

School of Environment, Resources and Sustainability  
Faculty of Environment  
University of Waterloo

## ERS 340: Ecosystem Assessment - Spring 2018

**Instructor:**

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**TAs:**

TBA

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**Course Location:** *University of Waterloo Campus*

**Course Dates:** The course formally runs the entire spring term – however, the bulk of the course (field skills) occurs during the block period of May 7 -27, 2018 (excluding Victoria Day). A detailed calendar will be posted to LEARN prior to the course beginning.

**Additional Course Fee:** \$625.00 plus 52.00 (HST) = 677.00 Paid to the University – plus approximately \$150.00 (+ HST). This fee is in addition to the normal per course fees set by the Province and the University; it pays for all transportation from the university to the field sites. It does not include meals; students will be responsible for their own meals.

\*\*Please note that normally there will be no refunds of the course fee if a student drops the course. The reason for this is that provincially accredited certifications require a guaranteed number of students present to run, and accommodations are booked well in advance. If extenuating circumstances apply, decisions on refunds will be rendered by the Associate Director of Undergraduate Studies, School of Environment, Resources and Sustainability.

**Course Description:** Today's environmental practitioner requires a comprehensive skill set of advanced environmental assessment techniques. In ERS 340, students will be trained by in-field professionals in aquatic and terrestrial ecology to become independent environmental technicians. Students will participate in field trips, conduct numerous field and lab analyses, as well as receive certification(s) in provincially recognized ecosystem assessment protocols. Students will benefit from interactions with guest presenters and have other networking opportunities during the course. You will be expected to take part in long days in both laboratory and outdoor environments.

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<sup>1</sup> When communicating via email, please identify the course (e.g. "ERS 340") in the subject line. Make sure to use your UW account.

### **Intended Learning Outcomes:**

1. Develop advanced skills in the collection and analysis of environmental data.
2. Acquire professional certification(s) in provincially recognized assessment protocols.
3. Learn to expertly record and manage environmental data.
4. Practice networking skills while meeting professional environmental practitioners.

### **Certification Courses (need to pass in-course test to be certified):**

1. Class II Backpack Electrofishing
2. Ontario Benthic Biomonitoring Network (OBBN)

### **Other Recognized Certificates and Skills**

1. Fish Identification Course
2. Vegetation Sampling Protocol
3. Plant Identification Training
4. Cultural Awareness and Working with Indigenous Peoples 101 Certificate
5. Orienteering and Topographic Map Training

### **Required Textbooks:**

*Shrubs of Ontario* - Available as courseware from campus bookstore

*Trees of Canada* – You can either buy your own copy (a good idea to have a personal copy of this book) or you can sign one out from the Ecology Lab (limited numbers)

*Newcomb's Wildflower Guide* - You can either buy your own copy (a good idea to have a personal copy of this book) or you can sign one out from the Ecology Lab (limited numbers)

Ferri, G. *The Psychology of Wilderness Survival*, 11th Edition, Hanover, ON: Skyway Printing, 2017 (*Suggested*)

### **Course Process:**

The Province mandates that this course is open during the entire term. However, the major portion of this course will run from May 7<sup>th</sup>, 2018 - May 27<sup>th</sup>, 2018.

MANDATORY ETHICS TRAINING REQUIRED PRIOR TO THE BEGINNING OF THE COURSE. Each student must complete the Basic Field and Tissue Course (Theory; AR0009). This will be available on LEARN once you have signed up for the course. Information on the course is available at <https://uwaterloo.ca/research/office-research-ethics/research-animals/pre-submission-and-training>

Field Work Risk Management Form must be filled out, signed and submitted to the Instructor prior to the first day of the course. This is available at [https://uwaterloo.ca/safety-office/sites/ca.safety-office/files/uploads/files/fieldworkriskmanagementform\\_6.pdf](https://uwaterloo.ca/safety-office/sites/ca.safety-office/files/uploads/files/fieldworkriskmanagementform_6.pdf)

**Additional Course Information:**

Field skills courses are physically demanding and will include long days. We will be going outside in all weather conditions. A few required supplies are listed below:

- Backpack to carry everything in the field
- Field books listed above
- Book for field notes, pens and pencils
- Work gloves
- Boots for wet and muddy areas
- Water bottle
- Insect repellent/ bug jacket
- Clothing: hat(s), sunglasses (polarized are best for electrofishing), good field clothes (cavass or similar pants with zip off legs are good), clothes that are neutral rather than blue are best (blue tends to attract insects), long sleeved shirts, rain gear, a good pair of hiking boots with ankle support
- Sunscreen (SPF 30 at least)
- It is a good idea to bring some personal medical supplies (band-aids, polysporin, aloe vera)
- Snacks and bagged lunches for each day of field work

\*\*Any student with severe allergies or reactions to certain plant oils, insect stings (etc) need to take precautions ahead of time (e.g. EpiPen) and alert TAs and Instructors on the safety form.

