ENVIRONMENTAL STUDIES AND SCIENCES (ENV)

Updated January 2, 2024

Chair: Associate Professor K. Patel; Professors**:** D. Kumaragamage, J. Tardif, R. Westwood; Associate Professors: R. Bullock, S. Indraratne; Assistant Professor: JP. Desforges; Lab Technician: France Conciatori; Department Assistant: Ayesha Hammad Khan; Adjunct Professor: A. Diduck

MAJOR REQUIREMENT

Single Major:	Sustainable Environmental Resource Systems, 63 credit hours; Sustainable Urban Environments, 63 credit hours.
Double Major:	The student must meet both the requirements of Environmental Studies and Sciences and those of the second Major Department. A course listed by both Department counts towards both Majors (unless it is clearly stated otherwise in that discipline's section of this Calendar).
Combined Major:	Minimum 48 credit hours from two (2) different majors with not less than 18 credit hours from each major subject. Required courses depend on second major and will be determined in consultation with the department advisor

Required courses:

These are the core courses for all BA students.

BIOL-1106(3)	Environmental Biology **OR CHEM-2801(3)** Environmental Issues: A Chemistry Perspective
ECON-1104(3)	Introduction to Economic Theory
ECON-2317(3)	Environmental Economics
ENV-1600(3)	Human-Environmental Interactions
ENV/IDS-2603(3)	Environmental Sustainability: A Global Dilemma
ENV-2604(3)	Environment and Health
ENV-3606(3)	The Environment and Business
ENV-3609(3)	Research Methods and Design
ENV-3610(3)	Research Projects
GEOG-1205(3)	Science for a Dynamic World: An Introduction to Physical Geography
GEOG-2309(3)	Statistical Techniques in Environmental Analysis
IS-1017(3)	Introduction to Indigenous Studies: Politics and Governance
PHIL-2233(3)	Environmental Ethics

SUSTAINABLE

SUSTAINABLE URBAN ENVIRONMENTS

CHEMISTRY

FOREST ECOLOGY

The **Forest Ecology and Forest Policy and Management streams** are accredited by the Canadian Institute of Forestry (CIF) in addition to accreditation by the Canadian Environmental Accreditation Commission (CEAC) and Environmental Careers Organization (ECO) Canada. The Canadian Institute of Forestry is Canada's professional organization of foresters and leading voice for the forest industry. This designation allows graduates from these streams to have the prestige associated with a **nationally recognized forestry baccalaureate program**, giving students a competitive edge 21 (10 Td[T)-3 48y)]TJ-0001 Tc -0.001 Tw [1.200 Td[T)p-31 (gnog0.2

Six credits from among:

IS-1017(3)	Introduction to Indigenous Studies: Politics and Governance
IS-2050(3)	Indigenous Peoples, Lands, and Resources
IS-2060(3)	Indigenous Treaties in Canada
POL-3411(3)	Indigenous People in Canada and the Law

Suggested electives:

BIOL/ENV-2477(3)	Forest Measurement
BIOL/ENV-3473(3)	Principles of Silviculture+
CRS-1200(3)	Introduction to Conflict Resolution Studies
ENV/SOC-2502(3)	Sociology of the Environment
ENV-3608(3)	Forest Wildlife Management
ENV-4613(3)	Directed Research in Environmental Studies and Sciences
ENV-4614 (3)	Critical Environmental issues
ENV-4615(3)	Environmental Soil Science
ENV-4617(3)	Ecology and Management of Species at Risk
GEOG-3306(3)	Advanced Geographic Information Systems
IS-1017(3)	Introduction to Indigenous Studies: Politics and Governance
IS-2050(3)	Indigenous Peoples, Lands, and Resources
IS-2060(3)	Indigenous Treaties in Canada
IS/POL/UIC -2020(3)	Colonization and Indigenous Peoples
POL-3405(3)	Indigenous Politics in Manitoba
POL-3411(3)	Indigenous People in Canada and the Law
POL-3415(3)	Indigenous Justice and Canadian Law
REL-2801(3)	Introduction to Indigenous Spirituality

* courses with prerequisites that are not required courses in the major
** The field courses are typically held in alternating years in the spring or summer session.
+ Typically held in alternating years in the fall/winter session.

REQUIREMENTS FOR A 4-YEAR BSC WITH A BUSINESS STREAM

Students must complete the requirements of the 4-year BSc in Environmental Science in any stream (see previous section) and the set of core courses indicated in the "Science with a Business Stream" section of the Calendar

REQUIREMENTS FOR AN HONOURS BSC

ADMISSION REQUIREMENT — Students must consult with the Department Advisor in planning their studies.

