



**Undergraduate Studies Academic Calendar**  
2012-2013

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Faculty of Environment

Waterloo

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## Faculty of Environment

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### About the Faculty of Environment

#### Introduction

The Faculty of Environment examines environmental issues from several perspectives. It is the home of the Department of Environment and Resource Studies, the Department of Geography and Environmental Management, the School of Planning, the Centre for Knowledge Integration, and the School of Environment, Enterprise and Development which offers undergraduate programs in Environment and Business, and International Development. The Faculty is recognized for its interdisciplinary, integrative, and problem-solving approach to research and teaching. Faculty members and students apply diverse knowledge and methods from different disciplines to understand human relationships with both built and natural environments. The Faculty uses innovative teaching techniques to explore the many contemporary issues in the study of the environment.

In the Department of Environment and Resource Studies, students and faculty focus on solving environmental and resource problems in the classroom, out in the field, and in the wider community. Students learn how to use techniques, skills, and comparative knowledge from the fields of (1) ecology and other ecosystem science, (2) environmental governance, policy, decision making, leading to action and change, (3) environmental, social, and sustainability assessment, and (4) transdisciplinary integration of these other three fields.

Geographers combine natural science, social studies, and information technologies to understand the complex interaction of natural and human forces that define landscapes, regions, and communities – and the environmental challenges facing them. The Department of Geography and Environmental Management gives students the opportunity, through innovative programs such as Geomatics, and Geography and Aviation, to develop practical skills and a deeper understanding of environmental systems and challenges.

Planners are professionals who guide the design, development, and management of healthy, vibrant communities. Planners may also address challenges of sparsely populated regions, parks and protected areas, and resource hinterlands. The School of Planning's program provides students with the knowledge and skills necessary for a successful career as a professional urban and regional planner.

The School of Environment, Enterprise and Development includes programs in Environment and Business and International Development. Environment and Business provides all the foundations of a business degree - economics, finance, accounting, management, and marketing – combined with an environmental education including field ecology, human geography, and environmental research techniques. Most significantly, integrated courses show how businesses can be both sustainable and profitable.

International Development brings together various disciplines of study, teamwork, and individual insight to recognize, analyze, and respond effectively to complicated human development problems in the world's most challenged communities. International Development integrates ethics, cultural and political understanding, knowledge of the natural and planned environment, and business skills to respond with lasting ideas and solutions to development problems.

Environment and Business as well as International Development are programs for students who are passionate about change that is responsible, accountable, and sustainable.

Knowledge Integration (BKI) is a flexible, integrative arts and science degree about tackling new and complex problems. Knowledge Integration students specialize in interdisciplinary collaboration, and personalize their degrees by applying those skills to their specific interests across the arts, humanities, and natural, social, and applied sciences. While based in the Faculty of Environment, Knowledge Integration students can access courses and resources in all University of Waterloo faculties.

There is a high degree of interaction among the Faculty's units. Faculty members in each School or Department participate in the curriculum of the other units. Interaction with other parts of the University is also fostered. Joint appointments of faculty members with other Faculties and Schools/Departments have been made and students are encouraged to choose courses from across the whole University.

## Degrees

The Faculty of Environment offers both Undergraduate and Graduate degrees. The Undergraduate degrees are Bachelor of Environmental Studies (BES) and Bachelor of Knowledge Integration (BKI). The Graduate degrees offered by the Faculty of Environment are Master of Arts (MA), Master of Applied Environmental Studies (MAES), Master of Development Practice (MDP), Master of Environment and Business (MEB), Master of Environmental Studies (MES), Master of Science (MSc), and Doctoral (PhD).

Undergraduate degrees may be obtained in the following areas:

*Bachelor of Environmental Studies (BES)*

Honours Environment and Business (4 years)

Honours Co-operative Environment and Business (4-2/3 years with rotating work/study terms)

Honours Environment and Resource Studies (4 years)

Honours Co-operative Environment and Resource Studies (4-2/3 years with rotating work/study terms)

Honours Geography and Aviation (4 years)

Honours Geography and Environmental Management (4 years)

Honours Co-operative Geography and Environmental Management (4-2/3 years with rotating work/study terms)

General Geography and Environmental Management (3 years)

Honours Geomatics (4 years)

Honours Co-operative Geomatics (4-2/3 years with rotating work/study terms)

Honours International Development (4 years)

Honours Co-operative Planning (4-2/3 years with rotating work/study terms)

*Bachelor of Knowledge Integration (BKI)*

Honours Knowledge Integration (4 years)

**Note:** *Applicants should apply to the unit most suited to her/his interests. Transfer to other Faculties will be considered after Year One, depending upon the student's academic record and plan. Ease of transfer between the units within the Faculty of Environment varies.*

Graduate degrees may be obtained in the following areas:

*Master of Arts (MA)*

Geography

Global Governance

Planning

*Master of Applied Environmental Studies (MAES)*

Local Economical Development

Planning

*Master of Development Practice (MDP)*

Development Practice

*Master of Environment and Business (MEB)*

Environment and Business

*Master of Environmental Studies (MES)*

Environment and Resource Studies

Geography

Planning

Tourism Policy and Planning

*Master of Science (MSc)*

Geography

*Doctoral (PhD)*

Environment and Resource Studies

Geography

Global Governance

Planning

## Admission

Admission categories, requirements, and procedures are outlined in detail in the [Admissions](#) section of this Calendar as well as the Faculty website at [uwaterloo.ca/environment/future-undergraduate-students/admissions](http://uwaterloo.ca/environment/future-undergraduate-students/admissions).

## Transfer Students

Generally, transfer credit is given for courses completed at accredited post-secondary institutions in which a grade of 60% or better was obtained. The exception is Planning and Knowledge Integration, which require a grade of 65% or better in courses completed at accredited post-secondary institutions.

Transfer students, internal (between Faculties at Waterloo) or external (from outside Waterloo), will be required to complete a minimum of 50% of the degree requirements while registered in the Faculty of Environment. A maximum of 10.0 units may be considered for transfer credit for an Honours Program and 7.5 units for a three-year General Program. The exception is Planning, where a maximum of 5.0 units may be considered. The maximum number of transfer credits may not be granted due to the specific plan requirements needed for the degree.

Normally, external transfer credits cannot be used to satisfy Faculty of Environment Diploma requirements (Diploma in Environmental Assessment, Diploma in Ecological Restoration and Rehabilitation, and Diploma of Excellence in Geographic Information Systems).

Students transferring from Faculties within the University, or former University of Waterloo students returning after an absence, generally have the option of either transferring previous Waterloo courses with 60% or better (Planning and Knowledge Integration require 65%) without including these in the cumulative average, or including all courses passed and failed in the cumulative average.

The specific transfer credit policies as outlined in the preceding paragraphs vary with each plan or Faculty. Students are advised to refer to the departmental or Faculty sections in the Calendar for detailed regulations. For "Failed" or readmission internal transfer credit, refer to the Environment Examinations and Standings section of the calendar.

## Courses at Other Universities (Letter of Permission)

Students may request to take a course(s) at other universities for credit towards a Waterloo degree by Letter of Permission. A Letter of Permission is granted only to students who have successfully completed a minimum of four University of Waterloo courses and who are in satisfactory standing; that is, they have satisfied the minimum cumulative average requirements for their current plan. A maximum of ten courses (5.0 units) may be taken on a Letter of Permission. Courses taken on a Letter of Permission at other institutions (except Wilfrid Laurier University) will appear on University of Waterloo records as transfer credits (grade of CR) if a minimum grade of 60% or equivalent is attained with the exception of Planning and Knowledge Integration, which require a grade of 65% or better. Courses taken at Wilfrid Laurier University will appear on University of Waterloo records as graded courses and the grades attained will be included in overall and major cumulative averages.

A Letter of Permission must be approved by the student's advisor prior to enrolling at the host institution and it is subject to departmental regulations. The student may obtain the Letter of Permission Form at [www.registrar.uwaterloo.ca/forms/LetterOfPermission.pdf](http://www.registrar.uwaterloo.ca/forms/LetterOfPermission.pdf). More information about the Letter of Permission policy and procedures is provided on page two of the form.

Courses taken at Wilfrid Laurier University (maximum of ten courses or 5.0 units) will appear on University of Waterloo records as graded courses and will be included in overall and major cumulative averages. On our [Schedule of Classes](#), a "W" following the course number, i.e., BUS 121W (see [WLU calendar](#)), denotes a Wilfrid Laurier University course. Enrolment in these courses is achieved in the same manner as any Waterloo course, by using Quest. To enrol in a Wilfrid Laurier University course that does not appear on our [Schedule of Classes](#), an [Undergraduate Studies Cross-Registration Form](#) is used instead of the Letter of Permission. The Undergraduate Studies Cross-Registration Form is available at [www.registrar.uwaterloo.ca/forms/CrossRegn.pdf](http://www.registrar.uwaterloo.ca/forms/CrossRegn.pdf). More information about Cross-Registration policies and procedures is provided on the form.

## English Language Proficiency Program

The Faculty of Environment requires that all students have a basic competency in written English in order to be successful in their university studies and to qualify for a degree. The English Language Proficiency Examination (ELPE) is a diagnostic exam intended to determine the level of a student's

ability in written English. Students entering the Faculty of Environment **must** write the English Language Proficiency Examination by the end of their 1A term and achieve a grade of 65/90 or higher. There are no exceptions to this requirement.

Students who do not achieve this grade must fulfill this requirement by the end of their 2B term in one of the following ways:

- Re-write the English Language Proficiency Examination and achieve a grade of 65/90 or higher (two additional attempts are permitted),
- Successful completion of the work assigned by the Waterloo Writing Centre, or
- Completion of ESL 102R or ESL 129R with a grade of 65% or higher.

ELPE (<http://elpp.uwaterloo.ca/>) is written during the student's first term. Sittings of ELPE are also available prior to the start of the Fall, Winter, and Spring examination periods.

Students may choose to attend the Writing for Success Workshop after attempting and failing ELPE with a grade of at least 60/90. The workshop is normally attended the term after the failed ELPE attempt. For information on this workshop visit: [//elpp.uwaterloo.ca/Workshops/workshops.html](http://elpp.uwaterloo.ca/Workshops/workshops.html).

#### **Notes:**

1. *Students can arrange a special sitting of the ELPE outside of the scheduled dates. An administrative fee will be charged. Contact the Writing Centre directly.*
2. *Students who have not completed the English Language Proficiency requirement by the end of second year will have their future registrations cancelled and will be allowed to proceed only after successful completion of this requirement.*
3. *A completed English Language Proficiency milestone on a student's academic record will indicate successful completion of this requirement.*
4. *Transfer credits cannot be used to satisfy the English Language Proficiency Requirement.*

### **WHMIS (Workplace Hazardous Materials Information System)**

Students registered in Faculty of Environment courses in which equipment will be used or procedures employed that could present hazards, must show proof that they have completed the online University of Waterloo WHMIS certification.

### **Examinations and Standings**

The following regulations govern the practice of the Faculty of Environment concerning final examinations, standing, and make-up examinations. These regulations also apply to part-time students and special plans. Further details concerning University Examination Regulations can be found in the "Examination Regulations and Related Matters" document available at [www.registrar.uwaterloo.ca/exams/ExamRegs.pdf](http://www.registrar.uwaterloo.ca/exams/ExamRegs.pdf).

#### **Final Examinations**

A student who defaults a final examination, except for a properly certified reason, shall have no make-up examination privileges.

A student may be eligible for make-up examinations or other accommodations as decided between the student and the instructor, when an exam is missed due to documented extenuating circumstances. If a student fails to write a final examination for medical reasons, a completed University of Waterloo [Verification of Illness Form](#), or a Medical Doctor's certificate covering the same information requested on the illness form, including the precise period of illness, must be provided to the instructor within 48 hours of the examination date. In addition, the student must have satisfied all course work requirements prior to the exam.

#### **Petitions, Re-assessments, and Appeals**

A petition involves instances where a student seeks relief from normal Faculty or University rules and regulations. Petition forms are available at [www.registrar.uwaterloo.ca/forms/Petition.pdf](http://www.registrar.uwaterloo.ca/forms/Petition.pdf). Appropriate supporting documentation must accompany all petitions.

A student who believes that the grade received in an examination, essay, or other piece of academic work is unreasonable, can initiate a request for re-assessment. The first step in this process is for the student to approach the course instructor and attempt to resolve the matter informally. This step must

take place within one month of the notification of the grade. If the problem cannot be resolved, the student may submit a [Notice of Reassessment Challenge](#) to the Faculty's Associate Dean Undergraduate Studies. Submission of the notice is due within ten working days of receiving the decision from the instructor or within ten working days of when the response was due.

A student who believes that an error in academic judgment or procedure has occurred may initiate a grievance by communicating directly with the individual whose action or decision is being questioned within one month of the action or of being notified of the decision or mark. If a student is not satisfied with the result of a request, he/she is encouraged to seek advice from the appropriate academic advisor or department chair, the Conflict Management and Human Rights Office, the Student Resource Office or the faculty undergraduate or graduate office before proceeding with a challenge. A student who wishes to proceed to the challenge stage must deliver a [Notice of Challenge](#) to the Faculty's Associate Dean, Undergraduate Studies within ten working days of receiving the response to the request or, if there was no timely response, within ten working days of when the response was due (20 working days from the request).

At the informal and formal level, students are encouraged to seek advice and assistance from the Undergraduate Associate Dean, Assistant Registrar, University Secretariat, and/or the Student Resource Office.

For more information see the Student Petitions and Grievances (University of Waterloo Policy #70) at [www.adm.uwaterloo.ca/infosec/Policies/policy70.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm).

### **Submission of Course Material**

In situations where a student wishes to submit a body of material to satisfy the requirement of more than one course, and where the courses are concurrent, the student must notify the instructors of both courses of her/his intention so that they may each decide what is appropriate for their respective courses.

When one of the courses has been taken in a previous term, the current course instructor must be informed by the student of her/his intention of submitting the same course material. The current instructor has the final decision on the extent to which the material is allowed.

Failure to comply with the above regulation constitutes an academic offence.

### **Standing**

A maximum of 6.5 first-year units (100-level courses) will be counted towards a BES and BKI. For other requirements, see the section for your Department/School. Normally, a lecture course has a unit weight of 0.5. Students who have passed fewer than five units will be considered Year One; those who have passed at least five but fewer than ten units will be considered Year Two; those with at least ten but fewer than 15 units, Year Three; and those with 15 or more units, Year Four.

1. The [University Grading System](#) is used in the Faculty of Environment.
2. Students receiving an Incomplete (INC) standing in any course will be allowed the following academic term to complete the coursework at the discretion of the instructor. If the coursework is not completed within this period the INC will automatically be converted to Failed To Complete (FTC) which equates to a grade of 32.

The mark of In Progress (IP) may be assigned temporarily to the first half of two sequential courses (i.e., GEOG 490A and 490B). The mark indicates that the course is "In Progress" and that, when completed, a final grade will be assigned to both the "A" and "B" halves of the course (usually the same grade).

3. All courses taken are included in the cumulative overall average. Cumulative major averages are calculated using grades of select courses in accordance with the individual plans. See your plan section in this calendar for details. Cumulative averages, both major and overall are calculated using grades whether a course is passed or failed.

Students in a Co-op plan are responsible for successfully completing four Work Terms, four Work Term

Reports, and five Professional Development courses. See plan section for details.

4. When a course is repeated, both grades will appear on the student's record and will be included in the calculation of the cumulative overall average. If the course is part of the major requirement, both marks will be calculated in the major cumulative average, as well.

