

# GEOGRAPHY AND PLANNING

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## Programs of Study

The Department of Geography and Planning offers graduate training leading to the degrees of Master of Arts, Master of Science, Master of Urban and Regional Planning and Doctor of Philosophy.

### Master of Urban and Regional Planning

Information on the M.PL. program may be found in the School of Graduate Studies Calendar under Urban and Regional Planning. (<https://www.queensu.ca/academic-calendar/graduate-studies/programs-study/urban-regional-planning/>)

## Admission Requirements

### Doctor of Philosophy

Admission to this program is based upon the completion of a Master's degree or its equivalent at a superior level at a recognized university.

### Master of Arts and Master of Science

Admission to these programs is based upon the completion of an Honours Bachelor's degree or equivalent, with minimum high second-class standing (B+ letter grade, 3.3 GPA).

## Financial Assistance

Financial assistance is available in the form of teaching assistantships for undergraduate courses. Duties include demonstrating and instruction in laboratories, tutorials, and seminars. In addition, graduate students may receive Queen's Graduate Awards as supplemental financial support. Employment and research fellowships may also be available on a part-time basis on various research projects. Geography and Planning graduate students are nominated annually for internal fellowships for which they may be eligible.

## Fields of Research

Studies at the Master's and Doctoral level are offered in the following areas:

### Human Geography

The broad emphasis in the field of Human Geography is on exploring the evolution of a multitude of human systems. The focus is on the interactions and linkages between systems that operate at different scales, ranging from local (work, place, bodies, gender, health and healthcare, urban areas) and increasing through regional and national scales (citizenship, justice, governance, postcolonialism, indigenous peoples) to global systems (globalization, development,

economies, sustainability). Unifying themes include identity and place.

The broad emphasis in the area of Urban and Regional Planning is on the planning and development of cities and regions, and the relation between development and public policy concerns. Research in urban and regional planning seeks to integrate the latest knowledge related to environment and society with real-world planning challenges. Areas of focus include health and social planning, environmental services, and land use and real estate planning.

### Earth System Science

The broad emphasis in the field of Earth System Science is on developing an integrative understanding of the Earth as a physical system of interrelated phenomena. The focus is on the interaction and linkages throughout the environment - the lithosphere, atmosphere, hydrosphere, cryosphere, and biosphere - and on physical, chemical, and biological processes operating at a wide range of spatial and temporal scales. Areas of faculty interest include forest systems, cold regions, energy production, and planning around resource use. Measurement, integration, and modelling of earth system elements to understand these linkages are key foci of research and graduate training activities. Field measurements and sample collection are matched with laboratory and data analysis, and modelling.

### Geographic Information Science

The broad emphasis of research in GIS encompasses the theoretical, technical, and applied aspects of cartography, geographic information systems, remote sensing and image processing, and modeling of human and natural systems. Specific areas of research focus relate GIS to aspects of human geography (disease modeling, mapping of human impacts on the environment, resource optimization, contemporary and historical cartography), physical geography (biophysical remote sensing, image processing, geo-visualization), and urban and regional planning (land use planning, cartography, social engagement).

## Departmental Facilities

Excellent research facilities include:

### Computing

Computing support in the department is provided from a variety of sources: a departmental GIS laboratory located beside the department; specialized computing equipment in departmental research laboratories; and a broad base of



personal computers housed in faculty and graduate student offices. All faculty and graduate students are provided with a university computing account and ethernet connection from their office. The account also provides students with a Queen's email address, internet access, and an authentication mechanism for access to restricted sites and services across campus.

## Labs, Forums, Research Groups

Laboratory equipment, enabling a broad range of environmental analyses, is distributed throughout both general and specialized laboratory spaces as described below. Field and laboratory research is supported by a range of common equipment.

