

2011-2012 Undergraduate Calendar

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2011-2012 academic year, including the Summer Semester 2011, the Fall Semester 2011 and the Winter Semester 2012.

For your convenience the Undergraduate Calendar is available in PDF format.

If you wish to link to the Undergraduate Calendar please refer to the Linking Guidelines.

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University of Guelph 2011

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2011-2012 academic year, including the Summer Semester 2011, the Fall Semester 2011 and the Winter Semester 2012.

The University reserves the right to change without notice any information contained in this calendar, including fees, any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs. The publication of information in this calendar does not bind the University to the provision of courses, programs, schedules of studies, or facilities as listed herein.

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Published by: Undergraduate Program Services

Introduction

Collection, Use and Disclosure of Personal Information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. Certain personal information is disclosed to external agencies, including the Ontario Universities Application Centre, the Ministry of Training, Colleges and Universities, and Statistics Canada, for statistical and planning purposes, and is disclosed to other individuals or organizations in accordance with the Office of Registrarial Services Departmental Policy on the Release of Student Information. For details on the use and disclosure of this information call the Office of Registrarial Services at the University at (519) 824-4120 or see <http://www.uoguelph.ca/registrar/registrar/index.cfm?index>.

Statistics Canada - Notification of Disclosure

For further information, please see Statistics Canada's web site at <http://www.statcan.ca> and Section XIV Statistics Canada.

Address for University Communication

Depending on the nature and timing of the communication, the University may use one of these addresses to communicate with students. Students are, therefore, responsible for checking all of the following on a regular basis:

Email Address

The University issued email address is considered an official means of communication with the student and will be used for correspondence from the University. Students are responsible for monitoring their University-issued email account regularly. See Section I--Statement of Students' Academic Responsibilities for more information.

Home Address

Students are responsible for maintaining a current mailing address with the University. Address changes can be made, in writing, through Undergraduate Program Services.

Name Changes

The University of Guelph is committed to the integrity of its student records, therefore, each student is required to provide either on application for admission or on personal data forms required for registration, his/her complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation.

Student Confidentiality and Release of Student Information Policy Excerpt

The University undertakes to protect the privacy of each student and the confidentiality of his or her record. To this end the University shall refuse to disclose personal information to any person other than the individual to whom the information relates where disclosure would constitute an unjustified invasion of the personal privacy of that person or of any other individual. All members of the University community must respect the confidential nature of the student information which they acquire in the course of their work.

Complete policy at <http://www.uoguelph.ca/policies/pdf/ORSInfoReleasePolicy060610.pdf>.

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Bachelor of Science in Environmental Sciences [B.Sc.(Env.)]

Program Information

Objectives of the Program

The Environmental Sciences program is designed to provide a strong interdisciplinary grounding in specific environmental sciences including the socioeconomic context in which environmental issues are resolved.

There is an emphasis on management and decision-making skills for the application of scientific knowledge to environmental problems, and the evaluation of appropriate environmental policies. A practical perspective based on defining and resolving problems is central to the program, and this is often done in the context of group work.

Substantial emphasis is placed on communication skills, including the development of competence in both written and oral presentations. These skills will be progressively developed in core courses from the first to the fourth year. Students in the final year of their program will be expected to take part in more intensive communication skill development. Graduates will seek employment in a range of fields, from government agencies to private industry and research.

Academic Counselling

General information on the degree program is available from the Program Counsellor. Advising for each major is available through the assigned faculty advisor responsible for the major. Students are encouraged to seek the advice of the faculty advisors when choosing restricted electives and planning course selections.

Degree

The degree granted for the successful completion of this honours program will be the Bachelor of Science in Environmental Sciences--B.Sc.(Env.).

Continuation of Study

Students are advised to consult the regulations for Continuation of Study in Section VIII--Undergraduate Degree Regulations and Procedures of this Calendar.

Conditions for Graduation

In order to graduate from the B.Sc.(Env.) program, students must successfully complete a minimum of 20.00 credits including all the stated course requirements for the program. As well, students must achieve a cumulative average of 60% or higher over all course attempts.

Environmental Sciences (Co-op)

A 5-year Honours Program in Environmental Sciences is offered as a Co-operative Education Program. This option is offered within the B.Sc. (Env.) degree and is available to all majors. The course requirements are the same as those listed for the regular B.Sc. (Env.) program, by the Co-operative Education Program and as outlined in the Continuation of Study policy (Section VIII--Undergraduate Degree Regulations & Procedures).

3 co-op work terms (COOP*1000, COOP*2000, COOP*3000) are required. An optional 4th co-op work term (COOP*4000) is available. COOP*1100 must be completed during semester 2.

Environmental Sciences Co-op Work Term Schedule

Year	Fall	Winter	Summer
1	Academic Term 1	Academic Term 2	Off
2	Academic Term 3	COOP*1000	Academic Term 4
3	COOP*2000	Academic Term 5	COOP*3000
4	Academic Term 6	Academic Term 7	COOP*4000 (Optional)
5	Academic Term 8	N/A	N/A

Since some of the course requirements in the degree program (core or major) are not offered each semester, careful planning and program consultation with the Faculty Co-op Advisor is essential. In particular, students are encouraged to seek advice when choosing for their Summer academic semester.