5. To be considered in satisfactory standing, a student must maintain:
- o a cumulative overall average of 65% for all Honours plans
  - o a cumulative overall average of 60% for General Geography and Environmental Management
  - o a cumulative major average of 75% for Planning and Knowledge Integration
  - o a cumulative major average of 70% for all other Honours plans
  - o a cumulative major average of 65% for General Geography and Environmental Management

A student who does not maintain the prescribed overall or cumulative major average will be given a Conditional standing. Students on conditional standing are required to speak with their Academic Advisor, Academic Officer, or a Faculty Student Success Officer for advice to increase the likelihood of success in the conditional term. A student who is given a Conditional standing at the end of her/his first or second term of study may choose to enroll voluntarily in the [Foundation Term](#), with the advice of her/his academic advisor.

6. Normally, a student receiving a conditional standing will be given the option to continue to the next term with the intent to raise her/his cumulative and major averages to meet plan requirements.

Should the student fail to meet the academic requirements for his/her plan at the end of the conditional term, he/she will receive a Failed standing.

Normally, an upper-year student (2A and above) who receives a Failed standing, is eligible to apply for re-admission after an absence of two consecutive academic terms. A Co-op work term immediately following a required to withdraw standing is not counted towards the two term absence.

In rare cases, a student may experience personal, medical or other challenges that create conditions under which the student either has limited likelihood of academic success or, more generally, may not benefit from continued studies. In these exceptional cases, the School or Departmental Promotions Committee in consultation with the student and other appropriate resources may give this student Failed standing regardless of his/her cumulative average.

7. A student who is given a Failed standing at the end of her/his second term of study, normally will be required to successfully complete the [Foundation Term](#). A student maintains the option to withdraw for two academic terms.

8. A student who continues in his/her studies after either a successful [Foundation Term](#) or an absence of two consecutive academic terms will have her/his record cleared; that is, grades achieved in all previous terms will not be included in the calculation of cumulative averages. Calculation of cumulative averages will begin with the [Foundation Term](#) or upon readmission after an absence of two consecutive academic terms.

Courses taken prior to the [Foundation Term](#) or readmission will remain on the student's official academic record. Cleared courses with grades over 60% (65% for Planning and Knowledge Integration) will contribute to the total credits required up to 10.0 units for Honours and 7.5 units for General Geography and Environmental Management students (50% of degree requirements).

Students are allowed to have only one [Foundation Term](#) or Failed standing on their transcript while in their ENV program. Students not achieving their program averages for a second time will be unable to continue in their ENV program.

9. Some courses which are listed under separate labels or numbers have overlapping content. Only one of these courses may be taken for credit. These are designated with notes after the course description

which would indicate one of the following:

- o the courses are cross-listed;
- o the courses are listed as antireq;
- o credit will be granted only for one of a pair of courses;
- o a course was formerly designated with a different number and/or label; or
- o students should consult their Undergraduate Officer.

10. Full-time students may be enrolled for additional or fewer courses than the normal load as required in each plan only after obtaining the approval of the appropriate Undergraduate Officer. An Undergraduate Officer may approve a maximum of 3.25 academic units per academic term. Students wishing to take 3.5 or more units in a term must file a [Petition for Exception](#) to Academic Regulation.

11. Generally, students wishing to graduate with a University of Waterloo Bachelor of Environmental Studies (BES) or a Bachelor of Knowledge Integration (BKI) undergraduate degree must spend a minimum of two years or their final year in residence (full-time on campus). This does not preclude special studies approved in advance.

### Term Dean's Honours List

The Faculty awards the distinction term Dean's Honours List (DHL), in order to officially recognize students who have attained a high degree of academic excellence during a term. This distinction is awarded to selected students at the completion of each academic term and appears on Quest and on the official transcript as part of the academic decision.

To be eligible for this distinction, students must:

1. have completed a full courseload, normally 2.5 units (2.0 units for Geography and Aviation), in the term under consideration for the DHL which count in the overall average for that term;
2. have a term overall average of 83% or higher; and
3. have no marks of INC, DNW, or NMR or failing grades in the term under consideration for the DHL.

### Graduating Dean's Honours List

Students graduating with a cumulative overall average of 83% or higher, and who do not have any INC, DNW, or NMR, on their record, while enrolled in the Faculty of Environment, will have the designation, Dean's Honours List, appear on his/her graduation diploma.

## Academic Plans

### Overview

Students who have not determined the field or subject in which s/he wishes to concentrate should read the academic plan descriptions in this Calendar or visit [uwaterloo.ca/environment/future-undergraduate-students/admissions](http://uwaterloo.ca/environment/future-undergraduate-students/admissions). A greater understanding of a plan's content can be gained by reviewing the description of core courses.

The Calendar is designed to enable students to make an informed decision about plans and courses. Students are encouraged to consult with their high school 's Guidance Counsellor, or the Undergraduate Officer of the appropriate School or Department. The Assistant Registrar for Environment will also respond to inquiries.

<b>Degree Requirements Common to all Faculty of Environment Academic Plans</b>			
<b>Requirement</b>	<b>Honours BES/BKI, 4-year, Regular</b>	<b>Honours BES, 4-year, Co-op</b>	<b>General BES, 3-year</b>
Minimum Academic Units	20.0	20.0	15.0
Minimum Work-term Units	0.0	2.0	0.0
Minimum Professional Development Units	0.0	2.5	0.0
Minimum Cumulative Overall Average	65%	65%	60%

<b>Degree Requirements Common to all Faculty of Environment Academic Plans</b>			
<b>Requirement</b>	<b>Honours BES/BKI , 4-year, Regular</b>	<b>Honours BES, 4-year, Co-op</b>	<b>General BES, 3-year</b>
Minimum Cumulative Major Average	70-75%	70-75%	65%
English Writing Skills	All Bachelor of Environmental Studies and Knowledge Integration candidates must satisfy the English Language Proficiency Exam (ELPE) requirement before the end of Year 2.		

The actual number of units required for the awarding of a degree varies with enrichment and emphasis, and depends on the academic plan(s) and system of study selected by the student. See the detailed description under the individual plans for plan specific requirements.

### **International Joint Education Programs**

The Faculty of Environment has negotiated agreements with several key universities in China to implement joint education programs at the undergraduate level. These programs involve a 2+2 model whereby students spend their first two years at the Chinese university and the final two years at the University of Waterloo. Degrees are awarded by both Waterloo and the partner Chinese university. Current programs include the BES in Geomatics or Geography and Environmental Management with Nanjing University, and the BES in Environment and Business with Nanjing University of Finance and Economics. It is expected that additional agreements will be signed to expand these programs to additional Chinese universities, as well as other international academic institutions. These programs currently are only available to international students at the specified Chinese universities.

### **Exchange Agreements**

Student exchange agreements between the Faculty of Environment and several institutions worldwide have been approved. These include but are not limited to institutions in Australia, United Kingdom, Japan, Scandinavia, Europe and Asia. Under these arrangements, a small number of students could take courses which would be credited towards their degrees at Waterloo, and vice versa. For additional information and criteria for eligibility, contact the Associate Dean, Undergraduate Studies, or visit our website at [uwaterloo.ca/environment/current-undergraduate-students/international-exchanges](http://uwaterloo.ca/environment/current-undergraduate-students/international-exchanges).

### **Incompatibility of Full-Time Study with Full-Time Employment**

Students who by choice or necessity work on non-academic activities more than ten hours per week should, where possible, structure their course/work load so that they can attend fully to their academic obligations.

### **Access to Plans and Courses**

Practical circumstances, such as significant budget shortfalls or the unavailability of qualified personnel, may result in restrictions in the choices available to students. The University reserves the right to limit access to courses or plans, and, at its discretion, to withdraw particular plans, sub-plans, options, minors, or courses altogether. In the event that existing resources make it necessary to limit admission to a plan, sub-plan, option, or minor, the admission process will be based on competition for the spaces available.

### **Course Changes**

1. Students may add courses before and during the first two weeks of classes in the term in which the courses begin.
2. Students may drop courses before and during the first three weeks of classes in the term in which the courses begin.
3. The Drop Penalty 1 period commences at the beginning of week four and ends at the end of week ten. Penalty 1 is the automatic assignment of the grade, WD (Withdrew after the drop deadline). No numerical grade is associated with a WD.
4. The Drop Penalty 2 period commences at the beginning of week eleven and continues to the end of the term. Penalty 2 is the automatic assignment of the grade WF (Withdrew/Failure). The grade WF is equivalent to 32% and will be calculated into term and cumulative averages.
5. Students may petition, because of special circumstances, for relief from the consequences of a late drop or withdrawal (see [Examinations and Standings](#); Petitions, Re-assessments, and Appeals).

6. The mark of In Progress (IP) may be assigned to the first half of what is essentially a year course which is listed as two courses (i.e., GEOG 490A and 490B). The mark indicates that the course is in progress and that when completed, a final grade will be assigned to both the A and B halves of the course (usually the same grade). When the second or B half of such a course is dropped as the result of a change or withdrawal, a Petition must be filed to have the first or A half dropped.
7. Students may request to register for Audit status (AUD) in a course taught on campus if the Faculty of the course allows Audits. No credit is granted for a course in which an AUD grade is awarded. Students interested in an Audit must consult with the course instructor at the beginning of the course to ascertain what conditions are attached to the granting of an AUD by the course instructor. Audits must be approved by the course instructor and the student's advisor during the two week add period. Failure to satisfy the conditions of an Audit will result in the course receiving a grade of WD.
8. Students are encouraged not to enrol for more courses than their plans require unless exceptional circumstances can be demonstrated. An Undergraduate Officer may approve a maximum of 3.25 academic units per academic term. Students wishing to take 3.5 or more units in a term must file a [Petition for Exception to Academic Regulation](#).
9. On-campus students may take online courses through the [Centre for Extended Learning](#).

### **Plan Modifications**

Students who intend to add a minor, option, or second major (Joint Honours or Concurrent Degree) to their academic studies must receive approval from the Director or Advisor for the second major, minor and/or option, as well as the Undergraduate Officer for their major plan of study. A Plan Modification/Application for Internal Transfer Form, available at [www.registrar.uwaterloo.ca/forms/PlanModification.pdf](http://www.registrar.uwaterloo.ca/forms/PlanModification.pdf), must be completed, signed, and submitted to the home department prior to the start of Year Three.

### **Concurrent Degrees**

University of Waterloo students pursuing programs in faculties other than ENV may wish to work concurrently toward a Bachelor of Environmental Studies (BES) or a Bachelor of Knowledge Integration (BKI). Following consultation with the Environment Academic Plan Advisor and the Academic Advisor of the home faculty, the student must successfully complete the following to be awarded the BES or BKI:

1. All Program-level requirements as approved by the Environment Academic Plan Advisor.
2. At least 7.5 academic course units (for the Three-year General degree) or ten academic course units (for the Honours degree) over and above the minimum number of courses required for the first degree in the home faculty.

In some instances, a Joint Honours program or a minor in an Environment discipline, where possible, may be preferable, in which case the BES would not be granted. Concurrent degrees with Environment and Business, International Development, or Planning will not be approved.

Students from the Faculty of Environment who wish to pursue the BKI and a BES degree concurrently must meet the requirements as specified in points 1 and 2 above.

### **Joint Honours Plans**

Many Honours plans may be combined within and between Faculties. However, before embarking on a Joint Honours plan, it is highly recommended that students consult with the Undergraduate Officer of both programs. Students must meet the requirements of both plans as stated in the Calendar, and they should be aware that combining some Honours plans may require more than the normal number of academic terms to complete.

### **Minors**

Within Honours Plans in the Faculty of Environment, students may concentrate study in an associated field to the extent that it becomes a Minor (typically 4.0 to 5.0 units; consult the minor requirements for the applicable plan). A minor can be in any area such as Anthropology, Chemistry, Human Resources Management, Management Studies, Psychology, etc.

### **Options**

The Faculty of Environment offers a number of Options for our students or students can elect to take a recognized University option outside the Faculty of Environment with appropriate Department and Faculty approval.

## Counting Courses

There will be no triple counting of any course for any academic credit in the Faculty of Environment. Double counting of courses applies as follows: once for the plan, and once for a joint honours or concurrent degree, option, minor, diploma, or specialization. There is no limit on the number of courses that may be double counted unless otherwise stated.

## Options

### Business Option

A Business Option, offered jointly with Wilfrid Laurier University, is available to all undergraduates in the Faculty of Environment, with the exception of students in the Environment and Business Honours Program. It may not be combined with the Human Resources Management Minor or the Management Studies Minor because of similar coursework.

The requirements for the Option are nine courses (six core and three elective) with a minimum overall cumulative average of 65%.

#### Required Courses

Six courses:

AFM 101, BUS 121W

one of: AFM 131, BUS 111W

one of: BUS 352W, ECON 344

one of: BUS 288W, PSYCH 338, MSCI 211

one of: BUS 354W, HRM 200

For course codes ending with a "W", see [WLU calendar](#).

#### Elective Courses

Three courses: ECON 101, one other Economics course, AFM 102, one other AFM course (excluding AFM 101), SOC 340, SPCOM 223, BUS 208W, 362W, 398W, 452W, 462W, 464W, 468W, 472W, 481W, 482W

For course codes ending with a "W", see [WLU calendar](#).

It is recommended that students take an introductory Economics course in Year One or Two.

#### Note:

*All WLU Business courses require one of AFM 131 or BUS 111W (see [WLU calendar](#)) and BUS 121W (see [WLU calendar](#)) as prerequisites.*

### Geomatics Option

The Geomatics Option is available to students in the Faculty of Environment and the Science and Aviation Plans in the Faculty of Science.

The requirements for the Option are seven courses (four core and three elective) with a minimum overall cumulative average of 65%.

#### Required Courses

Four Courses: GEOG 271, 310, 371, 471 (1.0 unit)

#### Elective Courses

Three courses selected from: GEOG 210, GEOG/PLAN 281, GEOG/PLAN 381, GEOG/PLAN 387, GEOG 410, GEOG/PLAN 481, GEOG/PLAN 487

### International Development Option

The International Development Option is available to all undergraduate students in the Faculty of Environment, except for students in the International Development Honours plan.

The requirements of the Option are six courses (four core and two elective) with a minimum overall cumulative average of 70% and the completion of an International Community Service Experience.

#### Required Courses

Four Courses: INDEV 100 *or* PSCI 252, INDEV 200, 300 and *one* of INDEV 302 *or* 308

#### Elective Courses

Two Courses:

One of: ERS 404, GEOG 426, 461, 462, PLAN 432, 433

One of: ANTH 370, ERS 372, RS 285, 381

### International Community Service Experience Requirement

Completion of a pre-approved international community service experience or travel seminar studying community development issues, of at least three weeks duration in a linguistic and cultural context different from that of the student's national origin, and in a location outside of Canada, the United States, Great Britain or Australia and New Zealand. An exception may be made for community service experiences in an Aboriginal community in Canada, the United States, Australia or New Zealand. Pre-approval and permission for exception is the final decision of the International Development Field Placement and Language Program Coordinator. This requirement must be organized by the student and is to be completed at the student's own expense. Co-op work terms that meet the above description will normally qualify for the requirement.

### Knowledge Integration Option

The Knowledge Integration Option is open to University of Waterloo undergraduate students, with appropriate approval of their home Department, who wish to obtain some integrative skills and knowledge.

The requirements for the Option are eight courses (four core and four elective) with a minimum overall cumulative average of 65%.

#### Required Courses

Four Courses: INTEG 120, 121, 220, 221

#### Elective Courses

Four Courses:

One non-INTEG course at the 200 level or above, from outside the student's home faculty

Three of: PHIL 145, SPCOM 223, INDEV 300, one course in statistics or research methods<sup>†</sup>, non-required INTEG-labelled courses<sup>‡</sup>

<sup>†</sup> *Most undergraduate courses on Statistics or Research Methods required for the student's major plan will satisfy this requirement.*

<sup>‡</sup> *Up to three INTEG-labelled courses, other than those listed as Required Courses, may be used to satisfy this requirement.*

#### Note:

*The courses listed above may have prerequisites. It is the student's responsibility to satisfy the requirements or otherwise obtain permission to enroll.*

### Parks Option

The Parks Option is available to all students in the Faculty of Environment.