GRADUATION REQUIREMENT — 120 credit hours

Graduation G.P.A. Requirement — To graduate with a BSc Honours, students must have completed the course requirements for a BSc in Environmental Science with a minimum GPA of 3.0 on all Environmental Studies and Sciences courses, which will be calculated on all course attempts in the major. Students must also have a minimum 2.75 GPA on all non-major courses, which will be calculated as for the General Degree (i.e., F's are not included and, in the case of repeated courses, only the highest grade will be used).

RESIDENCE REQUIREMENT

Degree: Minimum 60 credit hours

Honours: Minimum 30 credit hours**,** including minimum 18 credit hours at upper level (3000/4000) of which a minimum of 9 credit hours at 4000 level

GENERAL DEGREE REQUIREMENT

Humanities: 12 credit hours in Humanities

Science: 6 credit hours

Writing: Minimum 3 credit hours of Academic Writing. RHET-1106 Academic Writing: Links with the Disciplines, Environmental Studies, is recommended.

The Department recommends that students take RHET-1106 early in their first year of studies as most courses in DESS programs include multiple writing assignments.

Indigenous: 3 credit hours in designated Indigenous requirement courses

Maximum Introductory Courses: Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 78 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.

Distribution:	Minimum three (3) credit hours from each of five (5) different subjects.
4000-level Courses:	

CHEM-1111(3) Introduction to the Chemical Properties of Matter
CHEM-1112(3) Basic Principles of Chemical Reactivity
Academic Writing Requirement: 3 credit hours Humanities

MAJOR REQUIREMENT:

Year 1 - University of Winnipeg

BIOL-1115(3) Cells and Cellular Processes
BIOL-1116(3) Evolution, Ecology and Biodiversity
CHEM-1111(3) Introduction to the Chemical Properties of Matter
CHEM-1112(3) Basic Principles of Chemical Reactivity
ECON-1104(3) Introduction to Economic Theory
ENV-1600(3) Human-Environmental Interaction
GEOG-1205(3) Our Dynamic World: An Introduction to Physical Geography
Academic Writing Requirement

3 credit hours Humanities

Year 2 - University of Winnipeg

BIOL-2403(3) Principles of Ecology
CHEM-2302(3) Quantitative Chemical Analysis
CHEM-3302(3) Methods of Chemical Analysis
ECON-2317(3) Environmental Economics
ENV/IDS-2603(3) Environmental Sustainability: A Global Dilemma
ENV-3035(3) Law and the Environment
PHIL-2233(3) Environmental Ethics
3 credit hours Humanities
3 credit hours from among:
GEOG-2309(3) Statistical Techniques in Environmental Analysis
STAT-1301(3) Statistical Analysis 1
STAT-1501(3) Elementary Biological Statistics I
3 credit hours from among:
BIOL-3492(3) Quantitative and Theoretical Biology
CHEM-2701(3) Introduction to Computers in Chemistry
ACS-1453(3) Introduction to Computers

Year 3 - RRC Polytech

CIVC-1044 Project Administration
CIVL-2001 Calculus and Statistics
CIVL-2006 Geo-Environmental Fundamentals
CIVL-2009 Fundamentals of GIS
CIVL-2012 Environmental Analysis
CIVL-2020 Environmental Science
CIVL-2031 Chemistry 2
CIVL-2032 Health and Safety
CIVW-2008 Co-op Work Placement

Year 4 - RRC Polytech

CIVL-2007 Environmental Management
CIVL-3005 Applied Research Project
CIVL-3007 Waste Management
CIVL-3008 Water and Waste Water
CIVL-3011 Remote Sensing and Digital Photogrammetry
CIVL-3016 Hydrology
CIVL-3026 Engineering Economics
CIVL-3027 Supervisory Management

Year 5 - University of Winnipeg

ENV-3609(3) Research Methods and Design
ENV-3610(3) Research Projects
ENV-4611(3) Environmental Impact Assessment
3 credit hours Humanities
18 credit hours from among:
BIOL-2902(3) Biology of Bacteria and Archaea (formerly “Biology of the Prokaryotes and Viruses”)
BIOL-3410(3) Freshwater Ecology
BIOL/ENV-3471(3) Forest Ecology
BIOL/ENV-3476(3) Forest Policy and Management
BIOL-3901(3) Microorganisms and Disease
BIOL-3902(3) Microbial Ecology
BIOL-4471(3) Ecological Methodology
CHEM-3601(3) Environmental Chemistry
ENV-3607(3) Forests and the Environment
ENV-4614(3) Critical Environmental Issues