

For additional information:

The Department of
Environment and Geography
University of Manitoba
220 Sinnott Building, 70A Dysart Road
Winnipeg, Manitoba
R3T 2N2

General Inquiries:
1-204-474-9667
1-204-474-9451

Fax Line:
1-204-474-7699

Undergraduate Inquiries:
Contact a Student Advisor
1-204-474-9847

Graduate Inquiries:
Contact the Department
Graduate Program Assistant
1-204-474-7065

Visit our website:

<http://umanitoba.ca/faculties/environment/departments/geography/index.html>

The Department of
**Environment
and Geography**

Course Descriptions



UNIVERSITY
OF MANITOBA

Clayton H. Riddell

Faculty of Environment,
Earth, and Resources



UNIVERSITY
OF MANITOBA

Clayton H. Riddell

Faculty of Environment,
Earth, and Resources

Environment Course Descriptions

ENVR 1000 - Environmental Science 1 - Concepts

This course will introduce students to the conceptual framework of the environment by examining its physical, biological, and social components. General topics to be considered will include ecological principles and the responses of natural and managed systems to disturbance; population growth; biodiversity and conservation; and environmental sustainability.

ENVR 2000 - Environmental Science 2 - Issues

This course will briefly review the major features of the structure and function of natural systems along with the degree to which these have been compromised. The main component of the course, however, will concentrate on the identification of the issues that underlie environmental degradation, while exploring alternative conditions that have the potential to reverse current trends and ultimately contribute to ecological sustainability.

ENVR 2010 - Field Topics in Environment

Field and practical experience in selected topics of current interest in the Environmental Science and Studies, with the content to vary depending on the needs of students and faculty.

ENVR 2020 - Extended Field Topics in Environment

Field and practical experience in selected topics of current interest in the Environmental Science and Studies, with the content to vary depending on the needs of students and faculty.

ENVR 2180 - Introductory Toxicology

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, the mechanisms of toxic action, and some major types of toxicants.

ENVR 2190 - Toxicological Principles

A survey of general principles underlying the effects of toxic substances on biological systems, including consideration of the history, scope and applications of toxicology, and the mechanisms of toxic action.

ENVR 2270 - Environmental Problem Solving and Scientific Thinking

A course to help students develop skeptical and scientific thinking around environmental issues and problems. A multi-disciplinary approach will be taken, using current topical issues as examples.

ENVR 2350 - Technical Communication in the Environmental Sectors

An introduction to technical communication skills required for environmental practitioners in research, government, and industry. The course covers technical writing and literature search techniques, business writing including reports, memos and e-mails, professional presentation skills, and fundamental internet skills. Practical experience is gained through assignments and laboratory exercises.

ENVR 2550 - Environmental Chemistry

An introduction to the chemistry of the environment. Emphasis will be on the composition of the natural environment and the processes of natural and human-introduced chemical species that take place within it. The course will provide students with the chemical basis for understanding the environment and environmental problems.

ENVR 2900 - Professional Development in the Environmental Sectors 1

Through self directed learning students are introduced to the environmental sectors and issues including workplace health and safety, the respectful workplace, managing workloads and expectation, and professionalism. The course is a mandatory requirement to Cooperative Education Option admission.

ENVR 3000 - Multidisciplinary Topics in Environmental Science 1

Selected topics of current interest in the Environmental Sciences and Studies. Course content to vary with each offering depending on the needs and interests of students and faculty.

Did you know...?

Many of our courses are also offered through Université de Saint-Boniface

GEOG 1201 - Introduction à la géographie

Étude des aspects physique et humain du globe et de leur interdépendance.

GEOG 1281 - Introduction à la géographie humaine

Étude des divers aspects du milieu humain: la population, l'habitat et les ressources naturelles.

GEOG 1291 - Introduction à la géographie physique

Étude des divers aspects de l'environnement physique: le climat, le relief, les sols et la végétation.

GEOG 2211 - Géographie économique

Introduction à l'expression spatiale des activités économiques. Le cours traite du concept de ressource, de la localisation et de l'utilisation des ressources naturelles, des théories sur les facteurs de localisation des activités industrielles, de l'agriculture et des fondements du développement régional. Donné au Université de Saint-Boniface.

GEOG 2221 - Introduction à la cartographie et analyse de la carte numérique

Deux heures de laboratoire par semaine. Une étude de la production et de l'analyse de cartes, en tenant compte de la cartographie assistée par ordinateur. Ce cours est une introduction aux techniques de l'expression cartographique et à l'utilisation des données de la télédétection il porte une attention spéciale à la représentation précise des statistiques.

GEOG 2481 - Géographie de la population

Une étude des facteurs exerçant un contrôle sur l'ampleur et la répartition des populations humaines; l'analyse des variations de fécondité, de mortalité et de mobilité ainsi que leurs causes et conséquences. Donné au Université de Saint-Boniface.