The requirements for the Option are eight courses (four core and four elective) with a minimum overall cumulative average of 65%.

#### Required Courses

Four courses: ENVS 200, ENVS 334/REC 334, ENVS 433/REC 433 or ENVS 444/REC 437, REC 230

#### Elective Courses

Four of the following courses: ENVS 201, ENVS 433/REC 433, ENVS 444/REC 437, ERS 215, ERS 383/BIOLOG 383, GEOG 102 or SCI 250, GEOG 356, GEOG 368/PLAN 341, GEOG 405, PLAN 340, REC 280, REC 316, REC 416, REC 425/PLAN 414

### Sustainable Local Economic Development Option

The Sustainable Local Economic Development Option is available to all students in the Faculty of Environment.

The requirements for the Option are eight courses (three core and five elective) with a minimum overall cumulative average of 65%. A maximum of three (3) major or required courses may be double counted towards a student's major plan and this option.

#### Required Courses

Three courses (1.5 units): GEOG 203, GEOG 202, PLAN 233 or GEOG 311

#### Elective Courses

At least five courses (2.5 units): ECON 220, ENBUS 102, 203, 204, 311, 312, ENVS 220, ERS 253, 316, 370, GEOG 311, GEOG 323/REC 383, GEOG 340, 356, 360, 411, 426, 459, INDEV 200, 302, 308,

INTEG 121, PLAN 320/GEOG 319, PLAN 340, PLAN 349/GEOG 349, PLAN 362, PLAN 432/GEOG 432/HLTH 420, PSCI 283, 350, REC 215

### **Tourism Option**

The Tourism Option is available to any University of Waterloo student who meets the required prerequisites of their faculty. The Option is designed for students specializing in tourism impacts, tourism planning, tourism marketing, heritage, and outdoor recreation.

The requirements for the Option are eight courses (four core and four elective) with a minimum overall cumulative average of 65%.

#### Required Courses

Four courses: GEOG 233, 423, REC 280, REC 383/GEOG 323

#### Elective Courses

Four of the following: ANTH 348, ECON 220, ENGL 208M, ENVS 433/REC 433, GEOG 202, GEOG 319/PLAN 320, GEOG 333/REC 333, GEOG 426, REC 215, 380, 425/PLAN 414, REC 480

### **Diplomas**

#### **Diploma in Ecological Restoration and Rehabilitation**

The Diploma in Ecological Restoration and Rehabilitation is available to all students in the Faculty of Environment. To be awarded the Diploma, students must complete the complement of courses listed below with an overall average of 70%. Students achieving an overall average of 80% in the six required and elective courses will be awarded a Diploma with Distinction.

#### Required Courses

Two courses: ERS 211<sup>†</sup>, ENVS 469

#### Elective Courses

Four of the following: BIOL 351, 354, 457, 470, ENVS 444/REC 437, ERS 283, 340, 341, 382, 383/BIOL 383, ERS 484/GEOG 404, GEOG 368/PLAN 341, GEOG 387/PLAN 387, GEOG 405, PLAN 340

<sup>†</sup>ERS 211 must be completed before ENVS 469

#### **Diploma in Environmental Assessment**

The Diploma in Environmental Assessment is available to all University of Waterloo students.

The requirements for the successful completion of this diploma are five courses (three core and two elective) with a minimum overall cumulative average of 65%.

#### Required Courses

Three Courses: ERS 215, 315, 415

#### Elective Courses

Two additional courses must be taken. They must be selected from any *two* of the following four lists (no two courses can be from the same list):

List A: Courses that study the biophysical environment: BIOL 351, 354, 447, 490, 491, 498, EARTH 305, 342, 358, 458, ERS 371, ERS 383/BIOL 383, GEOG 405, HLTH 340

List B: Skills courses on modeling, surveying, and other information gathering and analysis: BIOL 470, EARTH 456, ENBUS 308, ENVE 573, ENVS 278, ENVS 444/REC 437, ERS 375, 382, GEOG/PLAN 281, GEOG 319/PLAN 320, SDS 251R, SOC 382

List C: Courses on related approaches to planning, analysis and problem solving: BIOL 455, CIVE 240, ECON 357, ENVE 320, 391, ENVS 201, 220, 401, ERS 211, 371, GEOG 356, PACS 202, 313, 323, PLAN 471

List D: Courses that involve material useful for case application of environmental assessment and related approaches to planning analysis, and problem solving: ENVE 577, ERS 317, ERS 404/PSCI 432, ERS/GEOG 461, ERS/GEOG 462/PSCI 488, ERS 484, GEOG 368/PLAN 341, GEOG 391, 407, 459, PLAN 340, PLAN 432, PLAN 440

Many of the courses listed have pre-requisites. Students are advised to check course descriptions for details.

### **Diploma of Excellence in Geographic Information Systems**

The Diploma of Excellence in Geographic Information Systems is available to any student who completes the courses below and satisfies the minimum grade requirement. Students must attain a minimum overall average of 80% for the five courses required for the Diploma.

*Required Courses:*

GEOG/PLAN 281, GEOG/PLAN 381, GEOG/PLAN 387, GEOG/PLAN 481, GEOG/PLAN 487

Further information can be obtained from the Undergraduate Advisors, Undergraduate Officers at [uwaterloo.ca/environment/current-undergraduate-students/academic-advisors](http://uwaterloo.ca/environment/current-undergraduate-students/academic-advisors) the Associate Dean, Undergraduate Studies.

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## Environment and Business

### Overview

The Environment and Business Co-op Program is offered by the School of Environment, Enterprise and Development (SEED) within the Faculty of Environment.

Environmental issues are increasingly becoming a part of business. Similarly, business approaches are becoming integral to the management of many environmental challenges. As the links between environment and business grow, there is a demand for individuals with a strong foundation in interdisciplinary environmental studies complemented by expertise in core business subjects. Decision-makers, not only in companies but in government and non-governmental organizations too, need to understand key environmental relationships as well as the economic ramifications of alternative courses of action.

Environment and Business is a distinctive interdisciplinary plan that integrates knowledge from environmental studies with business areas, while also providing skills in flexible problem solving and decision making. Graduates will be prepared to make valuable contributions to the understanding of environmental and business issues and to act on these challenges. The potential to develop a rewarding career is great. Graduates from Environment and Business are equipped with an environment and business toolbox, giving them business approaches, know-how and experience to address environmental issues across industry and other sectors. Graduates might work as environmental managers in Fortune 500 companies, helping to reduce ecological impacts. They might work in government positions deciding on environmental policies and designing better regulations. They might develop marketing and business plans with alternative energy entrepreneurs. They might audit the environmental practices at facilities, or help with environmental management systems and corporate reporting.

This plan develops students' expertise in three key areas:

**Business:** These courses provide the necessary expertise in business issues, providing basic competencies in areas of finance, project management, accounting, economics, marketing, and law.

**Environment:** These courses provide the necessary expertise in environmental issues, including field ecology, geographic information systems, environmental research methods, and environmental law.

**Integration of Environment and Business:** These courses serve as the core of the Environment and Business degree experience. Courses provide knowledge on concepts, tools and approaches that are important in the intersection of environment and business; for example: environmental management systems, ecological economics, green marketing and industrial ecology. Students will investigate case studies of specific environment and business experiences in companies and industries.

In Years 3 and 4, Theme Courses are offered in the areas of Environmental Reporting and Auditing, Environmental Entrepreneurship, and Corporate Sustainability.

The strength of the plan is enhanced not only by its own multidisciplinary core faculty, but also by the wider expertise available to it at the University of Waterloo. Other academic units contribute to the Environment and Business program. Insights gained from across the campus will allow students to develop their own interdisciplinary set of skills.

The formal admission requirements are listed in the "Admissions" section of this Calendar.

The Honours Co-op plan provides for alternate terms of practical work experience and academic study. The first work term is in the Winter of the second year. Co-op Environment and Business students must normally follow the work and study-term sequence outlined in the "Co-op Course Scheduling

Recommendation." Students complete five work terms. A work-term report is required upon completion of each work term and the minimum number of "satisfactory" work reports required to fulfill Co-op degree requirements is normally four.

The Faculty of Environment expects that students should be able to demonstrate competence in writing. Accordingly, all students newly admitted to the Faculty are required to write the English Language Proficiency Examination during their first term of enrolment (normally scheduled during the first week in December). The requirement in all plans in the Faculty of Environment for ELPE is the achievement of 65 out of 90. This must be met by students by the end of Year Two or the decision "May Not Proceed" will be assigned.

Inquiries for additional information regarding Co-operative studies, or additional information on this plan, should be directed to the Director of Environment and Business.

## **Bachelor of Environmental Studies**

### **Honours Environment and Business Co-operative and Regular**

#### *Year One*

AFM [123](#) Accounting Information for Managers  
 AFM [131](#) Introduction to Business in North America  
 ECON [101](#) Introduction to Microeconomics  
 ECON [102](#) Introduction to Macroeconomics  
 ENBUS [102](#) Introduction to Environment and Business  
 ENVS [131](#) Communications for Environmental Professions  
 ENVS [178](#) Introduction to Environmental Research Methods  
 ENVS [195](#) Introduction to Environmental Studies  
 GEOG [101](#) Geography and Human Habitat  
 PHIL [224](#) Environmental Ethics

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#### *Year Two*

ENBUS [202](#) Environmental Management Systems  
 ENBUS [203](#) Green Entrepreneurship<sup>‡</sup>  
 ENBUS [204](#) Principles of Industrial Ecology  
 ENVS [200](#) Field Ecology  
 ENVS [201](#) Introduction to Environmental and Planning Law  
 GEOG [203](#) Environment and Development in a Global Perspective  
 GEOG [281](#) Introduction to Geographic Information Systems (GIS)

One course\* from the following themes:

#### *Theme 1: Environmental Reporting and Auditing*

ENBUS [307](#) Environmental Declarations  
 ENBUS [308](#) Advanced Environmental Auditing  
 ENBUS [309](#) Occupational Health and Safety

#### *Theme 2: Environmental Entrepreneurship*

ENBUS [311](#) Green Marketing  
 HRM [200](#) Basic Human Resources Management  
 INDEV [308](#) Introduction to Social Entrepreneurship

#### *Theme 3: Corporate Sustainability*

PHIL [215](#) Professional and Business Ethics  
 ENBUS [310](#) Strategic Management for Sustainable Business  
 ENBUS [312](#) Operationalizing Sustainable Development within Business

*plus 2 electives for a total of five units*

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#### *Year Three*

AFM [231](#) Business Law  
 ECON [344](#) Marketing: Principles of Marketing and Consumer Economics

ENVS [220](#) Ecological Economics  
or ECON [357](#) Environmental Economics  
ENVS [278](#) Advanced Environmental Research Methods  
ENBUS [302](#) Strategies for Environment and Business  
ENBUS [306](#) Research Design  
ERS [215](#) Environmental and Sustainability Assessment I

One course\* from the following themes:

*Theme 1: Environmental Reporting and Auditing*

ENBUS [307](#) Environmental Declarations  
ENBUS [308](#) Advanced Environmental Auditing  
ENBUS [309](#) Occupational Health and Safety

*Theme 2: Environmental Entrepreneurship*

ENBUS [311](#) Green Marketing  
HRM [200](#) Basic Human Resources Management  
INDEV [308](#) Introduction to Social Entrepreneurship

*Theme 3: Corporate Sustainability*

PHIL [215](#) Professional and Business Ethics  
ENBUS [310](#) Strategic Management for Sustainable Business  
ENBUS [312](#) Operationalizing Sustainable Development within Business

*plus 2 electives for a total of five units*

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*Year Four*

ECON [371](#) Business Finance 1  
ENBUS [402A/B](#) Environment and Business Project

Two courses from the following themes:

*Theme 1: Environmental Reporting and Auditing*

ENBUS [407](#) Corporate Sustainability Reporting  
ENBUS [408](#) Best Practices in Regulations

*Theme 2: Environmental Entrepreneurship*

ENBUS [409](#) Special Topics in Environment and Business  
ENBUS [410](#) Engaging Stakeholders

*Theme 3: Corporate Sustainability*

ENBUS [408](#) Best Practices in Regulations  
ENBUS [411](#) International Corporate Responsibility

*plus 4 electives for a total of five units*

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\* Students in the regular Honours plan must complete at least one of ENBUS [307](#), [308](#), [309](#), [310](#), [311](#), or [312](#).

‡ECON 220 is a listed antireq for ENBUS [203](#). Academic Advisor approval required to enroll in ECON 220.

**Note:** The sequence of courses is subject to change based on course offerings, consultation with program advisor is recommended.

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### Notes:

#### 1. Minimum Required Courses

Total: 20 units. Environment and Business: 16 units. Environment and Business students may not take [ERS 370](#) for credit towards the Environment and Business degree.

#### 2. Course Load

No more than five courses may be taken in a term without the approval of the Director. Normally, approval for a sixth course will be considered only if the cumulative Environment and Business average is 78% or higher. A student may take up to one course during a co-op work term. An Environment and

*Business student is not allowed to fast-track.*

3. **Theme Courses** *Students must ensure they have acquired the pre-requisite courses for ENBUS 300 and 400 level theme courses. Students in the regular Honours plan must take at least one of ENBUS 307, 308, 309, 310, 311, or 312.*

#### 4. Average Requirements

*Students must maintain an overall cumulative average of 65% and a cumulative average in the core courses of 70%. All required courses must be passed.*

#### 5. Honours Co-operative Plan

*Environment and Business Honours Co-op is a five work term plan in which four satisfactory work-term reports have to be written. The first work term occurs in the winter term of the second year. Co-op students in Faculty of Environment are required to complete a minimum of five Professional Development (PD) courses, including an introductory course (PD1) that must be taken prior to the first work term. At least two other of the PD courses must cover non-technical skills. Other than, the initial course, the courses are normally taken during Co-op work terms. PD2 requires a work-term report to be written, which will be considered one of the four required work-term reports. Students are encouraged to take a PD course each work term until the requirement is met. Students who fail to meet these requirements will not be permitted to continue in Co-op.*

*The Environment and Business Honours Co-op plan has the same academic requirements as the Environment and Business Honours plan with the exception that Honours students must take at least one of ENBUS 307, 308, 309, 310, 311, or 312 in their choice of theme electives. Students will be permitted to transfer from the Honours Co-op plan to the Honours plan if academic requirements have been met up to the time of transfer.*

#### 6. Transfer Students

*Transfer applicants with post-secondary background may be considered for admission to either of the BES (Environment and Business) plans. Interested students will be considered for admission based on space available and university academic performance. Transfer into the Honours Co-op plan may also be based on an interview and work experience related to Environment and Business.*

*In order to meet the appropriate degree requirements, specifically the proper sequence of courses and co-op terms (if applicable), transfer applicants will normally be required to begin Environment and Business studies at the first year (1A) level. Applicants should be aware that transfer credit may not be granted for courses completed in other University of Waterloo programs or at other universities/colleges. Transfer students will only be admitted in the fall term.*

*Transfer students enrolled will be required to complete a minimum of 50% of their degree requirements in the Faculty of Environment at the University of Waterloo.*

#### 7. Restriction on Number of First-Year Courses

*A student must have at least 13.5 units above the 100 level.*

### **Economics Specialization**

The Economics Specialization is available for students in the Environment and Business Honours Co-op Plan in the Faculty of Environment.

#### *Required Courses*

ECON 101, ECON 102, ECON 201, ECON 202, ENVS 278

#### *Elective Courses*

At least three other Economics courses excluding: ECON 220, ECON 357, ECON 344, ECON 371

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## **International Development**

### **Overview**

The International Development Program is offered by the School of Environment, Enterprise and Development (SEED) within the Faculty of Environment.

Seed collaborates with St. Paul's University College in delivering the Program.

