Faculty

Chair
MONICA MULRENNAN, PhD University College Dublin; Associate Professor

Distinguished Professors Emeriti
BRIAN SLACK, PhD McGill University
PATRICIA THORNTON, PhD University of Aberdeen

Professors
ALAN E. NASH, PhD University of Cambridge
NORMA RANTISI, PhD University of Toronto

Associate Professors
PASCALE BIRON, PhD Université de Montréal
PIERRE GAUTHIER, PhD McGill University
KEVIN GOULD, PhD University of British Columbia
JOCHEN JAEGER, Diplom Dr.Sc.Nat ETH Zurich (Swiss Federal Institute of Technology)
DAMON MATTHEWS, PhD University of Victoria
JUDITH PATTERSON, PhD Virginia Polytechnic Institute
CRAIG TOWNSEND, PhD Murdoch University

Assistant Professors
SEBASTIEN CAQUARD, PhD Université Jean Monnet de Saint-Etienne
ROSEMARY COLLARD, PhD University of British Columbia
ZACHARY PATTERSON, PhD McGill University
TED RUTLAND, PhD University of British Columbia

Affiliate Assistant Professors
JAMES FREEMAN, PhD University of California, Berkeley
WILLIAM KENNEDY, PhD Free University of Berlin
JULIE PODMORE, PhD McGill University
LAURA SHILLINGTON, PhD York University

For the complete list of faculty members, please consult the Department website.

Location

Sir George Williams Campus
Hall Building, Room: H 1255-26
514-848-2424, ext. 2050

Department Objectives

The Department of Geography, Planning and Environment focuses on the processes and practices of human intervention in the natural, cultural, and built environment. Human interventions are examined as cultural and political processes across the spectrum of biophysical settings and human settlements. The Department’s aim is to provide a systematic understanding of biogeophysical environmental processes and human-environment interactions as a step towards improving policies, practices, and specific interventions. The curriculum reflects a balance among theoretical, technical, and applied aspects, and promotes environmental and spatial awareness and literacy. The Department aims to train professional geographers, environmental scientists, and urban planners, as well as to produce articulate and informed graduates who are committed to improving the quality and sustainability of the natural, human, and built environment.

Programs

The Department offers honours, specialization, and major programs leading to a BA in Human Environment, a BA in Urban Planning or Urban Studies, and a BSc in Environmental Science or Environmental Geography. Students wishing to follow a BSc must meet the entry profile for that program (see §31.002 — Programs and Admission Requirements — Profiles).
It is strongly recommended that students planning graduate studies follow the appropriate honours or specialization program. Students seeking admission to the honours program may apply either for direct entry on the University application form or, once in the program, to the departmental honours advisor during stage two of their program. In addition to meeting the Faculty requirements (see §31.003 Honours Regulations), the Department requires a statement of intent which specifies the proposed topic and supervisor for the Honours Essay (GEOG 491 or URBS 491). All students in department programs must be advised annually to receive permission to register for courses or to replace, substitute, or be exempted from any course within their program. Urban Studies students should consult the director of Urban Studies; all other program students should consult the Geography undergraduate advisor. Students are responsible for satisfying their particular degree requirements. The superscript indicates credit value.

60 BA Honours in the Human Environment
Stage I
15 GEOG 220, 260, 272, 274, 290
3 Chosen from GEOG 210; GEOL 210; URBS 230
Stage II
12 GEOG 300, 361, 362, 363
6 Chosen from GEOG 317, 318, 330, 355
6 Chosen from GEOG 371, 372 or 373, 375, 377, 378
Stage III
12 Elective credits in Geography at the 400 level
6 GEOG 491

60 BA Specialization in the Human Environment
Stage I
15 GEOG 220, 260, 272, 274, 290
3 Chosen from GEOG 210; GEOL 210; URBS 230
Stage II
12 GEOG 300, 361, 362, 363
6 Chosen from GEOG 317, 318, 330, 355
6 Chosen from GEOG 371, 372 or 373, 375, 377, 378
Stage III
12 Elective credits in Geography at the 400 level
6 Elective credits in Geography at the 300 or 400 level

42 BA Major in the Human Environment
Stage I
15 GEOG 220, 260, 272, 274, 290
3 Chosen from GEOG 210; GEOL 210; URBS 230
Stage II
12 GEOG 300, 361, 362, 363
3 Chosen from GEOG 317, 318, 330, 355
3 Chosen from GEOG 371, 372 or 373, 375, 377, 378
Stage III
6 Elective credits in Geography at the 400 level

69 BSc Honours in Environmental Science
Stage I
9 BIOL 225, 226; GEOG 290
3 COMP 218 or 248
6 Chosen from GEOG 272, 274; GEOL 210
3 GEOG 260 or GEOL 216
3 CHEM 212 or 217
Stage II
6 BIOL 322; GEOG 363
3 Chosen from BIOL 321; GEOG 355; GEOL 302
9 Chosen from GEOG 371, 372 or 373, 375, 377, 378
6 Chosen from BIOL 350, 351, 353, 367, 381, 385; CHEM 271; CIVI 361; GEOL 331; ENGR 251
Stage III
3 GEOG 463 or 465
12 Chosen from BIOL 451, 457, 459; CHEM 375, 470, 472; GEOG 458, 466, 467, 470, 474, 475, 478, 498***; GEOL 415, 440; CIVI 467, 468, 469; 495***
6 Chosen from BIOL 490; GEOG 491; GEOL 414
*Environmental Science students missing the prerequisites may apply to have all or some of these waived by the Department of Building, Civil and Environmental Engineering.
**Where the subject matter is of an environmental science nature.
69 BSc Specialization in Environmental Science

Stage I
9 BIOL 225, 226, GEOG 290
3 COMP 218 or 248
6 Chosen from GEOG 272, 274; GEOL 210
3 GEOG 260 or GEOL 216
3 CHEM 212 or 217

Stage II
6 BIOL 322; GEOG 363
3 Chosen from BIOL 321; GEOG 355; GEOL 302
9 Chosen from GEOG 371; 372 or 373; 375, 377; 378
6 Chosen from BIOL 350, 351, 353, 367, 381, 385; CHEM 271; CIVI 361, 365; GEOL 331; ENGR 251

Stage III
3 GEOG 463 or 465
18 Chosen from BIOL 451, 457, 459; CHEM 375, 470, 472; GEOG 458, 466, 467, 470, 474, 475, 478, 498***; GEOL 415, 440; CIVI 467, 468, 469, 495

*Environmental Science students missing the prerequisites may apply to have all or some of these waived by the Department of Building, Civil and Environmental Engineering.
**Where the subject matter is of an environmental science nature.

