

ENVIRONMENT (ENVR)

ENVR 1000 Environmental Science 1 - Concepts 3 cr

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. Not to be held with BIOL 1340.

Mutually Exclusive: BIOL 1340

Attributes: Recommended Intro Courses

ENVR 2000 Environmental Science 2 - Issues 3 cr

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.

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

Prerequisite: ENVR 1000 or BIOL 1340.

Attributes: Recommended Intro Courses

ENVR 2010 Field Topics in Environment 1.5 cr

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.

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

Prerequisite: Permission of department head.

ENVR 2020 Extended Field Topics in Environment 3 cr

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.

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

Prerequisite: Permission of department head.

Mutually Exclusive: ENVR 2030

ENVR 2030 Introduction to Sustainability 3 cr

The course takes an interdisciplinary perspective to understand environmental sustainability. The course helps students to engage with the foundational aspects of sustainability and relate that to the different disciplines in which they will later specialize. May not be held with ENVR 2020 when titled "Introduction to Sustainability".

Mutually Exclusive: ENVR 2020

ENVR 2180 Introductory Toxicology 3 cr

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. Not to be held with ENVR 2190 or BIOL 2380 or BIOL 2382 or AGRI 2180 or AGRI 2190.

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

Prerequisites: [BIOL 1030 or BIOL 1031], and [(CHEM 1310 or CHEM 1311, or CHEM 1320].

Equiv To: AGRI 2180, BIOL 2380, BIOL 2381, BOTN 2180

Mutually Exclusive: AGRI 2190, BIOL 2382, BOTN 2190, ENVR 2190, ZOOL 2190

ENVR 2190 Toxicological Principles 1.5 cr

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. Not to be held with ENVR 2180 or BIOL 2380, or BIOL 2382, or AGRI 2180, or AGRI 2190.

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

Prerequisites: [BIOL 1030 or BIOL 1031], and [CHEM 1310 or CHEM 1311, or CHEM 1320].

Equiv To: AGRI 2190, BIOL 2382, BOTN 2190, ZOOL 2190

Mutually Exclusive: AGRI 2180, BIOL 2380, BIOL 2381, BOTN 2180, ENVR 2180, ZOOL 2180

ENVR 2350 Technical Communication in the Environmental Sectors 3 cr

(Lab Required) 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.

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

Prerequisite: ENVR 1000 or BIOL 1340, or permission of department head.

ENVR 2550 Environmental Chemistry 3 cr

(Lab Required) 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. Not to be held with CHEM 2550.

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

Prerequisite: CHEM 1310 or CHEM 1311.

Equiv To: CHEM 2550

ENVR 2810 Environmental Critical Thinking and Scientific Research 3 cr

Course is designed to aid students in the development of a skeptical, scientific approach to thinking about environmental and geographical problems and issues, as well as applying that skepticism and critical thinking to develop well balanced research hypotheses and data collection methods. May not be held with the former ENVR 2270 or the former GEOG 2530.

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

Prerequisites: ENVR 1000 or GEOG 1280 or GEOG 1290 or GEOG 1700 or GPE 1700 or consent of department.

Mutually Exclusive: ENVR 2270, GEOG 2530, SCI 3300

Attributes: Written English Requirement

ENVR 2900 Professional Development in the Environmental Sectors 1 1.5 cr

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.

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

Prerequisite: 30 credit hours of university credit.

ENVR 3000 Multidisciplinary Topics in Environmental Science 1 3 cr
 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.

PR/CR: A minimum grade of C is required unless otherwise indicated.
 Prerequisites: Permission of department head, and 60 credit hours of university credit.

ENVR 3010 Field Topics in Environmental Science 1 1.5 cr
 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.

PR/CR: A minimum grade of C is required unless otherwise indicated.
 Prerequisite: Permission of department head.

ENVR 3020 Extended Field Topics in Environmental Science 1 3 cr
 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.

PR/CR: A minimum grade of C is required unless otherwise indicated.
 Prerequisite: Permission of department head.

ENVR 3110 Environmental Conservation and Restoration 3 cr
 (Lab Required) 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.

PR/CR: A minimum grade of C is required unless otherwise indicated.
 Prerequisites: BIOL 2390, or BIOL 2300, or AGEC 2370, or permission of department head.

ENVR 3140 Aquatic Ecosystem Services 3 cr

This course introduces the field of Ecosystem Services, an analytical framework for evaluating the economic, cultural, and biogeochemical contributions that ecosystems make to human health and well-being. Examples will be drawn from aquatic ecosystems and cover topics such as pollution and contamination cleanup, commercial and subsistence food provisioning, climate regulation, and cultural uses in folklore, art, religion, science, and recreation. A special emphasis will be made on microbes as key drivers of aquatic ecosystems, including topics in microbial diversity, metabolism, and evolution.