The trans-disciplinary field of international development (INDEV) has evolved significantly over the past

25 years. Governments, civil society organizations, and private enterprises increasingly are looking for people with a rigorous preparation that has equipped them to be development catalysts at the community project level. International Development students will acquire the knowledge, business skills, and problem solving orientation required to improve life for all members of challenged communities in a manner that is environmentally sustainable, culturally responsible, and scientifically sound.

In addition to preparing development catalysts, due to its multi-disciplinary character, the Honours International Development plan, when supplemented by Arts electives, constitutes a contemporary *general education for a 21<sup>st</sup> century global village world*. From scientific method to political economy to business skills, the plan lays a foundation for a cosmopolitan *hommes d'affaires*.

The Honours International Development plan has been designed to: (1) integrate knowledge from several disciplines including environmental studies, social sciences, and management; (2) develop competencies for adapting to different cultural and societal perspectives on development, for problem-solving on multi-cultural teams, and for adapting technology to fit the local situation, and (3) encourage innovative, sustainable solutions to development issues. The plan emphasizes project-oriented learning that incorporates a strong problem-solving theme on issues that are inherently multi-dimensional and complicated by differing cultural perspectives on desired development outcomes. An eight month required field placement provides practical exposure to development work and issues.

In the first year, the plan provides an overview of the development field, a basic understanding of economics, and a thorough introduction to the environment, geography, and the principles of planning. These themes are continued in years two and three with environmental research methods, principles of ecology and environmental assessment. In addition, in year two students are introduced to the tools of general and social accounting, environmental impact assessment, and the theory and practice of problem-solving in development contexts. Courses in third year discuss ethical issues between and within cultures, the role of development organizations including the importance of the individual social entrepreneur. Students also begin studying marketing and communication for development.

The fourth year is the experiential learning year and will require three terms to complete. In 4A (spring term), students apply their marketing and communication skills in fund raising activities and gain specialised training toward their field placement. Fall term (4B) and winter term (4C) constitute two consecutive terms of field placement work and learning that culminates in a two week capstone exercise at St Paul's University College. Students pursuing field placements in French or Spanish-speaking developing countries are required to develop or demonstrate at least intermediate-level French or Spanish by fourth year. Students with little or no Spanish or French are advised to begin language preparation in first year. Students pursuing field placement in developing countries where English is an official language will receive training in one of the local languages as part of the in-country orientation.

Additional information may be obtained from the Director, International Development.

## **Bachelor of Environmental Studies**

### **Honours International Development Requirements**

#### *Year One*

INDEV [100](#) Introduction to International Development  
 INDEV [200](#) The Political Economy of Development  
 ENVS [178](#) Introduction to Environmental Research Methods  
 ENVS [195](#) Introduction to Environmental Studies  
 GEOG [101](#) Geography and Human Habitat  
 PLAN [100](#) The Evolution of Planning  
 ECON [101](#) Introduction to Microeconomics  
 ECON [102](#) Introduction to Macroeconomics  
 Two electives

Total 5.0 Units

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#### *Year Two*

INDEV [202](#) Accounting for Development Organizations

INDEV [212](#) Problem-solving for Development  
ENVS [200](#) Field Ecology  
ENVS [278](#) Advanced Environmental Research Methods  
ERS [215](#) Environmental and Sustainability Assessment I  
STV [202](#) Design and Society  
Four electives  
Total 5.0 units

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*Year Three*

INDEV [300](#) Culture and Ethics  
INDEV [302](#) Development Agents  
INDEV [303](#) Marketing and Communication for Development Agents  
INDEV [304](#) Language Conversation for Development Field Work  
INDEV [308](#) Introduction to Social Entrepreneurship  
INDEV [387](#) Global Cities in Global Development  
ERS [315](#) Environmental and Sustainability Assessment II  
MSCI [211](#) Organizational Behaviour  
PLAN [362](#) Regional Planning and Economic Development  
*or* GEOG [426](#) Geographies of Development  
One elective  
Total 5.0 units

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*Year Four*

INDEV [388](#) Key Issues in Urban Development  
INDEV [401](#) International Development Placement 1  
INDEV [402](#) International Development Placement 2  
INDEV [403](#) Advanced Marketing and Communication for Development Agents  
INDEV [474](#) Special Topics in International Development  
One elective  
Total 5.0 Units

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Recommended Electives:

FR [151](#) Basic French 1  
FR [152](#) Basic French 2  
GEOG [102](#) Geography and Our Planetary Environment  
GEOG [206](#) Human Dimensions of Natural Hazards  
GEOG [208](#) Human Dimensions of Global Climate Change  
GEOG [461](#) Food Systems and Sustainability  
GEOG [462](#) Global Food and Agricultural Politics  
PHIL [328](#) Human Rights  
SPAN [101](#) Introduction to Spanish 1  
SPAN [102](#) Introduction to Spanish 2

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**Notes for the International Development Academic Plan**

1. Minimum Required Units  
*Total: 20 units.*
2. Course Load  
*No more than 2.5 units may be taken in a term without departmental approval.*
3. Average Requirements

*Students in the International Development Honours Regular Academic Plan must maintain an overall cumulative average of at least 65% and a major cumulative average (all required courses) of at least 70%. All required courses must be passed.*

4. Materials and Costs

*For INDEV [401](#) and [402](#), extra fees will be required to cover travel and subsistence costs related to international placement work. Statements on extra costs, where required, will be found in the course syllabus.*

5. Restriction on number of First-Year Courses

*A student must have at least 13.5 units above the 100-level.*

6. Double Counting

*A course can be used to satisfy requirements for a maximum of two credentials. Double counting of courses applies as follows: once for the plan and once for a joint honours or concurrent degree, option, minor, diploma, or specialization. There is no limit on the number of courses that may be double counted unless otherwise stated.*

7. Concurrent, Joint Honours and Minor Plans

*International Development (INDEV) does not offer a Concurrent or Joint Honours plan to students in other departments. However, INDEV students can participate in Concurrent and Joint Honours degrees offered by other departments. INDEV students pursuing a joint or concurrent degree are responsible for meeting all INDEV degree requirements as outlined in the calendar for their year of entry into the plan.*

*An International Development minor and option are available to students in other departments. INDEV students can participate in minors and options offered by other departments. Satisfying minor and option requirements may require more than the normal number of academic terms. Available minors and options are listed under the respective faculty and department sections in this calendar.*

8. Transfer Students

*Transfer applicants with post-secondary background may be considered for admission to the BES International Development program. Transfer applicants will not be granted transfer credits for any INDEV-labelled courses. Applicants should be aware that transfer credit may not be granted for courses completed in other University of Waterloo programs or at other universities/colleges. Transfer students will only be admitted for Fall term.*

9. Language Requirement

*Students demonstrating a functional capacity to operate in the language(s) of their field placement may substitute INDEV 304 with a course related to the history, politics, culture, or economics of the placement country or region. Department approval for this course is required.*

*Students pursuing field placements in French or Spanish-speaking countries are required to develop or demonstrate at least intermediate-level French or Spanish by fourth year. Students with little or no Spanish or French are advised to begin language preparation in first year. Students pursuing field placements in English-speaking countries will receive training in one of the local languages as part of their in-country orientation.*

## **International Development Minor**

The International Development Minor is available to University of Waterloo undergraduate students who are enrolled in an Honours or Four Year General plan.

The requirements of the Minor are 5.0 units (ten courses) with a minimum overall cumulative average of 70% and the completion of the International Community Service Experience.

Required Courses: Eight Courses

ENVS [200](#), ERS [215](#), INDEV [100](#) or PSCI [252](#), INDEV [200](#), [300](#), GEOG [101](#), [203](#), and one of INDEV [302](#) or [308](#)

Elective Courses: Two Courses

One of: ERS [404](#), GEOG [426](#), [461](#), [462](#), PLAN [432](#), [433](#)

One of: ANTH [370](#), ERS [372](#), RS [285](#), [381](#)

## International Community Service Experience Requirement

Completion of a pre-approved international community service experience or travel seminar studying community development issues of at least three weeks duration in a linguistic and cultural context different from that of the student's national origin, and in a location outside of Canada, the United States, Great Britain or Australia and New Zealand. An exception may be made for community service experiences in an Aboriginal community in Canada, the United States, Australia or New Zealand. Pre-approval and permission for exception is the final decision of the International Development Field Placement and Language Program Coordinator. This requirement must be organized by the student and is to be completed at the student's own expense. Co-op work terms that meet the above description will normally qualify for the requirement.

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## Knowledge Integration

### Overview

Knowledge Integration is a unique Honours plan that prepares its students to understand and address the kind of real-world problems that require the collaboration, differing perspectives and expertise of multiple disciplines. KI students study in both the humanities and the sciences to develop a balance of skills in creative, critical and integrative thinking. By choosing an appropriate focus in their upper years, graduates can also prepare themselves for professional schools, for public service and policy-making, or for graduate research in their chosen discipline.

There are three key components to the KI plan: the KI core, breadth, and flexibility.

1. **KI Core** In their core courses, students learn the central concepts of knowledge integration—such as expertise and metacognition—and practise essential skills—such as research, collaboration, and problem-solving through design thinking. From the day they arrive, KI students study how we know what we know. What sort of questions does an anthropologist ask? How do computer scientists share their findings? In fourth year, students put it all together in solo projects where each asks and answers an original question that matters to them.
2. **Breadth** The breadth courses develop a balanced foundation of scholarly tools and transferable skills from across campus, including: critical thinking, public speaking, computer science, maths, sciences, ethics, statistics, research design, English, and a second language. Students are able to choose specific breadth courses to complement their abilities and interests.
3. **Flexibility** The KI program allows students the flexibility to explore various interests by taking a variety of courses across campus. Students will either pursue an area of specialization in an established discipline—which may include a minor or joint degree in that area—or create their own interdisciplinary specialization. A dedicated KI academic advisor helps students choose courses and create a plan that matches their academic interests and career goals.

The Knowledge Integration plan encourages and develops creative, critical and integrative thinking skills, as well as self-awareness, initiative, and collaboration. KI students learn about the nature and variety of disciplinary specialties, how to characterize a discipline, and how to collaborate effectively with its practitioners. Group-based design projects in first and third years give students problem-solving opportunities for applying skills in integrating knowledge—from their coursework and beyond the classroom—to discover and develop innovative solutions. Every student studies at least one subject in meaningful depth, building a personal knowledge base and understanding firsthand the experience of specialization, while contributing to the multi-disciplinary nature of their core-course design groups. In their fourth year, KI students complete a research project on an inter- or transdisciplinary topic of particular interest to them, as a capstone for their entire degree.

## Bachelor of Knowledge Integration, Honours Regular

### Honours Knowledge Integration Requirements

*Year One*

INTEG [10](#) Knowledge Integration Seminar (0.0 units)

INTEG [120](#) Introduction to the Academy: Disciplines and Integrative Practices

INTEG [121](#) Introduction to the Academy: Design and Problem-Solving

PHIL [145](#) Critical Thinking

SPCOM [223](#) Public Speaking

Students must take *at least one* of the following *or* a suitable substitute by departmental consent.

CS [100](#) Introduction to Computing through Applications

CS [115](#) Introduction to Computer Science 1

CS [135](#) Designing Functional Programs

CS [145](#) Designing Functional Programs (Advanced Level)

Students must take *at least two* MATH courses at the 100-level *or* a suitable substitute by departmental consent.

Students must take *at least one course* (including lab), to count towards *Investigative Science*<sup>†</sup> requirement.

Two electives<sup>††</sup> (1.0 units)

*Total of 5.0 units*

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#### *Year Two*

INTEG [10](#) Knowledge Integration Seminar (0.0 units)

INTEG [220](#) Nature of Scientific Knowledge

INTEG [221](#) The Social Nature of Knowledge

INTEG [230](#) The Museum Course: Preparation and Field Trip (0.25 units)

Eight Electives<sup>††</sup> (4.0 units)

*Total of 5.25 units*

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#### *Year Three*

INTEG [10](#) Knowledge Integration Seminar (0.0 units)

INTEG [231](#) The Museum Course: Field Trip Project (0.25 units)

INTEG [320](#) The Museum Course: Research and Design

INTEG [321](#) The Museum Course: Practicum and Presentation

INDEV [300](#) Culture and Ethics *or* a suitable substitute by departmental consent

Seven Electives<sup>††</sup> (3.5 units)

*Total of 5.25 units*

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#### *Year Four*

INTEG [10](#) Knowledge Integration Seminar (0.0 units)

INTEG [420](#) Senior Research Project A (Research and Planning)

INTEG [421](#) Senior Research Project B (Writing and Defence)

Eight Electives<sup>††</sup> (4.0 units)

*Total of 5.0 units*

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#### *Theme Course Requirements*

<sup>††</sup> *Theme course requirements (listed below) are to be taken in to consideration when choosing elective courses.*

#### <sup>†</sup> *Investigative Science*

*Students must successfully complete a minimum of 1.5 units (three courses) that include a hands-on investigative component such as field study, lab, or programming. Co-requisite labs must be taken and passed but do not count toward the 1.5 units of investigative science. For example, KIN 100 Human Anatomy: Limbs and Trunk (0.50 units), and its co-requisite KIN 100L Human Anatomy Lab (0.25 units) count as one course (0.50 units) for the purposes of satisfying the investigative science requirement.*

*The investigative science requirement cannot be satisfied with any "SCI"-labelled or "SCBUS"-labelled units.*

*Students are not limited to first-year courses. They can satisfy the investigative science requirement with a sequence of courses, one prerequisite to the next, such as:*

*EARTH [121](#) Introductory Earth Sciences (0.50), and*

*EARTH [121L](#) Introductory Earth Sciences Laboratory (0.25)*

*EARTH [122](#) Introductory Environmental Sciences (0.50), and*

EARTH [122L](#) Introductory Environmental Sciences Laboratory (0.25)

EARTH [231](#) Mineralogy (0.50)

Students are not limited to courses with co-requisite labs. They can satisfy the investigative science requirement with courses that include hands-on investigative components, such as:

ANTH [355](#) Human Osteology

ANTH [365](#) Fossil Hominids

BIOL [211](#) Introductory Vertebrate Zoology

CS [234](#) Data Types and Structures

ENVS [200](#) Field Ecology

GEOG [165](#) Computer Cartography: Principles and Design

KIN [255](#) Introduction to Psychomotor Behaviour

PLAN [281](#) Introduction to Geographic Information Systems (GIS)

### **Languages**

Students must take *at least one of*:

ENGL 100-level

ENGL 200-level

Students must take *at least two* courses in a second language [e.g. FR [151/152](#) Basic French, GER [101/102](#) Elementary German, SPAN [101/102](#) Introduction to Spanish, *or a suitable substitute by departmental consent*].

### **Probability and Statistics**

Students must take *at least one of the following or a suitable substitute by departmental consent.*

STAT [202](#) Introductory Statistics for Scientists

STAT [220](#) Probability (Non-Specialist Level)

### **Research design/methods**

Students must take *at least one of the following or a suitable substitute by departmental consent.*

ENVS [178](#) Introduction to Environmental Research Methods

ENVS [278](#) Advanced Environmental Research Methods

### **Notes for the Bachelor of Knowledge Integration Academic Plan**

1. Minimum Required Units

*Total: 20.5 units not including Investigative Science Labs. See Investigative Science note below Theme Course Requirements for more information.*

2. Course Load

*No more than 2.5 units may be taken in a term without departmental approval.*

3. Average Requirements

*Students in the Knowledge Integration Honours Regular Academic Plan must maintain an overall cumulative average (all courses) of at least 65% and a major cumulative average of at least 75%. The major cumulative average includes all INTEG-labelled and core (required) courses. All required courses must be passed.*

4. Materials and Costs

*For some courses, extra fees may be required to cover field expenses/travel costs. Statements on extra costs, where required, will be found with the course descriptions.*

5. Restriction on number of First-Year Courses

*A student must have at least 13.5 units at the 200-level or above.*

6. Double Counting

*A course can be used to satisfy requirements for a maximum of two credentials. Double counting of courses applies as follows: once for the plan and once for a joint honours or concurrent degree, option, minor, diploma, or specialization. There is no limit on the number of courses that may be double counted unless otherwise stated.*

### **Joint Honours with Knowledge Integration**

A BKI degree can be combined with any other University of Waterloo degree plan which academic units in Environment and other faculties have chosen to make available for Joint Honours. Knowledge Integration may be the primary credential (i.e., Bachelor of Knowledge Integration with "Z" academic plan) or the secondary credential (i.e., Bachelor of academic plan "X" with Knowledge Integration). To

earn a Joint Honours degree with Knowledge Integration, students must meet the requirements of both plans as stated in the Calendar.