45 BSc Major in Environmental Geography

Stage I
15 GEOG 220, 260, 272, 274, 290
3 GEOL 210
3 Chosen from BIOL 225, 226, 227

Stage II & III
12 GEOG 300, 361, 362, 363
12 300- or 400-level credits chosen from the BSc Geography/Geology course list or in consultation with the appropriate departmental advisor. At least three credits must be at the 400 level.

30 Minor in the Human Environment
15 GEOG 220, 260, 272, 274, 290
3 GEOG 300
12 GEOG elective credits at the 300 or 400 level

NOTE: This minor is intended for Arts students.

24 Minor in Environmental Geography
6 GEOG 272, 274
3 GEOL 210
9 Chosen from GEOG 300, 363, 371, 372 or 373, 375, 377, 378; GEOL 302, 331
6 Chosen from GEOG 406, 458, 463, 466, 467, 470, 474, 475, 478; GEOL 415, 440

NOTE: This minor is intended for Science students.

Students in programs leading to the BSc degree may take the courses in Geography/Geology listed below for credits to be applied to their program of concentration.

GEOG 260 Mapping the Environment (3 credits)
GEOG 272 The Natural Environment: Air and Water (3 credits)
GEOG 274 The Natural Environment: Land and Life (3 credits)
GEOG 361 Research Design and Qualitative Methods (3 credits)
GEOG 362 Statistical Methods (3 credits)
GEOG 363 Geographic Information Systems (3 credits)
GEOG 371 Landscape Ecology (3 credits)
GEOG 372 Plant Reproductive Ecology (3 credits)
GEOG 373 Plant Community Ecology (3 credits)
GEOG 375 Hydrology (3 credits)
GEOG 377 Landform Evolution (3 credits)
GEOG 378 The Climate System (3 credits)
GEOG 458 Environmental Impact Assessment (3 credits)
GEOG 463 Advanced Geographic Information Systems (3 credits)
GEOG 465 Remote Sensing (3 credits)
GEOG 466 Geomedia and the Geoweb (3 credits)
GEOG 470 Environmental Management (3 credits)
GEOG 473 Environment and Health (3 credits)
GEOG 474 Sustainable Forest Management (3 credits)
GEOG 475 Water Resource Management (3 credits)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 478</td>
<td>Climate Change: Science, Impacts and Policy</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 210</td>
<td>Introduction to the Earth</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 216</td>
<td>Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 302</td>
<td>Palaeobiology</td>
<td>3</td>
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<tr>
<td>GEOL 311</td>
<td>Evolution of the Earth</td>
<td>3</td>
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<tr>
<td>GEOL 415</td>
<td>Plate Tectonics and Crustal Evolution</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 440</td>
<td>Seminar in Current Research on Environmental Earth Science</td>
<td>3</td>
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Courses

Because of the renumbering of courses in the Department, students should see §200.1 for a list of equivalent courses.

Geography

GEOG 200  **World Geography**  (3 credits)
This course provides an overview of world geography. It first examines the main environmental and social factors that geographers have employed to divide the world into a series of distinctive regions, and uses examples of specific countries to explore the distinctive geographical processes by which these patterns are transformed and perpetuated.

NOTE: Students currently registered in a Human Environment, Environmental Geography, or Environmental Science program may not take this course for credit.

GEOG 203  **Canadian Environmental Issues**  (3 credits)
This course examines the diversity and complexity of Canadian environmental issues from an interdisciplinary perspective. Natural science considerations are explored as well as the relationship of scientific understanding to policy and wider social action. Issues addressed include fisheries, animal rights, biodiversity conservation, protected areas, energy, and climate change.

NOTE: Students currently registered in a Human Environment, Environmental Geography, or Environmental Science program may not take this course for credit.

GEOG 204  **Global Environmental Issues**  (3 credits)
This course examines a number of global environmental issues from an interdisciplinary perspective. The complex interactions and interdependencies among the biophysical, socio-economic, political, and cultural aspects of global environmental change are explored in relation to issues such as global warming, desertification, deforestation, declining biodiversity, and acid rain.

NOTE: Students currently registered in a Human Environment, Environmental Geography, or Environmental Science program may not take this course for credit.

GEOG 206  **Maps and Mapping**  (3 credits)
This course explores the role of maps in society. Students are introduced to basic mapping concepts in order to evaluate the meaning and use of various types of maps. Samples of the following types of maps are studied: historic maps, political maps, cognitive maps, maps in newspapers and magazines, computer-generated maps, and maps on television.

NOTE: Students who have completed courses numbered GEOG 209 and above may not take GEOG 200-208 for credit.

GEOG 209  **The Geography of a Selected Region**  (3 credits)
The course includes both a systematic survey as well as an in-depth focus on particular geographical issues and problems. The specific region to be studied may vary from year to year.

GEOG 210  **Geography of Global Change**  (3 credits)
This course examines a variety of geographical changes related to globalization. It focuses mainly on the global political system and the global economy, and also considers transport and communications systems, culture, and environmental issues.

NOTE: Students who have received credit for GEOZ 210 may not take this course for credit.

GEOG 220  **The Human Environment: Place, Space, and Identity**  (3 credits)
This course examines how geographers construct the meaning of place, the unique identity of places, the contests over identity of place, and how space is socially constructed. The ways in which these have been affected by migration and globalization are then examined within the context of an already constituted social and geographical unevenness (political, economic, environmental, and cultural).

NOTE: Students who have received credit for GEOZ 220 may not take this course for credit.

GEOG 260  **Mapping the Environment**  (3 credits)
This course introduces students to the basic concepts, theory, and methods of mapping with reference to topographic and thematic maps. Through lectures, laboratories, and practical assignments, students learn about the sources of data for maps, and how these data are manipulated, represented, and interpreted in both analog and digital form (Geographic Information Systems). Lectures and laboratory.

GEOG 272  **The Natural Environment: Air and Water**  (3 credits)
This course introduces the Earth’s atmosphere and hydrosphere through an examination of their structural components, processes, and variability through space and time. Topics include the global energy system, air temperature cycles, weather systems, urban climate, the water cycle, oceans, lakes, and rivers.
GEOG 274  *The Natural Environment: Land and Life* (3 credits)
This course introduces the Earth’s lithosphere and biosphere through an examination of their structural components, processes, and variability through space and time. Topics include the tectonic system, volcanic activity, landscape and landform development, soils, biogeochemical cycling, succession, and biomes.