GEOG 2541 - Météorologie et climatologie

Étude de la nature, des contrôles et des observations du temps et des variations spatio-temporelles du climat. Donné au Université de Saint-Boniface.

GEOG 2551 - Géomorphologie

Vue d'ensemble des reliefs variés de la surface du globe et des processus géomorphologiques responsables de leur formation. (Laboratoire hebdomadaire).

GEOG 2651 - Géographie politique I

Étude des relations qui existent entre l'État et son territoire: sa localisation, ses frontières et ses disparités régionales.

GEOG 2661 - Géographie politique II

Étude des rapports de force entre les États et leurs relations à l'espace, aux ressources, à la population et aux groupes ethniques.

GEOG 3411 - Géographie de l'eau

L'eau, élément essentiel de la géographie physique: bilan d'eau, cycle hydrologique, infiltration, percolation et écoulement, eaux souterraines, hydrologie fluviale et marine: course d'eau, lacs et océans, environnement. Donné au Université de Saint-Boniface.

GEOG 3421 - L'eau, enjeu géostratégique

L'eau, un enjeu stratégique d'importance: un survol historique des enjeux liés à l'eau et les enjeux actuels, la répartition inégale de la ressource .eau. et son partage équitable, les solutions techniques, économiques, institutionnelles et juridiques envisagées et le droit international. Donné au Université de Saint-Boniface.

GEOG 3431 - Géographie de Canada

Étude du Canada par régions. L'étudiant ne peut se faire créditer à la fois le GEOG 2560 ou le GEOG 2570 et le GEOG 3700 Donné au Université de Saint-Boniface.

GEOG 3481 - Particularités de la géographie du Canada

Ce cours aborde des problèmes spécifiques la géographie canadienne: régions, urbanisme, milieu rural, ressources, utilisation du sol. Donné au Université de Saint-Boniface.

GEOG 3501 - Géographie de l'Europe

Vue générale sur la géographie du continent européen et plus spécifiquement sur l'Union européenne. L'accent sera placé sur quelques pays.

GEOG 3591 - Géographie des pays en voie de développement

Le thème principal sera la modernisation des pays en voie de développement: exemples de l'Asie méridionale et de l'Afrique noire. Seront étudiés les aspects suivants: le développement historique, les problèmes démographiques et sociaux, l'utilisation du sol et la conservation des ressources, l'urbanisation et l'industrialisation.

GEOG 3701 - Canada : Évolution de l'écoumène

Étude de l'impact qu'a eu l'arrivée des Européens, au début du XVIIe siècle, sur les différents aspects de l'environnement canadien; évolution de la nature de l'utilisation de l'espace canadien.

GEOG 3761 - Sujets particuliers en géographie

Le contenu de ce cours variera d'année en année selon les besoins des étudiants et la spécialité du professeur.

GEOG 3771 - Sujets particuliers en géographie

Le contenu de ce cours variera d'année en année selon les besoins des étudiants et la spécialité du professeur.

GEOG 3821 - Les territoires de la francophonie mondiale

La mise en place des espaces francophones à travers le monde: le développement et l'éclatement des empires français et belge. La territorialité et l'identité au sein de la francophonie internationale. Répartition géographique et développement institutionnel. Ententes politiques et aspirations territoriales.

GEOG 3831 - L'espace francophone panaméricain

L'étude des communautés francophones des Amériques dans le temps et dans l'espace. La mise en place de la francophonie panaméricaine et les circonstances de son éclatement. Ses enjeux économiques, sociaux, politiques et culturels. Les infrastructures, les institutions et les réseaux francophones.

GEOG 3841 - Les espaces francophones de l'Afrique, de l'Asie et de l'Océanie

L'étude des communautés francophones africaines, asiatiques et océaniques. Les étapes de la colonisation et de la décolonisation, l'évolution vers l'indépendance et l'accession au statut d'État souverain. La mise en place des infrastructures, des institutions et des réseaux francophones.

Geography Course Descriptions

GEOG 7410 - Spatial Analysis in Geography

The theory and techniques of spatial statistical data exploration, inference and hypothesis testing as they pertain to geographic analysis is explored. The role of spatial analytical techniques in field investigations, GIS and remote sensing applications are discussed.

GEOG 7420 - Synoptic Meteorology and Weather Analysis

The course covers applied aspects of meteorology in terms of weather analysis and forecasting techniques for synoptic-scales and meso-scales using various meteorological tools. An introduction to severe weather forecasting techniques will also be described. Familiarity with computers is essential.