Normally, a student would be eligible for admission to a Joint Honours degree plan with Knowledge Integration only with:

- a minimum cumulative average of 65%;
- completion of at least two of INTEG 120, 121, 220, and 221; and,
- a Knowledge Integration major cumulative average that would meet the degree requirement, a minimum of 75%. That average includes all INTEG-labelled courses and all the courses already completed that would become, on admission to a plan in Knowledge Integration, core courses (such as, to satisfy the Investigative Science theme requirements).

### **Knowledge Integration Minor**

Professionals regularly find themselves collaborating with experts from other areas, or addressing complex problems that span multiple disciplines and affect diverse stakeholders. The Knowledge Integration Minor is open to University of Waterloo undergraduate Honours students who wish to complement their major with the trans-disciplinary literacy and skills necessary to join - or lead - teams and guide projects that span diverse specialties.

The requirements for the Minor are 5.0 units (ten courses) with a minimum overall cumulative average of 65%.

Required Courses: Six Courses

INTEG 120, 121, 220, 221, 320, 321

Elective Courses: Four Courses

One non-INTEG course at the 200 level or above, from outside the student's home faculty

Three of: PHIL 145, SPCOM 223, INDEV 300, one course in statistics or research methods<sup>†</sup>, non-required INTEG-labelled courses<sup>‡</sup>

<sup>†</sup>Most undergraduate courses on Statistics or Research Methods required for the student's major plan will satisfy this requirement.

<sup>‡</sup>Up to three INTEG-labelled courses, other than those listed as Required Courses, may be used to satisfy this requirement.

#### **Note:**

*The courses listed above may have prerequisites. It is the student's responsibility to satisfy the requirements or otherwise obtain permission to enroll.*

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## **Department of Environment and Resource Studies**

### **Overview**

The Department of Environment and Resource Studies offers both an Honours Regular Academic Plan and an Honours Co-operative Academic Plan. These two Honours degree Academic Plans are oriented towards study of the many dimensions of human inter-relationships with various environments, including natural and managed landscapes, buildings and cities, small groups, communities, and whole societies. Through problem- and issue-oriented inquiry into such complex relationships, along with related study in contributing academic disciplines, ample scope is provided for acquiring a broad-based education as well as technical knowledge and skills.

The current emphases in research and scholarship among the faculty fall into four major thematic areas:

1. Ecosystem Sciences for conservation and restoration in parks, and protected urban and rural areas
2. Environmental Governance and Policy
3. Creating Sustainable Communities via environmental and social impact assessment
4. Solving Complex Environmental Problems via transdisciplinary experiential learning

Many of the positions held by graduates of the Department can be described by one of these headings.

The overarching goal of the Academic Plans offered by the Department is the development of abilities to

think and to analyse which are not artificially constrained by conventional boundaries of academic disciplines. This derives from the recognition that the complex interrelated problems of the contemporary world and of the future will be resolved only through this type of approach. These problems require attention from people who not only have specialized technical abilities, but also have increased perspective, awareness, and understanding. Our graduates find employment precisely because of the tapestry of technical and analytical skills amongst the areas of transdisciplinary approaches, ecosystem sciences, and environmental governance and policy.

The Environment and Resource Studies Academic Plans are flexible and student-centred as they present a wide range of subjects and problems inherent in the theme of human-environment relationships. Through selection of topics for study within required courses, through selection of electives, and through work or intern experiences in the Regular Academic Plan and work-term experiences in the Co-operative Academic Plan, students can equip themselves for careers.

Graduates holding the BES degree in Environment and Resource Studies have found employment in a range of government agencies in fields such as ecologist, senior scientist, senior policy director, parks and protected areas management, impact assessment specialist, natural resources management, pollution control, information technology manager, environmental software developer, social services planning, environmental planner, ethical investment counselor, teaching, and as university faculty themselves. These careers span the public, private, and non-governmental organization sectors. A significant number of students have graduated from Environment and Resource Studies and been accepted to do post-graduate work in these same fields.

The Department is fortunate in having a multidisciplinary faculty whose formal education and experience range over a number of disciplines in the natural sciences, social sciences, and the humanities. They bring to the Academic Plan qualifications in such fields as agriculture, ecology, environmental systems, environmental planning, communications, economics, geography, law, mathematics, physics, political science, and sociology, as well as a variety of experiences in such diverse areas as ecological research, economic studies, urban affairs, technology assessment, and work with international organizations.

For the approach used in Environment and Resource Studies, considerable academic innovation has been desirable. Besides lectures and labs, the Academic Plan emphasizes open-door, personal contact among students and faculty members; student-selected projects and community work; field trips to environments other than lecture halls; team teaching; a regular flow of visitors from outside the University; and workshop instruction to help develop techniques and skills relevant to environmental studies. Students in both the Regular and Co-operative Environment and Resource Studies Academic Plans are encouraged to relate aspects of their Academic Plan to summer or work-term employment, involvement with community organizations or other self-generated activity. Students often incorporate this experiential learning into the university-based educational process. For many students a "theme"-oriented Academic Plan of this kind offers a more satisfying undergraduate education than traditional alternatives.

More information may be obtained from the Undergraduate Officer, Department of Environment and Resource Studies.

## **Bachelor of Environmental Studies**

### **Honours Environment and Resource Studies**

The formal admission requirements are listed in the Admissions section of this Calendar. The Faculty of Environment expects that students enrolled in any of its Academic Plans should be able to demonstrate competence in writing. Accordingly, all students newly admitted to the Faculty are required to write the English Language Proficiency Examination (*see the English Language Proficiency Program section for the Faculty of Environment for more information on this requirement*). Because of the necessity of communicating research and project results during studies and in careers after graduation, writing skills are particularly important in Environment and Resource Studies.

Applicants who have been out of school for a number of years are considered on the basis of their work experiences, their involvement in environmental activities or interests in environmental studies, as well as their past academic record.

There are 6.5 core units in the Academic Plan. In addition, 3.0 units must be selected from ERS and/or ENVS courses. The first-year introductory courses examine major environmental themes from the

viewpoints of the natural and social sciences. In the second year, further work in natural ecology and the social sciences, including techniques for investigating environmental questions and experience in conducting a systematic enquiry through the device of small group projects, helps to introduce other perspectives and themes running through environment and resource studies. Additional course work on research design, methodology, and information or data handling is also required in the second year.

The core requirements for the third and fourth years include an in-depth examination of the development of environmental thought and an independent project course in each year, in which the student, working with an advisor, develops a project proposal and undertakes research. Arrangements to receive extra credit for project work have been provided for those who learn most effectively through undertaking self-directed work under the guidance of faculty and other advisors.

The emphasis given to project-oriented learning within the Academic Plan reflects the importance attached to having students develop increasingly sophisticated abilities for coping with situations that are inherently complex, value-laden, ambiguous, and uncertain. Project-oriented learning provides the occasion to practise skills in problem definition, information and data gathering, analysis and synthesis of material, and presentation of results in a suitable format using the most appropriate communications media. Skills of this nature can be refined, adapted and applied in whatever context or situations students choose during and after their university years. An increasing number of students incorporate work with governmental agencies, community organizations, and other groups into projects they select for their third- and fourth-year project assignments and, in a few cases, well-conceived and executed projects have led to employment in a variety of organizations.

Elective courses can be chosen from anywhere in the University and options start from the first year in the Academic Plan. Faculty will advise on this, but essentially there are five possibilities, as follows:

1. *The Honours Regular and Honours Co-operative Academic Plans*

Students take the required core courses and whatever sets of elective courses they wish to round out their individual interests and skills. Students may be admitted to the Co-op Academic Plan in the first or second year.

2. *A Joint Honours Degree*

Students can elect to take a Joint Honours degree with another department, which will require fulfilling the requirements of a second department as well as Environment and Resource Studies.

Students from other plans choosing a joint honours plan *with* ERS as the second major must complete 6.5 ERS core units plus 3 additional ERS and/or ENVS courses for a total 8.0 units. Students in all plans may substitute their home department's equivalent senior honours essay or thesis or senior seminar for ERS 411A/B.

3. *A Minor*

Students can elect to take a Minor, which normally requires completion of eight to ten courses in another department, as designated by that department.

ERS offers a minor to honours students outside of the Environment and Resource Studies department. A total of ten courses (5.0 units) are required with a cumulative average of 70%, with no failures. See Environment and Resource Studies Minor in this calendar for more details.

4. *An Option*

Students can elect to take one or more of the recognized Options outside of the Department.

In each case students should give careful consideration to their choices in terms of the educational goals and possible careers they may wish to pursue after obtaining a BES degree. They would also do well to seek information and advice on the kind of undergraduate courses favoured by graduate programs in which they may be interested.

The recommended course load is five courses per term. Each student must have completed 20 units or the equivalent to graduate, with 13.5 units (27 courses) above 100-level. Of these, 6.5 units are specific required courses. An additional 3.0 units must be selected from ERS and/or ENVS courses, with 10.5 units as free electives. A cumulative overall average of 65% and a cumulative average of 70% in ERS/ENVS courses must be maintained. There are several evaluation techniques used to determine grades.

## **Honours Regular Environment and Resource Studies Requirements**

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*Year One*

ENVS [195](#) Introduction to Environmental Studies

ERS [110](#) Environmental Analysis and Solutions I: Foundations

ERS [111](#) Environmental Analysis and Solutions II: Experiential Approaches

ENVS [178](#) Introduction to Environmental Research Methods

*plus electives for a total of five units*

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*Year Two*

ENVS [200](#) Field Ecology

ERS [210](#) Environmental Analysis and Solutions III: Greening Communities

ERS [211](#) Environmental Analysis and Solutions IV: Restoration Ecology

*plus electives for a total of five units*

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*Year Three*

ERS [310](#) Environmental Analysis and Solutions V: Environmental Thought

ERS [311](#) Environmental Research Project I

*one of:*

ERS [316](#) Integrated Urban Water Systems Planning and Management

ERS [317](#) Waste Management

ERS [370](#) Corporate Sustainability: Issues and Prospects

ERS [371](#) An Ecosystem Approach to Environment and Health

ERS [372](#) First Nations and the Environment

*plus electives for a total of five units*

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*Year Four*

ERS [410](#) Environmental Analysis and Solutions VI: Ecosocial Systems

ERS [411A](#) Environmental Research Project II\*

ERS [411B](#) Environmental Research Project III\*

*plus electives for a total of five units*

*\*ERS 412A/B or ERS 413 can be taken instead of ERS 411A/B.*

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**Note:**

*Students wishing to transfer to Environment and Resource Studies may receive credit for courses previously completed. Students should meet with the Undergraduate Officer to determine transferable courses and course selections for first year. The requirement of 27 courses above 100-level may not be applicable to transfer students.*

**Honours Co-operative Environment and Resource Studies Requirements**

Terms 1A, 1B, 4A, and 4B are the same as Years One and Four respectively of the Regular Academic Plan. In the Fall term (2A) Co-op students will be interviewed for jobs. Co-op students in the Faculty of Environment are required to complete a minimum of five Professional Development courses, including an introductory course (PD1) that must be taken prior to the first work term. At least two other of the Professional Development courses must cover non-technical skills. Other than the initial course, these courses are normally taken during Co-op work terms. Students are encouraged to take a Professional Development course each work term until the requirement is met. The first work term will be in the Winter following 2A. A total of four approved work-term reports are required for the Honours Co-op degree. PD2 requires a work-term report to be written, which will be considered one of the four required work-term reports.

The Co-op schedule is as follows:

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*Terms 1A and 1B*

Same as Regular Academic Plan

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*Term 2A*

ERS [210](#) Environmental Analysis and Solutions III: Greening Communities

ERS [211](#) Environmental Analysis and Solutions IV: Restoration Ecology

*plus electives for a total of 2.5 units*

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*Term 2B*

ENVS [200](#) Field Ecology

*plus electives for a total of 2.5 units*

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*Term 3A*

*One of the following courses must be taken in either 3A or 3B. Consult the Undergraduate Advisor for course availability.*

ERS [316](#) Integrated Urban Water Systems Planning and Management

ERS [317](#) Waste Management

ERS [370](#) Corporate Sustainability: Issues and Prospects

ERS [371](#) An Ecosystem Approach to Environment and Health

ERS [372](#) First Nations and the Environment

*plus electives for a total of 2.5 units*

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*Term 3B*

ERS [310](#) Environment Analysis and Solutions V: Environmental Thought

ERS [311](#) Environmental Research Project I

*One of the following courses must be taken in either 3A or 3B. Consult the Undergraduate Advisor for course availability.*

ERS [316](#) Integrated Urban Water Systems Planning and Management

ERS [317](#) Waste Management

ERS [370](#) Corporate Sustainability: Issues and Prospects

ERS [371](#) An Ecosystem Approach to Environment and Health

ERS [372](#) First Nations and the Environment

plus electives for a total of 2.5 units

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Terms 4A and 4B

Same as Regular Academic Plan

Deviation from this schedule may cause difficulty in satisfying all requirements.

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**Notes:**

1. *The arrangement of academic and work terms, and further information on Co-operative study generally, are stated in the [Co-operative Education and Career Services](#) section of the Calendar. Students transferring to ERS with 5.0 units of advanced standing and considering the Co-op Academic Plan should consult the ERS Admissions Officer or Undergraduate Officer. Only a small number of transfer students (two or three) will be admitted to the ERS Co-op Academic Plan each year. These students will be selected from Co-op applicants on the basis of applicants' marks in the first semester of their enrolment in ERS.*
2. *Students will be permitted to transfer from Co-op to a Regular Honours Academic Plan if all requirements of the Co-op Academic Plan have been met up to the time of transfer.*

**Environment and Resource Studies Minor**

The Environment and Resource Studies (ERS) Minor is available to University of Waterloo Honours students in other departments.

A total of ten courses (5.0 units) are required. Within these, three ENVS courses (1.5 units) are permitted as follows: ENVS 178, ENVS 195, ENVS 200. All remaining courses must be ERS-labelled. Cumulative average for all ten courses must be at least 70%.

**Certificate with Niagara College**

The Department offers a joint certificate in Environmental Management and Assessment, and Ecosystem Restoration with Niagara College Centre for Environmental Training. For further information, consult the Undergraduate Advisor.

**Options and Diplomas**

A number of other options and diplomas are available including:

- Business Option
- Geomatics Option
- International Development Option
- Knowledge Integration Option
- Parks Option
- Sustainable Local Economic Development Option
- Tourism Option
- Diploma in Ecological Restoration and Rehabilitation
- Diploma in Environmental Assessment
- Diploma of Excellence in Geographic Information Systems

The requirements of these options and diplomas are outlined under Academic Plans in the Faculty Section.

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**Department of Geography & Environmental Management**

**Overview**

Geography and Environmental Management is concerned with both the natural and human environment, studying how it has been shaped according to human need, how patterns of human activities are structured over space, and how these are influenced by environmental factors.

At the University of Waterloo, we stress the study of environmental change at a variety of scales from local to global. Our courses are highly integrated to encourage the study of the environment from many perspectives. These include the practical application of geographical studies, the role of field work, and the use of computer techniques such as model building, geographical information systems, and digital remote sensing.

Geography and Environmental Management is considered both a natural and social science and

flourishes in an academic organization where the multi-disciplinary approach is emphasized. The Bachelor of Environmental Studies (BES) in Geography and Environmental Management (Honours and General) provides students with considerable freedom to choose supporting electives from many departments in the University. Students can develop plans to suit their particular interests. Joint Honours Plans with a number of other departments are listed in "[Joint Honours Academic Plans](#)."