GEOG 290  *Environment and Society* (3 credits)
Prerequisite: GEOG 220, 272; 274 concurrently. This course integrates human and physical geography into a holistic view of human-environment relations. It focuses on a few key environmental issues through case studies operating at a variety of scales (global, national, regional, local), and in different places and time periods. It examines how humans interact with the environment; how they, as members of societies and bearers of culture, perceive, use, transform, and manage the physical environment in different ways and are in turn impacted by changes to that environment. Each case study highlights a specific method and tool of geographic analysis and introduces students to the value of different approaches to environmental issues.
*NOTE: Students enrolled in either the BSc Honours or Specialization in Environmental Science are not required to have the GEOG 220 prerequisite, and may substitute GEOL 210 for either GEOG 272 or 274.*

GEOG 298  *Selected Topics in Geography* (3 credits)
GEOG 299  *Selected Topics in Geography* (6 credits)
Specific topics for these courses, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and the Geography Course Guide.

GEOG 300  *Environment: Historical and Cultural Perspectives* (3 credits)
Prerequisite: GEOG 290 or permission of the Department. This course explores selected aspects of nature and culture in Western thought. It focuses on four overarching themes: 1) it presents a broad historical overview of the questions that humans have posed concerning the habitable Earth and their relationships to it; 2) it looks in more detail at one of those questions, namely, the extent to which human agency has transformed the Earth; 3) it explores the relations between attitudes, values and behaviour, focusing mainly on the idea of wilderness; and 4) it traces the roots and describes the main characteristics of contemporary environmentalism.

GEOG 301  *The Sustainable University Campus* (3 credits)
Prerequisite: 30 university credits or permission of the Department. With the campus as the laboratory, this course explores and contributes to building a more sustainable campus community. It is designed to support Concordia’s commitment to sustainability while providing students with an applied learning experience. Students gain experience in planning and implementing interdisciplinary research projects using a variety of qualitative and quantitative techniques. They learn about participatory action research, the application of sustainability concepts in a living and learning organization, and work in teams to develop creative and actionable projects that contribute to moving the University in a more sustainable direction. The course integrates theory and practice. The Concordia Campus Sustainability Assessment as well as recent literature and case studies from the sustainability assessment and reporting fields form the theoretical foundations of the course. The course uses lectures, guest speakers, workshops, and project work as learning tools.
*NOTE: Students who have received credit for this topic under a GEOG 398 number may not take this course for credit.*

GEOG 317  *Population Geography* (3 credits)
Prerequisite: GEOG 220 or permission of the Department. This course focuses on demographic processes and their relevance to current planning and policy issues. The lectures examine evolving patterns of fertility, mortality, and migration, the spatial and temporal processes that fashion them, and their interaction as expressed in population growth, age structure, and policy issues such as aging, low fertility in post-industrial societies, high fertility and poor health in some less developed countries. In response to now widely available electronic demographic data, the laboratory develops students’ skills in the methods of demographic analysis and interpretation through the use of desktop spreadsheet programs (Excel). Lectures and laboratory.

GEOG 318  *Vanishing Borders: Regions and the New International Order* (3 credits)
Prerequisite: GEOG 220, or completion of 30 credits for students enrolled in a Social Science program, or permission of the Department. This course examines the argument that as globalization reduces and removes the effects of international boundaries, regions are becoming more important in the global economy and in the global political system. Emerging new forms of regionalism are discussed, such as transborder regions, regions based on transnational economic integration, and hi-tech regions. The changing nature of more traditional regions, such as metropolitan regions and regions based on sub-state nationalism is also considered.

GEOG 321  *A World of Food* (3 credits)
Prerequisite: 24 university credits. This course examines the geographical processes that have affected the production and consumption of food from the beginnings of agriculture to the rise of genetically modified organisms, and considers the part played by different patterns of diet and cuisine in shaping distinctive regions at the global and local scale.
*NOTE: Students who have received credit for this topic under a GEOG 398 number may not take this course for credit.*

GEOG 330  *Urban Geography* (3 credits)
Prerequisite: GEOG 220 or permission of the Department. The geographer’s view of the city is explored at two scales: cities as elements of an urban system, including topics such as urbanization and the functional structure of cities; and intra-urban patterns, including the spatial arrangement of land-use and social areas.
NOTE: Students who have received credit for GEOG 372 or 374 may not take this course for credit.

GEOG 372  
Plant Community Ecology (3 credits)
Prerequisite: GEOG 272, 274; or permission of the Department. This course examines plant community dynamics as a consequence of the population dynamics of the constituent plant species. The role of natural disturbances (such as hurricanes, ice storms, and fire) in community dynamics is stressed, particularly as they affect forests. Applied issues such as vegetation mapping, prescribed burning in national parks, and species’ responses to climate change are explored in depth. There is a mandatory one-day field trip as well as a lab component.

NOTE: Students who have received credit for GEOG 372 or 374 may not take this course for credit.

GEOG 373  
Plant Community Ecology (3 credits)
Prerequisite: GEOG 272, 274; or permission of the Department. This course examines plant community dynamics as a consequence of the population dynamics of the constituent plant species. The role of natural disturbances (such as hurricanes, ice storms, and fire) in community dynamics is stressed, particularly as they affect forests. Applied issues such as vegetation mapping, prescribed burning in national parks, and species’ responses to climate change are explored in depth. There is a mandatory one-day field trip as well as a lab component.

NOTE: Students who have received credit for GEOG 372 or 374 may not take this course for credit.
GEOG 375  Hydrology (3 credits)
Prerequisite: GEOG 272, 274; or permission of the Department. The course examines the hydrologic cycle, with a main focus on
surface hydrology. Topics covered include the organization of the river network, precipitation over a watershed, runoff, flood frequency
analysis, estimation of peak streamflows, flow, and sediment transport in rivers. Assignments provide experience in the practical
aspects of hydrological data treatment using Canadian examples. The course aims at understanding the mechanics of processes
governing the motion of water on hillslopes and in rivers, which are essential to water management. Lectures and tutorial.

GEOG 377  Landform Evolution (3 credits)
Prerequisite: GEOG 272; GEOG 274 or GEOL 210; or permission of the Department. This course examines the processes
responsible for the development and evolution of the Earth’s landforms, including human modifications to those landforms.
Topics include the study of fluvial, coastal, glacial, periglacial, and arid landforms. Lectures and laboratory.
NOTE: Students are strongly encouraged to take GEOL 210.

