

# Geography (GEOG)

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## Geography (GEOG) Courses

4000-level courses are normally restricted to students with fourth-year Honours standing. However, students with third-year standing may take 4000-level courses provided they have the necessary prerequisites, a Geography CGPA of 6.50 or better, and permission of the Department.

### **GEOG 1010 [0.5 credit]**

#### **Global Environmental Systems**

Principles, processes and interactions in the Earth's environment emphasizing the flow of energy and matter within global systems. Atmospheric and oceanic processes, earth surface processes and biogeochemical cycling. Case studies on the interaction between human activity and the natural environment.

Includes: Experiential Learning Activity

Lectures three hours a week, laboratory two hours a week.

### **GEOG 1020 [0.5 credit]**

#### **People, Places and Environments**

Introduction to human geography. Examination of relationships between people, communities, society and the natural environment at local to global scales. Population change, cultural patterns, and historical, economic, political and environmental forces, including climate change, that shape human activity and experiences from place to place.

Includes: Experiential Learning Activity

Also listed as ENST 1020.

Lectures two hours a week and tutorial one hour a week.

### **GEOG 1023 [0.5 credit]**

#### **Introduction to Cities and Urbanization**

Geographies of urban experience, development, and change across an urbanizing planet. Historical and contemporary urbanization processes, patterns, and issues in and between cities and regions. The role of urbanization in producing and responding to climate change.

Includes: Experiential Learning Activity

Precludes additional credit for GEOG 2400 (no longer offered).

Lectures two hours per week and tutorials one hour per week.

### **GEOG 2005 [0.5 credit]**

#### **Introduction to Qualitative Research**

Introduction to the research process, from generating questions to reporting results. Topics include intensive and extensive research approaches; the use of surveys, interviews and other data collection methods; the analysis of qualitative information; and the ethical dimensions of doing research with people and communities.

Includes: Experiential Learning Activity

Also listed as ENST 2005.

Prerequisite(s): 1.0 credit in GEOG or ENST at the 1000-level and second-year standing, or permission of the Department.

Lectures two hours a week, workshop two hours a week.

### **GEOG 2006 [0.5 credit]**

#### **Introduction to Quantitative Research**

Introduction to solving problems using descriptive and inferential statistical methods. Graphical and numerical tools to describe distributions. Probability, sampling and estimates, and hypothesis testing. Fundamentals of spatial statistics and analysis.

Includes: Experiential Learning Activity

Also listed as ENST 2006.

Precludes additional credit for BIT 2000, BIT 2009, BIT 2100 (no longer offered), BIT 2300 (no longer offered), ECON 2210, NEUR 2002, PSCI 2702, STAT 2507, STAT 2601, STAT 2606.

Lectures two hours a week, laboratory two hours a week.

### **GEOG 2013 [0.5 credit]**

#### **Weather and Water**

Introduction to climate, weather and the hydrological cycle. Physical properties of the atmosphere, radiation and energy balances, global circulation, atmospheric moisture and precipitation, weather systems and forecasting, mechanisms of climate change.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 1010 or EARTH 1006 or ISCI 1001.

Lectures three hours a week, laboratory three hours a week.

### **GEOG 2014 [0.5 credit]**

#### **The Earth's Surface**

Introduction to geomorphology. Weathering, slope and fluvial processes within drainage basins, and glacial and periglacial processes.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 1010 or EARTH 1006 or ISCI 1001.

Lectures three hours a week, laboratory three hours a week.

**GEOG 2020 [0.5 credit]****Ecosystems of Canada**

Introduction to world biomes and in-depth analysis of the distribution and development of Canada's major ecosystems including the boreal forest, temperate forest, tundra, grasslands, wetlands, and aquatic environments; Current issues in ecosystem science and conservation such as agricultural management, forestry and urban ecology.

Prerequisite(s): GEOG 1010 or EARTH 1006 or EARTH 1010 or ISCI 1001.

Lectures three hours a week.