Regular Honours Geography and Environmental Management provides a sound foundation in the discipline, and prepares the student for specialization at the graduate level in almost any aspect of Geography and Environmental Management. The mandatory content of the courses include a series of integrated courses in both physical and human geography. Although the Honours plan is broad in scope, students may concentrate their courses in one area of specialization offered in the Department: Earth Systems Science; Geomatics; and Development and Environment. The fourth year includes the option of completing a research project, the Senior Honours Thesis.

Honours Co-op provides for alternate terms of practical work experience and academic study. Students may be admitted to Co-op in the first or second year. The first work term is in the winter of the second year. Co-op Geography and Environmental Management students must normally follow the work and study-term sequence outlined by Co-operative Education & Career Services. Students must complete five work terms. A work-term report is required upon completion of each work term and four of these must be approved for the Co-op degree. Inquiries for additional information regarding Co-operative studies should be directed to the Co-op Undergraduate Officer.

Three-year General Geography and Environmental Management provides a liberal education in environmental studies, with less specialization in Geography and Environmental Management than in the Honours plan.

In addition to the BES (Bachelor of Environmental Studies) in Geography and Environmental Management, a BA (Bachelor of Arts) is also available in Geography and Environmental Management (see the Faculty of Arts).

In all Academic Plans there is emphasis on the development of both theory and methodology and on the practical application of geographical concepts to the environmental, economic, social, and political problems of Canada and other parts of the world. The "applied geography" aspects of the plan are enhanced by the availability in the Faculty of elective courses in Environment and Resource Studies and Planning. Graduating students acquire a variety of jobs in education, government, industry, and planning agencies.

The Department of Geography and Environmental Management offers both Master's (MA, MES, and MSc) and Doctoral (PhD) graduate programs as part of the joint Waterloo-Wilfrid Laurier Graduate Program in Geography. At the graduate level course work and research are concentrated on a specific subfield of geography and environmental management. Areas of research specialization include: Physical Geography; Spatial Data Handling; Urban and Economic Geography; Resources Management; Tourism and Regional Geography.

The formal admission requirements are listed in the "Admissions" section of this calendar. The Faculty of Environment expects that students enrolled in any of its academic plans should be able to demonstrate competence in writing. Accordingly, all students newly admitted to the Faculty are required to write the English Language Proficiency Examination during their first term of enrolment (normally scheduled during the first week in December).

## **Bachelor of Environmental Studies**

### **Geography and Environmental Management Three-Year General**

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#### *Year One*

GEOG [100](#) On Becoming a Geographer

GEOG [101](#) Geography and Human Habitat

GEOG [102](#) Geography and Our Planetary Environment

GEOG [165](#) Computer Cartography: Principles and Design

*Electives (see notes below)*

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### Year Two

Students must take courses from the three following themes

1. Earth Systems Science: one of GEOG [201](#), [209](#)
2. Geomatics: one of GEOG [271](#), [281](#)
3. Development and Environment: one of GEOG [202](#), [203](#) and one of GEOG [206](#), [208](#)

and additional courses so that by the end of the second year a student should have completed 10 units. One of these 0.5 units should be ENGL [109](#), [129R](#), [140R](#), taken in Year One or ENGL [210E](#), [210F](#) taken in Year Two. **A student who receives greater than 80% in ENG4U English is exempt from the English requirement.**

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### Year Three

Additional courses so that a student should have completed at least 15 units.

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### Notes on Three-Year Academic Plan

#### 1. Minimum Required Units

*Total: 15 units. Geography: 6 units. Outside of Faculty of Environment: 3 units. All Environmental Studies (ENVS) courses are included in the cumulative Geography average but only 2 units can be counted in meeting the minimum required courses in Geography and Environmental Management.*

#### 2. Course Load

*No more than 2.5 units may be taken in a term without the approval of the Associate Chair (Undergraduate Studies). Normally, approval for a sixth 0.5 unit will be considered only if the cumulative Geography and Environmental Management average is 78% or higher.*

#### 3. Average Requirements

*Students must maintain an overall cumulative average of 60% and a Major cumulative average of 65%. All required courses must be passed.*

#### 4. Restriction on number of First-Year Courses

*For a three-year General degree, a student must have at least 8.5 units at or above the 200-level.*

5. Transfer students will be required to complete a minimum of 50% of their course work and half their geography course work at the University of Waterloo.

#### 6. Other Comments

*See notes 4, 5, and 6 on four-year academic plans.*

### Geography and Environmental Management Four-Year Honours (Regular and Co-op)

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#### Year One

- GEOG [100](#) On Becoming a Geographer
- GEOG [101](#) Geography and Human Habitat
- GEOG [102](#) Geography and Our Planetary Environment
- GEOG [165](#) Computer Cartography: Principles and Design
- ENVS [178](#) Introduction to Environmental Research Methods

*Electives including a course in English, either one of ENGL [109](#), [129R](#), [140R](#), taken in Year One or ENGL [210E](#), [210F](#) taken in Year Two. **A student who receives greater than 80% in ENG4U English is exempt from the English requirement.***

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#### Year Two

Students must take courses from the three following themes.

1. Earth Systems Science: one of GEOG [201](#), [209](#)
2. Geomatics: one of GEOG [271](#), [281](#)
3. Development and Environment: one of GEOG [202](#), [203](#) and one of GEOG [206](#), [208](#)

*If desired, two of the required courses above may be taken in Year Three.*

*Electives (see notes below)*

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#### Year Three

GEOG [391](#) Field Research (*not required for Co-op*)

GEOG [393](#) Approaches to Research in Human Geography  
or GEOG [394](#) Approaches to Research in Physical Geography  
*Electives (see notes below)*

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*Year Four*

GEOG [490A/B](#) Honours Thesis and one other Fourth Year Geography course (2.0 units) or 2.0 units in Geography at level four

*Electives to fulfill degree requirements (see notes below)  
(Co-op students, see Note 7)*

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## **Notes for the Honours Geography and Environmental Management Academic Plans**

### **1. Minimum Required Units**

*Total: 20 units. Geography: 10 units. All courses for which 1 unit is awarded will count as the equivalent of two courses. Outside of the Faculty of Environment: 4 units. Only two units designated Environmental Studies (ENVS) may be counted as Geography units but all units designated Environmental Studies are included in the cumulative major average.*

### **2. Course Load**

*No more than 2.5 units may be taken in a term without the approval of the Associate Chair (Undergraduate Studies). Normally, approval for a sixth 0.5 unit will be considered only if the cumulative Geography and Environmental Management average is 78% or higher.*

### **3. Average Requirements**

*Students in the Honours Academic Plans must maintain an overall cumulative average of 65% and a Major cumulative average of 70%. All required courses must be passed.*

### **4. Secondary School Teaching**

*Students intending to teach in Secondary Schools should check with various Teachers Colleges regarding admission requirements. Normally at least four courses of Regional Geography and at least four courses in another teachable school subject are required.*

### **5. Materials and Costs**

*For some courses, extra fees may be required to cover field expenses/travel costs, e.g., GEOG [391](#) Field Research. Statements on extra costs, where required, will be found with the course descriptions.*

### **6. Independent Study**

*Up to three independent study GEOG [475](#) courses may be taken.*

### **7. Honours Co-operative Academic Plan**

*Honours Geography and Environmental Management Co-op is a five work term Academic Plan in which four work-term reports have to be satisfactorily written. The first work term occurs in the Winter term of the second year. PD2 taken during the first work term requires a work-term report, which will be considered one of the four required work-term reports.*

*Enrolment in Honours Geography and Environmental Management Co-op is limited. Students are admitted to the Co-op Academic Plan in first year based on secondary school grades. Interested students enrolled in first year Regular Geography and Environmental Management at the University of Waterloo may be considered for admission to any remaining Co-op positions at the end of first year based on university academic performance, an interview, and work experience related to Geography.*

*The Honours Geography and Environmental Management Co-op Plan has the same academic requirements as the Honours Regular Plan with the exception that GEOG [391](#) need not be taken by Co-op students.*

### **8. Transfer Courses**

*Transfer students enrolled will be required to complete a minimum of 50% of their course work and half their geography units at the University of Waterloo.*

### **9. Restriction on number of First-Year Courses**

*For a four-year Honours degree a student must have at least 13.5 units at or above the 200-level.*

### **10. Double Counting**

*A course can be used to satisfy requirements for a maximum of two credentials. Double counting of courses applies as follows: once for the plan and once for a joint honours or concurrent degree, option,*

minor, diploma, or specialization. There is no limit on the number of courses that may be double counted unless otherwise stated.

11. All fourth year Geography courses will be restricted to third and fourth year Honours students.

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### Co-op Scheduling Recommendations

Co-op students in the Faculty of Environment are required to complete a minimum of five Professional Development (PD) courses, including an introductory course (PD1) that must be taken prior to the first work term. At least two other of the Professional Development courses must cover non-technical skills. Other than the initial course, these courses are normally taken during Co-op work terms. Students are encouraged to take a Professional Development course each work term until the requirement is met.

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#### Year One

GEOG [100](#), [101](#), [102](#), [165](#)

ENVS [178](#)

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#### Year Two

##### Fall Term 2A

Students must take courses from the three following themes in Terms 2A and 2B.

1. Earth Systems Science: one of GEOG [201](#), [209](#)
2. Geomatics: one of GEOG [271](#), [281](#)
3. Development and Environment: one of GEOG [202](#), [203](#) and one of GEOG [206](#), [208](#)

Electives, one of which must be ENGL [109](#), [129R](#), [140R](#) taken in Year One or ENGL [210E](#), [210F](#) preferably taken in Spring term 2B. **A student who receives greater than 80% in ENG4U English is exempt from the English requirement.**

##### Winter Work Term 1

##### Spring Term 2B

Students should take Geography theme courses in Earth Systems Science, Geomatics, or Development and Environment in Terms 2A and 2B.

#### Electives

##### Fall Work Term 2

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#### Year Three

##### Winter Term 3A

#### Electives

##### Spring Work Term 3

##### Fall Term 3B

GEOG [393](#) or GEOG [394](#)

#### Electives

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#### Year Four

##### Winter Work Term 4

##### Spring Term 4A

GEOG [490A](#) or level four Geography courses (1.0 unit)

#### Electives

##### Fall Work Term 5

##### Winter Term 4B

GEOG [490B](#) or level four Geography courses (1.0 unit)

#### Electives

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## Honours Geography and Aviation (Regular)

The field of aviation has evolved significantly over the past 50 years and increasingly depends upon advances in geography and technology. Aviation and aerospace industries clearly demand a new breed of specialists with a multidisciplinary educational experience, a comprehensive academic background to help them understand complex aircraft systems, and well-developed analytical, critical thinking, and decision-making skills.

Honours Geography and Aviation is designed to provide a strong environmental, geomatics, and technology base for careers in a very diverse array of aviation and aerospace industries. It consists of an Honours Geography degree (BES) combined with a Commercial Pilot Program. The Waterloo-Wellington Flight Centre (WWFC) component of the program provides advanced flight training leading to a commercial pilot licence. Coursework includes the essentials of aviation, as well as private and commercial pilot training, an instrument rating, and multiengine rating.

For more information on the aviation requirements, please visit [www.aviation.uwaterloo.ca/](http://www.aviation.uwaterloo.ca/).

### Year One

GEOG [101](#) Geography and Human Habitat  
 GEOG [102](#) Geography and Our Planetary Environment  
 GEOG [165](#) Computer Cartography: Principles and Design  
 GEOG [271](#) Earth from Space Using Remote Sensing  
 ENVS [178](#) Introduction to Environmental Research Methods  
 AFM [131](#) Introduction to Business in North America  
 CS [115](#) Introduction to Computer Science 1  
 One elective\* (0.5 unit)  
 Professional Pilot Program Course I<sup>†</sup> (1B) (0.5 unit)

### Year One (Spring)

Professional Pilot Program Course II<sup>†</sup> (0.5 unit)

Total of 5.0 units

### Year Two

GEOG [201](#) Fluvial Geomorphology  
 or GEOG [209](#) Hydroclimatology  
 GEOG [281](#) Introduction to Geographic Information Systems (GIS)  
 ENVS [201](#) Introduction to Environmental and Planning Law  
 ENVS [278](#) Advanced Environmental Research Methods  
 Students must take *at least* two courses from the following theme.  
 Development and Environment: one of GEOG [202](#), [203](#) and one of GEOG [206](#), [208](#)  
 Two electives\* (1.0 units)  
 Professional Pilot Program Course III<sup>†</sup> (2A) (0.5 unit)  
 Professional Pilot Program Course IV<sup>†</sup> (2B) (0.5 unit)

\* Electives including a course in English, either one of ENGL [109](#), [129R](#), [140R](#), taken in Year One or ENGL [210E](#), [210F](#) taken in Year Two. **A student who receives greater than 80% in ENG4U English is exempt from the English requirement.**

Total of 5.0 units

### Year Three

GEOG [210](#) Image Interpretation and Photogrammetry  
 GEOG [310](#) Geodesy and Surveying  
 GEOG [371](#) Advanced Remote Sensing Techniques  
 GEOG [387](#) Spatial Databases  
 GEOG [393](#) Approaches to Research in Human Geography  
 or GEOG [394](#) Approaches to Research in Physical Geography  
 Three electives (1.5 units)  
 Professional Pilot Program Course V<sup>†</sup> (3A) (0.5 unit)  
 Professional Pilot Program Course VI<sup>†</sup> (3B) (0.5 unit)

Total of 5.0 units

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Year Four

GEOG [381](#) Spatial Analysis Using Geographic Information Systems

GEOG [471](#) Remote Sensing Project

GEOG [490A/B](#) Honours Thesis

or two Fourth Year Geography courses (1.0 unit)

Electives

Total of 5.0 units

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**Note:**

For more information on rules governing this program, please see [Geography and Environmental Management](#).

<sup>†</sup> Professional Pilot Program Courses: 3.0 units to be transferred upon completion of University of Waterloo core and elective course requirements. The Professional Pilot Program Courses will **not** count towards any other University of Waterloo program requirement.

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**Notes for the Honours Geography and Aviation Academic Plan**

1. Minimum Required Units

Total: 20 units. University of Waterloo Core Courses: 11.5. Major Core Courses Geography/ENVS: 10.5 units. Elective Courses: 5.5 units. Professional Pilot Program Courses: 3 units. Outside of the Faculty of Environment (excluding Professional Pilot Program Courses): 4 units.

All Geography and Environmental Studies (ENVS) units are included in the cumulative major average.

2. Course Load

No more than 2.5 units may be taken in a term without departmental approval and overall average of 78%.

3. Maintaining Academic Status

In order to continue in the Aviation plan, students must maintain the University of Waterloo academic standards (described below) as well as achieve the flight component benchmarks set by WWFC for each semester. Students are expected to maintain passing grades (70%) in all WWFC flight components. Students may be allowed to achieve this by using a "competency-based" approach, so long as they achieve the established benchmarks on time.

4. Average Requirements

Students in an Honours Academic Plan must maintain an overall cumulative average of 65% and a Major cumulative average of 70%. Please see Note 1: Minimum Required Units, for major courses for your plan. In addition to these average requirements students must also maintain a cumulative average of 70% for **all** core courses.

Professional Pilot Program Courses are **not** used in average calculations.

All required courses must be passed.

5. Aviation Costs

All costs associated with the Professional Pilot Program Courses are paid directly to the Waterloo-Wellington Flight Centre (WWFC).

6. Materials and Costs

For some courses, extra fees may be required to cover field expenses/travel costs. Statements on extra costs, where required, will be found with the course descriptions.

7. Independent Study

Geography and Aviation Honours: Up to 3 independent study GEOG [475](#) courses may be taken.