The Environmental Sciences Program

The degree in Environmental Sciences consists of a minimum of 20.00 credits, as follows:

1. 5.00 First Year Curriculum
2. 5.00 Environmental Sciences Core
3. 7.00 Environmental Sciences Major
4. free electives*

Within these courses, students must include at least 6.00 credits at the 3000 or 4000 level, and no program may include more than 7.00 credits at the 1000 level.

* There are not specific subject requirements for the elective courses, however, you may NOT select the following: BIOL*1500, BOT*1200, CHEM*1100, CIS*1000, GEOL*1100, MET*1000, MICR*1020, MBG*1000, PHYS*1600.

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

First Year Curriculum

The first year courses have been selected to provide students with sufficient background and knowledge to enter any one of the Environmental Sciences majors.

Semester 1

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

CHEM*1050	[0.50]	General Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Note: Co-op students must select COOP*1100 Introduction to Co-operative Education

Environmental Sciences Core

In addition to the common first year curriculum, students are required to take the following core Environmental Sciences courses in the semesters recommended in the schedule of studies:

BIOL*2060	[0.50]	Ecology
ENVS*2150	[0.50]	Terrestrial Systems
ENVS*3150	[0.50]	Aquatic Systems
ENVS*4011/2	[0.50]	Project in Environmental Sciences
ENVS*4300	[0.50]	Environmental Law & Regulation
MET*2030	[0.50]	Meteorology and Climatology
PHIL*2070	[0.50]	Philosophy of the Environment

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

One of:

BIOL*4040	[0.50]	Natural Resources Policy
GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

One of:

ECON*2740	[0.50]	Economic Statistics
GEOG*2460	[0.50]	Analysis in Geography
STAT*2040	[0.50]	Statistics I

Note: the statistics course required is prescribed by the student's choice of major.

Environmental Sciences Majors

Earth and Atmospheric Science

Ecology

Environmental Biology

Environmental Economics and Policy

Environmental Geography

Natural Resources Management

Requirements for each of these majors are described in the detailed schedules of studies below.

Earth and Atmospheric Science (EAAS)

School of Environmental Sciences, Ontario Agricultural College

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

CHEM*1050	[0.50]	General Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics

GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications
One of:		
BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Semester 3

ENVS*2150	[0.50]	Terrestrial Systems
GEOL*1050	[0.50]	Geology and the Environment
MET*2030	[0.50]	Meteorology and Climatology
STAT*2040	[0.50]	Statistics I
One of:		
ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

Semester 4

BIOL*2060	[0.50]	Ecology
GEOL*3060	[0.50]	Groundwater
SOIL*2010	[0.50]	Soil Science
One of:		
MATH*1210	[0.50]	Calculus II
MATH*2080	[0.50]	Elements of Calculus II
STAT*2050	[0.50]	Statistics II

0.50 electives or restricted electives

Semester 5

GEOL*2110	[0.50]	Earth Material Science
One of:		
GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

1.50 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 8.

Semester 6

ENVS*3150	[0.50]	Aquatic Systems
GEOG*3420	[0.50]	Remote Sensing of the Environment
PHIL*2070	[0.50]	Philosophy of the Environment

1.00 electives or restricted electives

Semester 7

ENVS*4011	[0.00]	Project in Environmental Sciences
ENVS*4300	[0.50]	Environmental Law & Regulation

2.00 electives or restricted electives

Semester 8

ENVS*4012	[0.50]	Project in Environmental Sciences
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2.00 electives or restricted electives

Restricted Electives

Students must choose one of the following:

GEOL*3250	[0.50]	Field Methods in Geosciences
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
SOIL*4250	[0.50]	Soils in the Landscape

Students in the Earth and Atmospheric Science major are required to choose 3.50 credits from the following lists. Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of their B.Sc.(Env.) degree must be at the 3000-4000 level. With prior approval, students may be able to use courses not on this list towards their Earth and Atmospheric Science restricted electives.

List A - Environmental Geology

GEOL*2020	[0.50]	Stratigraphy
GEOL*2200	[0.50]	Glacial Geology
GEOL*3190	[0.50]	Environmental Water Chemistry
GEOL*4090	[0.50]	Sedimentology
GEOL*4130	[0.50]	Clay and Humic Chemistry
GEOL*4240	[0.50]	Geomicrobiology

List B - Soil Science

PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*3200	[0.50]	Environmental Soil Biology
One of:		
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management

List C - Water

ENGG*2550	[0.50]	Water Management
ENGG*3650	[0.50]	Hydrology
GEOG*4150	[0.50]	Sedimentary Processes
GEOL*3190	[0.50]	Environmental Water Chemistry
SOIL*3080	[0.50]	Soil and Water Conservation

List D - Atmosphere

MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation

Earth and Atmospheric Science (EAAS:C)**School of Environmental Sciences, Ontario Agricultural College****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1 - Fall