GEOG 7440 - Climate Change

The course will provide an overview of General Circulation Models (GCMs) and how these models are used to study various aspects of global climate change. More specifically the course will deal with the coupling between the atmosphere, hydrosphere, lithosphere and biosphere from the perspective of Earth System Science.

GEOG 7450 - Boundary-Layer Climatology and Micrometeorology

A seminar-based course devoted to the study of advanced topics in microclimatology and micrometeorology.

GEOG 7460 - Advanced Methods in Geographic Information Systems

Weekly two-hour lab. This course focuses on practical application of techniques used in Geographic Information Systems (GIS) and the development of GIS models. The development, testing and presentation of GIS data, models and results are studied.

GEOG 7470 - Techniques in Climatology

This course overviews the theoretical basis that underpins the measurement and application of climate elements in micrometeorological and microclimatological research.

GEOG 7480 - Advanced Methods in Remote Sensing

This course provides instruction in the current theory and application of remote sensing technology to Earth System Science. Emphasis will be placed on the processing and interpretation of remote sensing imagery and the integration of remote sensing data with other spatial data.

GEOG 7500 - Biogeography

The course will emphasize principles and approaches to understanding biogeography on a worldwide scale with specific examples from Canadian and Manitoban research. Topics discussed include the physical environment and biological interactions, effects of disturbance and climate change, the geography of biological diversity, evolution and extinction.

GEOG 7580 - Gender and the Human Environment

From critical social science theoretical positions, this course asks student to examine what we can learn about how humans live on the earth if we see them as gendered. Just as we may also understand humans and their interactions in and with spaces, places and environments through the lenses of race, ethnicity, class, age and /or combinations of these categories with gender.

For more information about our courses, please visit the Aurora Course Catalog:
<https://aurora.umanitoba.ca>

Environment Course Descriptions

ENVR 3010 - Field Topics in Environmental Science 1

Field and practical experience in selected topics of current interest in the Environmental Sciences and Studies, with the content to vary depending on the needs and interests of students and faculty.

ENVR 3020 - Extended Field Topics in Environmental Science 1

Field and practical experience in selected topics of current interest in the Environmental Sciences and Studies, with the content to vary depending on the needs and interests of students and faculty.

ENVR 3110 - Environmental Conservation and Restoration

Environmental conservation and restoration are introduced and approaches based on science and traditional knowledge are contrasted. An emphasis is placed on systems thinking and both local and international case studies.

ENVR 3160 - Environmental Responsibilities and the Law

Environmental responsibilities and their legal framework in terms of policies, legislation, standards and guidelines and the tools to manage responsibility are examined through lectures, case study review and discussion. Environmental liability and due diligence are reviewed in relation to responsibilities of organizations and individuals. Strategies to manage environmental liabilities, including environmental and risk assessment, are also discussed.

ENVR 3180 - Methods in Ecotoxicology

This is a laboratory-based course exploring the development, conduction and application of bioassays, biomarkers, indicators and biomonitors in ecotoxicology. Through a laboratory setting, students learn how to perform standard bioassays for a variety of species (plants and invertebrates) as well as systems (aquatic and terrestrial) at different levels of biological organization, from the individual to the ecosystem.

ENVR 3250 - Environmental Assessment

The theory, principles and practices of environmental assessment as a planning and decision-making process to identify and mitigate adverse effects of development projects. Environmental assessment is defined in the context of federal and provincial legislation, and applicable standards and guidelines. Laboratory assignments involve practical experiences, case study review and basic report preparation.

ENVR 3340 - Circumpolar Cultures and Lifestyles

This course provides an introduction to the culture, lifestyles, belief systems, material culture, art, environmental issues, and politics of Aboriginal Peoples in northern Canada, Greenland, Alaska, Siberia and Scandinavia.

ENVR 3350 - Environmental Management Systems

This course provides an introduction to environmental management systems and specific material on the ISO 14001 international EMS standard. Auditing principles and techniques are described with specific guidance on auditing an ISO 14001 EMS.

ENVR 3400 - Introduction to Environment and Health

An overview of the linkages between human health and environmental issues. The course discusses the nature of environmental hazards, human exposure and health outcomes. Major environmental and human health issues such as air pollution, hazardous substances, endocrine disruptors and products in the home are covered.

ENVR 3500 - Project in Environmental Science

A research project in any aspect of environmental science, chosen in consultation with the department head and an appropriate supervising faculty member. Written reports and oral presentation on the results of the project will be required. The course is normally available only to final year students in the Environmental Science or Studies Program.

Environment Course Descriptions

ENVR 3550 - Environmental Analysis

An introduction to classical and modern techniques for sampling, sample pre-treatment, and analysis of chemical substances in aquatic atmospheric and terrestrial environments and the interpretation of data obtained from such analyses.