8. Transfer Credit - Flight Training

Transfer consideration of previous flight training or Professional Pilot Program Courses will be at the discretion of the Waterloo-Wellington Flight Centre and **not** determined by the University of Waterloo.

Students with previous flight experience are eligible for transfer credit of up to 50% of the Professional Pilot Training component. That will usually mean a Private Pilot Licence and Night Rating with total time of not more than 115 hours. Students entering the program with a Private Licence will be required to

attend WWFC's Flight Management Basic Courses as a review. Students who apply with the flight qualifications that meet the standards set by WWFC would be eligible for the BES degree upon successful completion of the plan curriculum and transfer of credit for the flight courses.

#### 9. Transfer Courses - University of Waterloo Courses

Transfer students are required to complete a minimum of 50% of their University of Waterloo course work and half their Geography units at the University of Waterloo.

#### 10. Restriction on number of First-Year Courses

A student must have at least 13.0 units at or above the 200-level.

#### 11. Geomatics Option

Students in Geography and Aviation Honours will automatically be approved for the Geomatics Option at time of graduation unless otherwise instructed by the student.

#### 12. Double Counting

A course can be used to satisfy requirements for a maximum of two credentials. Double counting of courses applies as follows: once for the plan and once for a joint honours or concurrent degree, option, minor, diploma, or specialization. There is no limit on the number of courses that may be double counted unless otherwise stated.

Courses double counted to satisfy Geography and Aviation Honours academic plan requirements, as well as the Geomatics Option, cannot be applied to any other option, minor, diploma, or specialization.

#### 13. Options/Minors/Diplomas/Specializations

For more information on options, minors, diplomas or specializations that are available, please visit the Faculty of Environment Academic Plans or departmental section of this calendar.

14. All fourth year Geography courses will be restricted to third and fourth year Honours students.

### **Honours Geomatics (Regular & Co-op)**

Geomatics is the fusion of geography and informatics activities and services involved in the collection, analysis, management, and integration of location-based data to enable improved decision and policy making. The Geomatics program will include courses in geographic information systems, remote sensing global positioning and surveying, spatial statistics, and computer science. The computer science component will give graduates the strongest advantage in the field of Geomatics. Students completing this program will be able to go beyond the competent use of existing Geomatics tools to develop applications involving spatial database development and management, data dissemination, spatial analysis, decision support, and modeling.

The requirements are as follows:

The 40 course (20 units) degree requirements for the Geomatics plan will require a core of 28 courses (14 units). Degree requirements common to all BES academic plans are outlined in the [Academic Plan](#) section for the Faculty of Environment. The 28 Geomatics plan core courses include: 18 Geography courses, 2 Environmental Studies (ENVS) courses, and 8 Computer Science courses.

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### **Geomatics Four-Year Honours Requirements (Regular and Co-op)**

*Year One*

GEOG [101](#) Geography and Human Habitat

or GEOG [102](#) Geography and Our Planetary Environment

GEOG [165](#) Computer Cartography: Principles and Design

GEOG [271](#) Earth from Space Using Remote Sensing

GEOG [281](#) Introduction to Geographic Information Systems (GIS)

ENVS [178](#) Introduction to Environmental Research Methods

CS [115](#) Introduction to Computer Science 1

CS [116](#) Introduction to Computer Science 2

Three electives, one must be in English, either one of ENGL [109](#), [129R](#), [140R](#), taken in Year One or ENGL [210E](#), [210F](#) taken in Year Two.

*A student who receives greater than 80% in ENG4U English is exempt from the English elective requirement.*

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*Year Two*ENVS [278](#) Advanced Environmental Research MethodsGEOG [210](#) Image Interpretation and PhotogrammetryGEOG [387](#) Spatial DatabasesCS [230](#) Introduction to Computers and Computer SystemsCS [234](#) Data Types and Structures

Students must take courses from each of the two following themes. The student may take more than one course in either theme:

1. Earth Systems Science: one of GEOG [201](#), [209](#)
2. Development and Environment: one of GEOG [202](#), [203](#), and one of GEOG [206](#), [208](#)

Two Electives

*Year Three*GEOG [310](#) Geodesy and SurveyingGEOG [316](#) Multivariate Statisticsor GEOG [318](#) Spatial AnalysisGEOG [371](#) Advanced Remote Sensing TechniquesGEOG [381](#) Spatial Analysis Using Geographic Information SystemsGEOG [393](#) Approaches to Research in Human Geographyor GEOG [394](#) Approaches to Research in Physical GeographyCS [330](#) Management Information SystemsCS [338](#) Computer Applications in Business: Databases

Three Electives

*Year Four*GEOG [471](#) Remote Sensing Project (1.0 unit)GEOG [481](#) Geographic Information Systems Project (1.0 unit)GEOG [487](#) Management Issues in Geographic Information SystemsCS [430](#) Applications Software EngineeringCS [436](#) Networks and Distributed Computer SystemsGEOG [490A/B](#) Honours Thesis (1.5 units)

or Electives to fulfill degree requirements. (see notes below)

(Co-op students, see Note 5)

## Notes for the Honours Geomatics Academic Plans

## 1. Minimum Required Units

*Total: 20 units. Geomatics Plan: 14 units (9 Geography, 4 Computer Science, 1 Environmental Studies). All courses for which 1 unit is awarded will count as the equivalent of two courses. All units designated Geography (GEOG) and Environmental Studies (ENVS) are included in the cumulative major average. All Computer Science courses are included in the cumulative overall average.*

## 2. Course Load

*No more than 2.5 units may be taken in a term without the approval of the Associate Chair (Undergraduate Studies). Normally, approval for a sixth 0.5 unit will be considered only if the cumulative Geomatics average is 78% or higher.*

## 3. Average Requirements

*Students in the Honours Academic Plans must maintain an overall cumulative average of 65%, a Computer Science cumulative average of 60% and a Major cumulative average of 70%. All required courses must be passed.*

## 4. Materials and Costs

*For some courses, extra fees may be required to cover field expenses/travel costs, e.g., GEOG 381. Statements on extra costs, where required, will be found with the course descriptions.*

## 5. Honours Co-operative Academic Plan

*Honours Geomatics Co-op is a five work term Academic Plan in which four satisfactory work-term reports have to be written. The first work term occurs in the winter term of the second year. PD2 taken during the first work term requires a work-term report, which will be considered one of the four required*

*work-term reports.*

*Enrolment in Honours Geomatics Co-op is limited. Students are admitted to the Co-op Academic Plan in first year based on secondary school grades. Interested students enrolled in first-year Regular Geomatics at the University of Waterloo may be considered for admission to any remaining Co-op positions at the end of first year based on university academic performance, an interview and work experience related to Geomatics.*

*The Honours Geomatics Co-op Plan has the same course requirements as the Honours Regular Plan.*

#### 6. Transfer Courses

*It is possible for non-Geomatics students to apply for admission to Year Two. Advanced standing may be obtained through the transfer of courses/units from other Academic Plans and Institutions. However, advanced standing will not be granted to transfer students beyond the Year-One level (10 courses/5 units). All transfer students are required to complete a minimum of three full academic years before being eligible for graduation.*

#### 7. Restriction on Number of First-Year Courses

*For a four-year Honours degree a student must have at least 13.5 units at or above the 200-level.*

#### 8. Double Counting Courses

*Students may double count courses, i.e., once for the Geomatics Plan and one additional count for a joint honours or concurrent degree, specialization, option, or diploma unless otherwise stated.*

### Co-op Scheduling Recommendations

Co-op students in the Faculty of Environment are required to complete a minimum of five Professional Development (PD) courses, including an introductory course (PD1) that must be taken prior to the first work term. At least two other of the Professional Development courses must cover non-technical skills. Other than the initial course, these courses are normally taken during Co-op work terms. Students are encouraged to take a Professional Development course each work term until the requirement is met.

#### *Year One*

GEOG [101](#) or [102](#)

GEOG [165](#), [271](#), [281](#)

ENVS [178](#)

CS [115](#), [116](#)

Electives

#### *Year Two*

Fall Term 2A

GEOG [210](#), [387](#)

ENVS [278](#)

Students must take courses from each of the two following themes in Terms 2A and 2B. The student may take more than one course in any theme.

1. Earth Systems Science: one of GEOG [201](#), [209](#)

2. Development and Environment: one of GEOG [202](#), [203](#) and one of [206](#), [208](#)

Electives, one of which must be ENGL [109](#), [129R](#), [140R](#) taken in Year One or ENGL [210E](#), [210F](#)

preferably taken in spring term 2B. **A student who receives greater than 80% in ENG4U English is exempt from the English requirement.**

Winter Work Term 1

Spring Term 2B

CS [234](#), [330](#)

Electives

#### *Year Three*

Fall Work Term 2

Winter Term 3A

GEOG [316](#) or GEOG [318](#)

GEOG [381](#)

CS [230](#)  
Electives

Spring Work Term 3

Fall Term 3B

GEOG [371](#), [393](#) or [394](#)

CS [430](#)

Electives

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*Year Four*

Winter Work Term 4

Spring Term 4A

GEOG [481](#)

GEOG [490A](#) or elective

CS [338](#)

Elective

Fall Work Term 5

Winter Term 4B

GEOG [471](#), [487](#)

GEOG [490B](#) or elective

CS [436](#)

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### Minors, Options, and Diplomas

Minors, options, or diplomas are available to students in the Geomatics Plan including:

- Computer Science Minor
- Diploma of Excellence in Geographic Information Systems
- Diploma in Ecological Restoration and Rehabilitation
- Diploma in Environmental Assessment
- Business Option
- International Development Option
- Knowledge Integration Option
- Parks Option
- Sustainable Local Economic Development Option
- Tourism Option

### Specializations

Students majoring in Honours Geography and Environmental Management, Geography and Aviation, and Geomatics may choose to graduate with one specialization. At least 3.5 units must be completed within the specialization, including the identified required courses. A minimum of 1.0 units must be completed at level 4. Upon completion of the requirements of both the Honours academic plan and the specialization, students must indicate their area of specialization on their Intent to Graduate form.

The Geomatics Specialization is **not** available to Honours Geomatics students or students receiving the Geomatics Option.

### Courses Offered by Specialization:

#### 1. *Earth Systems Science*

Required courses: GEOG 201, 209, ENVS 200, 278

GEOG [201](#) Fluvial Geomorphology

GEOG [208](#) Human Dimensions of Global Climate Change

GEOG [209](#) Hydroclimatology

GEOG [300](#) Geomorphology and the Southern Ontario Environment

GEOG [303](#) Physical Hydrology

GEOG [309](#) Physical Climatology

GEOG [368](#) Conservation/Resource Management of the Built Environment

GEOG [404](#) Soil in the Environment

GEOG [405](#) Wetlands  
GEOG [407](#) Environmental Hydrology  
GEOG [409](#) Energy Balance Climatology  
GEOG [453](#) Urban Stormwater Management  
GEOG [490A](#) Honours Thesis Preparation  
GEOG [490B](#) Honours Thesis Completion (1.0 unit)  
ENVS [200](#) Field Ecology  
ENVS [278](#) Advanced Environmental Research Methods

## 2. Geomatics

Required courses: GEOG 271, 281, ENVS 278

GEOG [210](#) Image Interpretation and Photogrammetry  
GEOG [271](#) Earth from Space Using Remote Sensing  
GEOG [281](#) Introduction to Geographic Information Systems (GIS)  
GEOG [310](#) Geodesy and Surveying  
GEOG [316](#) Multivariate Statistics  
GEOG [318](#) Spatial Analysis  
GEOG [371](#) Advanced Remote Sensing Techniques  
GEOG [381](#) Spatial Analysis Using Geographic Information Systems  
GEOG [387](#) Spatial Databases  
GEOG [471](#) Remote Sensing Project  
GEOG [481](#) Geographic Information Systems Project  
GEOG [487](#) Management Issues in Geographic Information Systems  
GEOG [490A](#) Honours Thesis Preparation  
GEOG [490B](#) Honours Thesis Completion (1.0 unit)  
ENVS [278](#) Advanced Environmental Research Methods

## 3. Development and Environment

Required Courses: ENVS 278 *and* one of GEOG 202 or GEOG 203 *and* one of GEOG 206 or GEOG 208

GEOG [202](#) Geography of the Global Economy  
GEOG [203](#) Environment and Development in a Global Perspective  
GEOG [206](#) Human Dimensions of Natural Hazards  
GEOG [208](#) Human Dimensions of Global Climate Change  
GEOG [212](#) Japan and the Pacific Rim  
GEOG [215](#) China: Diverse and Dynamic  
GEOG [221](#) The United States  
GEOG [222](#) Geographical Study of Canada  
GEOG [233](#) Geography of Tourism  
GEOG [250](#) Urban and Economic Systems: Inter-City and Global Connections  
GEOG [311](#) Local Development in a Global Context  
GEOG [319](#) Economic Analyses for Regional Planning  
GEOG [323](#) Perspectives on International Tourism  
GEOG [333](#) Recreation Geography  
GEOG [340](#) Settlements of Rural Canada  
GEOG [349](#) Urban Form and Internal Spatial Structure  
GEOG [351](#) Geography of Transportation  
GEOG [353](#) Retail Location  
GEOG [356](#) Resources Management  
GEOG [360](#) Environment and Behaviour  
GEOG [368](#) Conservation/Resource Management of the Built Environment  
GEOG [411](#) Global and Local Dimensions of Industrial Restructuring  
GEOG [423](#) Tourism Lecture Series  
GEOG [426](#) Geographies of Development  
GEOG [430A](#) Field Research in Regional Geography  
GEOG [430B](#) Field Research in Regional Geography (1.0 unit)  
GEOG [430C](#) Field Research in Regional Geography (1.5 unit)  
GEOG [450](#) Changing Form and Structure of Metropolitan Canada  
GEOG [452](#) Resource Management Project

GEOG [459](#) Energy and Sustainability  
GEOG [461](#) Food Systems and Sustainability  
GEOG [462](#) Global Food and Agricultural Politics  
GEOG [490A](#) Honours Thesis Preparation  
GEOG [490B](#) Honours Thesis Completion (1.0 unit)  
ENVS [200](#) Field Ecology  
ENVS [220](#) Ecological Economics  
ENVS [278](#) Advanced Environmental Research Methods

### **Geography and Environmental Management Minor for Honours Students in Other Departments**

A total of five units in Geography which may include up to two units designated Environmental Studies (ENVS), and a cumulative Geography average of at least 65%. Courses used for the minor must be GEOG-labelled.

### **Joint Honours Geography and Environmental Management**

Many Honours plans may be combined within and between Faculties. However, before embarking on a Joint Honours plan, it is highly recommended that students consult with the Undergraduate Officer of both programs. Students must meet the requirements of both plans as stated in the Calendar and should be aware that combining some Honours plans may require more than the normal number of academic terms to complete.

Joint Honours Academic Plans have been arranged between Geography and Environmental Management and other disciplines in the University. Detailed plans have been worked out with Anthropology, Biology, Classical Studies, Earth Sciences, Economics, English, Environment and Resource Studies, Fine Arts, French, German, History, Management Studies, Mathematics, Music, Peace and Conflict Studies, Political Science, Philosophy, Psychology, Recreation and Leisure Studies, Russian, Science, Social Development Studies, and Sociology.

The Department of Geography and Environmental Management is prepared to arrange other Joint Academic Plans not listed for Honours students.

Students in the Joint Honours Plan must complete seven units in Geography (GEOG) and Environmental Studies (maximum of two units ENVS), including the following required courses:

#### *Year One*

GEOG [100](#) On Becoming a Geographer  
GEOG [101](#) Geography and Human Habitat  
GEOG [102](#) Geography and Our Planetary Environment  
GEOG [165](#) Computer Cartography: Principles and Design

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#### *Year Two*

Students must take at least one course from each of the three following themes. The student may take more than one course in any theme.