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Semester 3 - Fall

ENVS*2150	[0.50]	Terrestrial Systems
GEOL*1050	[0.50]	Geology and the Environment
MET*2030	[0.50]	Meteorology and Climatology
STAT*2040	[0.50]	Statistics I

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOL*2060	[0.50]	Ecology
PHIL*2070	[0.50]	Philosophy of the Environment
SOIL*2010	[0.50]	Soil Science

1.00 electives or restricted electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

ENVS*3150	[0.50]	Aquatic Systems
GEOG*3420	[0.50]	Remote Sensing of the Environment
GEOL*3060	[0.50]	Groundwater

One of:

MATH*1210	[0.50]	Calculus II
MATH*2080	[0.50]	Elements of Calculus II
STAT*2050	[0.50]	Statistics II

0.50 electives or restricted electives

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

ENVS*4011	[0.00]	Project in Environmental Sciences
GEOL*2110	[0.50]	Earth Material Science
One of:		
GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

1.50 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 7.

Semester 7 - Winter

ENVS*4012	[0.50]	Project in Environmental Sciences
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2.00 electives or restricted electives

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

ENVS*4300	[0.50]	Environmental Law & Regulation
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2.00 electives or restricted electives

Restricted Electives

Students must choose one of the following:

GEOL*3250	[0.50]	Field Methods in Geosciences
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
SOIL*4250	[0.50]	Soils in the Landscape

Students in the Earth and Atmospheric Science major are required to choose 3.50 credits from the following lists. Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of the B.Sc.(Env.) degree must be at the 3000-4000 level. With prior approval, students may be able to use courses not on this list towards their Earth and Atmospheric Science restricted electives.

List A - Environmental Geology

GEOL*2020	[0.50]	Stratigraphy
GEOL*2200	[0.50]	Glacial Geology
GEOL*3190	[0.50]	Environmental Water Chemistry
GEOL*4090	[0.50]	Sedimentology
GEOL*4130	[0.50]	Clay and Humic Chemistry
GEOL*4240	[0.50]	Geomicrobiology

List B - Soil Science

PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management

List C - Water

ENGG*2550	[0.50]	Water Management
ENGG*3650	[0.50]	Hydrology
GEOG*4150	[0.50]	Sedimentary Processes
GEOL*3190	[0.50]	Environmental Water Chemistry
SOIL*3080	[0.50]	Soil and Water Conservation

List D - Atmosphere

MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation

Ecology (ECOL)**College of Biological Science****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

CHEM*1050	[0.50]	General Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Note: ECOL students are required to take BIOL*1090 in semester 3 if not taken in semester 2.

Semester 3

ENVS*2150	[0.50]	Terrestrial Systems
MET*2030	[0.50]	Meteorology and Climatology
STAT*2040	[0.50]	Statistics I

1.00 electives or restricted electives

Note: ECOL students are required to take BIOL*1090 in semester 3 if not taken in semester 2.

Semester 4

BIOC*2580	[0.50]	Introduction to Biochemistry
BIOL*3110	[0.50]	Population Ecology
MBG*2040	[0.50]	Foundations in Molecular Biology and Genetics
STAT*2050	[0.50]	Statistics II

0.50 electives or restricted electives

Semester 5

BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
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One of:

BOT*2100	[0.50]	Life Strategies of Plants
ZOO*3200	[0.50]	Comparative Animal Physiology I

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

1.00 electives or restricted electives

Semester 6

BIOL*3120	[0.50]	Community Ecology
ENVS*3150	[0.50]	Aquatic Systems
PHIL*2070	[0.50]	Philosophy of the Environment

1.00 electives or restricted electives

Semester 7

BIOL*4110	[0.75]	Ecological Methods
ENVS*4011	[0.00]	Project in Environmental Sciences
ENVS*4300	[0.50]	Environmental Law & Regulation

One of:

GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

0.75 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 8.

Semester 8

BIOL*4120	[0.50]	Evolutionary Ecology
ENVS*4012	[0.50]	Project in Environmental Sciences

1.50 electives

Note: Ecology majors are not required to complete BIOL*2060 as a core course.

Restricted Electives

One of:

BIOL*3020	[0.50]	Population Genetics
BIOL*3400	[0.50]	Evolution

One of:

BOT*3410	[0.50]	Plant Anatomy
ZOO*2090	[0.50]	Vertebrate Structure and Function

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming
GEOG*2420	[0.50]	The Earth From Space
GEOG*2480	[0.50]	Mapping and GIS
GEOG*3420	[0.50]	Remote Sensing of the Environment

Ecology (ECOL:C)**College of Biological Science****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Note: ECOL students are required to take BIOL*1090 in semester 3 if not taken in semester 2.

Semester 3 - Fall

ENVS*2150	[0.50]	Terrestrial Systems
MET*2030	[0.50]	Meteorology and Climatology
STAT*2040	[0.50]	Statistics I

1.00 electives or restricted electives

Note: ECOL students are required to take BIOL*1090 in semester 3 if not taken in semester 2.