**Course Evaluation**

Section A: Quizzes/Certifications *	Percentage of Final Grade
Plant ID Quiz	5%
Electrofishing Test	15%
Vegetation Sampling Protocol Test	10%
Fish Identification Test	10%
OBBN Test	15%
Orienteering Quiz	5%
Section B: Assignments	Percentage of Final Grade
Weekly Field Notes (x 3)	15% (5% each)
Lab Notes	10%
Online Assignments (x 3)	15% (5% each)

**\*Students will be required to complete and pass all exercises and practical exams as set by the instructors. Participation will also be taken into consideration in determining the final mark of Section A.**

## Weekly Field Notes – (15% total)

### **Due Dates:**

Field Notes from May 7-10<sup>th</sup>, 2018 (Due by 5:00PM May 11<sup>th</sup>, 2018 or Midnight on LEARN)

Field Notes from May 11-17<sup>th</sup>, 2018 (Due by 5:00PM May 18<sup>th</sup>, 2018 or Midnight on LEARN)

Field Notes from May 18-25<sup>th</sup>, 2018 (Due by 5:00PM May 25<sup>th</sup>, 2018 or Midnight on LEARN)

Each student is required to create and maintain a comprehensive set of field notes which will be submitted at the end of each week of the field portion of the course. Field notes should include data on weather conditions, geographic locations, dates, environmental data collected and any observation or any ideas that you feel are important. Field Notes will be marked on their comprehensiveness and effectiveness. Notes may be submitted as original handwritten notes (but this must be done by the due date listed and by 5:00 PM directly to the instructor), though they can be transcribed by the student to digital format if they are likely to be illegible (these notes can then be submitted on LEARN by midnight of the due date set).

It is useful to purchase a good quality field notebook (waterproof paper) with a set of pencils (a normal pen will run if rained on) and a good small sharpener or a set of waterproof pens; it is useful to have a protected clipboard to shield it from rain. In a pinch, a large size Ziploc type freezer bag is useful. It is expected that you will include field notes from the certification courses.

You will submit your field notes for a total of **three** submissions. **Each submission (or weeks' worth of notes) is worth 10% of final mark.**

Late submissions will not be accepted. Any entry received after midnight on the due date will receive a zero grade. *It is recommended you keep a daily log in order to maintain efficiency of this exercise.*

### Lab Notes (10%)

Due Date: May 27, 2018 (Midnight on LEARN)

## Clarity and Accuracy of Data Collection and Entry – 20% Due July 20<sup>th</sup>, 2018

Students will be collecting and entering data for various portions of the course. Each student is required to create and maintain a comprehensive set of lab notes which will be submitted by May, 27<sup>th</sup> 2018 @ Midnight on LEARN. Lab notes should include information on data analysis, results, and methodology and any other pertinent information should also be recorded. Data logs will be provided for some of course components. Lab notes will be marked on their comprehensiveness, accuracy and clarity.

## **Online Assignments (15% total)**

**Due Dates: Starting May 28<sup>th</sup>, 2018 and ending July 25<sup>th</sup>, 2018 (at Midnight)**

Using LEARN, students will complete 3 assignments. Each assignment is worth 5% each (15% total). Students will read a provided research article or report, which you will describe in short written response (max. 500 words). The response should include such things as appropriate given the article provided; the research objective/purpose, a list of parameters used in the study, a description of the research design in 2-3 sentences, key regulatory standards, measures of performance, context for where regulatory standards are pertinent and the ecosystem types systems analyzed.

All assignments will be submitted through LEARN starting May 28<sup>th</sup>, 2018 and ending July 25<sup>th</sup>, 2018 (at Midnight). Each student is responsible for handing all three assignments by July 25<sup>th</sup>, 2018 (at Midnight).

### **Readability and Clarity:**

Students are expected to present well organized, and properly written work. Penalties of up to **25%** may be applied in cases where readability and/or clarity are inadequate.

### **Late Penalties**

All assignments, data files and in some cases field notes are to be submitted online on LEARN and are due at *midnight* on the date indicated. Students are responsible for handing their work in on time. Field notes can also be handed in to the instructor *by 5:00 PM* on the date due indicated. A late penalty of a 10% deduction (off the final grade of the grade item) is given per calendar day (24 hours) up to three days. Following the third day the assignment will be graded as a zero. Only in unavoidable circumstances will extensions be granted, and must be given by the course instructor prior to the due date of the assignment, field notes or data file.