ENVR 3750 - Green Building and Planning

An overview of the concepts and tools of Green building design and Green Planning. The course covers the history and trends in Green Building and Planning, related policies, tools and techniques. There is a strong emphasis on learning from local case-studies through seminars and field trips.

ENVR 3850 - Sustainable Manitoba

This course approaches local sustainability issues from an interdisciplinary perspective. By looking at the ecological, social and economic aspects from a variety of discipline perspectives, a fuller understanding of sustainability is achieved. The broad range of perspectives is achieved through participation of guest speakers from other faculties and outside of the university as well as excursion outside the classroom.

ENVR 3900 - Professional Development in the Environmental Sectors 2

Attendance and participation in seminars, conferences and workshops to foster greater interaction between students and practitioners in the environmental sectors. Students improve professional skill sets through assignments and mock interviews. The normal sequence for participation is after completion of ENVR 3980

ENVR 3910 - Coop Work Term Report 1

Work term report, completed in conjunction with the coop placement, designed to integrate professional experiences with the concepts and theories explored through academic study. Students must be admitted into the Coop program to be registered, and receive credit.

ENVR 3920 - Coop Work Term Report 2

Work term report, completed in conjunction with the coop placement, designed to integrate professional experiences with the concepts and theories explored through academic study. Students must be admitted into the Coop program to be registered, and receive credit.

ENVR 3980 - Coop Work Term 1

Work assignments in business, industry, research or government for students registered in the Honours or Major Cooperative program. This course is graded pass/fail.

ENVR 3990 - Coop Work Term 2

Work assignments in business, industry, research or government for students registered in the Honours or Major Cooperative program. This course is graded pass/fail.

ENVR 4000 - Multidisciplinary Topics in Environmental Science 2

Selected topics of current interest in the Environmental Sciences and Studies. Course content to vary with each offering depending on the needs and interests of students and faculty.

ENVR 4010 - Field Topics in Environmental Science 2

Field and practical experience in selected topics of current interest in the Environmental Sciences and Studies, with the content to vary depending on the needs and interests of students and faculty.

ENVR 4020 - Extended Field Topics in Environmental Science 2

Field and practical experience in selected topics of current interest in the Environmental Sciences and Studies, with the content to vary depending on the needs and interests of students and faculty.

Geography Course Descriptions

GEOG 7080 - Quantitative Methods

A discussion of analysis and model construction in the study of urban and rural systems; analysis of socioeconomic and demographic data, construction of measures, and testing of models.

GEOG 7180 - Methodology of Agricultural Geography

The course first provides an understanding of social and economic concepts in agricultural geography, and then examines methods of data collection, sampling techniques, and analysis with relevance to specific research topics.

GEOG 7200 - Environment, Resources, and Population

This course discusses the contemporary imbalance between population and resources. The consequences of resource exploitation upon the natural environment are also examined.

GEOG 7260 - Selected Regional Issues in Geography

Advanced study of specific issues and problems in selected world regions.

GEOG 7270 - Physical and Synoptic Climatology

A survey of advances in climatology providing a foundation for climatic research. An examination is made of principles and problems in physical and synoptic climatology. Two hour lectures and three hour laboratory per week both terms.

GEOG 7290 - Energy Analysis

A survey of origins, methods and applications of energy analysis, a new technique of system energetics designed to provide information for a more efficient use of scarce natural resources.

GEOG 7310 - Geographic Theory and Methodology

A discussion of the meaning of explanation in human geography, the status of geography as a science and the construction of theory.

GEOG 7332 - Concepts in Atmospheric Modelling

This course will primarily focus on numerical modelling applications and techniques of the Earth's atmosphere with an emphasis on weather prediction. This includes understanding basic modelling terminology, numerical schemes, structure of models, types of models, what is required to run a model, and an introduction to data assimilation and ensemble techniques to weather prediction.

GEOG 7360 - Interdisciplinary Perspectives on Issues in the Environment

An intensive examination of research relating to various issues in the environment, this course will challenge students to consider crosscutting themes found in the literature and from their own learning experiences, and apply them to environmental problems.

GEOG 7380 - Advanced Ecotoxicology: Understanding Stress Ecology

Ecotoxicology characterizes how organisms interact with anthropogenic and natural stressors in an ecological context. This course is an examination of the fundamental science, approaches and issues being addressed in the field. Students should have a four-year science-based undergraduate degree and be registered in a graduate program.

GEOG 7400 - Field Topics in Arctic Systems

Field and practical experience in selected topics of multidisciplinary research in Arctic System Science from science theory to field sampling, to modeling and remote measurements. Focuses on the ocean-sea ice-atmosphere interface and its relationship with the biological and geochemical processes operating in the cryosphere.

