering Minor is just one of the examples addressing Clarkson’s Coultor School of Engineering’s motto “Technology Serving Humanity.”

**Center for Identification Technology Research (CITEr)**  
*Stephanie Schuckers*  
sschucke@clarkson.edu

Clarkson University is the lead university for an NSF Industry/University Cooperative Research Center, called the Center for Identification Technology Research (CITEr). Other sites include West Virginia University, University of Arizona, University at Buffalo, and Michigan State University. CITEr focuses on biometrics, identity, and human analytics (www.clarkson.edu/citer). Over 20 affiliates, including the FBI, DOD, DHS, Qualcomm, Northrop Grumman, and other industrial and government partners, cooperatively define, fund, and execute work to meet common needs. Applications include defense, homeland security, forensics, consumer electronics, financial services, and humanitarian applications. Research focus areas in identification technology include:

- Human sensing and acquisition
- Feature extraction and processing
- Machine learning and analytics
- Performance and modeling
- Multispectral and cross spectral imaging
- Novel modalities
- Mobile & computing
- Social signal processing
- Authentication & cybersecurity
- Behavioral and soft biometrics
- Science of Biometrics
Students are key team members for research projects which are cooperatively defined by industrial and government affiliates. At the completion of their degree, students often go to work for organizations that funded their research project. Educational programs which CITE researchers pursue include electrical, computer, and software engineering, computer science, mathematics, among others. Additional information is available at https://citer.clarkson.edu/

Center for Metamaterials
David Crouse
dcrouse@clarkson.edu

The Center for Metamaterials (CfM) is an NSF-sponsored Industry/University Cooperative Research Center. The CfM’s mission is to provide a collaborative, multi-university one-stop shop to research, design, fabricate and test a wide range of metamaterials, photonic crystals, plasmonic structures, and other advanced light-controlling structures. Industry interest in metamaterials is growing as these materials are being used to develop new or higher performing optical, electronic and acoustic devices. Researchers at the Center focus on precompetitive topics jointly identified by the university and industry participants as being of high value, and include fundamental research, metamaterials processing, and device and system development. The CfM projects advance the knowledge base through fundamental and applied metamaterials research and development. The projects involve research teams composed of academic researchers (professors, postdocs, research staff, graduate students and undergraduate students), industry researchers at large and small companies, and researchers from government agencies (e.g., Air Force Research Laboratory (AFRL) and U.S. Army). The intent is to nurture long-term relationships and collaborations among the university, industry, and government laboratories. The intent is also to develop and perform technology transfer of metamaterials-based technologies to the applications of renewable energy, sensing and imaging, antennas, and communication systems. Industry members participating in the Center share in the products of the research and development, the generated intellectual property, have access to laboratories, equipment and expertise, and the resulting economic benefits.

Center for Complex Systems Science
Jie Sun, Associate Professor
sunj@clarkson.edu

Complex systems science involves the study of how many elements develop behaviors that are beyond those behaviors possible by considering the individual elements alone. While the behavior of each individual component of a system in isolation may support intricate dynamics, together the individual components interact to support group behaviors and system dynamics well beyond those possible from individual components alone.
Complex systems science is a rapidly growing and emerging field that is inherently interdisciplinary. It can be applied to a wide variety of fields including biology, medicine and cognitive science, mechanical, chemical, electrical, and civil engineering, physics and astronomy, economics and social sciences. The future of research in these fields lies in understanding not just the isolated components of a given system, but the manner in which the individual components interact to produce “emergent” group behavior.

In contrast to “data mining” or “big data”, where a primary focus is to understand hidden patterns or structure in large data sets, complex systems science attempts to identify “causality” and uncover “universality” that exists in large scale systems. Causality and universality are due to peer and hierarchical interactions, patterns, and scaling of individual system components. Universality has been observed across a wide range of fields such as brain science, insect swarming, social science, and fluid dynamics.

Key to the advancement of complex systems science is the development and use of mathematical tools designed to understand the resultant outcome of group behaviors that are not evident when studying the behavior individual elements alone. Mathematical tools for complex systems science are drawn from the following fields:

- **Information dynamics** - the study of interaction of elements and the information flow between elements. Of particular interest is the minimum information needed to produce an outcome of important behaviors.
- **Algorithmic complexity** - In contrast to information dynamics and entropy of evolving systems is the concept of algorithmic complexity, Kolmogorov complexity, and the concept of minimalism of description, as a contrast that intricate behavior is often opposite to simplicity of design.
- **Structure and dynamics on networks**, as a large number of interacting parts can give rise to behaviors that emerge from the group interactions and not implicit in any one element. Consider the collective behaviors and capabilities of an ant swarm, which is clearly not understood in terms of the behaviors of the parts. Considering networks brings in the mathematics of graph theory, but well beyond this when understanding dynamics on networks, comes complexity theory.
- **Criticality and scaling**, modeling of random networks, the implications of critical phenomena to complexity, and the recent approaches to evolutionary dynamics are all part of this field. As such, understanding interactions from food webs to economies all have a universality that can be understood in terms of the science that includes hierarchical interactions. It is the characterization of such universalities that lead to complex systems as a unifying field across such disciplines.
- **Technical details** and the tool-sets include areas of dynamical systems and chaos theory, network theory and graph theory, information theory, thermodynamics and statistical mechanics, cellular automata, information theory, activated processes including glasses, fractals, scaling and renormalization.
Shipley Center for Innovation
Matthew Draper, Executive Director
mdraper@clarkson.edu
Jamey Hoose, Director
jhoose@clarkson.edu

The Shipley Center for Innovation is a University-wide resource dedicated to bringing Clarkson innovations to market, gaining recognition for the technology created by our faculty and students, and creating local jobs for graduating Clarkson students. The Center will serve as an engine for economic development in the North Country by engaging in the creation of new enterprises that capitalize on emerging technologies.

The Shipley Center for Innovation is comprised of a business incubator that provides tools needed for the emerging technologies to be commercialized and developed into profitable companies. Workshops are also developed to assist with future technology.

Center for Sustainable Energy Systems
Kenneth Visser, Director
visser@clarkson.edu
315 268 7687

Clarkson University has been engaged in energy research and education for over 40 years and our faculty's wide range of interests and activities span disciplines from Engineering to Business. Specific current areas of research include wind energy, micro-grid power engineering, bioenergy, behavioral change for energy conservation, public perception and adoption of green energy technologies, energy policy and energy education. The Center provides a vehicle to bring these efforts together, exchange ideas with each other and generate new concepts for innovative, sustainable, collaborative projects at local, national and international levels. The Center also supports the current efforts of the Institute for a Sustainable Environment (ISE) and the Center for Advanced Materials Processing (CAMP) and is closely linked to the Shipley Center for Innovation.

Center for Electric Power Systems
Thomas Ortmeyer, Director
tortmeye@clarkson.edu
315-268-4035

Electric Power System Engineering is a recognized strength of Clarkson University. The electric power system is undergoing rapid dynamic change due to the development of clean energy sources, the deployment of smart grid technologies, the deregulation of the industry, and the developing growth of the electric vehicle industry. There is a strong need for research, development, and workforce training across the breadth of research areas that focus on electric power systems.
While historically centered in the Electrical and Computer Engineering Department at Clarkson, the interest in electric power systems has grown across campus, and active research is being conducted throughout the university. The Center for Electric Power System Research mission is to foster research collaborations across the university, and to grow our power systems research capability. The Center goal is to work closely with industry, and the Industry Advisory Board has an important role in the Center governance. The center also has a strong education mission, at the undergraduate and graduate levels, as well as in programs for practicing professionals.

**Great Rivers Center**  
*Michael Twiss, Director*  
mtwiss@clarkson.edu

Clarkson University faculty and researchers have a distinguished history of investigating and engineering solutions to a broad range of issues involving the lower Great Lakes and St. Lawrence River. Clarkson is best known for contributing to the solution of environmental problems such as eutrophication, toxic chemical pollution, and corrective measures to remediate contaminated environments; to the solution of water resources management concerns related to navigability for commerce and power generation, especially as affected by winter conditions and the formation and dynamics of ice; and for addressing socioeconomic issues such as binational trade and cultural concerns.

These activities have been undertaken by teams comprising faculty members, graduate students and undergraduates using Clarkson facilities and often involving collaborators from several other universities in New York State via the Great Lakes Research Consortium. Not only do these efforts create new knowledge that is essential to the education of students who pursue BS, MS, M.E. and PhD degrees and to the professional development of the faculty members, this work provides environmental and economic benefits to the people of the region, the nation and, indeed, the international community.