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOC*2580	[0.50]	Introduction to Biochemistry
PHIL*2070	[0.50]	Philosophy of the Environment

1.50 electives or restricted electives

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

BIOL*3110 [0.50] Population Ecology

ENVS*3150 [0.50] Aquatic Systems

STAT*2050 [0.50] Statistics II

1.00 electives or restricted electives

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

BIOL*3010 [0.50] Laboratory and Field Work in Ecology

ENVS*4011 [0.00] Project in Environmental Sciences

MBG*2040 [0.50] Foundations in Molecular Biology and Genetics

One of:

ECON*2100 [0.50] Economic Growth and Environmental Quality

FARE*2700 [0.50] Survey of Natural Resource Economics

1.00 electives or restricted electives

Semester 7 - Winter

BIOL*3120 [0.50] Community Ecology

BIOL*4120 [0.50] Evolutionary Ecology

ENVS*4012 [0.50] Project in Environmental Sciences

1.00 electives or restricted electives

Summer Semester (Optional)

COOP*4000 [0.00] Co-op Work Term IV

Semester 8- Fall

BIOL*4110 [0.75] Ecological Methods

ENVS*4300 [0.50] Environmental Law & Regulation

One of:

GEOG*3210 [0.50] Management of the Biophysical Environment

POLS*3370 [0.50] Environmental Politics and Governance

0.75 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 8.**Note:** Ecology majors are not required to complete as a core course.**Restricted Electives**

One of:

BIOL*3020 [0.50] Population Genetics

BIOL*3400 [0.50] Evolution

One of:

BOT*2100 [0.50] Life Strategies of Plants

ZOO*3200 [0.50] Comparative Animal Physiology I

One of:

BOT*3410 [0.50] Plant Anatomy

ZOO*2090 [0.50] Vertebrate Structure and Function

One of:

CIS*1200 [0.50] Introduction to Computing

CIS*1500 [0.50] Introduction to Programming

GEOG*2420 [0.50] The Earth From Space

GEOG*2480 [0.50] Mapping and GIS

GEOG*3420 [0.50] Remote Sensing of the Environment

Environmental Biology (ENVB)**School of Environmental Sciences, Ontario Agricultural College****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1070 [0.50] Discovering Biodiversity

CHEM*1040 [0.50] General Chemistry I

ENVS*1020 [0.50] Introduction to Environmental Sciences

MATH*1080 [0.50] Elements of Calculus I

PHYS*1080 [0.50] Physics for Life Sciences

Semester 2

CHEM*1050 [0.50] General Chemistry II

ECON*1050 [0.50] Introductory Microeconomics

GEOG*1300 [0.50] Introduction to the Biophysical Environment

PHYS*1130 [0.50] Physics with Applications

One of:

BIOL*1080 [0.50] Biological Concepts of Health

BIOL*1090 [0.50] Introduction to Molecular and Cellular Biology

Note: ENVB students are required to take BIOL*1090 in semester 3 if not taken in semester 2.**Semester 3**

ENVS*2150 [0.50] Terrestrial Systems

MET*2030 [0.50] Meteorology and Climatology

TOX*2000 [0.50] Principles of Toxicology

One of:

ECON*2100 [0.50] Economic Growth and Environmental Quality

FARE*2700 [0.50] Survey of Natural Resource Economics

0.50 electives or restricted electives

Note: ENVB students are required to take BIOL*1090 in semester 3 if not taken in semester 2.**Semester 4**

BIOC*2580 [0.50] Introduction to Biochemistry

BIOL*2060 [0.50] Ecology

MBG*2040 [0.50] Foundations in Molecular Biology and Genetics

STAT*2040 [0.50] Statistics I

0.50 electives or restricted electives

Semester 5

One of:

GEOG*3210 [0.50] Management of the Biophysical Environment

POLS*3370 [0.50] Environmental Politics and Governance

2.00 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 8.**Semester 6**

ENVS*3150 [0.50] Aquatic Systems

PHIL*2070 [0.50] Philosophy of the Environment

1.50 electives or restricted electives

Semester 7

ENVS*4011 [0.00] Project in Environmental Sciences

ENVS*4300 [0.50] Environmental Law & Regulation

2.00 electives or restricted electives

Semester 8

ENVS*4012 [0.50] Project in Environmental Sciences

2.00 electives or restricted electives

Restricted Electives

Students in the Environmental Biology major are required to choose 5.00 credits from the following list. Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of the B.Sc.(Env.) degree must be at the 3000-4000 level.