### Human Geography

Assessing Student Awareness of Indigenous Peoples Project (<https://www.queensu.ca/awarenessindigenousrealities/home/>) seeks to demonstrate that while most educational systems in Canada still cultivate a damaging and impoverishing ignorance of Indigenous people, in Canada there is the will and passion to change. We assess primary and secondary school curricula. We work with Indigenous educational leaders, community members and specialists to devise a set of questions that measure familiarity with Indigenous existence in Canada including governance issues, current events, culture, geography and what is taught in relevant provincial curricula. We use that questionnaire to analyze student awareness of and attitudes to Indigenous people and seek to determine what students have learned from teachers, the community, media, parents, and friends. We explore the processes and decisions followed by school and university officials from the Ministry, consultants, principals, professors and teachers, to investigate the still far too limited efforts to decolonize education. We join many others in working to make Canada more responsible and aware of its colonial past and present.

Citizenship, Equity, Rights, Community, Inclusion, and Social Justice (<https://www.queensu.ca/geographyandplanning/cercis/>) group includes projects addressing a range of citizenship and social justice issues addressing the law, racism, critical disability studies, gender identity, and poverty. The lab contains facilities for research varying from qualitative methods to large-scale surveying and mapping techniques and involves graduate students and researchers working in a variety of places across Canada.

The Geographies of Aging Laboratory (GAP Lab) (<https://www.queensu.ca/geographyandplanning/gaplab/>) is home for a wide range of projects emphasizing all aspects of the aging Canadian population, global aging, and research on the geographies of health and health care.

The Health, Environment, and Communities Research Lab (HEC Lab) (<http://heclab.com/>) houses a group of researchers and trainees who focus on reconciliatory, respectful, reciprocal, and responsible community-based participatory research. We are committed to equity-oriented projects that apply social, environmental, and health justice lenses, and our work comes together through intersections of culture(s), place(s), power (and resistance), and relational ethics using innovative, decolonizing research tools and methodologies. Our lab is equipped with a wide range of field equipment (audio and video recording, photovoice, and digital storytelling technologies), qualitative data management and transcription software, as well as common and individual internet-connected computer work stations.

The Lives of Animals Research Group (<https://livesofanimals.info.yorku.ca/>) at York University focuses on human-animal relations. We are interested in how humans think about, place and interact with animals, and how animals actively shape human lives, landscapes, and development trajectories. Our work is interdisciplinary, bridging social sciences (e.g. geography, environmental studies, social theory) with natural sciences (e.g. animal welfare science, behavioural ecology, biology) to ensure holistic research results meaningful for both human and non-human animals.

We collaborate with communities, scientists, practitioners, NGOs and governments. We hope to inform appropriate program and policy interventions that acknowledge, respect, and enhance the lives of animals.

The Sonic Arts of Place Laboratory (SAP Lab) (<https://www.queensu.ca/geographyandplanning/saplab/>) provides workspace, recording equipment, computer software/hardware and a listening station to support human geography field research. The SAP Lab is used by graduate and upper-level undergraduate students for research projects involving interviewing, oral geography, soundscapes, media digitization and video documentation. Resources include: Edirol and Zoom H1 portable digital audio recorders, Sony video camera, Logic Pro digital audio workstation software, Reaper digital audio workstation software, Raven Pro sound analysis software, Edirol FA66 firewire audio interface, M-Audio Q 40 headphones, Behringer B2031 monitors, iMac computer.

### Earth System Science

A new soil, sediment and vegetation sample processing laboratory is available for a wide range of uses. Soils analysis is supported by the standard analytical laboratory facilities including combustion furnaces and drying ovens. Soil processing is facilitated by a SPEX Certi-Prep grinder, balances of varying capacity, and pH meters. Preparation of plant material is also accomplished using the SPEX grinder. Limnological analysis is supported by GPS units, conductivity

meters, water and sediment acoustic profiling equipment, ground-penetrating radar, a vibracorer, dredges and surface corers, and a Hydrosound. Boats equipped for research in lacustrine and marine environments are available.