**GEOG 2023 [0.5 credit]****Cities, Inequality and Urban Change**

Geographical perspectives on the uneven power relationships and politics that shape urban lives and urban space. Key topics may include housing and segregation, planning for sustainable cities, urban social movements, urban inequality and changing livelihoods.

Includes: Experiential Learning Activity

Precludes additional credit for GEOG 2400 (no longer offered).

Prerequisite(s): GEOG 1023, or second-year standing, or permission of the department.

Lectures two hours per week and tutorials one hour per week.

**GEOG 2200 [0.5 credit]****Global Connections**

Globalization and global environmental change as linked processes. Geographical analysis of economic, cultural, political, and climate change transformations acting at global, national and local scales. Choices and constraints underlying economic, social and environmental sustainability.

Prerequisite(s): second-year standing or permission of the Department.

Lectures three hours a week.

**GEOG 2300 [0.5 credit]****Space, Place and Culture**

Introduction to social and cultural geography, including how theories of space, place, landscape, power, and knowledge can be used to understand the geographic dimensions of social and cultural life. Topics include culture and identity, migration and transnationalism, nature, gender, sexuality, race, colonialism, consumption, and work.

Prerequisite(s): second-year standing or permission of the Department.

Lectures two hours a week, discussion one hour a week.

**GEOG 2500 [0.5 credit]****Climate Change: Social Science Perspectives**

An introduction to climate change as a political, economic and socio-cultural phenomenon, including the political-economic and world-historical causes of anthropogenic greenhouse gas emissions; variations in impact and vulnerability; climate justice and other political movements; global mitigation and adaptation strategies; and proposals for radical systemic change.

Includes: Experiential Learning Activity

Also listed as ENST 2500.

Prerequisite(s): second-year standing or permission of the Department.

Lectures two hours a week, discussion groups one hour a week.

**GEOG 2600 [0.5 credit]****Geography Behind the Headlines**

Exploration of the geographical backgrounds to selected issues of current public interest, through geography's perspective of integrating human and physical environments. Issues selected will be structured from the global through the national/regional to the local, identifying the interdependencies among the scales.

Lecture three hours a week.

**GEOG 3000 [0.5 credit]****Honours Field Course**

Field research, with a focus on data collection methods, analysis and presentation of findings. Design and conduct research that links the human and biophysical environment. Topics may change from year to year.

Includes: Experiential Learning Activity

Also listed as ENST 3900.

Precludes additional credit for ENST 2900 (no longer offered).

Prerequisite(s): GEOG 2005/ENST 2005 and GEOG 2006/ENST 2006, third-year Honours standing in Geography, Geomatics or Environmental Studies, or permission of the Department.

Normally consists of a multi-day field excursion in the Ottawa region. A supplementary charge may apply.

Consult the department regarding course details.

**GEOG 3001 [0.5 credit]****Doing Qualitative Research**

Theory and methods used in qualitative approaches to research in human geography; hands-on experience and discussion of beliefs and claims underlying scholarly work. Ethical and practical dilemmas confronting researchers. Gathering and interpreting qualitative information; representing knowledge.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 2005 or ENST 2005.

Lecture and discussion three hours per week.

**GEOG 3003 [0.5 credit]****Quantitative Geography**

Quantitative methods used in geographical research: multiple correlation and regression, principal component/factor analysis, spatial statistics, cluster analysis, and a review of other selected techniques. Computer-based analysis.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 2006 or ENST 2006 or STAT 2507 or permission of the Department.

Lecture two hours a week, laboratory two hours a week.

**GEOG 3009 [0.5 credit]****Special Topics in Human Geography**

Selected topics concerning human geography not usually included in regular course offerings. Topic varies from year to year. Students should check with the Department for more information.

Precludes additional credit for GEOG 2505 (no longer offered).

Prerequisite(s): GEOG 1020 or ENST 1020 and third-year standing, or permission of the Department.

Lecture three hours per week.

**GEOG 3010 [0.5 credit]****Field Methods in Physical Geography**

Field and laboratory approaches, methodologies and techniques in physical geography. Field projects will be undertaken to collect data for analysis, evaluation and presentation.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 2006 or ENST 2006 or STAT 2507 and GEOG 2013 or GEOG 2014 or permission of the Department.