GEOG 378  The Climate System (3 credits)
Prerequisite: GEOG 272; GEOG 274 or GEOL 210; or permission of the Department. This course examines the interacting
components of the climate system (atmosphere, ocean, ice, land and vegetation) and the key features of the present-day weather
and climate systems; including a focus on how the climate system has changed in the past, and the processes, both natural and
human-induced, which drive and moderate these changes. Methods used to reconstruct past climate changes, and the use of
climate models to understand climate system interactions and change are discussed.

GEOG 398  Selected Topics in Geography (3 credits)

GEOG 399  Selected Topics in Geography (6 credits)

Specific topics for these courses, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and
Geography Course Guide.

GEOG 400  Political Ecology (3 credits)
Prerequisite: GEOG 300 or permission of the Department. This course explores the politics of the environment from the
perspective of critical human geography. Land degradation and transformation, environmental governance, social movements,
and environmental conflicts are some of the topics that are covered. The course examines how political struggles not only
rearrange the environment, but also forge new environmental meanings, identities, and spaces.

GEOG 406  Tropical Forests (3 credits)
Prerequisite: GEOG 372 or 373 or 374; or permission of the Department. This course focuses on three themes: how tropical forest
ecosystems function and change; the causes and consequences of deforestation and faunal impoverishment; and the ecological
and sociological problems faced by conservationists in the tropics.

GEOG 407  Indigenous Resource Management (3 credits)
Prerequisite: GEOG 300 or permission of the Department. This course explores the relationship between indigenous peoples
and the environment. It focuses on two primary themes: first, it looks at ways in which ecological knowledge shapes indigenous
resource management, land tenure, and sea-rights systems; and second, it examines the roles of indigenous peoples and state
authorities in land, sea, and resource management.

GEOG 417  Population and the Environment (3 credits)
Prerequisite: GEOG 317 or permission of the Department. This course examines the scientific basis for concern that the world is, or
soon will be, overpopulated. Two themes are emphasized: (1) environmental stress is the product of lifestyles and the production
systems that support lifestyles, as well as population numbers and growth; (2) the relationship between population and environment
is mediated by social organization; people are both constrained by social structures, and intelligent human agents of demographic
and environmental change. The course examines these issues from theoretical, historical, empirical, and policy perspectives.

GEOG 418  Geographies of Postcolonialism (3 credits)
Prerequisite: GEOG 300 or permission of the Department. Based largely on scholarship about the Americas, this course introduces
students to theories of the colonial present and trace geographies of a variety of contemporary colonial processes and anti-colonial
struggles.
NOTE: Students who have received credit for this topic under a GEOG 498 number may not take this course for credit.

GEOG 430  The Social and Cultural Geographies of Montreal (3 credits)
Prerequisite: GEOG 361 or URBS 360 or 362. This course explores the social and cultural geographies of Montreal with particular
emphasis on how the spatial distribution of communities influences urban planning and public policy at the local and regional
levels. Complex webs of identities and solidarities informed by socio-economic, linguistic, ethno-cultural, and sexual orientation
factors shape the city living experience of individuals and populations alike. Through lectures, discussions, assignments and field
trips, students are introduced to a variety of analytical perspectives that investigate the socio-cultural dynamics that contribute to
shaping urban settlements, human-environment interactions and local social networks.
NOTE: Students who have received credit for URBS 320 or 420 may not take this course for credit.
GEOG 431  Urban Planning in the Developing World  (3 credits)
Prerequisite: GEOG 330 or permission of the Department. This course explores the growth and planning of large metropolitan areas in developing nations, with a focus on East and South East Asia. Issues and problems associated with recent urbanization are examined along with potential solutions offered by urban planning and public policies. The planning roles of institutions including governments, multilateral development agencies, and non-governmental organizations are reviewed.
NOTE: Students who have received credit for GEOG 430 or URBS 481, or for this topic under a URBS 398, URBS 498, or GEOG 498 number, may not take this course for credit.

GEOG 435  Transportation Impact Assessment  (3 credits)
Prerequisite: URBS 310 or GEOG 333; URBS 335 or GEOG 363; or permission of the Department. This course introduces students to the quantitative analysis of the environmental (e.g. emissions) and social impacts (e.g. accessibility) of transportation system interventions. Students are introduced to, and gain hands-on experience with, the traditional transportation planning and modelling process aided by the use of a Geographic Information System (GIS)-based transportation decision aid tool. A real-world case-study region and transportation system are used to illustrate the different elements of the planning and modelling process and how this can be used in impact assessment. Lectures and laboratory.
NOTE: Students who have received credit for URBS 435 or for this topic under a GEOG 498 or URBS 498 number may not take this course for credit.

GEOG 440  Geography and Public Policy  (3 credits)
Prerequisite: 33 credits in Geography or permission of the Department. This course examines the relationship between geographical approaches to problems and issues, and the public policy process. It discusses such topics as the relevance of geographical information and geographical research to policy makers, the need for assessment of the spatial and environmental impact of public policies, and the role of geographers in the public policy process.

GEOG 450  Industrial Restructuring  (3 credits)
Prerequisite: GEOG 318 or URBS 380 or permission of the Department. In the age of globalization and heightened market uncertainty, firms are assuming new spatial and organizational forms to remain innovative and competitive. This course surveys both theories and policies on these restructuring initiatives in advanced capitalist countries. In addition to assessing the new challenges and opportunities that firms face in the present context, the course examines the changing role of national, state, and local governments in encouraging and shaping new economic development strategies.
NOTE: Students who have received credit for URBS 450 or for this topic under a GEOG 498 or URBS 498 number may not take this course for credit.

GEOG 458  Environmental Impact Assessment  (3 credits)
Prerequisite: GEOG 355 or permission of the Department. This course examines the conceptual bases, procedures, and methodology of Environmental Impact Assessment (EIA). The effectiveness of EIA as a decision-making process in the promotion of good environmental planning is analyzed, including its role in assessing the potential effects of certain activities on the natural environment as well as on social, cultural, and economic aspects of the environment.

GEOG 463  Advanced Geographic Information Systems  (3 credits)
Prerequisite: GEOG 363 or URBS 335; or permission of the Department. This course focuses on database structure and management as well as advanced spatial analysis techniques. It considers both practical and theoretical questions of interpretation of GIS in the context of particular problems and real data sets. The course involves hands-on use of ArcGIS software in a laboratory setting. Lectures and laboratory.