### **The Biogeography and Landscape Ecology (BALE)**

**Laboratory** focuses on the analysis of ecological patterns and processes at multiple spatial and temporal scales. Emphasis is on the study of species and vegetation distributions and dynamics, and their implications for conservation planning and management. Specialized laboratory facilities include a multi-station dendrochronology bench for measurement and analysis of tree rings, a suite of equipment for the preparation and measurement of vegetation samples, computer workstations for spatial and statistical analysis, and an extensive range of field equipment to support experimental and observational studies in a variety of environments.

The Cape Bounty Arctic Watershed Observatory (CBAWO) (<https://capebountyresearch.com/>) in the Canadian High Arctic is a field laboratory to undertake integrated Arctic System Science research related to land, water, vegetation, soil, and atmospheric processes. Queen's Geography and Planning researchers and students work with other institutions and northern communities to understand the impact of environmental and permafrost change. A base camp provides accommodation and laboratory facilities, and research is supported by land and water instrumentation and long-term sampling locations and experiments. Watersheds and lakes are instrumented to evaluate hydrological processes and land instrumentation including: meteorological stations, an eddy covariance gas flux tower, automated and manual soil gas chambers, a network of soil and borehole stations, and time lapse cameras. Vegetation research supported by an extensive remote sensing collection as well as a long-term network of sites and an International Tundra Experiment (ITEX) site where snow and growing temperature conditions are experimentally altered.

The Environmental Variability and Extremes Laboratory (EVEX) (<https://www.queensu.ca/geographyandplanning/evex/>) houses instruments to support geomorphology, hydrology, sedimentology, and limnology. Instrumentation includes an automated Coulter laser scattering particle size analyzer, high-resolution magnetic system, a high-capacity furnace, analytical scales, fume hoods, and walk-in refrigeration along with microscopy and image analysis. A dedicated thin section laboratory including a freeze dryer and vacuum embedding system is available. A large number of data loggers and sensors are available, as are boats for studies in lake and marine environments.

### **The Facility for Biogeochemistry Research on Environmental Change and the Cryosphere (FaBRECC)**

emphasizes the measurement of organic and inorganic constituents in soil, water and atmospheric samples. Research is supported by a Millipore water system producing 18 Mohm, < 5 ppb TOC water and a Miele dishwasher system, Shimadzu Total Organic Carbon analyzer, an ICS 5000 liquid ion chromatograph, laminar flow hood, an Aqualog fluorometer, an Astoria Pacific Astoria2 automated colorimetric system, LECO TruSpec carbon/nitrogen analyzer, and a Shimadzu Greenhouse Gas GC system equipped with an autosampler. Field research is supported by soil and stream water sampling and monitoring equipment as well as automated chambers for measuring greenhouse gas exchange between the land and the atmosphere. (<https://www.queensu.ca/geographyandplanning/fabrecc-lafreniere/>) (<https://www.queensu.ca/geographyandplanning/fabrecc-scott/>)

The Ice, Climate, and Environment Laboratory (ICELab) (<https://www.queensu.ca/geographyandplanning/icelab/home/>) specializes in glacier research applications including field-based, remote sensing, and modelling methods. Our field-based instrumentation includes:

1. Glaciological tools including ice coring and drilling systems, and essential glacier travel/safety equipment;
2. Automatic weather stations (Campbell Scientific and Onset) and related instrumentation necessary for energy balance studies in the accumulation and ablation areas of glaciers;
3. Geophysics tools including high (250-1000 MHz) and low (10 MHz) ice-penetrating radar systems;
4. Survey instrumentation including high-resolution Trimble GPS systems and air-photo quality camera systems for producing georectified 3D models.

These tools support investigations into Arctic glacier dynamics across a variety of spatial and temporal scales, and provide insight into the key processes driving glacier changes. The ICELab facilities host high-quality computing systems that support our GIS, Remote sensing, statistical analysis, and modelling activities, as well as the bench-space and tools required for the development and calibration of field instruments.