Normally consists of a multi-day field camp, including lodging, during Fall or Winter Break, and regular classroom meetings. A supplementary charge will apply.

**GEOG 3021 [0.5 credit]****Geographies of Culture and Identity**

Examination of culture, identity and place over time in different contexts; how colonialism, globalization and other processes have shaped societies; geographies of identity, including gender, ethnicity, race and nationality; relationships between cultural groups and their natural surroundings and impacts of climate change.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 2300 and third-year standing, or permission of the Department.

Lecture three hours a week.

**GEOG 3022 [0.5 credit]****Environmental and Natural Resources**

Exploration of complexity, dynamics, uncertainty and equity issues underpinning environmental and resource issues; review and appraisal of selected contemporary methods to assess and manage environmental and natural resources.

Includes: Experiential Learning Activity

Also listed as ENST 3022.

Prerequisite(s): third-year standing in Geography or Environmental Studies or BGIInS Specialization/Stream in Globalization and Environment or permission of the Department.

Lecture three hours a week.

**GEOG 3023 [0.5 credit]****Cities in a Global World**

Introduces the study of cities as "systems of cities", the political economy of linkages between urban places located unevenly in space, and "cities as systems". Case studies of socio-cultural, political and economic relations within biophysical and built environments.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 2023 and third-year standing, or permission of the department.

Lecture and discussion three hours a week.

**GEOG 3024 [0.5 credit]****Understanding Globalization**

Geographical analysis of processes of globalization: theoretical frameworks, historical context and contemporary challenges.

Prerequisite(s): GEOG 2200 and third-year standing, or permission of the Department.

Lecture three hours a week.

**GEOG 3025 [0.5 credit]****Geographies of Selected Regions**

Geographical analysis of key questions facing a selected region of the world. Attention will focus on selected topics within one or more regions and their related global context.

Prerequisite(s): third-year standing in a B.A. program or BGIInS Specialization/Stream in Globalization and Environment or permission of the Department.

Lecture three hours a week.

**GEOG 3026 [0.5 credit]****Topics in the Geography of Canada**

Selected topic concerning the geography of Canada.

Topic varies from year to year.

Precludes additional credit for GEOG 2505 [no longer offered].

Prerequisite(s): GEOG 1020 or ENST 1020 and second-year standing, or permission of the Department.

Lecture three hours a week.

**GEOG 3030 [0.5 credit]****Regional Field Excursion**

Guided and independent geographic field research, with a focus on data collection methods, and analysis and presentation of findings. Consists of an excursion outside of the Ottawa region. A supplementary charge may apply. Includes: Experiential Learning Activity  
Prerequisite(s): third-year Honours standing in Geography or BGIInS Specialization in Globalization and Environment or permission of the Department.  
A seven- to ten-day field excursion.

**GEOG 3102 [0.5 credit]****Geomorphology**

Geomorphological agents of landscape change at the Earth's surface, emphasizing the role of water, ice and wind in erosion and deposition; use of geomorphic indicators in studies of environmental change. A supplementary charge may apply.  
Includes: Experiential Learning Activity  
Prerequisite(s): GEOG 2014 and third-year standing, or permission of the Department.  
Lectures two hours a week, laboratory two hours a week, one field excursion.

**GEOG 3103 [0.5 credit]****Watershed Hydrology**

Principles of hydrology at local and watershed scales, emphasizing: soil moisture regimes; field data collection and analysis of surface water or snow and ice conditions; hydrologic processes in cold environments; and regional runoff regimes in Canada.  
Includes: Experiential Learning Activity  
Prerequisite(s): GEOG 2013 or permission of the Department.  
Lectures three hours a week, laboratory two hours a week.

**GEOG 3104 [0.5 credit]****Principles of Biogeography**

Contemporary and past controls on distribution of plants and animals at global, regional and local scales; significance of these distributions.  
Includes: Experiential Learning Activity  
Also listed as BIOL 3608.  
Prerequisite(s): GEOG 1010 or BIOL 2600, or permission of the Department.  
Lectures, laboratory, and fieldwork five hours a week.