Geography Course Descriptions

GEOG 4390 - Global Climate Change

Students will be introduced to the complexities of climate changes through a series of introductory lectures and reading assignments that focus on recent scientific publications and review articles (mathematical skills are not required). Both sides of the climate change debate will be addressed in weekly assignments, and students will defend their conclusions in classroom discussion. Each student will take on a project in some aspect of climate change -- glaciers, sea ice, temperature trends, precipitation, agriculture, animal migration, aerosols, or a regional impact.

GEOG 4410 - Rural Land Use

This course focuses on the dynamics of change on the rural-urban fringe. It involves seminars and individual field research.

GEOG 4550 - Topics in Air Pollution: Climatology, Location, and Planning

An introduction to air pollution sources; meteorology of air pollution; calculation of ground concentrations; effects and controls; environmental planning and policy.

GEOG 4560 - Techniques in Climatology

Instrumentation, the sources of climatic data, and the use of satellite photography, as well as methods of analysis and presentation are discussed.

GEOG 4580 - Concepts and Methods in Geography

This course surveys the historical development of the nature, scope, and methods of human and physical geography.

GEOG 4590 - Spatial Analysis

The theory and techniques of spatial statistical data exploration, inference and hypothesis testing as they pertain to geography analysis are explored. The role of spatial analytical techniques in field investigations, GIS and remote sensing applications are discussed.

GEOG 4650 - Models in Regional Analysis

Emphasis is placed on the use of regression techniques in regional analysis including the classical ordinary least squares methods and two-stage least squares. Migration and industrial location models are developed and calibrated using these techniques.

GEOG 4660 - Honours Thesis

This course involves the production of a thesis under the supervision of a department faculty member.

GEOG 4670 - Selected Issues

Intensive study of selected geographic issues.

GEOG 4720 - Advanced Methods in Geographic Information Systems

Weekly two-hour lab. This course focuses on the practical application of techniques used in Geographic Information Systems (GIS) and the development of techniques used in Geographic Information Systems (GIS) and the development of GIS models. The development, testing and presentation of GIS data, models and results are studied.

GEOG 7010 - Selected Topics in Geography

Advanced study of a selected topic from any one of the department's fields of specialization.

GEOG 7030 - Regional Analysis

A seminar course reviewing theories of regional development which have planning applications. Further, it assesses government policy aimed at regional intervention and notes procedures of evaluation.

GEOG 7040 - Seminar in Population Geography

Examination of the spatial and temporal character of demographic controls. Special emphasis will be placed upon the problems faced by developing areas in their attempts to deal with population growth.

Environment Course Descriptions

ENVR 4050 - Ecosystem Management

This course will provide students with an understanding of the practical applications of ecological science, environmental policy, and resource management approaches in the large-scale planning of landscapes. The course will review ecological principles and trace the historical development of the ecosystem concept. Comparisons are made to other possible environmental management approaches. The synthesis of major elements and concepts will be reinforced through case studies on the Manitoba landscape, with an emphasis on practical learning by students through field seminars and group discussions.

ENVR 4060 - Biogeography

This course will provide students with a general understanding of the historical, ecological, analytical, and conservation aspects of biogeography. The course will also have a dual focus on the principles and concepts of reasons for the distribution of plants and animals worldwide, as well as incorporating discussion on as many local (Manitoba, Canada, North America) examples as possible.

ENVR 4110 - Critical Thinking and the Environment

Topical issues and responses regarding the environment including conservation, management, and policy making are critically evaluated at local, national, and global scales. Term projects emphasizing applied work with environmental organizations and researchers are presented.

ENVR 4180 - Ecotoxicological Risk Characterization

A biologically based, advanced course that will give students working knowledge of current processes and techniques for ecotoxicological risk characterization. The course material will cover the topics of problem definition, dose response characterization, exposure characterization, risk assessment, and risk management decision making.

ENVR 4400 - Advanced Issues in Environment and Health

An evaluation of global and local environmental health issues and the assessment and management tools used to manage these risks. Case studies of environmental issues and their human health effects are covered. Students have the opportunity to work on a substantial interdisciplinary environmental health project.

ENVR 4500 - Thesis Project in Environmental Science and Studies

A research thesis project in any aspect of environmental science or environmental studies, chosen in consultation with the course coordinator and an appropriate supervisor, typically a faculty member. Written reports and oral presentation on the results of the thesis project will be required. The course is normally available only to final year students in the Environmental Science Honours or Environmental Studies Honours Program.

ENVR 4550 - Aquatic Chemistry

An examination of biogeochemical processes affecting the distribution, speciation and bioavailability of chemical substances in the aquatic environment. The theoretical basis for the chemical behaviour of natural water systems is discussed, as well as the description of the processes involved in wastewater treatment.