GEOG 465  Remote Sensing  (3 credits)
Prerequisite: GEOG 363 or URBS 335, or permission of the Department. This course provides basic knowledge about the theory and practice of remote sensing, its potential and limits. The course is divided in five parts: 1) fundamentals of remote sensing, where the physical basis of remote sensing is explained; 2) sensors and orbits (different types of sensors, passive, active, and thermal sensors); 3) digital image processing, looking at image enhancement, filtering, classification, and how to obtain thematic data from raw imagery; 4) applications of remote sensing such as forestry, urban studies, water pollution, and agriculture; and 5) problems and challenges associated with remote sensing. Practical examples for all these topics will be covered in the laboratory sessions. Lectures and laboratory.

GEOG 466  Geomedia and the Geoweb  (3 credits)
Prerequisite: GEOG 363 or URBS 335, or permission of the Department. This course introduces students to geospatial technologies that have dramatically changed the way one interacts with the environment. Students acquire the geovisualization skills required to design meaningful maps in the context of the Geoweb, and are exposed to the growing body of literature that critically envisions the socio-political dimensions of these new forms of cartographic expression. Lectures and laboratory.

GEOG 467  Environmental Modelling  (3 credits)
Prerequisite: GEOG 362 or BIOL 322; enrolment in the BSc Honours Environmental Science or BA Honours Human Environment; permission of the Department. The different approaches to modelling the biophysical, built, or human environment are examined. The conceptualization of simple models to examine how human interventions affect the environment is investigated. Different modelling approaches such as system models, computer visualization and simulation are covered. Students develop a model scheme related to a topic of interest. Lectures and laboratory.
NOTE: Students who have received credit for this topic under a GEOG 498 number may not take this course for credit.
GEOG 470 **Environmental Management** (3 credits)
Prerequisite: GEOG 375 or 377, or permission of the Department. This course provides students with an understanding and appreciation of the field of environmental management and its contribution to addressing the impacts of human activities on the natural environment. Assessment of the limitations associated with conventional command-and-control approaches to environmental management are considered. The course also focuses on emerging concepts and frameworks associated with a recent rethinking of environmental management approaches, including complex adaptive systems, social-ecological systems, and resilience.

GEOG 473 **Environment and Health** (3 credits)
Prerequisite: GEOG 317 or permission of the Department. This course examines geographical approaches to the study of health, focusing on the investigation of spatial variations in disease incidence, the ecology of selected diseases, and the links between health and the biophysical, social, and built environment. Focus is placed on critical examinations of approaches and methods of explanation.

GEOG 474 **Sustainable Forest Management** (3 credits)
Prerequisite: GEOG 372 or 373 or 374; or permission of the Department. This course looks at changes in the exploitation and sustainable management of the forest resource in Canada and the United States. Topics include the evolution of harvesting strategies and their effect on species composition; the effects of technological changes in cutting, transportation, and milling on forests; and the recent evolution of the tension between environmentalists and foresters. There is a mandatory field trip.

GEOG 475 **Water Resource Management** (3 credits)
Prerequisite: GEOG 355; GEOG 375 or 377; or permission of the Department. This course examines the complexity of, and necessity for, better water resource management from the viewpoint of ecological and economic sustainability as well as social equity and basic human health and dignity. Topics include the qualities, values, and uses of water — consumptive and non-consumptive, economic and environmental; major regional and global water management issues; factors affecting water supply reliability and challenges to maintain and improve long-term quality and equitable service in different situations; and the ways domestic, industrial, and agricultural water users can conserve water.
NOTE: Students who have received credit for this topic under a GEOG 498 number may not take this course for credit.

GEOG 477 **Climate Change: Science, Impacts and Policy** (3 credits)
Prerequisite: GEOG 378 or equivalent; or permission of the Department. This course examines the science, impacts and policy options surrounding recent and future global climate change. The first part of the course focuses on the basic science of global warming including the greenhouse effect, climate models, and predictions of future climate change, and an assessment of possible climate impacts. The course concludes with an overview of potential solutions to climate change, including national and international climate policy, energy alternatives, and technological approaches to reducing human impacts on the climate system.
NOTE: Students who have received credit for this topic under a GEOG 498 number may not take this course for credit.

GEOG 490 **Internship in Geography** (3 credits)
Prerequisite: Permission of the Department. This course provides final-year students the opportunity to apply their geographical skills and training in a workplace environment. In consultation with the supervisor, students identify a placement related to their interests, develop and carry out a project approved by both employer and academic supervisor, and/or keep a daily log of how the tasks and duties performed relate to and build upon their academic studies. The internship involves 100 hours of unpaid work and contribution to a seminar series.

GEOG 491 (also listed as URBS 491) **Honours Essay** (6 credits)
Prerequisite: Permission of the Department. The course requires the student to propose and conduct a research project and to produce a substantial report under the supervision of a faculty advisor.

GEOG 495 **Field Research** (3 credits)
Prerequisite: 30 program credits and permission of the Department. This course gives the student the experience of field research in human-environment interactions. The field excursion, often in combination with a local organization, is typically two or three weeks in duration.

GEOG 498 **Advanced Topics in Geography** (3 credits)

GEOG 499 **Advanced Topics in Geography** (6 credits)
Specific topics for these courses, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and Geography Course Guide.

**Geology**

GEOL 203 **Introduction to Environmental Geology** (3 credits)
Prerequisite: GEOL 210 recommended. Environmental geology is concerned with the physical, chemical, and biological processes that have acted, and continue to act, upon the planet, shaping its evolution. The course examines the interactions of lithosphere, mantle, core, biosphere, atmosphere, cryosphere, and hydrosphere. The Earth’s climate is in part determined by these Earth system interactions, and climate change throughout the Earth’s history is a central theme of the course.
GEOL 204  **Natural Disasters** (3 credits)
This course introduces students to natural disasters. Students gain an understanding of the geological and meteorological environments of the world that allow humans to plan for avoidance and mitigation of disasters. Topics may include plate tectonics, earthquakes, volcanoes, tsunamis, landslides and mudslides, hurricanes, floods, wildfires, ice storms, thunderstorms, and tornadoes. 

**NOTE:** Students who have received credit for this topic under a GEOL 298 number may not take this course for credit.

GEOL 206  **Earthquakes, Volcanoes, and Plate Tectonics** (3 credits)
This course is for students with little or no previous background in the earth sciences, providing an up-to-date account of our present knowledge of earthquakes and volcanoes, and the use of this information in the development of the theory of plate tectonics. Areas of concentration are: nature, distribution, and causes of earthquakes and volcanic eruptions, measuring earthquakes, great earthquakes and volcanic eruptions in world history, products of volcanic eruptions, and hazards from, and prediction of, earthquakes and volcanic eruptions. The theory of plate tectonics and the evolution of mountain belts of the world are studied. Lectures only.