PR/CR: A minimum grade of C is required unless otherwise indicated.
 Prerequisites: [BIOL 1010 or BIOL 1011] or [(BIOL 1020 or BIOL 1021) and (BIOL 1030 or BIOL 1031)]; and [(one of CHEM 1100, CHEM 1101, the former CHEM 1300, or the former CHEM 1301) and (CHEM 1120 or CHEM 1121)] or ENVR 2000.

ENVR 3160 Environmental Responsibilities and the Law 3 cr

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. Not to be held with (ENVR 3150 or ENVR 2650).

PR/CR: A minimum grade of C is required unless otherwise indicated.
 Prerequisite: ENVR 2000 or permission of department head.

Equiv To: ENVR 2650, ENVR 3150

ENVR 3180 Methods in Ecotoxicology 3 cr

(Lab Required) This is a laboratory-based course exploring and critiquing the development, conduction and interpretation of toxicity tests in ecotoxicology. Students will learn how to perform standard bioassays for a variety of species (plants, invertebrates, and vertebrates) as well as systems (aquatic and terrestrial) at different levels of biological organization, from the individual to the ecosystem.

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

Prerequisites: ENVR 2180 or BIOL 2380 or AGRI 2180, or permission of instructor or department head.

Equiv To: ENVR 3300

ENVR 3250 Environmental Assessment 3 cr

This course engages with 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. Assignments involve practical experiences, case study review and basic report preparation.

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

Prerequisites: [ABIZ 3550 or ENVR 3160 or the former ENVR 3150] and [BIOL 2300 or BIOL 2301 or AGEC 2370] or [BIOL 2390] or permission of department head or instructor.

ENVR 3340 Circumpolar Cultures and Lifestyles 3 cr

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.

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

Prerequisite: Permission of department head.

Equiv To: NATV 3340

ENVR 3350 Environmental Management Systems 3 cr

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.

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

Prerequisite: Permission of department head.

ENVR 3400 Introduction to Environment and Health 3 cr

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.

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

Prerequisite: 60 credit hours of university credit.

ENVR 3500 Project in Environmental Science 3 cr

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.

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

Prerequisite: Permission of department head.

ENVR 3550 Environmental Analysis 3 cr

(Lab Required) 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. Not to be held with CHEM 3590.

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

Prerequisite: ENVR 2550, or CHEM 2550, or CHEM 2470, or permission of department head.

Mutually Exclusive: CHEM 2523, CHEM 3500, CHEM 3520, CHEM 3590

ENVR 3750 Green Building and Planning 3 cr

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.

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

Prerequisite: ENVR 2000 and 57 credit hours, or permission of department head.

ENVR 3850 Sustainable Manitoba - Linking Local and Global Sustainability 3 cr

This course explores the links in sustainability between the local and global through an interdisciplinary perspective. By looking at the ecological, social and economic aspects from a variety of disciplinary perspectives, an advanced understanding of sustainability is achieved. A broad range of perspectives is achieved through participation of guest speakers both from within and outside the university as well as excursion outside the classroom. May not be held with GEOG 3850.

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

Prerequisite: 60 credit hours of course work, or permission of department head or instructor.

Equiv To: GEOG 3850

ENVR 3890 Geography and Wellness 3 cr

This course explores how human environment relations influence our mental, emotional, and physical wellbeing. Students will delve into current research in health and wellness geography and related disciplines, particularly focusing on: therapeutic landscapes, ecological loss and grief, sacred spaces, and environmental influences on mental wellbeing. Also offered as GEOG 3890. May not be held with GEOG 3890.

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

Prerequisites: ENVR 1000 or GEOG 1200 or GEOG 1280 or GEOG 1700 or GPE 1700 or permission of the department head.

Equiv To: GEOG 3890

ENVR 3900 Professional Development in the Environmental Sectors 2 1.5 cr

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.

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

Prerequisites: ENVR 2900, and 60 credit hours of university credit.

ENVR 3910 Coop Work Term Report 1 1.5 cr

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.

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

Prerequisite: ENVR 2900. Prerequisite or Concurrent Requirement: ENVR 3980.

ENVR 3920 Coop Work Term Report 2 1.5 cr

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.

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

Prerequisite: ENVR 3980 (P). Prerequisites or Concurrent Requirements: ENVR 3900, and ENVR 3990.

ENVR 3980 Coop Work Term 1 0 cr

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

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

Prerequisite: ENVR 2900.

ENVR 3990 Coop Work Term 2 0 cr

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

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

Prerequisite or Concurrent Requirement: ENVR 3900.

ENVR 4000 Multidisciplinary Topics in Environmental Science 2 3 cr

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.

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

Prerequisites: Permission of department head, and 60 credit hours of university credit.

Mutually Exclusive: ENVR 4800, ENVR 4850, GEOG 4800

ENVR 4010 Field Topics in Environmental Science 2 1.5 cr

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.

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

Prerequisite: Permission of department head.

ENVR 4020 Extended Field Topics in Environmental Science 2 3 cr

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.

