In order to better understand the geographical world around us and the effect we may be having on it and on us, we need to fully understand it. To help us in this study, we need to gather, analyze, interpret and use geographical information. Geomatics provides the tools we need for this search, including geographic information systems (GIS), remote sensing, cartography and measurement technologies such as the global positioning system.

Geomatics is a rapidly growing field worldwide, and Canada is a significant player in geomatics research, education and application. Geographic technology has been identified (along with nanotechnology and biotechnology) as one of the most important emerging fields in worldwide labour markets. Companies, governments and non-governmental organizations need staff that have both technical skills and understanding of the underlying geographic concepts.

You can join us to learn how we use and develop tools to explore biophysical processes and environmental change; socio-economic, cultural-political and historical factors that influence human actions; and the activities and patterns of societies across the globe. You will investigate these areas using the latest technological advances in map design and interpretation, geographic information systems and remote sensing.

The Carleton advantage
During your studies in Geomatics at Carleton, you will develop a combination of skills that will make you highly employable. This program will enable you to analyze problems thoroughly, to effectively acquire and manipulate digital data, to tackle issues of varying complexity, to work productively in teams, and to communicate professionally.

The Geomatics program at Carleton is made possible by a diverse range of geomatics expertise in our professors. We have extensive expertise in areas such as custom application development, spatial analysis, software and data interchange, image acquisition and analysis, and evolving cartographic techniques. We use commercial and open-source software tools, emphasizing understanding of how the software works “under the hood,” so that students are prepared for a wide range of workplace scenarios.

We apply this geomatics experience to a diverse range of applications in geography and environmental studies, including the physical geography fields of resource and environmental assessment, soil science, climatology, hydrology and biogeography; the human geography fields of globalization, geopolitics, gender issues, and economic, historical and cultural geography; and the development of methods for spatial and temporal data analysis using GIS, remote sensing and computer cartography.

Hands-on learning
Our interest in your future has led us to build practical learning experiences into our programs. Geomatics is no exception—Honours students have opportunities to learn in a workplace environment through our practicum courses. In your fourth year, you can gain valuable experience by working one day per week in:

- private industry (all geomatics related subfields);
- government departments, such as the Canada Centre for Remote Sensing, Agriculture and Agri-Food Canada, Natural Resources Canada, Environment Canada and National Defence.

Extensive learning and research facilities
You will have access to the latest in teaching laboratories at Carleton, including two geomatics laboratories. In addition, the Carleton University Library houses extensive resource materials, including a collection of over 166,000 digital and paper maps.

The capital advantage
Ottawa is rich in study resources such as the Canada Centre for Remote Sensing, Statistics Canada and other federal government departments. Ottawa’s extensive research and information technology activities also provide exciting opportunities.

Choosing the right program
Bachelor of Arts (Honours) in Geomatics
Through the use of geographic information systems (GIS), cartography, remote sensing and image analysis, and quantitative techniques, Geomatics offers a powerful and versatile toolset. Geomatics applications include the analysis of a wide range of problems involving environmental and resource planning, land cover and vegetation mapping, market analysis, hazard mapping and education.
Bachelor of Science (Honours) in Geography with a Concentration in Geomatics

In the Geomatics concentration, you will gain a similar skill set as the Bachelor of Arts Geomatics students, but will concentrate on application development and areas of interest in the physical or information sciences.

Minor in Geomatics

Students in other Honours programs can pursue a minor in Geomatics to complement their degree. Recent Geomatics course and thesis projects offered at Carleton include:

- geomatics in education;
- landscape fragmentation impacts on forest ice-storm damage;
- network modelling and analysis;
- development of biodiversity statistical methods for GIS; and
- web-mapping data portals.

Honours field camp and research project

As a Geomatics student, you will gain valuable field experience by participating in the Honours field course in third year. You will also have the opportunity to develop a research project in your area of interest. The fourth-year Honours research project allows you to work closely with a faculty supervisor, developing an area of independent research. You will graduate with a defined area of expertise, as well as valuable research experience.