BIOL*3130	[0.50]	Conservation Biology
BIOL*3450	[0.50]	Introduction to Aquatic Environments
BIOL*4150	[0.50]	Wildlife Conservation and Management
BIOL*4350	[0.50]	Biology of Polluted Waters
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*2040	[0.50]	Plant Health and the Environment
ENVB*3010	[0.50]	Climate Change Biology
ENVB*3030	[0.50]	Pesticides and the Environment
ENVB*3040	[0.50]	Natural Chemicals in the Environment
ENVB*3230	[0.50]	Agroforestry Systems
ENVB*3250	[0.50]	Forest Health and Disease
ENVB*3270	[0.50]	Forest Biodiversity
ENVB*3280	[0.50]	Waterborne Disease Ecology
ENVB*4020	[0.50]	Water Quality and Environmental Management
ENVB*4130	[0.50]	Chemical Ecology: Principles & Practice *
ENVB*4240	[0.50]	Biological Activity of Pesticides
ENVB*4550	[0.50]	Toxicological Risk Characterization *
ENVB*4780	[0.50]	Forest Ecology *
ENVS*3410	[0.50]	Independent Research I
ENVS*3420	[0.50]	Independent Research II *
ENVS*3430	[1.00]	Independent Research
ENVS*4410	[1.00]	Advanced Independent Research I *
ENVS*4420	[1.00]	Advanced Independent Research II *
ENVS*4430	[2.00]	Advanced Independent Research *
GEOG*3020	[0.50]	Global Environmental Change
GEOL*3190	[0.50]	Environmental Water Chemistry
MICR*4140	[0.50]	Soil Microbiology and Biotechnology
MICR*4180	[0.50]	Microbial Processes in Environmental Management
NRS*2120	[0.50]	Introduction to Environmental Stewardship
PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants *
SOIL*3080	[0.50]	Soil and Water Conservation *
TOX*3360	[0.50]	Environmental Chemistry and Toxicology

* **Note:** Students should note that some restricted electives (marked by asterisks *) require other restricted electives as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements.

Environmental Biology (ENVB:C)

School of Environmental Sciences, Ontario Agricultural College

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Note: ENVB students are required to take BIOL*1090 in semester 3 if not taken in semester 2.

Semester 3 - Fall

ENVS*2150	[0.50]	Terrestrial Systems
MET*2030	[0.50]	Meteorology and Climatology
TOX*2000	[0.50]	Principles of Toxicology

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

0.50 electives or restricted electives

Note: ENVB students are required to take BIOL*1090 in semester 3 if not taken in semester 2.

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOC*2580	[0.50]	Introduction to Biochemistry
BIOL*2060	[0.50]	Ecology
STAT*2040	[0.50]	Statistics I

1.00 electives or restricted electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

ENVS*3150	[0.50]	Aquatic Systems
MBG*2040	[0.50]	Foundations in Molecular Biology and Genetics
PHIL*2070	[0.50]	Philosophy of the Environment

One of:

GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

0.50 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 7.

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

ENVS*4011	[0.00]	Project in Environmental Sciences
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2.50 electives or restricted electives

Semester 7 - Winter

ENVS*4012	[0.50]	Project in Environmental Sciences
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2.00 electives or restricted electives

Summer Semester - (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

ENVS*4300	[0.50]	Environmental Law & Regulation
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2.00 electives or restricted electives

Restricted Electives

Students in the Environmental Biology major are required to choose 5.00 credits from the following list. Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of the B.Sc.(Env.) degree must be at the 3000-4000 level.

BIOL*3130	[0.50]	Conservation Biology
BIOL*3450	[0.50]	Introduction to Aquatic Environments
BIOL*4150	[0.50]	Wildlife Conservation and Management

Last Revision: March 15, 2014

BIOL*4350	[0.50]	Biology of Polluted Waters
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*2040	[0.50]	Plant Health and the Environment
ENVB*3010	[0.50]	Climate Change Biology
ENVB*3030	[0.50]	Pesticides and the Environment
ENVB*3040	[0.50]	Natural Chemicals in the Environment
ENVB*3230	[0.50]	Agroforestry Systems
ENVB*3250	[0.50]	Forest Health and Disease
ENVB*3270	[0.50]	Forest Biodiversity
ENVB*3280	[0.50]	Waterborne Disease Ecology
ENVB*4020	[0.50]	Water Quality and Environmental Management
ENVB*4130	[0.50]	Chemical Ecology: Principles & Practice *
ENVB*4240	[0.50]	Biological Activity of Pesticides
ENVB*4550	[0.50]	Toxicological Risk Characterization *
ENVB*4780	[0.50]	Forest Ecology *
ENVS*3410	[0.50]	Independent Research I
ENVS*3420	[0.50]	Independent Research II *
ENVS*3430	[1.00]	Independent Research
ENVS*4410	[1.00]	Advanced Independent Research I *
ENVS*4420	[1.00]	Advanced Independent Research II *
ENVS*4430	[2.00]	Advanced Independent Research *
GEOG*3020	[0.50]	Global Environmental Change
GEOG*4230	[0.50]	Environmental Impact Assessment
GEOL*3190	[0.50]	Environmental Water Chemistry
MICR*4140	[0.50]	Soil Microbiology and Biotechnology
MICR*4180	[0.50]	Microbial Processes in Environmental Management
NRS*2120	[0.50]	Introduction to Environmental Stewardship
PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants *
SOIL*3080	[0.50]	Soil and Water Conservation *
TOX*3360	[0.50]	Environmental Chemistry and Toxicology

* **Note:** Students should note that some restricted electives (marked by asterisks *) require other restricted electives as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements.

