

WELCOME students who enjoy mathematics and sciences and are looking to engineering as a possible career choice. The Department of Civil Engineering at Ryerson University offers a Bachelor of Engineering (B.Eng.) degree in Civil Engineering with a Geomatics Engineering option to Canadian and international students. Our program has been accredited by the Canadian Engineering Accreditation Board. After completing the first two years of the regular civil engineering stream, students can elect to enter the Geomatics Engineering option. The curriculum is unique in Ontario and provides a solid background in civil engineering subjects with a specialization in Geomatics.

WHAT IS GEOMATICS?

GEOMATICS is the science and technology of acquiring, processing, analyzing, integrating, managing, and applying geospatial information. Geomatics is one of North America's fastest growing information technology sectors, and it is vital to both economic growth and environmental protection.

GEOMATICS ENGINEERS work on cutting edge developments in the areas such as:

- Satellite positioning and geodesy
- Photogrammetry and digital mapping
- Remote sensing and image analysis
- Spatial information systems and GIS
- Land surveying and information management

GLOBAL POSITIONING SYSTEM

GLOBAL POSITIONING SYSTEM (GPS) provides the ability to precisely pinpoint objects' locations on the earth and navigate over its surface anywhere and anytime under all weather conditions. Geomatics students work with satellite positioning data acquired from land-borne, sea-borne, and airborne receivers for high-precision point positioning and vehicle navigation as well as various engineering applications.

PHOTOGRAMMETRY

PHOTOGRAMMETRY is the technology of obtaining reliable measurements, digital elevation models, orthophotos, topographic maps and other image products primarily from close-range and aerial photography. Geomatics students work with high-resolution digital cameras and scanners to acquire digital images and process them on softcopy photogrammetric workstations.



REMOTE SENSING

REMOTE SENSING data can tell you the location of objects in a scene as well as the geometry of the scene itself. Geomatics students work with data from a wide array of terrestrial, airborne, and spaceborne imaging systems ranging from digital cameras and multi-spectral scanners, to radiometers, radar, and lasers. Students learn how to interpret image data leading to the creation of new digital maps and databases for environmental planning, resource inventory, and engineering projects.

GEOSPATIAL INFORMATION SYSTEMS

GEOSPATIAL INFORMATION SYSTEMS (GIS) allow you to work with, interrelate, and analyze virtually all forms of spatial data. A GIS synthesizes computer mapping and automated cartography, spatial analysis, data modeling and database management into a coherent unit. GIS enables the combining (overlay) and analysis of various spatially-based data sets for use in many decision-making processes that benefit from the ability to visualize data and information in different ways. Students are trained in employing off-the-shelf GIS systems and developing new software tools for management, analysis and visualization of spatial data. GIS is an expanding technology, and people with this expertise are in high demand.



CAREERS WITH A FUTURE

GEOMATICS has evolved into one of the fastest growing and most widely adopted technologies over the last decade. Geospatial information is increasingly becoming the driving force for decision-making across local to global continuums. Tasks as varied as planning urban growth, managing a forest, implementing precision farming, assessing insurance claims, locating automatic teller machine, routing 911 vehicles, drilling a well, assessing groundwater contamination, designing a cellular phone network, and guiding intelligent vehicles are feasible with GIS. In addition, GIS can be used for assessing the market for manufactured goods, managing a city, operating a utility, improving wildlife habitat, monitoring air quality, assessing environmental impact, designing a road, studying human health statistics, minimizing water pollution, undertaking real estate transactions, preserving wetlands, mapping natural hazards and disasters, providing famine relief, or studying the causes and consequences of global climate change. Students become pioneers, builders, and specialists in geospatial information collection and management as a result of their training in such fields as satellite positioning, photogrammetry, remote sensing, and GIS.

GRADUATES of Geomatics Engineering at Ryerson University have a very successful employment rate, securing positions both nationally and internationally. A rough survey indicates that Geomatics graduates command starting salaries of over \$40,000 per year.

RYERSON'S Geomatics Engineering program provides the academic qualifications required for applying to become an Ontario Professional Engineer, a commissioned Ontario Land Surveyor and Ontario Land Information Professional.



GRADUATE STUDIES

RYERSON UNIVERSITY offers a graduate program leading to degrees of Master of Applied Science (M.A.Sc.), Master of Engineering (M.Eng.), and Doctor of Philosophy (Ph.D.) in Civil Engineering in such research fields as Transportation and Environmental Studies with many integrated research topics in Geomatics. The availability of many graduate Geomatics courses enhances the multidisciplinary nature of our programs. A number of highly qualified graduate students are working on research projects in diversified areas. Both full-time and part-time programs are offered at the master's level in order to respond to the diverse needs of our students. Most graduate students are supported by the professors, with the majority involved in government or industry-funded research projects. There is a high demand for well-qualified graduates in satellite positioning, photogrammetry, remote sensing, and GIS in both national and international job markets.

RESEARCH OPPORTUNITIES

PROFESSORS in Geomatics Engineering have attracted over one million dollars of research funding from government and industry sources. For this reason, there are opportunities for undergraduate students to secure summer research positions in the Department and with industry.

STUDENT LIFE

CLASS SIZES for Geomatics Engineering do not exceed 30 students, and there is a close relationship between students and faculty members. Courses challenge Geomatics students — working individually and in groups — to master skills in effective problem solving, data collection, computer processing, and multi-media communication.

ENTRANCE REQUIREMENTS & FINANCIAL AID

FOR APPLICANTS within Canada, a solid background in Grade 12 mathematics (advanced mathematics desirable), physics, chemistry, and English is required. Under suitable conditions, relevant course credits may be transferred from community college programs.

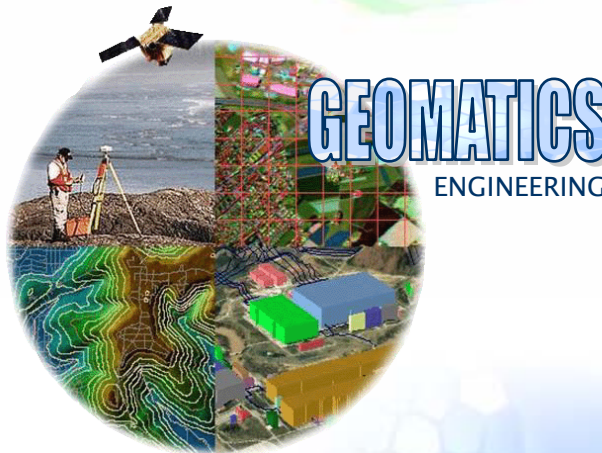
IN ADDITION to student loans and bursaries, several awards and scholarships are awarded to qualified and deserving candidates every year. Information and application forms for scholarships, loans, and bursaries are also available on the Web at www.ryerson.ca/awards.

FOR MORE INFORMATION**VISIT OUR WEBSITE:**

<http://www.geomaticseng.ryerson.ca>

GEOMATICS COORDINATOR

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Geomatics Engineering Option