ENVR 4650 - Advanced Issues in Environmental Law and Policy

This course provides an in-depth review of Canadian law and policy relating to environmental protection and management. In particular, the course describes the laws governing a variety of topics related to the environment, including constitutional responsibilities, federal and provincial environmental legislation, water law, parks and protected areas, wildlife and fisheries management, species at risk, and international law including climate change.

Environment Course Descriptions

ENVR 4910 - Coop Work Term Report 3

Work term report, completed in conjunction with the coop placement, which is designed to integrate professional experiences with the concepts and theories explored through academic study. Students must be admitted into the Coop program to be registered, and receive credit.

ENVR 4980 - Work Term 3

Work assignments in business, industry, research or government for students registered in the Honours or Major Cooperative program. This course is graded pass/fail.

**For more information about our courses, please visit the Aurora Course Catalog:
<https://aurora.umanitoba.ca>**

Did you know...?

Our Bachelor of Environmental Science Program is now accredited by the Canadian Environmental Accreditation Commission

The Bachelor of Environmental Science degree programs received Accreditation by the Canadian Environmental Accreditation Commission in May 2011. Accreditation means that the stringent academic requirements that ensure that all aspects of environmental knowledge and practice are fully integrated into the offerings of our degree programs have been met. The University of Manitoba's Environmental Science program is now one of only 8 Canadian University programs that have attained this measure of success. Accreditation is important because it clearly demonstrates to students, parents, educators, and industry that the University has made the commitment to meet and maintain their Environmental Science offerings at the level of recognized National standards.

Benefits of Accreditation include:

- **Facilitates school-to-work transitions for graduates**
- **Provides a framework for continually improving the quality and efficiency of environmental programs**
- **Increases cooperation, articulation, and resulting economies in the development of new environmental programs**
- **Offers an objective measure of a program so that employers can select future employees on the basis of specific requirements**
- **Enables graduates to receive Certification as an Environmental professional more quickly than from non-accredited Universities**

Geography Course Descriptions

GEOG 4200 - Advanced Methods in Remote Sensing

Provides instruction in the current theory and application of remote sensing technology to Earth system Science. Emphasis will be placed on the processing and interpretation of remote sensing imagery and the integration of remote sensing data with other spatial data.

GEOG 4260 - Sacred Lands

Students will increase their understanding of the importance and significance of Sacred Lands and Sacred Spaces to International Indigenous Peoples. Experiential learning, seminars, and a field component may be included.

GEOG 4280 - Gender and the Human Environment

This upper-level seminar course will develop in students a depth and breadth of understanding appropriate to the honours undergraduate/graduate level in the area of gender geography scholarship. From critical social science theoretical positions, this course asks students to examine what we can learn about how humans live on the earth if we see them as gendered. Just as we may also understand humans and their interactions in and with spaces, places and environments through the lenses of race, ethnicity, class, age and/or combinations of these categories with gender.

GEOG 4290 - Geographies of Health and Health Care

This course provides an introduction to and critical examination of the geographies of health and healthcare. Topics include perceptions and determinations of health and health care; health care delivery, focusing on spatial patterns and inequities; and the relationship between environment and health, particularly impacts of environmental contamination.

GEOG 4300 - Synoptic Meteorology and Weather Analysis

Applied aspects of meteorology are described in terms of weather analysis and forecasting techniques for synoptic-scales and meso-scales using various meteorological tools. An introduction to severe weather forecasting techniques will also be described.

GEOG 4310 - Boundary-Layer Climatology and Micrometeorology

A seminar course on advanced topics in microclimatology and micrometeorology.

GEOG 4330 - Concepts in Atmospheric Modeling

This course will primarily focus on numerical modeling applications and techniques of the Earth's atmosphere with an emphasis on weather prediction. This includes understanding basic modeling terminology, numerical schemes, structure of models, types of models, what is required to run a model, and an introduction to data assimilation and ensemble techniques to weather prediction.

GEOG 4350 - Parks and Protected Areas Planning and Management: Field Studies

The course is taught in two segments, an on-campus component and field study component taking place in Banff National Park. The on-campus component examines the historical development of the concept of parks and protected areas, the role of interpretation, management and research in the parks and emerging issues in the management of parks and protected areas. In addition, during the on-campus component planning for the field will take place. The field segment will focus on a wide variety of management issues with particular attention to Banff National Park. Emerging issues and trends will be examined and past management responses evaluated. There will be opportunities for students to investigate specific management issues of interest to them and to participate in current research being conducted in the park. This course is also offered in the Faculty of Kinesiology and Recreation Management as REC 4350.

Geography Course Descriptions

GEOG 3800 - Geography of Transportation Development

This course examines the development of selected modes of transportation and their associated route and network development. Emphasis is on the place of transportation in the cultural, economic, and physical landscape of Canada and the United States since 1800.