**GEOG 3105 [0.5 credit]****Climate and Atmospheric Change**

The global climate system, with emphasis on global change variability over the historical and modern periods; the changing composition of the atmosphere and its impact on climate; analysis and interpretation of climatic and atmospheric data; modeling of climate systems.  
Includes: Experiential Learning Activity  
Prerequisite(s): GEOG 2013 or permission of the Department.  
Lecture two hours a week, laboratory two hours a week.

**GEOG 3106 [0.5 credit]****Aquatic Science and Management**

Fundamentals of aquatic science. The physical, chemical, and biotic aspects of lake, river, and estuary systems including human impacts, management and conservation.  
Includes: Experiential Learning Activity  
Also listed as ENSC 3106.  
Prerequisite(s): third-year standing and a second-year science or engineering course.  
Workshop four hours per week.

**GEOG 3108 [0.5 credit]****Soil Properties**

The physical and chemical properties of soils; soil-water relationships, weathering processes, soil mineralogy, cation exchange, soil pH. A plant-oriented perspective predominates.  
Includes: Experiential Learning Activity  
Prerequisite(s): GEOG 2013 or GEOG 2014 or permission of the Department.  
Lectures and laboratory five hours a week.

**GEOG 3206 [0.5 credit]****Health, Environment, and Society**

Explores the nexus between geography and human health, including climate change impacts on disease, mental and physical health, and inequity; relationships between colonization, modernization, identity, ideologies, and the environment; population health and health behaviour; social determinants of global health inequality and possibilities for change.  
Prerequisite(s): third-year standing.  
Lectures three hours a week.

**GEOG 3209 [0.5 credit]****Sustainability and Environment in the South**

Analysis of the relationships between people and environment in selected regions in the South (Africa, Asia, Latin America). Emphasis on sustainable livelihoods and local action in relation to climate change and broader socioeconomic and political processes. Regions selected vary from year to year.

Prerequisite(s): third-year standing and ENST 2000 or ENST 2001 or GEOG 2200 or GEOG 2300 or permission of the Department.

Lecture and discussion three hours a week.

**GEOG 3404 [0.5 credit]****Geographies of Economic Development**

Geographical approaches to economic development and difference at local, regional, and global scales. Critical historical, cultural, social, political, economic, and environmental perspectives on 'development', including theories of the state, colonial power, development institutions, and climate change. Spatial dynamics and environmental impacts of economic activity.

Prerequisite(s): GEOG 2200 or permission of the Department.

Lectures three hours a week.

**GEOG 3501 [0.5 credit]****Geographies of the Canadian North**

Key issues in contemporary northern Canada, including land and jurisdiction, wildlife, resource extraction, economic development, culture, geopolitics, health, and climate change. Historical geography and physical characteristics of the region.

Prerequisite(s): third-year standing or permission of the Department.

Lectures three hours a week.

**GEOG 3700 [0.5 credit]****Population Geography**

The distributional aspects of population attributes; areal patterns of population characteristics and their spatial variations associated with differences in the nature of places; migratory movements within the framework of spatial models of interactions between locations.

Prerequisite(s): GEOG 2200 or GEOG 2300, or permission of the Department.

Lectures three hours a week.

**GEOG 3999 [0.0 credit]****Co-operative Work Term**

Includes: Experiential Learning Activity

**GEOG 4000 [0.5 credit]****Field Studies**

Field observation and methodology in a selected region; individual or group basis.

Includes: Experiential Learning Activity

Also listed as ENST 4400.

Prerequisite(s): third-year Honours standing and permission of the Department.

Hours to be arranged.

**GEOG 4004 [0.5 credit]****Environmental Impact Assessment**

Principles, scope and purpose of environmental impact assessment, from conceptual and methodological points of view; range of environmental issues, with emphasis on Canadian case studies.

Includes: Experiential Learning Activity

Also listed as ENST 4004.