Environmental Economics and Policy (EEP)

Department of Economics and Finance, College of Management and Economics

Department of Food, Agricultural and Resource Economics, Ontario Agricultural College

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

CHEM*1050	[0.50]	General Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Semester 3

ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2100	[0.50]	Economic Growth and Environmental Quality
ENVS*2150	[0.50]	Terrestrial Systems
FARE*2700	[0.50]	Survey of Natural Resource Economics
MET*2030	[0.50]	Meteorology and Climatology

Semester 4

BIOL*2060	[0.50]	Ecology
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2740	[0.50]	Economic Statistics
PHIL*2070	[0.50]	Philosophy of the Environment

0.50 electives or restricted electives

Note: STAT*2040 may be substituted for ECON*2740.

Semester 5

ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2770	[0.50]	Introductory Mathematical Economics
FARE*4290	[0.50]	Land Economics

One of:

GEOG*3210	[0.50]	Management of the Biophysical Environment
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POLS*3370 [0.50] Environmental Politics and Governance

0.50 electives or restricted electives

Note: FARE*4290 is taught in even-numbered years.

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 8.

Semester 6

ECON*3740 [0.50] Introduction to Econometrics

ENVS*3150 [0.50] Aquatic Systems

FARE*3170 [0.50] Cost-Benefit Analysis

1.00 electives or restricted electives

Semester 7

ECON*3710 [0.50] Advanced Microeconomics

ENVS*4011 [0.00] Project in Environmental Sciences

ENVS*4300 [0.50] Environmental Law & Regulation

1.50 electives or restricted electives

Semester 8

ECON*4930 [0.50] Environmental Economics

ENVS*4012 [0.50] Project in Environmental Sciences

FARE*4310 [0.50] Resource Economics

1.00 restricted electives or electives

Restricted Electives

Students in the Environmental Economics and Policy major are required to choose 2.50 credits additional Food, Agricultural and Resource Economics (FARE*XXXX) or Economics (ECON*XXXX). Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of their B.Sc.(Env.) degree must be at the 3000 level or higher.

Environmental Economics and Policy (EEP:C)

Department of Economics and Finance, College of Management and Economics

Department of Food, Agricultural and Resource Economics, Ontario Agricultural College

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1070 [0.50] Discovering Biodiversity

CHEM*1040 [0.50] General Chemistry I

ENVS*1020 [0.50] Introduction to Environmental Sciences

MATH*1080 [0.50] Elements of Calculus I

PHYS*1080 [0.50] Physics for Life Sciences

Semester 2 - Winter

CHEM*1050 [0.50] General Chemistry II

COOP*1100 [0.00] Introduction to Co-operative Education

ECON*1050 [0.50] Introductory Microeconomics

GEOG*1300 [0.50] Introduction to the Biophysical Environment

PHYS*1130 [0.50] Physics with Applications

One of:

BIOL*1080 [0.50] Biological Concepts of Health

BIOL*1090 [0.50] Introduction to Molecular and Cellular Biology

Semester 3 - Fall

ECON*1100 [0.50] Introductory Macroeconomics

ECON*2100 [0.50] Economic Growth and Environmental Quality

ENVS*2150 [0.50] Terrestrial Systems

FARE*2700 [0.50] Survey of Natural Resource Economics

MET*2030 [0.50] Meteorology and Climatology

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

BIOL*2060 [0.50] Ecology

ECON*2310 [0.50] Intermediate Microeconomics

ECON*2410 [0.50] Intermediate Macroeconomics

PHIL*2070 [0.50] Philosophy of the Environment

STAT*2040 [0.50] Statistics I

Note: ECON*2740 may be substituted for STAT*2040.

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

ECON*2770 [0.50] Introductory Mathematical Economics

ENVS*3150 [0.50] Aquatic Systems

FARE*3170 [0.50] Cost-Benefit Analysis

One of:

GEOG*3210 [0.50] Management of the Biophysical Environment

POLS*3370 [0.50] Environmental Politics and Governance

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 7.

0.50 electives or restricted electives

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

ECON*3710 [0.50] Advanced Microeconomics

ENVS*4011 [0.00] Project in Environmental Sciences

FARE*4290 [0.50] Land Economics

1.50 electives or restricted electives

Note: FARE*4290 is taught in even-numbered years.

Semester 7 - Winter

ECON*4930 [0.50] Environmental Economics

ECON*3740 [0.50] Introduction to Econometrics

ENVS*4012 [0.50] Project in Environmental Sciences

FARE*4310 [0.50] Resource Economics

0.50 electives or restricted electives

Summer Semester (Optional)

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

ENVS*4300 [0.50] Environmental Law & Regulation

2.00 electives or restricted electives

Restricted Electives

Students in the Environmental Economics and Policy major are required to choose 2.50 credits additional Food, Agricultural and Resource Economics (FARE*XXXX) or Economics (ECON*XXXX). Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of their B.Sc.(Env.) degree must be at the 3000 level or higher.