Recognizing the multiplicative effect of interdisciplinary collaboration, in 1999 Clarkson initiated actions that resulted in the establishment of the Great Rivers Center on the Clarkson campus. The Great Rivers Center is integrated into the education, research and outreach missions of the Institute for a Sustainable Environment.
STUDENT AFFAIRS

Clarkson Housing
Clarkson is a residential university. Single, undergraduate students in their first, second, third, and fourth cohort years are required to live in University housing and dine in campus facilities unless they are granted an exemption to the residency requirement. Students living in campus housing are required to contract for food service, eating their meals in a University dining venue of their choice (exceptions are campus apartment residents).

The Residence Life Staff provides supportive and development programming for students. All events and programs are designed to involve and engage students with the campus community and provide a healthy mix of educational, fun, and recreational activities to support the diverse interests of Clarkson students.

University housing provides accommodations ranging from traditional rooms to suites to apartments. Special attention is given to the assigning of roommates to first-year students. Most first-year students reside together in Cubley-Reynolds and Ross-Brooks (otherwise known as “the Quad”) on theme-based floors. Students select from a wide variety of themes during the summer prior to arrival. Some of our housing units feature suite-type accommodations; these are typically two double rooms with interconnecting baths. Lounges and recreational areas, laundry rooms, and vending machines are located in or near each residence facility.

In addition, the University operates three on-campus apartment complexes. All units are furnished with kitchen facilities and include utilities. Students in a campus apartment are not required to contract for food service; however, they may choose to do so. Students residing off campus have the option of contracting for University food service. TV cable and data ports are available for students in each room or apartment. Smoking is not permitted in any buildings on campus including the residence halls.

Campus housing is staffed by live-in University employees known as Area Coordinators, who supervise and train students as who serve as Resident Advisors (RAs) and Residence Directors (RDs) to assist students with personal issues and a variety of educational, social and recreational programs.

Fifth-year students are housed on campus only as space allows. Junior and senior fraternity and sorority members who meet academic requirements may live and dine in University-recognized fraternity and sorority housing. Upper-class fraternity and sorority members living in residence halls may be permitted to take their meals at their respective fraternity or sorority houses.

Students are responsible for knowing and adhering to the Residence Regulations enumerated in the University housing contract and on the University's web site.
**Theme Housing**
Clarkson strives to create learning communities by developing innovative theme housing opportunities created around projects or entrepreneurial ventures in which students from various majors live and learn together. In addition, students are encouraged to develop meaningful proposals for living together in theme-related housing, increasing options for students with similar interests to live together while intentionally expanding the collaborative learning atmosphere of our campus residences.

**Clarkson Regulations**
Each student is responsible for knowing the contents of the Clarkson Regulations. The regulations contain information on registration, class absences, the grading system, scholastic requirements, the method for removing course deficiencies, special examinations, the code of conduct, campus policies, and other information regarding University operations. For a link to the Clarkson student regulations, please visit: https://www.clarkson.edu/student-administrative-services-sas/clarkson-regulations

**Extracurricular Activities and Student Life**
Participating in clubs and organizations and attending campus events are great ways to enhance your college experience. With over 150 student organizations and hundreds of events happening every semester, there are no shortages of fun, educational, and social opportunities. Joining a club or organization or participating in campus activities are great sources of leadership experience and foster personal growth. To find out when student clubs are meeting and what activities are happening on campus, go to knightlife.clarkson.edu. Your college experience will be richer if you are an active participant in it.

**Clarkson Union Board**
The Clarkson Union Board (CUB) is the campus programming board. Through its dedicated student members, CUB provides entertaining programs every week. CUB co-sponsors the weekly Late Knight Movie and hosts hypnotists, comedians, bands, and fun events like laser tag every weekend. Clarkson Union Board sponsors two annual concerts: FallFest and SpringFest. Past concerts have boasted performances by the Goo Goo Dolls, the All American Rejects, Panic! At the Disco, Waka Flocka Flame, X-Ambassadors, and more.

**Clarkson University Student Association (CUSA)**
All students who pay the student activities fee are members of CUSA. The CUSA elects the CUSA Senate, which is responsible for allocating the student activities fee each semester to sponsored clubs and organizations. Composed of Executive Board, Senators from each class, and a Clarkson School representative, the CUSA Senate serves as the formal representatives of the student body. CUSA Senate is the governing body of all clubs and organizations on campus.
CUSA Senate is responsible for working together with the University on decisions that impact the student body and is advised by two professional staff members. CUSA Senate meetings are held on Monday at 7 p.m. in the Student Center. CUSA committee meetings are held at various times throughout the week. All students are welcomed to participate in CUSA committees, even if they do not hold a Senate position. Meetings are open to all students and the University community.

Community Service
Each year, a Volunteer Fair is held on the first day of classes. Volunteering and community service can be one of the most fulfilling opportunities you will find at Clarkson. By reaching out and offering your energy, talent, and compassion, you can make a real difference in people's lives. Through service to others, you will gain a better understanding of yourself, demonstrate classroom learning, and increase leadership, teambuilding, and management skills. That is why service is a core value of Clarkson; it benefits both the students and the community. Service helps develop a sense of social responsibility and civic pride. Potsdam has a number of service institutions, agencies and organizations that welcome volunteer assistance. Some members of the Clarkson faculty are building opportunities for service learning into the structure of their courses. This enables students to receive partial academic credit for working on community needs and problems relevant to their academic fields. One of Clarkson’s fundamental values is to develop the kinds of skills in students that will enable them to contribute toward the betterment of the local and global community. For information about volunteer opportunities with local organizations, visit [https://www.clarkson.edu/clubs-activities/office-student-life-engagement/volunteering](https://www.clarkson.edu/clubs-activities/office-student-life-engagement/volunteering)

Service Organizations
There are special organizations dedicated specifically to community service. They are open to all undergraduate students. Alpha Phi Omega national service fraternity, consisting of over 615 chapters across the United States, is one of the largest fraternities in the country. Founded in 1925, Alpha Phi Omega was established to promote leadership by providing services to benefit the campus and the community. Alpha Phi Omega is open to all students. Clarkson also recognizes active chapters of Circle K, whose members become involved in numerous community service projects.

Cultural and Recreational Opportunities
The Clarkson community has easy access to many cultural and recreational facilities in upper New York State, New England, and Canada, as well as on the campus.

Among New York State attractions are the Adirondack Museum at Blue Mountain Lake, the Remington Museum at Ogdensburg, the Thousand Islands resorts near Alexandria Bay, and the St. Lawrence Seaway area near Massena.
Skiing is available at slopes around Lake Placid, Tupper Lake, Vermont, and New Hampshire, which are easily reached by automobile, as are excellent locations and facilities for fishing, boating, hiking, tennis, and golf.

Splendid concentrations of cultural activities abound in nearby areas of Canada. Within 96 miles is the Canadian capital of Ottawa, with its National Arts Centre, National Gallery of Canada, Museum of Civilization, Museum of Science and Technology, Museum of Nature, Ottawa Senators hockey team, and the Parliament complex. Within 150 miles are Montreal’s Museum of Fine Arts, Place des Arts, several educational institutions, and a professional hockey team, the Canadians. Just across the border near Cornwall is Upper Canada Village, a reconstruction of the living style of United Empire Loyalists who sought refuge in Canada following the American Revolution.

In Potsdam itself, music lovers have excellent opportunities to hear orchestral, choral, and solo performances by teachers, students, and visiting artists at the noted Crane School of Music at SUNY Potsdam.

**Fraternity-Sorority Life**

Between 10 and 15% percent of Clarkson students join fraternities and sororities. The local chapters, in order of their founding, are: Omicron Pi Omicron (1903) and Zeta Nu (1956). National fraternities, with the date of their origination at Clarkson, include: Delta Upsilon (1922), Alpha Chi Rho (1956), Tau Kappa Epsilon (1963), Tau Epsilon Phi (1966), Phi Kappa Sigma (1981), Sigma Chi (1987), Sigma Phi Epsilon (2000), Alpha Delta Gamma (2017). The four national sororities at Clarkson are: Phi Sigma Sigma (1979), Delta Zeta (1986), Theta Phi Alpha (2006), and Kappa Delta Chi (2011).

Students are eligible to join fraternities and sororities according to the guidelines established by the Recognition Policy for Fraternities and Sororities. Recruitment activities typically take place during the first few weeks of each semester; however, chapters may elect to hold recruitment activities throughout the year.

Clarkson University’s Recognition Policy for Fraternities and Sororities holds that the futures of these organizations are determined by their demonstrated ability to contribute positively to high academic standards, good social behavior, and constructive extracurricular activities.