Your first-year experience

First-year Seminars

BA students are strongly encouraged to include a First-year Seminar (FYSM) in their first-year course load. Our First-year Seminars will get you away from the lecture hall and give you the chance, in a small class of no more than 30 students, to discuss and debate topics with your classmates and your professors. You will also get early and frequent feedback on class assignments and instruction in research, writing and study skills. Although some FYSMs count as courses leading to a major, you do not have to choose a FYSM in your major discipline. Currently, there are two First-year Seminars in Geography: It’s Your Environment (FYSM 1100) and Location is Everything (FYSM 1101).

A sample first year

- 0.5 credit in Global Environmental Systems (GEOG 1010)
- 0.5 credit in People, Places and Environments (GEOG 1020)
- 0.5 credit in Introduction to Geomatics (GEOM 2004)
- 2.0 credits in courses outside Geography and Geomatics
- 1.0 credit in any First-year Seminar

Following first year, Geomatics courses become more prominent in your course load.

Future opportunities

The workplace

In Geomatics, you will have a strong theory and application base that makes a range of career possibilities available to you. Here are some positions that have been secured by our recent graduates:

- geographic information system analyst;
- land use planner;
- environmental scientist or consultant;
- cartographer; and
- web map developer.

The power of geomatics to address challenges related to space and place has led a growing number of businesses and organizations to hire geographers who have this expertise.

Graduate studies

Graduates of any of our Honours programs in Geography may also be eligible to go on to graduate studies in a variety of fields. The following is a list of some recent graduate research topics:

- predicting vegetation distribution and productivity in a changing climate;
- development of visualization and web-based cartography; and
- mapping species-at-risk habitat.

If you are considering an advanced degree, you are encouraged to investigate graduate programs early in order to ensure that your Geomatics program meets the relevant graduate-level requirements.

Matthew Leveille, BA/07 in Geographic Information Processing

Studying at Carleton has been an incredible experience. My first year was a crucial one. I made lots of friends and I met amazing faculty in the Geography department. I took many different Geography courses in my first year but the ones that stood out the most were those in the Geomatics program. I changed my major in my second year and spent the next four year studying Geomatics. My professors made Geomatics interesting. It was actually a joy to wake up in the morning and to come to campus because I was finally learning something that I truly enjoyed. My advice to those who are choosing their future at Carleton is to consider Geography. The department does not treat you like a student, they treat you like family.

FAQs

1. Why would I choose an Honours program?

Honours or four year programs have many advantages including offering more courses in your chosen field and access to co-op and internship opportunities where available, as well as preparing you for graduate studies, professional programs and employment.

2. When do I have to declare a major?

You will need to choose a major by the end of your first year. Course registration is generally easier for students who have declared a major, so even if you are not 100 per cent certain, it is best to choose a major upfront and change it later if you need to.

3. Where can I go for academic advice?

If you are considering an advanced degree, you are encouraged to investigate graduate programs early in order to ensure that your Geomatics program meets the relevant graduate-level requirements.

Admission requirements

For admission to the Bachelor of Arts in Geomatics, you must have the Ontario Secondary School Diploma (OSSD) or equivalent, including a minimum of six 4U/M courses. Your six 4 U/M courses must include 4U English (or Anglais).

For admission to the Bachelor of Science in Geography with a concentration in Geomatics, you must have the Ontario Secondary School Diploma (OSSD) or equivalent, including a minimum of six 4 U/M courses. Your six 4 U/M courses must include Advanced Functions and Calculus and Vectors, and two of Biology, Chemistry, Earth and Space Science, or Physics.

It is Carleton University policy to consider your best performance in any eligible course in the admissions assessment.

Since the number of qualified applicants may be greater than the number of available spaces, cut-off averages and required marks may vary. Please refer to our website at admissions.carleton.ca/requirements for the current admission requirements.

For more information

...about Carleton’s Geomatics programs, please visit our website at carleton.ca/geography/geomatics or consult the Carleton University Undergraduate Calendar at carleton.ca/cuuc.

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