Prerequisite(s): GEOG 3022 or ENST 3022, and fourth-year Honours standing in Geography or Environmental Studies or Environmental Science, or permission of the Department.

Lectures and seminars three hours a week.

**GEOG 4005 [0.5 credit]****Directed Studies in Geography**

Students pursue their interest in a selected theme in geography on a tutorial basis with a member of the Department.

Prerequisite(s): permission of the Department.

**GEOG 4007 [0.5 credit]****Special Topics in Geography and Environmental Studies**

Selected topics in geography and/or environmental studies.

Also listed as ENST 4007.

Precludes additional credit for GEOG 4006.

Prerequisite(s): fourth-year Honours standing in the Department or permission of the Department.

Seminar three hours per week.

**GEOG 4013 [0.5 credit]****Cold Region Hydrology**

An examination of cold region hydrologic processes via experimental and observational studies; analysis of hydrologic data and application of hydrologic models.

Prerequisite(s): GEOG 3103.

Lecture three hours a week.



**GEOG 4017 [0.5 credit]****Global Biogeochemical Cycles**

Processes that control the fluxes and reservoirs of biologically active chemical constituents on land, in the atmosphere, and in the oceans. Interactions between biogeochemical cycles and the Earth's climate; impact of land use and fossil fuel emissions on biogeochemical cycles and global change.

Prerequisite(s): GEOG 3108 or permission of the Department.

Lectures three hours a week.

**GEOG 4021 [0.5 credit]****Seminar in Culture, Identity and Place**

Selected topic or field of inquiry concerning the geographic dimensions of culture, identity and place.

Prerequisite(s): GEOG 3021 and fourth-year Honours standing in Geography or permission of the Department.

Seminar three hours a week.

**GEOG 4022 [0.5 credit]****Seminar in People, Resources and Environmental Change**

A selected topic or field of inquiry concerning natural resource use and environmental change.

Also listed as ENST 4022.

Prerequisite(s): GEOG 3022 or ENST 3022 and fourth-year Honours standing in Geography or Environmental Studies or BGIInS Specialization in Globalization and Environment or permission of the Department.

Seminar three hours a week.

**GEOG 4023 [0.5 credit]****Seminar in Special Topics on the City**

A selected topic or field of inquiry concerning urban geography.

Prerequisite(s): GEOG 3023 and fourth-year Honours standing in Geography or Environmental Studies or BGIInS Specialization in Globalization and Environment or permission of the Department.

Seminar three hours per week.

**GEOG 4024 [0.5 credit]****Seminar in Globalization**

A selected issue or topic related to globalization.

Prerequisite(s): GEOG 3024 and fourth-year Honours standing in Geography or BGIInS Specialization in Globalization and Environment or permission of the Department.

Seminar three hours week.

**GEOG 4040 [0.5 credit]****Geographic Thought**

Major intellectual issues and debates in the development of contemporary human geography, including history of geographic thought, geographic responses to social and political movements and debates, and geographic engagement with contemporary critical theory.

Prerequisite(s): fourth-year Honours standing in Geography or permission of the Department.

Seminar three hours per week.

**GEOG 4050 [0.5 credit]****Environmental and Geographic Education**

Selected theoretical and applied issues concerning environmental and geographic education.

Also listed as ENST 4050.

Prerequisite(s): third-year Honours standing in Geography or Environmental Studies, or permission of the Department.

Seminar three hours per week.

**GEOG 4101 [0.5 credit]****Two Million Years of Environmental Change**

Multidisciplinary scientific study of the changes in the physical environment of the Earth during the last two million years and methods of studying recent Earth history, with focus on current research.

Includes: Experiential Learning Activity

Prerequisite(s): third year standing in a B.Sc. program, or a third year Science Geography Elective or a third year EARTH course, or permission of the Department. Note: GEOG 3105 is recommended.

Lectures three hours a week.

**GEOG 4103 [0.5 credit]****Water Resources Engineering**

A quantitative analysis of natural water systems and the development of these systems as a resource.

Components of the hydrologic cycle. Quantitative analysis of stream flow. Probability concepts in water resources. Reservoir design and operation. Availability of groundwater. Storm water management.