GEOG 3810 - Quantitative Research Methods in Geography

This course focuses on the quantitative analytical methods available for the interpretation on physical and human geography applications.

GEOG 3850 - Sustainable Manitoba

This course approaches local sustainability issues from an interdisciplinary perspective. By looking at the ecological, social and economic aspects from a variety of discipline perspectives, a fuller understanding of sustainability is achieved. The broad range of perspectives is achieved through participation of guest speakers from other faculties and outside of the university as well as excursion outside the classroom.

GEOG 3860 - Animal Geographies

This course presents a variety of topics concerning the interactions between humans and animals, how humans influence and use animals, and the many roles animals play in human lives and environments. Animal Geographies lies at a meeting point between physical and human geography, where we must consider the blurring boundaries between what it means to be animal/human, and the implications of how animals are used and represented. A wide variety of perspectives, beliefs, and points of view will be explored.

GEOG 3870 - Food Geographies

This course provides a critical examination of the geographies of food at a variety of scales, from the body to the global. The course focuses on themes in three interconnected areas: 1) food production and the global food system from farm to plate including agribusiness and alternative food production and distribution models; 2) food consumption habits and beliefs and foodways as geographically contingent material culture; and 3) food (in) security and its relationship to health and wellbeing. This course is cross-listed as HNSC 3630.

GEOG 3900 - Geography of Manitoba

A regional study of Manitoba emphasizing the unique character and diversity of Manitoba's cultural landscapes. The historical, social, cultural, economic and political distinctiveness along with the impact of European settlement and aboriginal displacement will be discussed.

GEOG 4050 - Ecosystem Management

This course will provide students with an understanding of the practical applications of ecological science, environmental policy, and resource management approaches in the large-scale planning of landscapes. The course will review ecological principles and trace the historical development of the ecosystem concept. Comparisons are made to other possible environmental management approaches. The synthesis of major elements and concepts will be reinforced through case studies on the Manitoba landscape, with an emphasis on practical learning by students through field seminars and group discussions.

GEOG 4060 - Biogeography

This course will provide students with a general understanding of the historical, ecological, analytical, and conservation aspects of biogeography. The course will also have a dual focus on the principles and concepts of reasons for the distribution of plants and animals worldwide, as well as incorporating discussion on as many local (Manitoba, Canada, North America) examples as possible.

Geography Course Descriptions

GEOG 1280 - Introduction to Human Geography

This course studies aspects of the human world: population, settlement and resources.

GEOG 1290 - Introduction to Physical Geography

This course studies aspects of our physical environment: climate, landforms, soils and vegetation.

GEOG 2200 - Introduction to Thematic Cartography

An introduction to the principles of map compilation and reproduction, including analysis and cartographic display of spatially referenced data. Emphasis will be placed on cartographic data manipulation, generalization, and symbolization, map design, visualization and communication.

GEOG 2210 - Economic Geography

An introduction to spatial aspects of economic activities. It includes consideration of natural resource extraction and development, industrial location theory, agriculture, and the basis of regional development.

GEOG 2250 - Introduction to Geographic Information Systems

An introduction to the fundamental theoretical concepts of geographic information systems including acquisition, processing and analyzing environmental and socio-economic data. Topics to be covered include georeferencing, spatial data structures, processing, output and applications.

GEOG 2272 - Natural Hazards

Environmental hazards to human settlement and economy are examined with particular attention to meteorological, soil erosion, mass wasting, earthquake and volcanic phenomena.

GEOG 2300 - Atmospheric Thermodynamics, Clouds and Precipitation

Critical thermodynamic processes are discussed that are associated with the Earth's atmosphere including dry and moist processes, phases of water, stability, cloud development and precipitation processes.

GEOG 2310 - Introduction to Process Hydrology

This course introduces students to the near-surface components of the hydrological cycle, including the processes of precipitation, evaporation, water-biosphere interactions, infiltration, overland and stream flow.

GEOG 2330 - Place, Populations and Mobility: Geographic Perspectives

An examination of the factors controlling the number and distribution of human population. Variations in fertility, mortality and mobility will be analyzed and the causes and consequences reviewed.

GEOG 2372 - Geography of Tourism

This course examines the social, economic and environmental dimensions of tourism and recreation. Historical and contemporary experiences from around the world will be studied.

GEOG 2520 - Geography of Natural Resources

An introduction to the basic concepts of the subject and the distribution of resources. Stress will be placed on Canadian resources and resource requirements but examples from other resource systems will also be used.

GEOG 2530 - Introduction to Scientific Geographic Research

An introduction to the use of scientific methodology in geography and the application of scientific explanatory frameworks to geographic research projects. Data collection procedures are discussed with particular emphasis on measurement, sampling designs, and interview surveying techniques.