*Hazing and discrimination are prohibited. Many fraternities and sororities maintain chapter houses and serve meals. Initiatives are underway to integrate fraternities and sororities more completely into the educational and social fabric of the University through the ongoing development of on-campus housing options. Currently, there are four fraternities residing on campus. Housing requests to live at chapter houses are considered by the Office of Student Organizations in conjunction with Residence Life and are made according to housing policies. Costs of joining social fraternities and sororities vary. Questions may be directed to the Director of Student Organizations and Student Center at 315-268-2345.
Honor Societies
Upper-class students who demonstrate high scholastic achievement in a given field and possess exemplary qualities of character and leadership are eligible for membership in a number of national and local honor societies. National honor societies include Beta Gamma Sigma (business administration), Chi Epsilon (civil engineering), Eta Kappa Nu (electrical and computer engineering), Gamma Sigma Epsilon (chemistry), Omega Chi Epsilon (chemical engineering), Phi Kappa Phi (academic excellence), Phi Theta Kappa (transfer students), Pi Mu Epsilon (mathematics), Pi Tau Sigma (mechanical engineering), and Tau Beta Pi (engineering). Sigma Gamma Tau (Mechanical Engineering), Sigma Pi Sigma (physics), Psi Chi (psychology), Sigma Tau Iota is a local honor society available to Engineering and Management students, Tri-Beta (biology), Sigma Nu Tau Entrepreneurship Honor Society.

Interfraternity Council
The Interfraternity Council (IFC) is a body of representatives from each of the member fraternity chapters. From this body, the IFC Executive Officers are elected on an annual basis. In addition to the president, there are vice presidents who serve in various capacities, such as risk management, membership recruitment, educational programming, public relations, community involvement, etc. These students work with their Panhellenic Council counterparts to offer programming for the Greek system and campus.

International Student Organization (ISO)
The ISO is an organization for both U.S. and International students. Students meet on a regular basis to celebrate holidays, take trips, socialize, and learn more about each other’s cultures. For more information, contact the International Center at internationalcenter@clarkson.edu.

Journalism, Radio, TV
Students interested in journalism can work on one of the University publications. The student newspaper, The Integrator, is published weekly. The Clarksonian is the University yearbook. Each is edited and managed by students.

A radio station is operated out of the Student Center. WTSC-FM operates as a broadcast station and is governed and operated by Clarkson students, as is the amateur radio club, K2CC. Clarkson students also operate the cable television station WCKN-TV, which broadcasts hockey games.

Music and Dramatics
Those interested in music may participate in the pep band, jazz ensemble, or orchestra. The pep band plays at athletic events and the jazz ensemble and orchestra at various University functions.

Students with an interest in acting may join theatre, which presents two or three productions each year. Past performances include “Harvey,” “Joseph and the Amazing Technicolor Dreamcoat,” “Arsenic and Old Lace,” “Once Upon a Mattress,” “Our Town,” and “Dracula.”
Clarkson also has an amazing a capella student organization, the Golden Knots, as well as a number of dance and performance student organizations.

A wide range of concerts, plays, lectures, and other cultural events are available through the Office of Student Life and Engagement, Clarkson Union Board, Residence Life, and student organizations. Events are also sponsored by the Associated Colleges of the St. Lawrence Valley. Movies, both foreign and domestic, are presented throughout each term at Clarkson and other nearby colleges.

**Panhellenic Council**
The Panhellenic Council (Panhel) is composed of delegates from each of the member sorority chapters. The President and Vice President are elected by chapter delegates; other positions are rotated by chapters. Recruitment activities are typically conducted during the first few weeks of each semester, however individual chapters also hold recruitment events throughout the year.

**Parent Relations**
Parents and family members of our students play an integral role in the student experience and are considered partners of Student Affairs. Clarkson University partners with parents to provide programming and information throughout the year regarding services, events, and resources that may be applicable to families.

The Parents Association was founded in 1977 to foster a closer relationship and to involve a greater number of parents in the affairs of the University. All parents become members of the Association upon the acceptance and enrollment of their children into the University and can remain members indefinitely.

The administration of the Association is vested in the Parents Committee, which consists of parent representatives from all four class years of students, as well as the graduate students. The Parents Committee works closely with the office of the Vice President for Enrollment and Student Advancement and the staff of the division in planning programs and events that support parent involvement and interaction. The Committee has parent liaisons with a variety of student service departments. The Parents Committee also has a role in the fundraising arm of the University through contributions to the Parents Fund.

The relationship between students, parents and the University is an important one. Through the Parent Relations area, communication is encouraged in order to foster a better understanding among parents, students and University staff.

**Professional Societies**
Numerous national professional societies maintain student chapters at Clarkson. These include Alpha Kappa Psi (national professional business fraternity-coed); American Indian Science and Engineering Society; American Institute of Astronautics and Aeronautics; American Institute of
Chemical Engineers; American Product and Inventory Control Society; American Society of Civil Engineers; American Society of Mechanical Engineers; Arnold Air Society; Association of General Contractors; Association for Computing Machinery; Association for Women in Mathematics; Engineering and Management Society; Institute of Electrical and Electronics Engineers; National Society of Black Engineers; New York Water Environment Association (NYWEA); Society of Hispanic Professional Engineers; Society for Industrial and Applied Mathematics; and Society of Women Engineers; Society of Human Resource Management; American Chemical Society; American Academy of Physician Assistants.

Recognition Societies
One of the highest honors a Clarkson student can receive is to be tapped for membership in Phalanx, the senior leadership society. Students are recognized for their exceptional leadership ability, scholastic attainment, and extracurricular involvement.

The Arnold Air Society is a professional honorary service organization within the Corps of Air Force ROTC Cadets. Arnold Air provides a stimulating, service-oriented program that gives selected cadets enhanced leadership skill development opportunities while they provide service to the campus and the community.

Religious and Spiritual Life
Although it is not a church-affiliated university, Clarkson is interested in the moral and spiritual development of its students. Some students pursue their spiritual development in personalized ways, while others attend services of organized religious groups. Potsdam churches include Baptist, Christian Science, Church of Jesus Christ of Latter Day Saints, Episcopal, Jehovah’s Witnesses, New Hope Community Church (unaffiliated), Methodist, Nazarene, Presbyterian, and Roman Catholic. Potsdam’s synagogue is the Congregation Beth-El. There is also a mosque in Potsdam. There are Seventh Day Adventist and Unitarian Universalist churches in nearby Canton, a Congregational church in Norwood, and a Lutheran church in Massena.

Special Interest Clubs
Find a current listing of student organizations at: http://knightlife.clarkson.edu

Student Center
The Student Center is the focal point of activities on the Hill campus. The Student Center is a place where students can come to spend time between classes, study, hold meetings, and host evening events. There are lounges and spaces with comfortable chairs and tables for studying and relaxing. In addition, meeting rooms are available for group meetings and other activities. The Forum, an auditorium in center stairwell of the Student Center, is equipped with a massive video wall. The space is often used for large events such as lectures, showcases, comedians, pre-released movie showings, and dance recitals.

Besides being a great place to connect with your classmates, the Student Center is the home of many departments and services on campus. On the lowest level, you can access the Mail Room.
and your student mailbox. You can also head over to the POD Store to pick up convenience items, listen to and watch the campus radio and TV station, or write an article for the school newspaper. In addition, our virtual game room is equipped with multiple game consoles where you can play all of the newest video games.

On the ground level of the Student Center, you will be able to visit the Student Center Desk, the Clarkson University Student Association (CUSA) and Student Organizations office, Java City, Bar 9, and take out cash through an ATM. You will find the more traditional game room with billiards, darts, foosball, bubble hockey and ping pong on this level.

The top floor of the Student Center houses our largest dining facility on campus, known as the Servery, as well as the Multipurpose Rooms (MPRs). Student organization events and campus-wide student meetings happen in the MPRs, including CUSA Senate and Clarkson Union Board.

**Cheel Arena**
Cheel Campus Center boasts a 3,000 seat multipurpose arena. The Arena, home of men’s and women’s Golden Knights Hockey, is also the place to attend University Convocation, University Recognition Day, Commencement, and other large-scale events.

**Residential Life**

**Clarkson Housing**
Clarkson is a residential university. Single, undergraduate students in their first, second, third, and fourth cohort years are required to live in University housing and dine in campus facilities unless they are granted an exemption to the residency requirement. Students living in campus housing are required to contract for food service, eating their meals in a University dining venue of their choice (exceptions are campus apartment residents).

The Residence Life Staff provides supportive and development programming for students. All events and programs are designed to involve and engage students with the campus community and provide a healthy mix of educational, fun, and recreational activities to support the diverse interests of Clarkson students.

