

Environmental Science 4999E Honors Research Thesis Syllabus 2017-2018

Contact Information

Course Coordinator: Dr. Christie Stewart, Environmental Science Program

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Course Information

Eligibility: Registration in final year of the Honors Specialization in Environmental Science

Anti-requisite: Environmental Science 4970F/G

Class lectures: Enviro Sci 4999E students will join the Bio 4999E students on Tues. 6:30-8:30 pm during the **fall and winter terms in Somerville House 2355** (unless otherwise noted on class schedule). The class instructor will be the Bio 4999E instructor.

Course Description:

The purpose of this course is to provide students registered in Honors Specialization in Environmental Science to undertake a two-term, interdisciplinary research project related to environmental science under the supervision of a faculty member associated with the Centre for Environment and Sustainability at Western. The goal is to provide students with hands-on research experience through completing a research project, starting with hypothesis development (if applicable), literature searching, experimental design, data collection, analysis, and interpretation. Students will also gain experience in written and oral scientific communication by submitting several written components including a research proposal, a progress report, and final thesis for evaluation as well as presenting the results of their research in a public oral presentation. The guidelines for this course are outlined below to assist the students in achieving these goals. The Environmental Science Honors Research Thesis course has a weight of 1.5 full course equivalents (FCE).

Admission Procedures & Finding a Supervisor:

Students interested in completing an Environmental Science Honors Research Thesis must contact the Course Coordinator or Undergraduate Chair in the academic year prior to commencing the thesis. **It is the responsibility of the student to meet with potential Supervisors they are interested in and discuss potential thesis topics.** A list of the available faculty and potential research thesis topics are normally available from the undergraduate program counsellor or Chair early in the winter term for theses to be undertaken and completed in the following academic year.

In addition to a supervisor, a co-supervisor will be required if the following three conditions are met: 1) the supervisor is not a regular or cross-appointed faculty member in the Faculty of Science, AND 2) the supervisor is not a Faculty Affiliate of the Centre for Environment and Sustainability, AND 2) the supervisor has not previously supervised an Enviro Sci 4999E student. The co-supervisor must be a regular or cross-appointed faculty member in the Faculty of Science. Co-supervisors are found with the help of the supervisor. Joint Supervisors are different from Co-Supervisors, as the former would take on equal responsibility as Supervisors. For Supervisor & Co-supervisor roles and responsibilities, see below.

Each student will also have two Readers from the Faculty of Science or the Centre for Environment and Sustainability. Ph.D. students and post-docs can also be advisors but they CANNOT be from your supervisor's lab (i.e. you cannot be working in the same lab with them). Readers are found with the help of the Supervisor.

Once there is a mutual agreement between the student and Supervisor/Joint Supervisors/Co-supervisor, a "Thesis Registration" form (available on OWL) must be signed and submitted to the Course Coordinator ASAP no later than **September 15, 2017**. In signing the application, the faculty member agrees to supervise the Environmental Science 4999E student. The student should also submit on OWL the names of the two Readers and the Readers contact information by **September 15, 2017**. The supervisory structure is subject to approval by the Course Coordinator.

Students who plan to enroll in EnvirSci 4999E in the fall term, but will be collecting their data in the summer months, must submit the Thesis Registration form and list of Readers prior to the collection of data. In addition, students must complete their Research Proposal milestone (see below).

Advisory Committee (optional):

An advisory committee (up to 2 additional people) may also be formed; this is completely optional and up to your Supervisor. An advisor may be a faculty member, postdoctoral fellow or senior graduate student from the same department as the Supervisor or from a different department. If an Advisory Committee is formed, you **must** notify the Course Coordinator. The committee members will need to sign your registration form. Typically, if you have an Advisory Committee you will ask these individuals to also be your Readers.

Course Website:

See <http://uwo.ca/enviro/undergraduate/courses.html> for general course information and OWL (<http://owl.uwo.ca>) for detailed information. Students should check OWL on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. The missing of critical information due to your failure to check OWL cannot be used as a basis for appeal.