Geography Course Descriptions

GEOG 2540 - Weather and Climate

This half-course examines the nature, controls, and observations of weather and the variation of climate in time and space.

GEOG 2550 - Geomorphology

This half-course surveys a broad array of landforms in the world and the geomorphic processes responsible for their creation. Attention is strongly focused on those landform processes originating at the earth's surface.

GEOG 2570 - Geography of Canada

A regional study of Canada in which the major regions of Canada are studied with respect to geographical patterns of their physical environment, settlement, culture, economic activity, and land use.

GEOG 2580 - Geography of the United States

A regional study of the United States in which the major regions of the United States are studied with respect to geographical patterns of their physical environment, settlement, culture, economic activity, and land use.

GEOG 2630 - Geography of Culture and Environment

An introduction to the cultural geographic study of environment, focusing on the evolution of landscape, the creation of regions, and human relationships with nature.

GEOG 2640 - Geography of Culture and Inequality

An introduction to the cultural geographic study of human and place inequalities, focusing on behaviour in landscape, group differences, and human identities.

GEOG 2900 - Geography of Canadian Prairie Landscapes

This course introduces students to the various geographical themes, concepts and processes within the context of the natural and anthropogenic development of the Canadian prairie region. It traces the evolution of the prairie landscape. It will focus on academic writing in the discipline.

GEOG 3200 - Introduction to Remote Sensing

The course is an introduction to the principles of optical, active and passive microwave remote sensing. A review of satellite and sensors and their geographic applications will be presented, along with digital image analysis techniques. Laboratory assignments will provide hands-on experience in dealing with remote sensing data.

GEOG 3310 - Atmospheric Dynamics, Storms and Radar

The course covers the critical dynamic processes that are associated with the Earth's atmosphere including forces that control wind, the kinematics of the wind field, general circulation, hodographs, thermal wind, laws of motion, mid-latitude circulations, convective storms and the utility of weather radar.

GEOG 3320 - Introduction to Microclimates and Micrometeorology

This course introduces the concept of energy balance climatology and examines relationships among climate, microclimate, and environments of the Earth's surface and human-made environments. Studies include bioclimates and hydroclimates.

GEOG 3330 - Population Issues in the Developing World

This course examines issues and trends in population growth, change, and movement in the global south dominated by developing countries.

Geography Course Descriptions

GEOG 3340 - Migration and Mobility in a Globalized World

This course surveys the geographic dimensions of migration and mobility of populations, with emphasis of contemporary events.

GEOG 3390 - Introduction to Climate Change and Its Causes

The primary objective of this course is to provide students with a general understanding of the physical and astronomical factors that drive global climate change. Focus will be given to current and future climate change in the context of observations and modeling.

GEOG 3460 - Urban Geography

The course studies the processes and trends of urbanization; the classification of cities; central-place theory; cities as systems; land-use patterns; social forces and factorial ecology; and urban transport problems.

GEOG 3480 - Canadian Problems

The geographical basis of selected problems (e.g. regional, urban, rural, resource, land use).

GEOG 3520 - Energy and Society

The course reviews in detail the role of energy in modern society. Explanation of basic energy laws and flows in the biosphere precedes discussion of energy resources, technologies, uses, and impacts.

GEOG 3540 - Regional Development Planning Theory and Practise

The course considers regional disparities in a range of Western economies including Canada. The regional problem is explored theoretically and in the application of policies to alleviate disparities.

GEOG 3580 - Landforms

Present-day and Pleistocene glacial processes and landforms are examined in one term; slope processes and forms as well as the activities of rivers comprise the other. Human modification of these systems is discussed.

GEOG 3590 - Geography of Developing Countries

The main theme is modernization; examples from South Asia and Africa south of the Sahara. Historical development, population and social problems, land use and conservation, urbanization and industrialization.

GEOG 3640 - Social Geography of the Environment

This course provides an intermediate-level assessment of current geographical approaches to society and environment. Students are exposed to critical realist, social constructionist, Marxist, feminist and post-Colonial traditions as they are applied to environmental and social justice, globalization and public health. It includes discussion and a community-based learning project.

GEOG 3730 - Geographic Information Systems

Weekly two-hour lab. An introduction to geographic information systems (GIS) input, processing, output and applications.

GEOG 3740 - Field Studies in Geography

A field course designed to introduce students to either a detailed area study or to field techniques employed for specific geographic enquiry.

GEOG 3750 - Field Studies in Geography

A field course designed to introduce students to either a detailed area study or to field techniques employed for specific geographic enquiry.

GEOG 3760 - Special Topics in Geography

This course will vary from year to year depending on the needs of students and the interests of instructors.

GEOG 3770 - Special Topics in Geography

This course will vary from year to year depending on the needs of students and the interests of instructors.