GEOL 208  **The Earth, Moon and the Planets** (3 credits)
The course emphasizes the cosmic perspective of the Earth and focuses attention on how the results of the last two decades of planetary exploration have brought about an intellectual revolution concerning the planets, especially their surface features, processes, and histories. Lectures only.

GEOL 210  **Introduction to the Earth** (3 credits)
This course provides an overview of the physical processes that govern how the Earth works. Topics include origin of the solar system and Earth; analysis of the internal structure of the Earth; minerals and rocks; igneous and metamorphic processes; deformation of the crust; surficial processes, including weathering, deposition and glaciation. The course culminates with the integration of these geological processes in the theory of plate tectonics, and goes on to examine the interactions of crust, mantle, atmosphere, and biosphere from this perspective. Laboratory work includes the identification of rocks and minerals, map exercises, and a field trip. Lectures and laboratory.

GEOL 216  **Field Methods** (3 credits)
Prerequisite: GEOL 210. The purpose of this course is twofold: to learn the basic methods that geologists, physical geographers, and environmental scientists use in the field (including learning how to map, measuring stratigraphic sections, and solving field problems based on observations) and to become familiar with the immediate geological environment of the Montreal region from the young Quaternary sediments, Mesozoic intrusive rocks and Paleozoic assemblages (including rocks of the St. Lawrence Lowlands) to the ancient Precambrian, crystalline basement. Two-week field school in the spring, immediately after the final examination.

GEOL 298  **Selected Topics in Geology** (3 credits)
Specific topics for this course, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and Geography Course Guide.

GEOL 302  **Palaeobiology** (3 credits)
Prerequisite: GEOL 210. General discussion covers taphonomy, processes and patterns of evolution, extinction, ontogeny, palaeoecology and taxonomy. Systematics, morphology, biostratigraphic value of selected macro-invertebrate fossils will be included in the latter half of the course. Lectures and laboratory.

**NOTE:** Students who have received credit for GEOL 212 may not take this course for credit.

GEOL 331  **Evolution of the Earth** (3 credits)
Prerequisite: GEOL 210 or permission of the Department. The geological evolution of planet Earth is studied in the context of the theory of plate tectonics using interpretations of stratigraphic, structural, seismic, paleontologic, and geochronologic data. A systematic review of the geological evolution of the Earth and development of life forms is examined from the time of formation of the Earth to the present, including case studies of mountain belts. In the lab, rock suites and geological maps representative of different periods of Earth history are examined. Lectures and laboratory.

**NOTE:** Students who have received credit for GEOL 310 may not take this course for credit.

GEOL 398  **Selected Topics in Geology** (3 credits)
Specific topics for this course, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and Geography Course Guide.

GEOL 414  **Undergraduate Research** (6 credits)
Prerequisite: For third-year honors students. Honors students in their final year are expected to show competence in isolating and examining a geological problem under the supervision of a faculty advisor. A written application to take the course, including a brief outline of the research project, must be made to the Department before April 15 of the second year. The application is reviewed by a committee and a decision forwarded by mail. The results of research must be presented in the form of an undergraduate thesis, two copies of which must be submitted by April 1.

**NOTE:** Written requests from specialization students, with appropriate academic records, to take the course will be considered.

GEOL 415  **Plate Tectonics and Crustal Evolution** (3 credits)
Prerequisite: GEOL 210; GEOL 331 or GEOG 377; or permission of the Department. Techniques of data collection in tectonics. Structure and rheology of the upper mantle. Tectonics of crustal types to include shields, platforms, passive continental margins,
phanerozoic foldbelts, continental rifts, island-arc trench belts and oceanic rises, sea-floor spreading, plate tectonics, magma associations, and plate reconstructions. Crustal origin and growth. Lectures and laboratory.

NOTE: Students who have received credit for GEOL 315 may not take this course for credit.

GEOL 440  Seminar in Current Research on Environmental Earth Science (3 credits)
Prerequisite: GEOL 331 or GEOG 377, or 60 credits in an Engineering program, or permission of the Department. This course covers current research in environmental Earth science; topics vary from year to year, but will generally include: mantle-biosphere-atmosphere interactions, the carbon and methane cycles, and the geological climate record. Evaluation is based on seminar participation and written work.

NOTE: Students who have received credit for this topic under a GEOG or GEOL 498 number may not take this course for credit.

GEOL 498  Advanced Topics in Geology (3 credits)
Specific topics for this course, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and Geography Course Guide.

31.130.1  URBAN STUDIES

Urban Studies is a multidisciplinary program, designed to introduce the student to the processes of planned change in urban environments. Urban Studies provides a core of urban-planning courses involving field studies, planning projects, and the acquisition of technical skills. Complementary courses in Sociology, Political Science, Economics, and Geography provide the necessary approaches and understanding in order to consider complex urban development. The program is designed for students planning to undertake a post-graduate degree in planning or a related field and also provides required training for work in the planning, real estate, and social service fields.

Programs

Students are responsible for satisfying their particular degree requirements. The superscript indicates credit value.

All course substitutions must be approved by the director of Urban Studies and Urban Planning. Students enrolled in the Major in Urban Studies, or other undergraduate programs in Arts and Science, seeking to transfer to the BA Specialization in Urban Planning normally request a transfer at the end of their first year, after completing a minimum of nine URBS credits. A minimum cumulative GPA of 2.7 is required to transfer. Students request transfer by submitting a short letter of intent to the Department by April 30. The director communicates the decision directly to students by the end of May.

66  BA Honours in Urban Planning
Stage I
15  URBS 230, 240, 250, 260, 293
Stage II
15  URBS 300, 333, 335, 362
12  Chosen from GEOG 330; URBS 310, 337, 338, 380; and up to 3 credits from ARTH 374, POLI 349
Stage III
12  URBS 433, 491
12  Chosen from URBS 420, 434, 435, 450, 460, 480, 481, 486, 488, 490, 495; and up to 6 credits from GEOG 463, 465, 466

63  BA Specialization in Urban Planning
Stage I
15  URBS 230, 240, 250, 260, 293
Stage II
15  URBS 300, 333, 335, 362
12  Chosen from GEOG 330; URBS 310, 337, 338, 380; and up to 3 credits from ARTH 374, POLI 349
Stage III
6  URBS 433
15  Chosen from URBS 420, 434, 435, 450, 460, 480, 481, 483, 486, 488, 490, 495; and up to 6 credits from GEOG 463, 465, 466

42  BA Major in Urban Studies
Stage I
12  URBS 230, 240, 250, 260
Stage II
9  URBS 300, 335, 362
12  Chosen from GEOG 318, 330; URBS 310, 337, 338, 380; and up to 3 credits from ARTH 374, POLI 349
Stage III
9  Chosen from URBS 420, 434, 435, 450, 460, 480, 481, 486, 488, 490, 495; and up to 3 credits from GEOG 463, 465, 466
Courses

Because of the renumbering of courses in the Department, students should see §200.1 for a list of equivalent courses.