University housing provides accommodations ranging from traditional rooms to suites to apartments. Special attention is given to the assigning of roommates to first-year students. Most first-year students reside together in Cubley-Reynolds and Ross-Brooks (otherwise known as “the Quad”) on theme-based floors. Students select from a wide variety of themes during the summer prior to arrival. Some of our housing units feature suite-type accommodations; these are typically two double rooms with interconnecting baths. Lounges and recreational areas, laundry rooms, and vending machines are located in or near each residence facility.

In addition, the University operates three on-campus apartment complexes. All units are furnished with kitchen facilities and include utilities. Students in a campus apartment are not required to contract for food service; however, they may choose to do so. Students residing off campus have the option of contracting for University food service. TV cable and data ports are
available for students in each room or apartment. Smoking, of any form, is not permitted in any buildings on campus including the residence halls.

Campus housing is staffed by live-in University employees known as Area Coordinators, who supervise and train students, who serve as Resident Advisors (RAs) and Residence Directors (RDs). Housing staff assist students with personal issues and work to provide a variety of educational, social and recreational programs.

Fifth-year students are housed on campus only as space allows. Junior and senior fraternity and sorority members who meet academic requirements may live and dine in University-recognized fraternity and sorority housing. Upper-class fraternity and sorority members living in residence halls may be permitted to take their meals at their respective fraternity or sorority houses.

**Theme Housing**
Clarkson strives to create learning communities by developing innovative theme housing opportunities created around projects or entrepreneurial ventures in which students from various majors live and learn together. In addition, students are encouraged to develop meaningful proposals for living together in theme-related housing, increasing options for students with similar interests to live together while intentionally expanding the collaborative learning atmosphere of our campus residences.

**Clarkson Regulations**
Each student is responsible for knowing the contents of the Clarkson Regulations. The regulations contain information on registration, class absences, the grading system, scholastic requirements, the method for removing course deficiencies, special examinations, the code of conduct, campus policies, and other information regarding University operations. For a link to the Clarkson student regulations, please visit: [https://www.clarkson.edu/student-administrative-services-sas/clarkson-regulations](https://www.clarkson.edu/student-administrative-services-sas/clarkson-regulations)

**Student Success Center, Diversity and Inclusion**
Cathy McNamara, Associate VP of Student Success, Diversity, & Inclusion

The office of Student Success, Diversity and Inclusion (SS, D & I) was created in April, 2015 as part of the university’s vision to create a community whose organizational units would support initiatives focusing on inclusion, employee development, and an enhanced culture. Changes that were announced by President Collins were:

SS, D & I collectively houses units that are leading campus-wide efforts to strengthen and develop key initiatives to support diversity objectives related to student access, academic success, campus involvement, and leadership development that will ultimately lead to career success and lifelong engagement with Clarkson.

The mission of the Student Success, Diversity and Inclusion organization is to serve and embrace all students. We are committed to providing access and opportunity programming
for student success. Using a collaborative approach, we provide academic monitoring and advisement, student engagement, professional development opportunities and support retention initiatives to graduate culturally competent students.

The following outlines the work by the respective areas now housed under the umbrella Student Success, Diversity & Inclusion. The central office (Student Success Center) houses the Associated Vice President/Director of Student Support Services (SSS) which leads the strategic direction of the office and the programs within and joined by the following dedicated Directors:

- Marjorie Warden – Director, Community of Underrepresented Professional Opportunities (CUPO)
- Tammy McGregor-Twiss – Director, Arthur O. Eve Higher Education Opportunity Program (HEOP)
- Catherine Avadikian – Director First Year Advising/University Studies (Please see Academic Program Options section of the Catalog for more information)

Enrollment is the crucial first step toward achieving a diverse community. Funding streams that support access to Clarkson — scholarships, specialized admissions programs and K-12 outreach programs and summer camps — are crucial to meeting our goals of expanding the world reach and diversity of the Clarkson community and to supporting our commitment to creating a university for the 21st century.

A transformative campus experience, which incorporates and supports aspects of academic success, campus involvement, and leadership and professional development opportunities, will positively affect retention and is the vital link to future career and personal success as well as lifelong engagement with Clarkson.

**First-Year Seminar, FY100**

This freshman seminar introduces students to Clarkson University’s mission where we “strive to attune ourselves and our programs to our global, pluralistic society”. Through project-based learning, students engage in research and dialogue with the intention of developing a set of behaviors and attitudes that create a sense of belonging for each participant and enable them to work effectively in diverse situations. Classroom discussions, facilitated by guest speakers and Peer Educators, are designed to promote self-reflection, constructive dialog, and improved communication skills. The aim of First Year Seminar is to aid in the development of citizens attentive to our campus, local, national, and world community needs.

**CU Connect Mentoring**

A university-wide mentoring program in which every student is connected with a staff or faculty member in the first week of school to help with the transition to college. Underrepresented students’ mentors are hand selected from over 80 volunteers to mentor students who are strategically placed within our campus community.
Student Support Services
Trio grant funded by the Department of Education to serve 160 students who hail from low-income/first generation or students with disabilities. The persistence rate meets and often exceeds 94% and graduation rate meets/exceeds 83%.

First Year Advising/University Studies First-Year Advising
It is not unusual for students to experience many changes in their first year on campus, and we provide resources to help them. Academic advising is an important function of Clarkson’s faculty and staff. Although all students have a faculty or professional administrative advisor within their academic programs of study, an added service offered by Clarkson is First-Year Advising for students who want extra guidance, want to tailor their education to pursue multiple interests, or are still deciding on a major or career direction.

Clarkson University’s Arthur O. Eve Higher Education Opportunity Program
Clarkson’s Higher Education Opportunity Program (HEOP) provides a wide range of services to New York State residents, who because of academic and economic circumstances would otherwise be unable to attend and complete a college education. Furthermore, HEOP at Clarkson University enriches our campus community with a diversity of backgrounds and ideas to enhance the overall educational experience for all. This in turn, provides all with a greater sense and awareness of the ever increasing globally diverse workforce and economy. Moreover, Clarkson University’s HEOP program emphasizes recruitment to include American Indian and rural youth in addition to African American males, Latino students and women who are among the most disadvantaged populations with respect to achieving degrees in Science, Technology, Engineering and Mathematics (STEM).

The Community of Underrepresented Professional Opportunities (CUPO)
The CUPO office is the shared home to the Collegiate Science and Technology Entry Program (CSTEP), the Ronald E. McNair Post-Baccalaureate Achievement Program (McNair), the Louis Stokes Alliances for Minority Participation Program (LSAMP), and the Academic Success Program to Improve Retention and Education (ASPIRE). The creation of this office brings together four long-standing federal and state Department of Education and National Science Foundation programs in one location, providing ease in access to services for students. The CUPO office provides academic enrichment and support, graduate school preparation, career and professional development, research opportunities, and social and cultural experiences for eligible students.

CUPo Collegiate Science and Technology Entry Program (CSTEP)
Funded to serve 80, the purpose of CSTEP is to increase the number of historically underrepresented and economically disadvantaged students pursuing careers in STEM fields or NYS licensed professions. CSTEP is sponsored by the New York State Education Department. Clarkson’s Collegiate Science and Technology Entry Program (CSTEP) has been in existence since 1994 and has served over 400 students.
The CSTEP program helps to assure a competitive advantage to eligible students by providing academic support, enrichment activities, career development, and graduate school preparedness. Students are provided with academic guidance and tutoring. Along with this, the office provides academic success workshops and a lending library of textbooks laptops and other important tools for success.

The CSTEP staff helps students meet the challenges of the competitive STEM field by offering career guidance and skill building that will help students identify and prepare for a career. Students are given opportunities to participate in activities such as conferences; networking with corporations, other colleges and universities; as well as meeting with Clarkson University alumni. This builds their career network, and may lead to becoming involved with research, co-op, study abroad, or internship opportunities. CSTEP offers assistance with various graduate and professional exams, and with applying to graduate schools when approaching the end of baccalaureate degree requirements.

CUPO Community College Recruitment
In Early spring semester we host a group of OCC and MCC students (CSTEP & LSAMP) at Clarkson. While on campus we provide a tour, a transfer admissions information session, and meetings with faculty, speed teams, student organizations, and our Student Success Center. The visit ends with a student panel, food and game night, and an overnight stay with current CUPO students.

CUPO Summer Research and Summer Research Transfer Initiative
CUPO provides a 10 week paid faculty guided summer research program. The main focus of participants is to attend workshops designed to explore the graduate school application process, prepare for the GRE exam, visit graduate schools, obtain faculty and peer mentoring, and to access opportunities to present research locally and at national conferences.