The Northern Environmental Geoscience Laboratory (<https://www.labradorgeolab.ca/team/>): Labrador is known to be an ecologically unique region with beautiful Subarctic and Arctic landscapes. Labrador is also home to Inuit, Innu, mixed and settler people who together contribute to a diverse cultural landscape. Observed changes to the natural environment are



acutely felt by Labradorians so understanding and predicting future impacts is this laboratory's priority.

The Renewable Energy Development and Implementation (REDI) Laboratory (<https://www.queensu.ca/geographyandplanning/redi/>) focuses on understanding the challenges with transition to a renewable economy. Our group has amassed geo-referenced data on Canadian renewable resources and developed specialized tools for managing these resources. Extensive databases on policy and institutional support mechanisms related to renewable energy development are also available.

### Geographic Information Science

The Laboratory for Geographic Information and Spatial Analysis (LaGISA) (<https://www.queensu.ca/geographyandplanning/lagisa/>) is a facility dedicated to the understanding and modeling of the interaction between human activities and physical environments by using GIS, remote sensing, and quantitative spatial analysis. It includes a state-of-the-art computing and display facility to support memory intensive geo-computational modeling and visualization research. A wide range of GIS, remote sensing, and statistical software is available.

The Laboratory for Remote Sensing of Earth and Environmental Systems (LARSEES) (<https://www.queensu.ca/geographyandplanning/larsees/>) is dedicated to remote sensing research related to estimation and characterization of biogeophysical processes and patterns over diverse landscapes. A specialized computing facility has been designed to support memory intensive remote sensing research. A suite of remote sensing, GIS, and statistical software is available to meet the demands of diverse remote sensing data types and analyses. Specialized equipment available for in situ measurements of spectra and canopy biophysical parameters include an ASD 350-2500 nm spectroradiometer, LiCor Plant Canopy analyzers, and canopy hemispherical photographic systems. Field equipment is also available to support forest and arctic biophysical measurements.

### Urban and Regional Planning

The Ambassadors' Forum (<https://www.queensu.ca/geographyandplanning/surp/outreach/ambassadors-forum/>) was established by the School of Urban and Regional Planning in 2003 and brings together ambassadors and high commissioners to Canada from 20 Asia-Pacific countries to meet for discussion with informed and thoughtful Canadians who speak on domestic and international issues.

The China Projects Office (<https://www.queensu.ca/geographyandplanning/surp/outreach/china-projects-office/>) was established under a Memorandum of Understanding

between Queen's University and the Chinese Ministry of Land and Resources in 1999. The primary function of the China Projects Office is to provide logistical support to implement the MOU between Queen's and the MLR.

The National Executive Forum on Public Property (<https://www.queensu.ca/geographyandplanning/surp/outreach/national-executive-forum-public-property/>) brings together organizations from all levels of government across Canada to create a public sector council where real property knowledge and best practices are exchanged. Senior officials of over 40 federal departments, provincial/territorial agencies, the largest municipal governments and development agencies, use the Forum and the information emanating from its annual symposium and fall working session. The Forum has Academic Advisors drawn from across Canada, conducts practice-based research and facilitates internships.

The Planning With Indigenous Peoples (PWIP) Research Group (<https://www.queensu.ca/pwip/>) is dedicated to conducting collaborative research about policy and planning with First Nations. Our objective is to enhance Indigenous-municipal relationships in the context of land use planning in the cities and regions encompassing First Nations' lands in Southern Ontario. We also seek out the relevance and applications for our planning and policy research to other jurisdictions.

The Queen's Real Estate Roundtable (Q25) is a group of companies from a broad spectrum of the Canadian commercial real estate sector, working together to engage in high-quality, value-added executive development, applied research, and senior-level networking. In addition to its executive seminar series (ESCIRE), current and future activities include member-directed applied research projects, an annual retreat, senior-executive networking events, and collaborative events with other industry organizations.