URBS 210  **Urban Issues** (3 credits)
This course presents contemporary issues regarding the city and includes a behind-the-scenes look at how planning and development are carried out. The principles and practices of community planning are addressed to enable students to develop critical thinking skills about the metropolitan world in which they live.

URBS 230  **Urban Development** (3 credits)
This course examines how and why cities grow and change over time. The relationships between socio-cultural, economic, and physical aspects of urban development are considered at the local, city, and regional scales.

URBS 240  **Planning** (3 credits)
This course examines the emergence and evolution of contemporary planning ideas within the broader historical context of 19th- and 20th-century city development. Special attention is given to how planning theories and practices have informed the development and management of urban, suburban and rural environments.

URBS 250  **Representation Methods in Urban Studies** (3 credits)
This course introduces students to theories and methods of graphic representation. It focuses on methods used to analyze and communicate data with an emphasis on spatial information on built and social environments. The representation methods include two- and three-dimensional views, cartography, as well as data visualization. Physical and digital tools are covered. Lectures and laboratory.

URBS 260  **Analytical Methods in Urban Studies** (3 credits)
This is an introduction to qualitative research skills associated with urban studies. The emphasis is on the use of data sources and collection techniques along with analytical procedures appropriate to questions of urban planning and public policy. Lectures and laboratory.

URBS 293  **Law and Regulation in Urban Planning** (3 credits)
Urban planning as governmental activity is defined by planning legislation in Quebec. This course covers the major bodies of legislation on urban plans, local development plans, environmental protection, agricultural land preservation, heritage and economic development. The law is a framework for development control and direct intervention at the municipal, regional and provincial levels.

NOTE: Students who have received credit for this topic under a URBS 298 or 398 number may not take this course for credit.

URBS 298  **Selected Topics in Urban Studies** (3 credits)
Specific topics for this course, and prerequisites relevant in each case, will be stated in the Undergraduate Class Schedule and Geography Course Guide.

URBS 300  **Neighbourhood and Community Planning** (3 credits)
Prerequisite: GEOG 220 or URBS 230. This course examines theories, issues, and techniques of community-level planning in urban and suburban environments. Particular place-based or identity-based communities and their participation in planning processes are considered. Models of community change and local development are reviewed, along with the policies and supportive infrastructure in cities, including Montreal. Local governance, decision-making, and public participation are considered in light of municipal and regional institutions which currently predominate in Canada's metropolitan areas.

URBS 310  **Urban Transportation** (3 credits)
Prerequisite: GEOG 220 or URBS 230 or permission of the Department. This course examines the past evolution and recent functioning of various transport modes in cities around the world. Recent debates about desirable levels of car, transit, and non-motorized modes feature prominently. Techniques of analyzing urban transport and public policy options are considered in light of burgeoning concerns about sustainable development and the worldwide growth of motorization.

NOTE: Students who have received credit for GEOG 333 may not take this course for credit.

URBS 333  **Urban Laboratory** (6 credits)
Prerequisite: URBS 250, 260, and 293 previously or concurrently; enrolment in the BA Honours in Urban Planning or BA Specialization in Urban Planning. With an emphasis on first-hand knowledge of an area-based problem, students study an urban problem and simulate solutions. Theory and case studies are used to develop appropriate interventions. Plans are prepared and, under the supervision of the professor, are evaluated by the peer group and experts in the field.
URBS 335  Geographic Information Systems (3 credits)
Prerequisite: URBS 250. This course is an introduction to current theoretical and practical approaches to Geographic Information Systems (GIS) through which students acquire basic skills and understanding in the use of GIS for spatial analysis. Training is centred on a series of practical assignments using ArcGIS software and for the term project, students explore the potential of GIS for addressing a real-world problem. Lectures and laboratory.
NOTE: Students who have received credit for GEOG 363, URBS 387, or URBS 487 may not take this course for credit.

URBS 337  Urban Agriculture (3 credits)
Prerequisite: URBS 230 or GEOG 220 or 274. This course examines the history and practice of growing food for human consumption in cities. Current practices of urban agriculture are viewed in relation to issues of social justice, sustainability, food security, and health. In addition to social issues, the course examines relevant aspects of plant and soil science. Lectures and field trips.
NOTE: Students who have received credit for this topic under a GEOG 398 number may not take this course for credit.

URBS 338  Urban Ecology (3 credits)
Prerequisite: 24 credits; or permission of the Department. Focusing on the impacts of human activities on fauna, flora, soils and air, this course introduces students to ecosystems found in urban environments. This course also examines the flux of energy and materials to and from the city, and places a strong emphasis on policy and planning practices related to urban forestry, site restoration, greening initiatives, environmental justice, and on practices that foster biodiversity and responsible resource management. The course also looks at historical and contemporary views on the relationship between the city and nature.

URBS 362  Quantitative Research Methods (3 credits)
Prerequisite: URBS 260. This course covers the most commonly employed methods for quantitative social science research. Students are taught the basics of introductory classical statistics (both descriptive and inferential) and gain experience applying these methods with commonly used software tools and real-world data. Lectures and laboratory.
NOTE: Students who have received credit for URBS 360 may not take this course for credit.

URBS 380  Urban and Regional Economic Development (3 credits)
Prerequisite: URBS 230, 240. This course draws on economic and geographical concepts to examine the process of urbanization. Students begin by focusing on the conventional tools and models for analyzing the nature and structure of cities, and at theories concerning the location of economic activity. It also examines key planning issues associated with the (evolving) role of cities as place of production, distribution, and consumption and considers the role of public policy in addressing these issues. Methods for defining and measuring urban economies for the purpose of analysis are reviewed.

URBS 398  Selected Topics in Urban Studies (3 credits)
Special topics in urban studies.

URBS 420  The Social and Cultural Geographies of Montreal (3 credits)
Prerequisite: GEOG 361 or URBS 360 or 362. This course explores the social and cultural geographies of Montreal with particular emphasis on how the spatial distribution of communities influences urban planning and public policy at the local and regional levels. Complex webs of identities and solidarities informed by socio-economic, linguistic, ethno-cultural, and sexual orientation factors shape the city living experience of individuals and populations alike. Through lectures, discussions, assignments and field trips, students are introduced to a variety of analytical perspectives that investigate the socio-cultural dynamics that contribute to shaping urban settlements, human-environment interactions and local social networks.
NOTE: Students who have received credit for URBS 320 or GEOG 430 may not take this course for credit.