1. Earth Systems Science: one of GEOG [201](#), [209](#)
  2. Geomatics: one of GEOG [271](#), [281](#)
  3. Development and Environment: one of GEOG [202](#), [203](#) and one of [206](#), [208](#)
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#### *Year Three*

GEOG [393](#) or GEOG [394](#)

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#### *Year Four*

GEOG [490A](#) and GEOG [490B](#) and one other 400 level GEOG course or 2.0 units in Geography at the 400 level.

Three additional 0.5 units for a total of 7 units in Geography (GEOG) and Environmental Studies (maximum of two ENVS units)

**Notes:** Courses in the home department equivalent to ENVS [178](#) and GEOG [393](#) or [394](#) and [490A](#), [490B](#) are accepted. If scheduling difficulties arise in meeting required courses, contact the Associate Chair (Undergraduate Studies) in Geography for possible substitute courses.

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## Notes on Joint Honours Geography and Environmental Management Academic Plans

### 1. Admission to Joint Honours Academic Plans

*Admission to a Joint Honours Plan will occur no earlier than Year Two.*

### 2. Minimum Required Courses

*Only two units designated Environmental Studies (ENVS) may be counted in the Joint Honours Academic Plan. If both majors are taken in the Faculty of Environment, and the student's first declared major is Geography and Environmental Management, a minimum of four units must be taken outside of the Faculty of Environment. The total number of units required is 20.*

### 3. Average Requirements

*Geography and Environmental Management students taking Joint Honours with another department must achieve Honours standing as required by the Geography and Environmental Management Department (65% overall, 70% in Geography courses). The average required in the second major is the minimum Honours standing set by that department. Students in other departments taking Joint Honours with Geography and Environmental Management must achieve a cumulative average of 70% in Geography and Environmental Studies courses. Environmental Studies (ENVS) courses are included with Geography courses in the calculation of the Geography and Environmental Management Major average.*

## Options and Diplomas

A number of other options and diplomas are available including:

- Diploma of Excellence in Geographic Information Systems
- Diploma in Ecological Restoration and Rehabilitation
- Diploma in Environmental Assessment
- Geomatics Option
- International Development Option
- Knowledge Integration Option
- Parks Option
- Sustainable Local Economic Development Option
- Tourism Option
- Business Option

The requirements of these options and diplomas are outlined under Academic Plans in the Faculty Section of the Calendar.

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## School of Planning

### Overview

Planners are professionals who guide the orderly development of communities. Their work touches each of our daily lives, whether we live in major metropolitan areas, smaller rural villages, or sparsely populated northern regions.

The term "Planning" refers to the scientific, aesthetic, and orderly disposition of land, resources, facilities and services with a view to securing the physical, economic and social efficiency, health and well-being of communities. Responsible planning has always been vital to the sustainability of safe, healthy, and secure communities.

In addition to resolving land use issues, the profession involves:

- planning social and community services
- designing community elements
- managing cultural and heritage resources
- creating economic capacity in local communities
- working internationally

*[Canadian Institute of Planners]*

In Canada, Planners contend with issues ranging from air quality and public safety, transit provision and intensification, to redevelopment of brownfields and gentrification. Globally, increasing urbanization rates and population growth present mounting challenges including loss of natural spaces, land conversion to urban uses, designing effective infrastructure and water quality.

Both local and globally, Planners contribute to charting a course to a future that reflects the values of the community in concert with sound planning principles.

The School of Planning at Waterloo is a professional school accredited by the Canadian Institute of Planners (CIP). Graduates of our program are eligible to join CIP as Members, (and use the professional designation MCIP after their names), once they have:

- a minimum of two years of planning experience
- passed the examinations set by CIP

The curriculum of the School's undergraduate Planning program is developed to provide students with the knowledge, skills, and perspectives necessary for successful careers as professional planners – whether they choose to work in a private or public sector, or to further their education with post graduate study in planning or several related disciplines. It is an Honours Co-op plan, reflecting the importance of our applied orientation and vital connection with the Planning profession. This connection takes many forms from involving professionals in the classroom to students engaging with communities as part of their course experience.

Core courses cover key topics like planning history, theory, policy, ecology, design, transportation, law, statistics and planning methods. Electives allow students to pursue special interests. Students may decide to choose a suite of courses that allow them to attain the following specializations:

- Decision Support and GIS
- Environmental Planning and Management
- Land Development Planning
- Urban Design

Options and minors are also attainable through strategic course selection.

The Faculty of Environment expects that students are able to demonstrate effective communication and proficiency in written English. Accordingly, all students newly admitted to the Faculty are required to write the English Language Proficiency Examination (ELPE) during their first term of enrollment (normally scheduled during the first week in December). Students must achieve 65 out of 90 on the exam. The ELPE requirement must be met by the end of Year 2 or the decision "May Not Proceed" will be assigned.

## Specializations

Planning students may choose to graduate with one or two specializations in the areas of [Decision Support and GIS](#), [Environmental Planning and Management](#), [Land Development Planning](#), or [Urban Design](#). Students are required to have an 80% overall average in the specialization courses at time of graduation.

### Decision Support and GIS

Geographic information systems (GIS) are used commonly by planners to manage, analyze, and visualize data related to urban planning and resource management. Students completing this specialization will have a sound grasp of the principles of GIS and the means to apply this technology effectively in research capacities and in planning practice.

Required Courses:

ENVS 278 Advanced Environmental Research Methods  
PLAN 281 Introduction to Geographic Information Systems (GIS)

2.5 units of Elective Courses:

PLAN 381 Spatial Analysis Using Geographic Information Systems  
PLAN 387 Spatial Databases  
PLAN 481\* Geographic Information Systems Project  
PLAN 487 Management Issues in Geographic Information Systems  
PLAN 490\* Senior Honours Essay

\*course is worth 1.0 unit

### Environmental Planning and Management

Environmental Planning and Management is for students intending to integrate ecology and

environmental management into their career plans. It is intended for those with an urban focus as well as for students with rural, resource hinterland, or park planning interests.

**Required Courses:**

ENVS 200 Field Ecology

PLAN 340 Ecology-Based Policy-Making

PLAN 341 Conservation/Resource Management of the Built Environment

**2.0 units of Elective Courses:**

PLAN 432 Health, Environment, and Planning

PLAN 440 Waste Planning

PLAN 452 Policy Analysis for Planners

PLAN 453 Urban Stormwater Management

PLAN 490\* Senior Honours Essay

ENVS 401 Environmental Law

ENVS 469 Landscape Ecology, Restoration and Rehabilitation

ERS 484 Soil in the Environment

GEOG 405 Wetlands

\*course is worth 1.0 unit

### **Land Development Planning**

This specialization trains planning students to develop or redevelop land in communities. Land development planners practice in complex, high-profile and often contentious decision-making environments. To be effective practitioners in this planning context, students acquire a good working knowledge of land use planning regulations, planning law, policy, and land development issues. Graduates with this specialization would be ready to work in the land development industry, municipal planning, or private planning practice.

**Required Courses:**

PLAN 103 Planning, Administration, and Finance

ENVS 201 Introduction to Environmental and Planning Law

PLAN 233 People and Plans

PLAN 261 Urban and Metropolitan Planning and Development

PLAN 401 Planners and Planning Tribunals

PLAN 483 Land Development Planning

**2.0 units of Elective Courses:**

PLAN 320 Economic Analyses for Regional Planning

PLAN 349 Urban Form and Internal Spatial Structure

PLAN 362 Regional Planning and Economic Development

PLAN 450 Changing Form and Structure of Metropolitan Canada

PLAN 471 Planning Law

PLAN 478 Transit Planning and Operations

PLAN 484 Physical Infrastructure and Planning

PLAN 490\* Senior Honours Essay

\*course is worth 1.0 unit

### **Urban Design**

This specialty will acknowledge the student's competence in design and prepare them for work in public and private practice. Urban design focuses on the look and feel of our communities. As an urban designer, you might create public squares or urban parks. It will also provide a sound foundation for graduate studies in urban design.

**Required Courses:**

PLAN 110 Visual Approaches to Design and Communication

PLAN 210 Planning Design and the Environment

PLAN 409\* Urban Design Studio

**1.5 units of Elective Courses:**

PLAN 309 Site Planning and Design Studio

PLAN 313\* Community Design Studio  
PLAN 408 Urban Design Seminar  
PLAN 414 Heritage Planning Workshop  
PLAN 431 Issues in Housing  
PLAN 490\* Senior Honours Essay  
\*course is worth 1.0 unit

## **Bachelor of Environmental Studies**

### **Honours Co-operative Planning**

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#### *Year One*

Required Courses (4.0 units)  
PLAN [100](#) The Evolution of Planning  
PLAN [102](#) Professional Communication  
PLAN [103](#) Planning, Administration, and Finance  
PLAN [104](#) Perspectives on Planning  
PLAN [105](#) Introduction to Planning Analysis  
PLAN [110](#) Visual Approaches to Design and Communication  
ENVS [178](#) Introduction to Environmental Research Methods  
ENVS [195](#) Introduction to Environmental Studies

Year One Elective Courses (1.0 unit)

Students must complete any two elective courses (1.0 unit) at the 100- or 200-level.

#### **Note:**

*Required and elective courses together will total 10 courses (5.0 units) – all courses must be at the first- or second-year level. Before making a final selection in these courses, students must check that prerequisites have been met for courses that they might take in Years Two, Three, and Four.*

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#### *Year Two*

Required Courses (3.5 units)  
PLAN [203](#) Transportation Planning and Analysis  
PLAN [210](#) Planning Design and the Environment  
PLAN [233](#) People and Plans  
PLAN [261](#) Urban and Metropolitan Planning and Development  
PLAN [281](#) Introduction to Geographic Information Systems (GIS)  
ENVS [200](#) Field Ecology  
ENVS [278](#) Advanced Environmental Research Methods

Year Two Elective Courses (1.5 units)

Students must complete any three elective courses (1.5 units) at the 100- or 200-level.

**Note:** See Note 4 below regarding 100-level course restrictions before selecting elective courses.

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#### *Year Three*

Required Courses (2.5 units)  
PLAN [300](#) Planning Theory  
PLAN [340](#) Ecology-Based Policy-Making  
or PLAN [453](#) Urban Stormwater Management  
PLAN [346](#) Advanced Tools for Planning: Program Evaluation, Mediation and Public Participation  
PLAN [350](#) Research Methods for Planners  
ENVS [201](#) Introduction to Environmental and Planning Law

Year Three Elective Courses (2.5 units)

Students must complete any five elective courses (2.5 units) at the 300- or 400-level.

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#### *Year Four*

Required Courses ( 3.0 units)  
PLAN [341](#) Conservation/Resource Management of the Built Environment

PLAN [401](#) Planners and Planning Tribunals  
PLAN [403](#) Professional Practice, Public and Private Administration  
PLAN [405](#) Integrated Planning Project  
PLAN [471](#) Planning Law  
PLAN [483](#) Land Development Planning

#### Year Four Elective Courses (2.0 units)

Students must complete any four elective courses (2.0 units) at the 300- or 400-level.

Work term sequencing can be found in the [Co-operative Education and Career Services](#) section in the UG Calendar.

#### Notes

##### 1. Minimum Required Courses

*Total: 20.0 units. Planning core: 13.0 units; electives: 7.0 units*

##### 2. Average Requirements

*Students must obtain a cumulative overall average (all courses) of 65%, and 75% in their major average (all PLAN and ENVS courses). All courses must be passed.*

*Students may be granted conditional standing at the discretion of the School, which permits a student to proceed to a subsequent term on a conditional basis. Should the student be permitted to continue on the basis of "conditional" due to average and/or course standing, and if, subsequently, the required averages are not met this second time (term) or course deficiencies not cleared, withdrawal from Planning will be required.*

##### 3. Course Load

*Students are expected to carry a minimum load of five courses (2.5 units) in each term. Students interested in taking a higher course load require approval from the Undergraduate Advisor. A student may take up to one course during a Co-op work term. Planning students are not allowed to fast-track to complete the program earlier.*

##### 4. First-Year Courses

*No more than ten courses (5.0 units) at the 100-level will be counted toward the 40 courses (20.0 units) required to graduate.*

##### 5. Transfer Students

*Transfer applicants with post-secondary background may be considered for admission to the Planning program. In order to meet the appropriate degree requirements for this program, specifically the proper sequence of courses and co-op terms, transfer students will be required to begin their studies at the first year (1A) level. Applicants should be aware that transfer credit may not be granted for courses completed in other University of Waterloo programs or at other universities/colleges. Transfer students will only be admitted in the fall term.*

##### 6. Honours Co-operative Plan

*Planning Co-op is a five work-term plan in which four satisfactory work-term reports have to be written. Planning students are strongly encouraged to participate in at least one out-of-province work placement.*

*Co-op students in the Faculty of Environment are required to complete a minimum of five Professional Development courses, including an introductory course (PD1) that must be taken prior to the first work term. Students are encouraged to take a professional-development course each work term until the requirement is met. PD2 requires a work term report to be written, which will be considered one of the four required work-term reports. At least two other of the Professional Development courses must cover non-technical skills. Other than PD1, Professional Development courses are normally taken during co-op work terms.*

*It is recommended that students write their work-term reports for their first four work terms. Please refer to the work report guidelines in the [Co-op Student Manual](#).*

##### 7. Double Counting

*A course can be used to satisfy requirements for a maximum of two credentials. There will be no triple counting of any course for any academic credit in the Faculty of Environment. Double counting of courses applies as follows: once for the plan and once for any option, minor, diploma or specialization. There is no limit on the number of courses that may be double counted, unless otherwise stated.*

## 8. Diplomas, Options, and Minors

*A number of diplomas, options and minors are available to Planning students including:*

*Diploma in Ecological Restoration and Rehabilitation*

*Diploma of Excellence in GIS*

*Diploma in Environmental Assessment*

*Business Option*

*Geomatics Option*

*International Development Option*

*Knowledge Integration Option*

*Parks Option*

*Sustainable Local Economic Development Option*

*Tourism Option*

*Environment and Resource Studies Minor*

*Geography and Environmental Management Minor*

*International Development Minor*

*Knowledge Integration Minor*

*For more information, please refer to the [Faculty of Environment Student Handbook](#).*

## 9. Concurrent Degrees, Joint Honours, and Minors

*The School does not offer a concurrent, Joint Honours, or minor plan to other departments. However, Planning students can participate in Joint Honours, minors, or options offered by other departments. Students choosing minors should refer to the regulations of those departments. Satisfying minor requirements may require more than the normal number of academic terms. See other faculty and department sections in this calendar regarding available minors.*

## 10. School of Planning Specializations

*Planning students can choose to add one of these optional specializations to their plan in third year:*

*Decision Support and GIS*

*Environmental Planning and Management*

*Land Development Planning*

*Urban Design*

*For specialization requirements, please refer to the [School's Planning Program Undergraduate Manual](#).*

## 11. Oxford Brookes Field Trip

*PLAN 480 - Theory and Practice of Planning in the U.K. (Oxford): This elective course is offered to third-and fourth-year Planning students and is conducted at Oxford Brookes University, Oxford, England. Since much planning theory and practice in Canada has drawn on U.K. roots, PLAN 480 has been developed to give students a first-hand experience of planning in the U.K. Large scale urban design in the 18th Century, the growth of the New Towns movement from its beginning in the late 19th Century to the present day, and central area redevelopment following large scale bomb damage during World War II are given special attention through seminars and field trips. Waterloo students also work on specific projects with British students. During free time, the students have the opportunity for travel in U.K. and Europe and there is an opportunity to remain in U.K. following the Oxford course for further travel.*

## 12. Planning Program Undergraduate Manual

*A number of important guidelines and regulations are available online in the [School's Planning Program Undergraduate Manual](#). Areas covered include: academic standing, admission, certificates, co-op, courses, English Language Proficiency Requirements (ELPE), Oxford Brookes field trip, leave-of-absence, senior honours essay, teaching assistants, etc.*

*13. The School reserves the right to make changes to the curriculum as necessary.*