Also listed as ENVE 3003.

Prerequisite(s): permission of the Department.

Recommended background: MAAE 2300.

Lectures three hours a week, problem analysis one hour a week.

**GEOG 4104 [0.5 credit]****Microclimatology**

The formation of microclimates near the Earth's surface; energy and water flows; the interaction of atmospheric processes with the physical properties of surfaces.

Prerequisite(s): GEOG 2013 or permission of the Department.

Lectures three hours a week.

**GEOG 4108 [0.5 credit]****Permafrost**

Distribution, development, and degradation of permafrost in Canada; thermal and hydrologic regime of permafrost terrain; development of landforms in permafrost regions; geotechnical consideration in northern construction.

Prerequisite(s): GEOG 3108 or permission of the Department.

Lectures three hours a week.

**GEOG 4304 [0.5 credit]****Transportation Engineering and Planning**

Transportation and the socio-economic environment; modal and intermodal systems and components; vehicle motion; human factors, system and facility design; traffic flow; capacity analysis; planning methodology; environmental impacts; evaluation methods.

Precludes additional credit for CIVE 3304.

Prerequisite(s): third-year standing, or permission of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

**GEOG 4323 [0.5 credit]****Urban and Regional Planning**

History, theories, and practice of urban planning, as well as the policies, plans, and programs developed and implemented in diverse communities. Course topics may include the integration of community development and social planning, urban design, transportation and infrastructure, and environmental management.

Includes: Experiential Learning Activity

Prerequisite(s): GEOG 3023 and fourth-year standing in Geography or Environmental Studies, or permission of the department.

Lectures three hours per week.

**GEOG 4406 [0.5 credit]****Practicum I**

Students apply their knowledge and research skills and gain experience through field placements in government, the private sector, non-government organisations and with community organisations in the environmental field.

Includes: Experiential Learning Activity

Also listed as GEOM 4406.

Prerequisite(s): fourth-year Honours standing in Geography or Geomatics and permission of the Department.

Field placement one day a week.

**GEOG 4408 [0.5 credit]****Practicum II**

Students apply their knowledge and research skills and gain experience through field placements in government, the private sector, non-government organisations and with community organisations in the environmental field.

Includes: Experiential Learning Activity

Also listed as GEOM 4408.

Prerequisite(s): fourth-year Honours standing in Geography or Geomatics and permission of the Department.

Field placement of one day a week.

**GEOG 4450 [0.5 credit]****Community-Engaged Research**

Working in partnership with local organizations, students apply their geographical knowledge to conduct community-engaged research. Student projects will generate outputs for community partners. Research topics vary year to year.

Includes: Experiential Learning Activity

Also listed as ENST 4450.

Prerequisite(s): fourth-year standing, or permission of the department.

Lectures, discussion and project work three hours a week.

**GEOG 4906 [1.0 credit]****Honours Research Project**

A research project based on a modeling, laboratory or field problem. The project is supervised by a member of the department and a written thesis and poster must be submitted.

Includes: Experiential Learning Activity

Precludes additional credit for GEOG 4904/GEOM 4904 (no longer offered), GEOM 4906, GEOG 4909, GEOM 4909, ENST 4906, and ENST 4907.

Prerequisite(s): fourth-year Honours standing in B.Sc. Geography, and an approved research topic and adviser. Hours to be arranged with faculty adviser.

**GEOG 4909 [1.0 credit]****Honours Research Thesis**

Independent design and implementation of a research project leading to the submission of a research thesis. Students work with an individual faculty adviser. The subject for research is decided upon in consultation with the supervisor.

Includes: Experiential Learning Activity

Precludes additional credit for GEOG 4904/GEOM 4904 (no longer offered), GEOG 4906, GEOM 4906, GEOM 4909, ENST 4906, and ENST 4907.

Prerequisite(s): fourth-year Honours standing in B.A. Geography or B.Globalization and International Studies, a minimum CGPA of 9.00 in the major or permission of the Department, and an approved research topic and adviser. Hours to be arranged with faculty adviser.