CUPO Ronald E. McNair Post Baccalaureate Achievement Program (McNair)
The McNair program, a federal TRIO grant funded by the US Department of Education, serves 30 students per year. Participating in the program allows students firsthand experience in cutting-edge research with faculty member mentors who are dedicated to their teaching and research.

Clarkson's research for McNair Scholars focuses on STEM disciplines. Students in McNair complete a 10-week intense research program, filled with graduate school workshops, GRE preparation, and seminars by alumni and faculty with PhD’s. Students present their research at a national McNair Conference and at Clarkson’s summer SURE Symposium. The goal of the McNair program is to have historically underrepresented and economically disadvantaged, first-generation college students enter graduate school and attain a PhD.

CUPO Louis Stokes Alliance for Minority Participation Program (LSAMP)
LSAMP is a program aimed at increasing the quality and quantity of African, Latino, Asian, and
Native American (AALANA) students successfully completing science, technology, engineering and mathematics (STEM) baccalaureate degree programs, and increasing the number of AALANA students matriculating into graduate programs. The program goals are accomplished through the formation of alliances. The Consortium is comprised of seven institutions: Syracuse University (the lead institution) and Clarkson University, Cornell University, Rensselaer Polytechnic Institute, Rochester Institute of Technology, and Monroe and Onondaga Community Colleges.

CUPO The Academic Success Program to Improve retention and Education (ASPIRE)
The ASPIRE program provides a four-year scholarship to approximately 60 students who qualify as academically talented, economically disadvantaged, and underrepresented students in STEM. The purpose of ASPIRE is to increase the number of eligible students graduating, attending graduate school and/or obtaining employment in STEM fields.

The ASPIRE program is funded by the National Science Foundation (NSF). ASPIRE emphasizes the importance of recruiting students in STEM disciplines and supporting students through degree completion. ASPIRE has a strong focus on research opportunities, professional development, and partnering with employers to facilitate student career planning of the STEM workforce.

CUPO CORE (College Opportunities for Retention and Engagement)
CORE Peer Mentoring connects freshman and sophomore students by pairing with junior and senior mentors. Our mentors are trained to offer support, insight and friendship, helping students to adjust and be socially and academically successful.

CUPO Annual Northern NY Career Exploration Symposium
This annual symposium provides students an opportunity to hear from professionals in STEM fields about their personal experiences and opportunities that exist in their field of expertise. In addition, the symposium offers an opportunity to network with professionals and make important connections toward employment goals. The event is rotated yearly among the 4 colleges CSTEP/STEP programs in the North Country (Clarkson, St. Lawrence, SUNY Potsdam and SUNY Canton).

CUPO Advisory Board
The CUPO Advisory Board provides a leadership role for CUPO students. Students meet several times each semester to discuss programming activities for CUPO. They are the student voice in the CUPO program and each semester plan several community building activities for CUPO students as well as giving insight and input into the initiatives and programming the CUPO office initiates.
Student Health & Counseling Center (SHAC)
Counseling Services
A Clarkson University education encompasses more than classroom learning. Challenges and transitions provide opportunities for personal, social, and academic growth and cognitive development. Counseling services are confidential and offered at no additional cost to enrolled students. Counseling and health professionals at Student Health and Counseling collaborate to enhance the well-being and health of Clarkson students. Counseling services focus primarily on mental health concerns and problems such as: adjustment to change, relationships, self-care, communication, career-vocational choice, academic performance, identity development, personal/sexual/social behaviors, habit change, depressed mood, stress and anxiety, loss and grieving, sexual harassment and/or assault, gender identity, self-esteem, loneliness, substance use and/or abuse, and self-defeating behaviors.

Office of Accessibility Services
This is the initial point of contact for students with documented disabilities seeking accommodations or services. The office is responsible for maintaining disability-related documentation, certifying eligibility for receipt of services, determining reasonable accommodations, and ensuring the provision of those services. Students are asked to make contact with the Office of Accessibility Services prior to the beginning of each semester at Clarkson, in order to ensure that accommodations will be available in a timely fashion. The student will meet with the staff of Accessibility Services to review documentation and determine appropriate accommodations. The Office of Accessibility Services will assist the student with faculty and staff notifications requesting appropriate accommodations. Appropriate accommodations will be provided to students who have followed the procedures as developed by the Office of Accessibility Services. Services may include short-term arrangements for students who have become temporarily disabled.

Alcohol and Drug Education
Clarkson’s alcohol and drug educational efforts are focused on two important messages. The first emphasizes the legal obligations of students with regard to the use of alcohol or any other substance. The University’s alcohol and drug policies are stated clearly in the Clarkson Regulations and are guided by law. A civil community is built on respect for others and respect for the law. A second major emphasis is the complicated concept of responsible and moderate use of alcohol. The use of alcohol is interwoven in many everyday settings and activities in our culture. Education and policy at Clarkson are designed to insist on legal and moderate usage among those choosing to drink, and to discourage dangerous or harmful practices involving alcohol or other substances. Campus programming is designed to convey the messages highlighted above. Students who are interested in participating in prevention efforts can contact the counseling staff on the ground floor of the ERC. Students with special concerns or problems with alcohol or drug abuse should also contact Counseling Services at the same location.
Health Services
The University has forged a partnership with Canton-Potsdam Hospital, (CPH) in which CPH provides professional staffing and services at the University’s Student Health Center. Through this partnership, students enjoy a comprehensive health care program and the broad professional capacities provided by the hospital and its highly trained staff. At The Student Health Center (centrally located in the Educational Resources Center) CPH provides clinical services to include basic medical care, preventative care, general physicals for student-related activities and limited urgent care. Most visits to The Student Health Center and many services are free of charge. The Student Health Center is open weekdays from 8 a.m. – 4:30 p.m. during the academic year. After hours care is also available at CPH’s Urgent Care Center (49 Lawrence Ave) or the CPH emergency department (50 Leroy Street) located approximately one mile from campus. In after-hours emergency situations, students are encouraged to contact Campus Safety if they need assistance.

Career Center
The Career Center is a student service that provides links between students, alumni, and employers as they prepare for their post-graduate and hiring goals. Our office provides career development and services that include exploration, professional development, experiential education, and employment opportunities. We utilize an educational placement model that engages students to meet their career-related goals within a global context. Fun Facts:

- 95% of Clarkson graduates that reported are placed in their field of study within 8 months of graduation
- All students have access to KnightLink, a comprehensive online career resource
- Visit our office early to get a jump start on your career search - resume, cover letter, interview and networking advice available in one-on-one or group settings
- Targeted student services by school for a customized experience
- Two on-campus career fairs each year, bringing over 300 employers to campus
- Student professional development through seminar style classes
- Access to employers and alumni through mock interviews, info sessions, hiring events and innovation competitions
- Assists with landing internship, co-op, and full-time career experiences

Career and Job Search Services
Individual career coaching appointments are available through the Career Center to discuss concerns such as career direction and choice, skills identification, employment opportunities, and job search techniques. Staff members are available to help students discern solutions and develop strategies to address career-related concern.

The Center facilitates a wide number of career-oriented workshops for first-year students through graduate-level students, including career exploration groups, resume preparation, interviewing techniques, and job-search techniques. The mock interview program is noted for its success in preparing students for their job interviews. The bi-annual Career Fairs attract hundreds of employers to recruit on campus each year.
Among the many benefits of a Clarkson education is the alumni network. Alumni serve as a critical link to the Center. The Center also reaches out to the community by planning programs with any campus organization or academic program.

The Career Center provides access to internship, co-op, and permanent job opportunities through the following means: campus recruiting programs with business, industry and government; Career Fairs; a Web-based resume database system that enables the Center to provide students’ resumes to employers; a job-listing and networking service on the Internet called CareerShift; and a network of thousands of Clarkson alumni who can be tapped at any time in the students’ years at the University.

Clarkson’s reputation with hundreds of companies across the country, combined with a comprehensive Career Center, has resulted in positive outcomes for the graduates consistently over the years.

**Experiential Education Program: Cooperative Education & Internships**

**Cooperative Education (Co-op) Program**

The Career Center works closely with representatives of business, industry and government to place students in meaningful real-life work environments during the academic year. A Co-op experience provides students the opportunity to apply their academic knowledge and gain valuable experience while positioning them to obtain full-time professional employment upon graduation.