Environmental Geography (ENVG)

Department of Geography, College of Social and Applied Human Sciences

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1070 [0.50] Discovering Biodiversity

CHEM*1040 [0.50] General Chemistry I

ENVS*1020 [0.50] Introduction to Environmental Sciences

MATH*1080 [0.50] Elements of Calculus I

PHYS*1080 [0.50] Physics for Life Sciences

Semester 2

CHEM*1050 [0.50] General Chemistry II

ECON*1050 [0.50] Introductory Microeconomics

GEOG*1300 [0.50] Introduction to the Biophysical Environment

PHYS*1130 [0.50] Physics with Applications

One of:

BIOL*1080 [0.50] Biological Concepts of Health

BIOL*1090 [0.50] Introduction to Molecular and Cellular Biology

Semester 3

ENVS*2150 [0.50] Terrestrial Systems

GEOG*2000 [0.50] Geomorphology

GEOG*2460 [0.50] Analysis in Geography

MET*2030 [0.50] Meteorology and Climatology

One of:

ECON*2100 [0.50] Economic Growth and Environmental Quality

FARE*2700 [0.50] Survey of Natural Resource Economics

Semester 4

BIOL*2060 [0.50] Ecology

GEOG*2110 [0.50] Climate and the Biophysical Environment

GEOG*2210 [0.50] Environment and Resources

GEOG*2480 [0.50] Mapping and GIS

0.50 electives

Semester 5

GEOG*3110 [0.50] Biotic and Natural Resources

GEOG*3210 [0.50] Management of the Biophysical Environment

POLS*3370 [0.50] Environmental Politics and Governance

1.00 electives or restricted electives*

Note: Environmental Geography majors are required to complete GEOG*3210 and (POLS*3370 or BIOL*4040). BIOL*4040 may be substituted for POLS*3370 and would be taken in Semester 8.

Semester 6

ENVS*3150	[0.50]	Aquatic Systems
GEOG*3480	[0.50]	GIS and Spatial Analysis
PHIL*2070	[0.50]	Philosophy of the Environment

1.00 electives or restricted electives*

Semester 7

ENVS*4011	[0.00]	Project in Environmental Sciences
ENVS*4300	[0.50]	Environmental Law & Regulation
GEOG*4690	[1.00]	Geography Field Research

1.00 electives or restricted electives*

OR

ENVS*4011	[0.00]	Project in Environmental Sciences
ENVS*4300	[0.50]	Environmental Law & Regulation

0.50 credits in Geography at the 3000 level or higher

1.50 electives or restricted electives*

Semester 8

ENVS*4012	[0.50]	Project in Environmental Sciences
GEOG*4880	[0.50]	Contemporary Geographic Thought

1.50 electives or restricted electives*

* students in the Environmental Geography major must take at least 4 additional geography courses at the 3000 level or higher including:

At least one of:

GEOG*3000	[0.50]	Fluvial Processes
GEOG*3610	[0.50]	Environmental Hydrology

At least two of:

GEOG*3020	[0.50]	Global Environmental Change
GEOG*4110	[1.00]	Environmental Systems Analysis
GEOG*4210	[0.50]	Environmental Governance
GEOG*4230	[0.50]	Environmental Impact Assessment

Environmental Geography (ENVG:C)**Department of Geography, College of Social and Applied Human Sciences****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are strongly encouraged to seek advice from the appropriate advisor when selecting and scheduling courses, **before Semester 3.**

Semester 1 - Fall

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Semester 3 - Fall

ENVS*2150	[0.50]	Terrestrial Systems
GEOG*2000	[0.50]	Geomorphology
GEOG*2460	[0.50]	Analysis in Geography
MET*2030	[0.50]	Meteorology and Climatology

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOL*2060	[0.50]	Ecology
GEOG*2210	[0.50]	Environment and Resources
PHIL*2070	[0.50]	Philosophy of the Environment

1.00 electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

ENVS*3150	[0.50]	Aquatic Systems
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*2480	[0.50]	Mapping and GIS

1.00 electives or restricted electives*

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

ENVS*4011	[0.00]	Project in Environmental Sciences
GEOG*3110	[0.50]	Biotic and Natural Resources
GEOG*3210	[0.50]	Management of the Biophysical Environment
GEOG*3480	[0.50]	GIS and Spatial Analysis
POLS*3370	[0.50]	Environmental Politics and Governance

0.50 electives or restricted electives*

Note: Environmental Geography majors are required to complete GEOG*3210 and (POLS*3370 or BIOL*4040). BIOL*4040 may be substituted for POLS*3370 and would be taken in Semester 7.