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

Prerequisite: Permission of department head.

ENVR 4050 Ecosystem Management 3 cr

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. Not to be held with GEOG 4050.

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

Prerequisite: Permission of department head.

Equiv To: GEOG 4050

ENVR 4060 Biogeography 3 cr

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. Not to be held with GEOG 4060.

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

Prerequisite: Permission of department head.

Equiv To: GEOG 4060

ENVR 4110 Critical Thinking and the Environment 3 cr

(Lab Required) 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.

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

Prerequisites: ENVR 2000, and 72 credit hours of course work, or permission of department head.

ENVR 4140 Advanced Topics in Ecosystem Services 3 cr

This course delves into the field of Ecosystem Services, an analytical framework for evaluating the economic, cultural, and biogeochemical contributions that ecosystems make to human health and well-being. Topics will be drawn from aquatic and terrestrial ecosystems and cover pressing issues such as pollution and contamination cleanup, commercial and subsistence food provisioning, climate regulation, and cultural uses in folklore, art, religion, science, and recreation. A special emphasis will be made on current events and guest lectures by professionals in the field of Ecosystem Services, or those with unique epistemological perspectives related to Ecosystem Services.

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

Prerequisites: [BIOL 1010 or BIOL 1011] or [(BIOL 1020 or BIOL 1021) and (BIOL 1030 or BIOL 1031)]; and [(one of CHEM 1100, CHEM 1101, and (CHEM 1120 or CHEM 1121)] or ENVR 2000, or permission of department head or instructor.

ENVR 4180 Ecotoxicological Risk Characterization 3 cr

An advanced course that will give students working knowledge of current techniques for defining and mitigating the environmental risks associated with chemical and other contaminants. The course will cover the topics of problem definition, effects characterization, exposure characterization, risk assessment, causality, weight of evidence and risk communication and management.

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

Prerequisite: One of ENVR 2180, BIOL 2380, BIOL 2381 or AGRI 2180 or permission of instructor or department head.

ENVR 4400 Advanced Issues in Environment and Health 3 cr

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.

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

Prerequisite: ENVR 3400.

Equiv To: ENVR 4220

ENVR 4500 Thesis Project in Environmental Science and Studies 6 cr

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.

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

Prerequisites: Permission of course coordinator, and a GPA of 3.00 in the last 30 credit hours.

ENVR 4550 Aquatic Chemistry 3 cr

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. Not to be held with CHEM 4550.

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

Prerequisite: ENVR 3550, or CHEM 3590, or permission of department head.

Equiv To: CHEM 4550

ENVR 4650 Advanced Issues in Environmental Law and Policy 3 cr

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.

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

Prerequisite: a minimum grade of C in ENVR 3160 (or the former ENVR 2650), or permission of department head.

ENVR 4800 Climate and Society 3 cr

This course takes an interdisciplinary approach to explore the social causes, consequences, and necessary responses to climate change including adaptation and mitigation. It identifies key concepts and analytic approaches that assist with identifying the social, economic, political, and cultural processes that both drive climate change and influence responses. In particular, it engages with human environment relationships and the role of diverse values, identities, knowledge systems and emotions, and the differential amounts of power held across social groups. Examples will be drawn from the global North and South and at multiple scales from the local to global. May not be held with GEOG 4800 or ENVR 4000 when titled "Climate and Society" or GEOG 4670 when titled "Climate and Society."

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

Prerequisite: 3 credit hours of 2000- or 3000- or 4000- level GEOG or ENVR, or permission of the instructor.

Equiv To: GEOG 4800

Mutually Exclusive: ENVR 4000, GEOG 4670

ENVR 4850 Wildlife Management 3 cr

(Lab required) This course provides students with an understanding of relevant theory and practice in wildlife management. Topical management issues will be studied, selected through consultation with government and NGOs in Manitoba. There will be field trips and lab activities. May not be held with ENVR 4000 when titled "Wildlife Management."

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

Prerequisite: Permission of Instructor.

Mutually Exclusive: ENVR 4000

ENVR 4872 Advanced Methods in Geomatics 3 cr

(lab required) This course focuses on the theory and application of geomatics in spatial problem solving in geography and the environment. The use of geomatics' technologies including GIS, Earth observation and spatial numerical methods will be covered. Students will learn the theoretical underpinning of spatial statistical concepts and will experiment with data exploration, inference and hypothesis testing. Lab assignments will provide practical experience with GIS and other geomatics software as well as CRAN-R. Not to be held with GEOG 4590 or GEOG 4720 or GEOG 4872.

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

Prerequisite: GEOG 3730 or permission of instructor.

Equiv To: GEOG 4590, GEOG 4720, GEOG 4872

ENVR 4910 Coop Work Term Report 3 1.5 cr

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.

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

Prerequisite: ENVR 3990 (P).

ENVR 4980 Work Term 3 0 cr

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

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

Prerequisite: ENVR 3990 (P).