Typically, students participate in the Co-op Program for an academic semester and a summer. Students may choose to co-op from January through August or from May through December. However, the co-op work block timeframe is very flexible and the University makes every effort to match a student’s academic plans with a company’s work schedule. To help prepare students for the co-op experience, the Career Center provides skill-based seminars and workshops. The focus of these programs are on writing resumes, cover letters, practicing job interviews, and teaching students how to conduct a successful job search. A key decision for the student is how to make up coursework missed while in the workplace. Students can choose to attend summer school, use AP credit they have earned, overload coursework during the semester or push back their planned graduation date. Co-op students work closely with their academic advisor, Student Administrative Services representative and the Career Center staff to plan out a successful co-op experience. While away during the semester(s), a co-op student is considered a full-time student and does not pay tuition expenses. All University students are encouraged to consider co-op as a way to enrich their Clarkson education. Co-op positions are located across the country, though most are concentrated in the northeast. While on co-op, students are assigned a direct supervisor, paid a professional salary and are evaluated during their job assignment. Students are also encouraged to communicate with the Career Center while on co-op so that staff may monitor their progress.
**Internship Program**
As part of the professional experience component, the Career Center also offers assistance in identifying and applying for internships. Students from all academic majors can pursue internships during any summer of their undergraduate or graduate program, as well as some unique study/internship programs that are offered during the semesters. Similar to the co-op program, internships are offered throughout the year, along with individual advising. Most internships are paid; in some cases, students receive a stipend and may receive academic credit, and some internships are for credit only.

Internships are available with business and industry across the country; with local, state, and federal government agencies; and with other agencies, non-profits, and educational institutions. Students work closely with the Center and their academic advisors to select an internship that best suits their needs.

**Athletics**  
*Steven Yianoukos ’72, Director of Athletics*

**Recreation and Intramural Activities**  
All students are encouraged to participate in intramural and recreational activities. Clarkson’s location provides students with a wide array of outdoor sporting opportunities including individual and team challenges. Intramural contests include both regular leagues and weekend tournaments. Recreational activities included both outdoor and indoor activities.

**Varsity Sports**  
The Clarkson Golden Knights compete in 20 intercollegiate varsity sports, at the NCAA Division I level in men’s and women’s hockey and with the other 18 at the NCAA Division III/USCSA level.

For more information on Clarkson Athletics, visit  

**Facilities**  
The Henry R. Hodge Sports and Recreation Complex is located on the Potsdam campus, adjacent to the residence halls and easily accessible to all students. Facilities include The Deneka Family Fitness Center, Alumni Gymnasium, Schuler Recreation Building (which houses the Stephenson Field House and the Fuller Pool), the Denny Brown Adirondack Lodge, and the Snell Athletic Fields. Additional facilities include Walker Center, Hantz Turf Field, Bagdad Field, Scott Field, Neugold Field, and the Cheel Campus Center and Arena.

**Campus Safety and Security**
The Office of Campus Safety & Security consists of a team of people working with the campus community to meet the specialized safety and security needs of the University. Responsibilities include the maintenance of public order, vehicle registration, emergency first aid treatment, issuing I.D. cards, room key distribution, educational programs (including crime prevention and fire safety), and other related programs. Campus Safety & Security officers are responsible for the enforcement of the rules and regulations of the University. The Dean of Students staff is responsible for overseeing the judicial process. Officers do not have police jurisdiction over public streets, public property, or private property. Arrests and apprehension are referred to the Village Police. Statistics concerning campus safety and campus crime are available upon request from the Office of Campus Safety & Security or can be accessed at http://www.clarkson.edu/campus-safety. The department’s ability to function as an independent agency enables it to preserve the tradition of Clarkson in which security, safety, and adherence to the Code of Student Conduct are both an individual responsibility and a collective behavior. In emergencies, Village Police are called as first-line, back-up support, along with appropriate University officials and the University Emergency Response Team.

Clarkson Alumni Association

The Clarkson Alumni Association was organized on Founder’s Day, November 30, 1904, and has existed since that time to benefit both the University and its alumni. The administration of the Association is vested in the Clarkson Alumni Association Leadership Board in partnership with the Alumni Office. The mission of the Clarkson Alumni Association is to engage and empower alumni as partners in the Clarkson community, nurturing their pride in their alma mater and promoting the interests of Clarkson University and its alumni. Alumni are actively involved identifying and recruiting quality high school students, and assisting the Career Center in providing career opportunities for our graduates. Alumni are also involved in supporting fund-raising efforts, mentoring undergraduates, serving as speakers on campus, serving on advisory councils, and providing opportunities to learn the value of being engaged alum. There is an extensive regional Clarkson alumni chapter program for alumni once they leave the University. Regional volunteers in numerous cities throughout the United States host alumni activities.

Clarkson alumni stay in contact with friends and the University through various social networks including CU Online, the community for staying connected.
International Center
The International Center is a centralized office that consists of three operations: Study & Work Abroad, International Partner Relations, and International Student & Scholar Services.

Study Abroad Program
Study Abroad provides an excellent opportunity for students to enhance their academic background and prepare for the global marketplace through exposure to another educational system and culture. The primary program open to all students offered by the International Center is the Student Exchange Program. The program is designed for students to spend a semester or a year abroad usually during their junior year. Students go through a competitive application process during the sophomore year to be considered for the program. Clarkson University has articulated exchange agreements with over 50 colleges and universities in 27 countries. Please see the Clarkson International Center website for a listing of Clarkson’s Exchange Partners by Country.

In addition to the semester or year-long exchange opportunities, Clarkson offers students the option to participate in short-term summer programs or faculty led trips. The short-term summer programs are 2-3 weeks in duration and are ideal for those students who do not wish to be gone for a full semester or year. Faculty led trips usually occur immediately following the spring semester. The Clarkson School of Business has a requirement for students to study abroad and has created the Global Business Program that along with the Student Exchange opportunities offers students more options to meet this requirement. For more information about the Global Business Program in the School of Business visit http://www.clarkson.edu/business/GBP/

Financial Policies and Exchange
Exchange Programs: Students who participate in the Study Abroad/Exchange Program through Clarkson must attend one of our exchange partner universities in order to receive financial aid. During the exchange semester(s) students pay their tuition to Clarkson; there is no tuition paid to the exchange university. Room, board, and other fees are paid directly to the exchange university by the student. The financial assistance package is applied to the participant’s account as if that student were attending Clarkson University. Any credit balance may be requested through the Director of Financial Aid in SAS after tuition is applied and all required financial aid documentation (i.e. loan promissory notes, signed summary, etc.) are processed. This credit can be used toward the room, board, and other fees at the exchange partner university. It is an important step in the application process for the student to consult with the Director of Financial Aid in order to understand how their financial assistance package will be applied to the study abroad/exchange experience.

Non-exchange Programs: Should a student decide to attend a non-exchange university, he or she must take a leave of absence from Clarkson for the semester involved. The student should work with the International Center for approval of these non-exchange programs. No tuition is aid to Clarkson and financial assistance may not be utilized.
**Academic Policies and Exchange**

*Exchange Programs:* All courses must be pre-approved through completion of Off-Campus Coursework Permission Forms prior to leaving campus. All credit is transferred back to Clarkson for those courses that students complete satisfactorily. Course credit will be transferred as transfer credit on a pass/fail system. It should be noted that credit hour and grading system differ from country to country and school to school. Participants should request to have their grades sent to the International Center at Clarkson prior to leaving their exchange program. It may take several weeks after a student returns to receive these grades.

*Non-exchange Programs:* The student is responsible for assuring that the courses to be taken through the non-exchange program have been pre-approved by the faculty at Clarkson using the Off-Campus Coursework Permission Forms. The International Center will assist these students with any questions regarding passports, visas, and travel, but non-exchange students will not be included in the official study abroad rosters. Course credit will be transferred as transfer credit on a pass/fail system.

**Work Abroad**

Imagine working for an organization or company abroad, and learning what it is like to work in another culture. You will increase your marketability and be better prepared for the global workplace upon graduation. Students interested in an internship abroad can work with the International Center staff to identify the opportunities available across the globe. Some of these jobs are paid and some are for academic credit.

If you plan to study abroad, many of our partner universities will allow you to apply for internships that would follow your study semester. There are also other opportunities that can be identified through the links on the following website: [https://internal.clarkson.edu/internationalcenter/outgoing/work/index.html](https://internal.clarkson.edu/internationalcenter/outgoing/work/index.html)

**International Student & Scholar Services**

This part of the International Center informs and educates the international population as well as the University community on immigration regulations that govern international students, scholars and the University. The ISSS also coordinates services and benefits available to the international population and facilitates international cultural events within the Clarkson community.