### **Citation Format for Assignments**

The citation format adopted for this course is the APA (American Psychological Association) style. The complete style outline can be found in the Publication Manual of the American Psychological Association, located in the reference section in Dana Porter Library, call number BF76.7.P83 1994.

Online you can find some quick references at the following URLs:

APA essentials - [http://www.vanguard.edu/faculty/ddegelman/index.aspx?doc\\_id=796](http://www.vanguard.edu/faculty/ddegelman/index.aspx?doc_id=796) and <http://www.apastyle.org/>

APA Crib Sheet - <http://www.wooster.edu/psychology/apa-crib.html>

Citing Electronic References - <http://www.apa.org/journals/webref.html#Email>

Frequently asked Questions - <http://www.apa.org/journals/faq.html>

## **Policies and Procedures:**

- ◆ Students with disabilities: AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.
- ◆ Mental Health: The University of Waterloo, the Faculty of Environment and our Departments/Schools consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. Please note that help is available. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services <https://uwaterloo.ca/counselling-services/> is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.
- ◆ Provincial Tests: Students will be expected to follow the rules of the provincial tests. Rules for testing at the University of Waterloo will not apply, nor will accommodations be made during these tests that fall outside the provincial rules.
- ◆ Religious Observances: Students need to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.
- ◆ Unclaimed assignments: Unclaimed assignments will be retained for one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.
- ◆ Communications with Instructor and Teaching Assistants: All communication with students must be through either the student's University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account.
- ◆ Intellectual Property: Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:
  - Lecture content, spoken and written (and any audio/video recording thereof);
  - Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides); Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the

intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

◆ Academic Integrity: Each student will be asked to read and sign the Academic Integrity form below. We will go over on the first day of the course: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: <http://uwaterloo.ca/academicintegrity> ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students: <http://uwaterloo.ca/academicintegrity/Students/index.html> Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions.

Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also complete the following tutorial: <https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial>

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline:

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>.

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance:

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>

Plagiarism: In particular, you should not plagiarize the work of others. Policy 71 defines plagiarism as: "The act of presenting ideas, words or other intellectual property of another as one's own. The use of other people's work must be properly acknowledged in all written material such as... essays, laboratory reports, design projects, statistical data, computer programs and research results. The properly acknowledged use of sources is an accepted and important part of scholarship. Use of such material without complete and unambiguous acknowledgement, however, is an offence under this policy." Students are expected to keep a copy of all materials used to prepare assignments in case of disputed work and should be able to provide working notes and original data for any assignment within 4 hours of this being requested.

In the context of this course, plagiarism includes (among other activities) submitting without appropriate acknowledgement any report (or part thereof, including software, designs, photos, computer images, models, drawings, maps, statistics, samples, results of lab or field work etc.) which has been submitted previously to any course anywhere by any person, submitting a report in which the production has been shared by more than one student and each has submitted it as their own without acknowledgement of the other's contributions, submitting any work created in whole or in part by another without the usual acknowledgement. Policy 71 states that one should not submit "an essay, report or assignment when a major portion has been previously submitted or is being submitted for another course with the express permission of all the instructors involved". **If in doubt, ask the course instructors or the teaching assistant if your intended assignment submission is acceptable.**

All suspected academic misconduct are investigated and formally reported to the Associate Dean, Undergraduate of Faculty of Environment.

◆ Appeals: A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>

◆ Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 - Student Petitions and Grievances, Section 4, <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>. When in doubt please contact your Undergraduate Advisor for details. *This form may be used by course instructors as an educational tool to help their students maintain high standards of academic integrity (AI) in their work. Additional copies (as well as a version specifically for programming assignments) are available online at: <https://uwaterloo.ca/academic-integrity/sites/ca.academic-integrity/files/uploads/files/AIAcknowledgementForm.pdf>.*

Students are expected to know what constitutes AI, to avoid committing AI offences, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offence, or who need help in learning how to avoid offences (e.g., plagiarism, cheating) or about 'rules' for group work / collaboration should seek guidance from the course professor, TA, academic advisor, or the Undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to **Policy 71, Student Discipline**, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>

A student who believes that he/she has a ground to appeal a discipline decision should refer to **Policy 72, Student Appeals**,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>

A student who believes that a decision or action of a faculty member has been unfair or unreasonable should refer to **Policy 70, Student Petitions and Grievances**,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>