URBS 433  Advanced Urban Laboratory (6 credits)
Prerequisite: URBS 333. This is an advanced course in urban design. An overview of current theory and practice is presented. An urban problem is developed and appropriate interventions are considered. These interventions are simulated and the results assessed.

URBS 434  Transportation GIS (3 credits)
Prerequisite: URBS 310 and 335, or GEOG 363 and 333. This course introduces students to the transportation planning and modelling process aided by the use of a GIS-based transportation decision aid tool. A real-world case-study region and transportation system is used to illustrate the different elements of the planning and modelling process. The course aims to highlight both the strengths and weaknesses (particularly with regard to how it treats the interaction between the transportation system and land use) of the traditional transportation planning approach.
NOTE: Students who have received credit for this topic under an URBS 498 number may not take this course for credit.

URBS 435  Transportation Impact Assessment (3 credits)
Prerequisite: URBS 310 or GEOG 333; URBS 335 or GEOG 363; or permission of the Department. This course introduces students to the quantitative analysis of the environmental (e.g. emissions) and social impacts (e.g. accessibility) of transportation system interventions. Students are introduced to, and gain hands-on experience with, the traditional transportation planning and modelling process aided by the use of a Geographic Information System (GIS)-based transportation decision aid tool. A real-world
case-study region and transportation system are used to illustrate the different elements of the planning and modelling process and how this can be used in impact assessment. Lectures and laboratory.

NOTE: Students who have received credit for GEOG 435 or for this topic under a GEOG 498 or URBS 498 number may not take this course for credit.

**URBS 450 Industrial Restructuring** (3 credits)
Prerequisite: GEOG 318 or URBS 380 or permission of the Department. In the age of globalization and heightened market uncertainty, firms are assuming new spatial and organizational forms to remain innovative and competitive. This course surveys both theories and policies on these restructuring initiatives in advanced capitalist countries. In addition to assessing the new challenges and opportunities that firms face in the present context, the course examines the changing role of national, state, and local governments in encouraging and shaping new economic development strategies.

NOTE: Students who have received credit for GEOG 450 or for this topic under a URBS 498 or GEOG 498 number may not take this course for credit.

**URBS 460 Reading the Urban Form** (3 credits)
Prerequisite: URBS 360 or 362 and completion of 48 university credits; or permission of the Department. This course focuses on the physical reality of the city, or its urban form, as well as the ongoing process of city building and urban morphogenesis. It introduces tools to properly describe, quantify, and interpret urban form in its spatial and temporal dimensions. It seeks to develop a better understanding of the processes of which the contemporary urban artifact is the result. Along with theoretical presentations, the course makes use of case studies conducted in different urban and cultural contexts, and introduces many examples of practical applications of morphological analysis in urban planning and design.

NOTE: Students who have received credit for this topic under a URBS 498 number may not take this course for credit.

**URBS 480 Impact Assessment** (3 credits)
Prerequisite: URBS 360 or 362 and completion of 48 university credits; or permission of the Department. The impacts of projects on urban and suburban communities and the environment are studied within the context of environmental protection legislation. The methods of assessment are then applied to specific cases.

**URBS 481 Urban Planning in the Developing World** (3 credits)
Prerequisite: GEOG 330 or URBS 380 or permission of the Department. This course explores the growth and planning of large metropolitan areas in developing nations, with a focus on East and South East Asia. Issues and problems associated with recent urbanization are examined along with potential solutions offered by urban planning and public policies. The planning roles of institutions including governments, multi-lateral development agencies, and non-governmental organizations are reviewed.

NOTE: Students who have received credit for this topic under a URBS 398, GEOG 398, URBS 498, or GEOG 498 number may not take this course for credit.

**URBS 483 Directed Studies/Practicum in Urban Planning I** (3 credits)
Prerequisite: Completion of 60 university credits; enrolment in the Specialization in Urban Planning. Through a case study or practicum of 120 hours with a private or public institution, or community interest group, students acquire experience in a professional working environment.

**URBS 484 Directed Studies/Practicum in Urban Planning II** (3 credits)
Prerequisite: Completion of 60 university credits; enrolment in the Specialization in Urban Planning. Through a case study or practicum of 120 hours with a private or public institution, or community interest group, students acquire experience in a professional working environment.

**URBS 486 Behaviour and the Environment** (3 credits)
Prerequisite: URBS 360 or 362 and completion of 48 university credits; or permission of the Department. Human behaviour is seen both as a determinant and as an outcome of environment. Behavioural topics include perception and attitudes, spatial behaviour, spatial cognition, and time-path analysis. Student projects involve applying the theory to a location study, a facility management study, or other relevant application.

**URBS 488 Analyzing Choice** (3 credits)
Prerequisite: URBS 360 or 362 or GEOG 362; or permission of the Department. This course examines the theory and statistical techniques commonly used to analyze choice. Students design, administer and analyze the results of a stated preference survey on a topic related to people’s choices and the environment.

**URBS 490 Public Space and the Public Interest** (3 credits)
Prerequisite: URBS 360 or 362 and completion of 48 university credits; or permission of the Department. Public space is understood as physical space, as well as the space of media and communications, which are openly accessible to all members of a community. Changing definitions of public space are examined in the context of societal and cultural change. The roles of agents and stakeholders in changing the definitions of public interest are also examined. Legal and normative frameworks for the definition of space, control, and access are also introduced.

NOTE: Students who have received credit for this topic under a URBS 498 number may not take this course for credit.
URBS 491  **Honours Thesis or Project** (6 credits)
Prerequisite: Completion of 60 university credits; enrolment in the Honours in Urban Planning. Students may undertake independent, supervised research leading to the production of an honours thesis. They may also undertake a major urban study leading to recommendations for public or private interventions.
*NOTE: Students who have received credit for GEOG 491 may not take this course for credit.*

URBS 495  **International Field Research** (3 credits)
Prerequisite: 60 university credits and permission of the Department. The political, social, and cultural realities of planning in a setting outside Canada are explored in a field course. Preparation for the field experience at home is accompanied by a stay in the chosen international city, where a field investigation is conducted, usually in collaboration with local partner organizations.
*NOTE: Students who have received credit for this topic under an URBS 398 or 498 number may not take this course for credit.*

URBS 498  **Advanced Topics in Urban Studies** (3 credits)
Special topics in urban studies.