**INFORMATION TECHNOLOGY**

*Joshua Fiske, Chief Information Officer, jfiske@clarkson.edu, 315-268-6718*

Clarkson University is wholly committed to providing high-quality computer resources, services and support to meet the diverse needs of its students and faculty. The mission of the Office of Information Technology (OIT) is to provide access to teaching, learning, research, administrative
and communication technologies through a commitment to excellence in customer support and technical leadership in fulfillment of the institutional mission. This involves leveraging the University’s corporate partnerships to provide high-performance hardware and software, while employing a distributed user support structure. As a result, Clarkson students receive access to up-to-date technology, backed by direct assistance from easily accessible and highly skilled OIT support staff.

Access to campus IT resources is provided by a high-speed, fiber-optic network “backbone” connecting University classrooms, laboratories, on-campus housing, and faculty offices. Students are able to connect to this network via high-speed wired and wireless connections in buildings across campus. The campus network is connected to the Internet via several multi-gigabit connections.

All students have access to a broad range of computing and information technology resources, including: high-tech, multimedia classrooms and collaborative spaces; email; web conferencing; digital publishing; online teaching and learning; and campus computer labs equipped with the latest software.

OIT supports Clarkson’s commitment to integrating technology into the classroom through its instructional technology operation. Instructional Technology supports both students and faculty by providing and maintaining software, equipment and facilities for the production, dissemination, and utilization of learning resource materials.

**Student Personal Computers**

Information technology is such an integral part of today’s marketplace, it is strongly recommended that every Clarkson student have an appropriate personal computer. High-speed network access is available for all students residing on campus. In addition, students can also access the network at any one of the numerous computer labs found in the academic buildings.

**UNIVERSITY LIBRARIES**

*Michelle L. Young, Director of Libraries/Assoc Professor, myoung@clarkson.edu, 315-268-4268*

The University Libraries supports Clarkson University’s mission by promoting academic excellence through the implementation of programs, policies, and strategies geared towards the innovative vision of libraries in the 21st century in support of teaching and research. To achieve
excellence, we provide high-level information literacy instruction, reference and research assistance, and run a robust access services model allowing our clientele to access resources both inside and outside of our collection. The Harriet Call Burnap Memorial Library is the main library located on the Potsdam hill campus in the Educational Resources Center (ERC). Its collection is comprised of materials in various formats including journals, books, audio visual materials, government documents and reports, Clarkson University dissertations, and archival materials. The Health Science Library is the University Libraries’ branch library and is located in the Center for Health Sciences (Clarkson Hall) on the downtown Potsdam campus. This unique collection serves the University’s allied health programs as well as the local health industry.
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NIMS, Wesley
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Instructor of Communication and Media/  
Director of the Writing Center  

KAUFFMAN, Brett  
BS State University of New York at Buffalo  

KELLY, Gary  
Adjunct Instructor  
Honors Program  

MARTIN, Christopher  
BS, Clarkson University  
MS, SUNY Potsdam  
Instructor of Mathematics  

MORRISON, Sara  
BS, St. Lawrence University  
MS, University of Vermont  
Instructor of Mathematics  

OLSEN, William  
Instructor of Civil & Environmental Engineering  

PIERCE, Duane  
Instructor  
School of Engineering  

RICE, Dale  
Adjunct Instructor of Consumer & Organizational Studies  
David D. Reh School of Business  

RILEY, Charles  
Adjunct Instructor  
Beacon Institute  

SEKELJ, Gasper  
BS, M.B.A., Clarkson University  
Instructor of Economics and Financial Studies  

SHATTUCK, Heather  
BS, D'Youville College  
MS, D'Youville College  
Clinical Instructor of Physical Therapy  

SHERMAN, Jesse
BS, MS, Clarkson University
Instructor of Economics & Financial Studies

SIMON, Judith
Instructor of ESL

SMITH, Brad
B.A., SUNY Potsdam
M.A., SUNY Potsdam
Instructor of Mathematics

SMITH, Robert
BS Brooklyn College
MS C.W. Post College
Adjunct Professor of Healthcare Management

STRANG, Carl
BA Union College
MS Suny Albany
Participating Professor of Operations and Information Systems

SZARKA, Andrew
Adjunct Instructor
Humanities & Social Sciences

TIGHE, Michael
Assistant Instructor of Biology

TITUS, Leo
Adjunct Instructor of Civil and Environmental Engineering

TIRION, Monique
Adjunct Research Associate Professor

WELLS, David John
BS, MS Clarkson University Ph.D, Clarson University
PE Wyoming (active)
Dean Emeritus – SUNY Canton
Adjunct Professor, MAE Department

WIGGINS, Arderrick
Instructor of Military Science

WULTSCH, Elisabeth
Instructor of School of Engineering
POLICIES

Non-Discrimination Policy
Clarkson University does not discriminate on the basis of race, color, religion, sexual orientation, gender identity, gender expression, national or ethnic origin, age, disability, veteran status, predisposing genetic characteristics, domestic violence victim status, marital status, parental status, ancestry, source of income, or other classes protected by law in provision of educational opportunity, or employment opportunities. Clarkson University does not discriminate on the basis of sex or disability in its educational programs and activities, pursuant to the requirements of Title IX of the Educational Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973, and the American Disabilities Act of 1990 respectively. This policy extends to both employment by and admission to the University.

Inquiries concerning Section 504, and the Americans with Disabilities Act of 1990, should be directed to ADA504@clarkson.edu.

Inquiries concerning Title IX, should be directed to the Title IX Coordinator, Room 168 Snell Hall, Clarkson University, Box 5750, Potsdam, NY 13699-5750; or telephone 315-268-4208.

Inquiries concerning the Age Discrimination Act, or other discrimination concerns should be directed to the Human Resources Office/Affirmative Action Office at (315) 268-6497, Room 104 Graham Hall, Clarkson University, Box 5542, Potsdam, NY 13699-5542 and/or the Title IX Coordinator, Room 168 Snell Hall, Clarkson University, Box 5750, Potsdam, NY 13699-5750; or telephone 315-268-4208.

Information on the processing of grievances and charges relating to the above policies can be obtained from the Human Resources Office/Affirmative Action Office.

Clarkson University is making a special effort to identify for employment opportunities and participating in its educational programs a broad spectrum of candidates, including women, minorities, and people with disabilities.

Student Complaint Process (HEOA)
In compliance with the Higher Education Opportunity Act of 2008 and the state complaint processes as prescribed for under 34 CFR 600.9, the following resources are provided: Filing a Grievance with NY State New York State Education Department Office of College and University Evaluation EBA Room 969
89 Washington Avenue
Albany, New York 12234
Filing a Grievance with Appropriate State Education Departments/Agencies/Officials - All States

Campus Crime Statistics
The Advisory Committee on Campus Safety will provide upon request all campus crime statistics as reported to the United States Department of Education. Contact the Director of Campus Safety & Security, 315-268-6666, or visit www.clarkson.edu/campussafety

Protection of Privacy
Clarkson University abides by the provisions of the Family Educational Rights and Privacy Act of 1974 (Buckley Amendment). The University will release or withhold information under these provisions, which are published annually in the Clarkson Regulations.

Nonimmigrant Alien Students
Clarkson is authorized under federal law to enroll nonimmigrant alien students.

Student Regulations
Each student is responsible for knowing the contents of the Clarkson Regulations. The regulations contain information on registration, class absences, the grading system, scholastic requirements, the method for removing course deficiencies, special examinations, and the code of conduct, campus policies, and other information regarding University operations. For a link to the Clarkson student regulations, please visit: https://www.clarkson.edu/student-administrative-services-sas/clarkson-regulations
## ACADEMIC CALENDARS

