

GEOGRAPHY (GEOG)

GEOG 7010 Selected Topics in Geography 3 cr

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

GEOG 7030 Regional Analysis 3 cr

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 7080 Quantitative Methods 3 cr

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 3 cr

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 3 cr

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 3 cr

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

GEOG 7290 Energy Analysis 3 cr

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 3 cr

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 3 cr

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.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of instructor.

GEOG 7360 Interdisciplinary Perspectives on Issues in the Environment 3 cr

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 3 cr

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.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of instructor.

GEOG 7400 Field Topics in Arctic Systems 3 cr

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.

GEOG 7420 Synoptic Meteorology and Weather Analysis 3 cr

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.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of instructor.

GEOG 7440 Climate Change 3 cr

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 3 cr

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

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of instructor.

GEOG 7470 Techniques in Climatology 3 cr

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

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of instructor.

GEOG 7480 Advanced Methods in Remote Sensing 3 cr

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.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: GEOG 3200 (C), or permission of instructor .

GEOG 7500 Biogeography 3 cr

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 3 cr

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. Cannot be held for credit with GEOG 4280.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: permission of instructor.

Equiv To: GEOG 4280

GEOG 7610 Graduate Seminar in E&G (Masters) 3 cr

The course allowed students to develop research and communication skills and provides a greater understanding of research within geography, environmental science and environmental studies; it is organized around presentations given by the students on their area of expertise; course graded pass/fail.

GEOG 7620 Graduate Seminar in E&G (PhD 1) 1.5 cr

The course allowed students to develop research and communication skills and provides a greater understanding of research within geography, environmental science and environmental studies; it is organized around presentations given by the students on their area of expertise; course graded pass/fail.

GEOG 7630 Graduate Seminar in E&G (PhD 2) 1.5 cr

The course allowed students to develop research and communication skills and provides a greater understanding of research within geography, environmental science and environmental studies; it is organized around presentations given by the students on their area of expertise; course graded pass/fail.

GEOG 7750 Understanding Contemporary Environmentalism: Power and Discourse 3 cr

This course will provide students with an advanced understanding of the relationships between nature and society by examining the rise of environmentalism through the past 50 years. Special attention will be paid to recent developments within the field of environmentalism and to theoretical work in the field of political ecology.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Pre-requisite: Permission of Instructor.

GEOG 7780 Storms-Mesoscale 3 cr

This course focuses on a range of storms, and mesoscale phenomena in the summer and winter. These include thunderstorms, tornadoes, squall lines, lightening, low level jets, gust fronts, blizzards, freezing rain, orographic storm, and polar lows. The emphasis is on the physical mechanisms leading to these events and it also examines how they may change in our warming climate. This course cannot be held for credit with GEOG 4780.

Equiv To: GEOG 4780

GEOG 7800 Climate and Society 3 cr

This course explores the causes, impacts, and responses to climate change. It identifies key concepts and analytic approaches to understand the social-ecological processes that drive climate change and influence responses. It engages with inequalities and the role of diverse relationships, values, identities, and knowledge systems.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Pre-requisite: Permission of Instructor.

GEOG 7872 Advanced Methods in Geomatics 3 cr

This course focuses on advanced theory and application of geomatic methods and technologies in spatial problem solving. Laboratories provide practical experience in the application of spatial multivariate methods.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of instructor.

GEOG 7910 Contemporary Issues in Arctic Science 3 cr

The course will deal with the coupling between the ocean-sea ice-atmosphere (OSA) interface and examine the role of these processes in physical-biological coupling. Seminars will be presented on both scientific and methodological principles required to understand how climate change affects the Arctic system.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of Department Head.

GEOG 7930 Oceanography: Chemical 3 cr

This course deals with the sources, distribution, and transformation of chemical constituents of the oceans, and the processes that control them. The emphasis will be given to biologically or climatically significant elements such as carbon, nitrogen, phosphorus, iron and mercury in the Arctic Ocean. Not to be held with GEOG 4930.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of the Department Head.

Equiv To: GEOG 4930

GEOG 7940 Sea Ice in Arctic Marine System 3 cr

This course will provide a general background on the importance and current knowledge of sea ice with a focus on the Arctic marine system. The material will be provided in a highly disciplinary manner, touching on fields of geophysics, physical geography, biology and chemistry. Not to be held with GEOG 4940.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of Instructor.

Equiv To: GEOG 4940

GEOG 7960 Oceanography: Biological II High Trophic Levels 3 cr

This course will examine the oceanographic-biological coupling occurring in the Arctic region, focusing on environmental conditions related to higher trophic levels and impacts of climate change. The aim of this course will extend the learning of the 3000-level course that examines the biological oceanography, which focus on the environmental factors that control primary production and lower tropic levels in the world's oceans. Not to be held with GEOG 4960.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: Permission of Department head.

Equiv To: GEOG 4960