Semester 7 - Winter

ENVS*4012	[0.50]	Project in Environmental Sciences
GEOG*4880	[0.50]	Contemporary Geographic Thought

1.50 electives or restricted electives*

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

ENVS*4300	[0.50]	Environmental Law & Regulation
GEOG*4690	[1.00]	Geography Field Research

1.00 electives or restricted electives*

OR

ENVS*4300	[0.50]	Environmental Law & Regulation
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0.50 credits in Geography at the 3000 level or higher

1.50 electives or restricted electives*

* students in the Environmental Geography major must take at least 4 additional geography courses at the 3000 level or higher including:

At least one of:

GEOG*3000	[0.50]	Fluvial Processes
GEOG*3610	[0.50]	Environmental Hydrology

At least two of:

GEOG*3020	[0.50]	Global Environmental Change
GEOG*4110	[1.00]	Environmental Systems Analysis
GEOG*4210	[0.50]	Environmental Governance
GEOG*4230	[0.50]	Environmental Impact Assessment

Natural Resources Management (NRM)**School of Environmental Sciences, Ontario Agricultural College****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

CHEM*1050	[0.50]	General Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

One of:

BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Semester 3

ENVS*2150	[0.50]	Terrestrial Systems
MET*2030	[0.50]	Meteorology and Climatology
NRS*2120	[0.50]	Introduction to Environmental Stewardship
STAT*2040	[0.50]	Statistics I

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

Note: GEOG*2460 may be substituted for STAT*2040.**Semester 4**

BIOL*2060	[0.50]	Ecology
PHIL*2070	[0.50]	Philosophy of the Environment
SOIL*2010	[0.50]	Soil Science

1.00 electives or restricted electives

Semester 5

ENVB*2030	[0.50]	Current Issues in Forest Science
SOIL*3050	[0.50]	Land Utilization
SOIL*3080	[0.50]	Soil and Water Conservation

One of:

GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

0.50 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 8.

Semester 6

ENVS*3150	[0.50]	Aquatic Systems
NRS*3100	[0.50]	Resource Planning Techniques

One of:

ENGG*2550	[0.50]	Water Management
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*3060	[0.50]	Groundwater

1.00 electives or restricted electives

Semester 7

ENVS*4011	[0.00]	Project in Environmental Sciences
ENVS*4300	[0.50]	Environmental Law & Regulation
NRS*4110	[0.50]	Natural Resources Management Field Camp

1.50 electives or restricted electives

Semester 8

BIOL*3130	[0.50]	Conservation Biology
ENVS*4012	[0.50]	Project in Environmental Sciences

1.50 electives or restricted electives

Restricted Electives

Students in the Natural Resources Management major are required to choose 2.50 restricted elective credits from the following list. Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of their B.Sc.(Env.) degree must be at the 3000 level or higher.

CROP*2280	[0.50]	Crops in Land Reclamation
ENVB*3000	[0.50]	Nature Interpretation
ENVB*3230	[0.50]	Agroforestry Systems
ENVB*3270	[0.50]	Forest Biodiversity
ENVB*4780	[0.50]	Forest Ecology
ENVS*3410	[0.50]	Independent Research I
ENVS*3420	[0.50]	Independent Research II *
ENVS*3430	[1.00]	Independent Research
ENVS*4410	[1.00]	Advanced Independent Research I *
ENVS*4420	[1.00]	Advanced Independent Research II *
ENVS*4430	[2.00]	Advanced Independent Research *
GEOG*2420	[0.50]	The Earth From Space
GEOG*3210	[0.50]	Management of the Biophysical Environment
GEOG*3420	[0.50]	Remote Sensing of the Environment
GEOG*3480	[0.50]	GIS and Spatial Analysis
GEOG*4230	[0.50]	Environmental Impact Assessment
LARC*3320	[0.50]	Principles of Landscape Ecology
LARC*4520	[0.50]	Park and Recreation Administration
MET*3050	[0.50]	Microclimatology
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3200	[0.50]	Environmental Soil Biology

Natural Resources Management (NRM:C)

School of Environmental Sciences, Ontario Agricultural College

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1 - Fall

BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ENVS*1020	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics

GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications
One of:		
BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology

Semester 3 - Fall

ENVB*2030	[0.50]	Current Issues in Forest Science
ENVS*2150	[0.50]	Terrestrial Systems
MET*2030	[0.50]	Meteorology and Climatology
NRS*2120	[0.50]	Introduction to Environmental Stewardship
STAT*2040	[0.50]	Statistics I

Note: GEOG*2460 may be substituted for STAT*2040.

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOL*2060	[0.50]	Ecology
PHIL*2070	[0.50]	Philosophy of the Environment

1.50 electives or restricted electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

ENVS*3150	[0.50]	Aquatic Systems
SOIL*2010	[0.50]	Soil Science

One of:

ENGG*2550	[0.50]	Water Management
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*3060	[0.50]	Groundwater

1.00 electives or restricted electives

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

ENVS*4011	[0.00]	Project in Environmental Sciences
SOIL*3050	[0.50]	Land Utilization
SOIL*3080	[0.50]	Soil and Water Conservation

One of:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
FARE*2700	[0.50]	Survey of Natural Resource Economics

One of:

GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Politics and Governance

0.50 electives or restricted electives

Note: BIOL*4040 may be substituted for GEOG*3210 or POLS*3370 and would be taken in Semester 7.

Semester 7 - Winter

BIOL*3130	[0.50]	Conservation Biology
ENVS*4012	[0.50]	Project in Environmental Sciences
NRS*3100	[0.50]	Resource Planning Techniques

1.00 electives or restricted electives

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

ENVS*4300	[0.50]	Environmental Law & Regulation
NRS*4110	[0.50]	Natural Resources Management Field Camp

1.50 electives or restricted electives

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