### Semester Programs

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<th>Fall Semester Events</th>
<th>2018-2019</th>
<th>2019-2020</th>
<th>2020-2021</th>
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<tr>
<td><strong>Graduate Residential Business Program</strong></td>
<td><strong>Fall 2018</strong></td>
<td><strong>Fall 2019</strong></td>
<td><strong>Fall 2020</strong></td>
</tr>
<tr>
<td>Classes Begin</td>
<td>20 Aug M</td>
<td>26 Aug M</td>
<td>24 Aug M</td>
</tr>
<tr>
<td><strong>New Transfer Student Check-in</strong></td>
<td>23 Aug TH</td>
<td>29 Aug TH</td>
<td>27 Aug TH</td>
</tr>
<tr>
<td><strong>New First Year Student Check-In</strong></td>
<td>24 Aug F</td>
<td>30 Aug F</td>
<td>28 Aug F</td>
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<tr>
<td><strong>Returning Student Check-In</strong></td>
<td>26 Aug SU</td>
<td>1 Sep SU</td>
<td>30 Aug SU</td>
</tr>
<tr>
<td>Classes Begin</td>
<td>27 Aug M</td>
<td>2 Sep M</td>
<td>31 Aug M</td>
</tr>
<tr>
<td><strong>Fall Recess Begins</strong>*</td>
<td>5 Oct F</td>
<td>11 Oct F</td>
<td>9 Oct F</td>
</tr>
<tr>
<td>Classes Resume</td>
<td>10 Oct W</td>
<td>16 Oct W</td>
<td>14 Oct W</td>
</tr>
<tr>
<td><strong>Family Weekend Begins</strong></td>
<td>19 Oct F</td>
<td>18 Oct F</td>
<td>TBD</td>
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<tr>
<td><strong>Midterm Grades Due at Noon</strong></td>
<td>24 Oct W</td>
<td>30 Oct W</td>
<td>28 Oct W</td>
</tr>
<tr>
<td><strong>Enrollment For Spring Classes Begin</strong></td>
<td>7 Nov W</td>
<td>13 Nov W</td>
<td>11 Nov W</td>
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<tr>
<td><strong>Thanksgiving Recess Begins</strong>*</td>
<td>20 Nov TU</td>
<td>26 Nov TU</td>
<td>24 Nov TU</td>
</tr>
<tr>
<td>Classes Resume</td>
<td>26 Nov M</td>
<td>2 Dec M</td>
<td>30 Nov M</td>
</tr>
<tr>
<td><strong>Last Day of Class</strong></td>
<td>7 Dec F</td>
<td>13 Dec F</td>
<td>11 Dec M</td>
</tr>
<tr>
<td><strong>Exams Begin</strong></td>
<td>10 Dec M</td>
<td>16 Dec M</td>
<td>14 Dec M</td>
</tr>
<tr>
<td><strong>Exams End</strong></td>
<td>14 Dec F</td>
<td>20 Dec F</td>
<td>18 Dec F</td>
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<tr>
<td><strong>December Graduates Recognition Ceremony</strong></td>
<td>15 Dec SA</td>
<td>14 Dec SA</td>
<td>TBD</td>
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<tr>
<td><strong>Final Grades Due at Noon</strong></td>
<td>17 Dec M</td>
<td>23 Dec M</td>
<td>21 Dec M</td>
</tr>
<tr>
<td>Spring Semester Events</td>
<td>Spring 2019</td>
<td>Spring 2020</td>
<td>Spring 2021</td>
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</tr>
<tr>
<td>Graduate Residential MBA and Graduate Health Science Classes Begin</td>
<td>7 Jan M</td>
<td>13 Jan M</td>
<td>11 Jan M</td>
</tr>
<tr>
<td>New Student Check-In</td>
<td>8 Jan TU</td>
<td>12 Jan TU</td>
<td>12 Jan TU</td>
</tr>
<tr>
<td>Returning Student Check-In</td>
<td>9 Jan W</td>
<td>13 Jan W</td>
<td>13 Jan W</td>
</tr>
<tr>
<td>Classes Begin</td>
<td>10 Jan TH</td>
<td>16 Jan TH</td>
<td>14 Jan TH</td>
</tr>
<tr>
<td>February Break Begins*</td>
<td>20 Feb W</td>
<td>19 Feb W</td>
<td>17 Feb W</td>
</tr>
<tr>
<td>Classes Resume</td>
<td>25 Feb M</td>
<td>24 Feb M</td>
<td>22 Feb M</td>
</tr>
<tr>
<td>Graduate Residential Business Program Spring Recess Begins*</td>
<td>8 Mar F</td>
<td>13 Mar F</td>
<td>TBD</td>
</tr>
<tr>
<td>Spring Recess Begins*</td>
<td>15 Mar F</td>
<td>23 Mar F</td>
<td>12 Mar F</td>
</tr>
<tr>
<td>Midterm Grades Due to SAS — Noon</td>
<td>11 Mar M</td>
<td>23 Mar M</td>
<td>22 Mar M</td>
</tr>
<tr>
<td>All Classes Resume</td>
<td>25 Mar M</td>
<td>25 Mar M</td>
<td>22 Mar M</td>
</tr>
<tr>
<td>Enrollment For Fall Classes Begin</td>
<td>3 Apr W</td>
<td>8 Apr W</td>
<td>7 Apr W</td>
</tr>
<tr>
<td>Last Day of Class</td>
<td>26 Apr F</td>
<td>1 May F</td>
<td>30 Apr F</td>
</tr>
<tr>
<td>Reading Days</td>
<td>29-30 Apr M, TU</td>
<td>4-5 May M, TU</td>
<td>3-4 May M, TU</td>
</tr>
<tr>
<td>Exams Begin</td>
<td>1 May W</td>
<td>6 May W</td>
<td>5 May W</td>
</tr>
<tr>
<td>Exams End</td>
<td>7 May TU</td>
<td>12 May TU</td>
<td>11 May TU</td>
</tr>
<tr>
<td>Final Grades Due at Noon</td>
<td>10 May F</td>
<td>15 May F</td>
<td>14 May F</td>
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<tr>
<td>Graduate Commencement Ceremony</td>
<td>9 May TH</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Undergraduate Commencement Ceremony</td>
<td>11 May SA</td>
<td>16 May SA</td>
<td>15 May SA</td>
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<td>Summer 2019</td>
<td>Summer 2020</td>
<td>Summer 2021</td>
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</tr>
<tr>
<td>Summer 15 Week</td>
<td>13 May M</td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td>Trimester Session</td>
<td></td>
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<tr>
<td>Begins</td>
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<tr>
<td>Summer 10 Week</td>
<td>20 May M</td>
<td>25 May M</td>
<td>24 May M</td>
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<tr>
<td>Session Begins</td>
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</tr>
<tr>
<td>Session 1 Begins</td>
<td>20 May M</td>
<td>25 May M</td>
<td>24 May M</td>
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<tr>
<td>Summer MAT Session</td>
<td>24 Jun M</td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td>Begins</td>
<td></td>
<td></td>
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<tr>
<td>Session 1 Ends</td>
<td>22 Jun SA</td>
<td>27 Jun SA</td>
<td>26 Jun SA</td>
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<tr>
<td>Session 2 Begins</td>
<td>1 Jul M</td>
<td>6 Jul M</td>
<td>5 Jul M</td>
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<tr>
<td>Session 2 Ends</td>
<td>3 Aug SA</td>
<td>8 Aug SA</td>
<td>7 Aug SA</td>
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<tr>
<td>Summer 10 Week</td>
<td>3 Aug SA</td>
<td>8 Aug SA</td>
<td>7 Aug SA</td>
</tr>
<tr>
<td>Session Ends</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Summer MAT Session</td>
<td>3 Aug SA</td>
<td>8 Aug SA</td>
<td>7 Aug SA</td>
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<tr>
<td>Ends</td>
<td></td>
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</tr>
<tr>
<td>Summer 15 Week Trimester Session Ends</td>
<td>30 Aug F</td>
<td>TBD</td>
<td>TBD</td>
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<tr>
<td>Alumni Reunion Dates</td>
<td>7/11-7/14</td>
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LIST OF DEGREE PROGRAMS & HEGIS CODES

The number following the degree program is the Higher Education General Information Survey (HEGIS) code for classifying academic areas designated by the New York State Education Department. Enrollment in other than registered or otherwise approved programs may jeopardize a student’s eligibility for certain student aid awards.

Undergraduate Degree Programs

David D. Reh School of Business
Bachelor of Science
Business Intelligence and Data Analytics 0599
Engineering and Management 4904
Financial Information and Analysis 0504
Global Supply Chain Management 0509
Innovation and Entrepreneurship 0506

History 2205
Humanities 1501
Interdisciplinary Liberal Studies 4901
Interdisciplinary Social Sciences 2201
Physics 1902
Political Science 2207
Psychology 2001

Wallace H. Coulter School of Engineering
Bachelor of Science
Aeronautical Engineering 0902
Chemical Engineering 0906
Civil Engineering 0908
Computer Engineering 0999
Electrical Engineering 0909
Environmental Engineering 0922
Mechanical Engineering 0910

Institute for a Sustainable Environment
Bachelor of Science
Environmental Science and Policy 0420
Environmental Health Science 0426

Interdisciplinary
Bachelor of Science
Mathematical Economics 2204
Software Engineering 0999
(See ISE for additional Programs)

School of Arts and Sciences
Bachelor of Science
American Studies 0313
Applied Mathematics and Statistics 1703
Biology 0401
Biomolecular Science 0499
Chemistry 1905
Communication 0601
Computer Science 0701
Data Science 1703
Digital Arts and Sciences 0605

Bachelor of Professional Studies
Individually Designed Program 4999