Course requirements

The Environmental Science Honors Research Thesis course 4999E consists of:

1. Developing and writing a viable research proposal
2. Attending two hour classes with the Bio 4999E class
3. Conducting the proposed work

4. Completing a Progress Report & Meeting by the end of the Fall term
5. Writing a thesis based on the work
6. Presenting a final, public seminar on the work and responding to questions
7. Attending lab meetings and advisory committee meetings (if applicable) when appropriate and/or requested by the Supervisor
8. Completion of all Health and Safety training requirements

Research Proposal

Research proposals should be 1500 ± 100 words (excluding title page and references), and will consist of a preliminary literature search, summary of proposed research project, planned methods, and references. Students must obtain their Supervisor's signature on the "Research Proposal Approval Form". By **Monday, October 16, 2017**, students are required to submit 1) their written research proposal to their Supervisor, Readers, and Course Coordinator and 2) the signed Research Proposal Approval Form to the Course Coordinator. Late proposals will not be accepted. Proposals are graded by the Readers and are worth 15% of the final grade. Readers will return written comments on the Research Proposal to the student.

Experimental Work:

Normally, experimental work or data collection begins shortly after the approval of the proposal by the supervisor and is completed by the end of February to allow adequate time for data analysis and thesis writing. Students are expected to spend a minimum of 15 hours per week in the lab or field for the duration of the course. The quality of the experimental work/data collection will be assessed by the Supervisor.

Progress Report and Progress Meeting:

Students will submit a written Progress Report that summarizes their progress to date and their plans for completion of the thesis to their Supervisor and Readers by **January 8, 2018 (4:30 pm)**. The Progress Report should be 1250 ± 100 words (excluding title page, references, tables, and figures) and may include up to 10 figures and/or tables.

Students must also arrange a meeting with their Supervisor and Readers, to be held no later than **January 26, 2018**, to discuss their progress. Use a Doodle poll or something similar to schedule this meeting as sending emails back and forth are more time consuming and cumbersome. **Book this meeting no later than Dec 21.** At the Progress Meeting, the student will deliver a brief oral presentation (~10-15 min) that summarizes their progress and plans to complete the thesis. Students must be prepared to answer any questions asked by the Supervisor/Co-supervisor and Readers regarding the thesis. At the Progress Meeting, ensure your "Progress Report Form" is signed by everyone. This form must be handed in to the Course Coordinator by **January 26, 2018 (4:30 pm)**.

The Progress Report and Oral Presentation will be evaluated by your Supervisor and Readers and is worth 15% of the course grade. Late reports will not be accepted. Supervisors and Readers will return written comments on the Progress Report to the student.

Thesis:

A thesis presents the major findings of the project and is due on **April 11, 2018 (4:00 pm)**. Theses should be a 15-20 pages (excluding title page, references, figures or tables) and consist of an abstract, introduction, materials and methods, results, discussion, conclusion and references. Guidelines on how

to write the thesis can be found on OWL. The thesis is evaluated/graded by the Readers. A signed "Honors Thesis Approval Form" must also be submitted to the Course Coordinator at this time. Late theses will not be accepted.

Public Presentation of Thesis Work:

Students will present and defend the major findings of their research thesis, in seminar format, at the CES organized EnvironCon in March or April (date TBA). Each seminar presentation will consist of a 12 minute presentation by the student, followed by 3 minutes of questioning. The presentation and defence of the research project will be evaluated by 2-3 faculty members, post-doctorate or graduate students.

Student Roles and Responsibilities:

Environmental Science 4999E is not a traditional lecture style course. Students are expected to spend at least 15 hours per week in the lab for the duration of the thesis. Additional time spent out of lab for reading, writing and data analysis will also be required.

It is the responsibility of the students to arrange for their Environmental Science 4999E thesis projects, through consultation with the Course Coordinator.

In the Fall Term, two-hour weekly classes will be held with the Bio 4999E class. The intention of these workshops is to provide opportunities for development of skills that will assist in the research thesis. There will be one additional meeting in the winter term. Participation is expected, and attendance will be taken. Attendance reports may be submitted to Supervisors.

Students are responsible for completing all necessary forms (Thesis Registration, Research Proposal, Progress Report, Honors Thesis Approval) and submitting them on time to the Course Coordinator. Students are ultimately responsible for their own work, including the meeting of deadlines as established by the Course Coordinator and their Supervisor.

Health and Safety Training:

Complete the necessary health and safety training sessions Working in a safe environment is everyone's responsibility: the student, co-workers and supervisor. No student will be allowed to start their research project until they have completed the necessary safety training. It is part of your supervisor's responsibility to ensure you have the appropriate training. Almost all training is offered on-line (see links below). At a minimum, all 4999E students are required to complete the following, if you have not done so already at Western.

- Worker Health and Safety Training Awareness
<http://uwo.ca/hr/learning/required/index.html>
- WHMIS-Workplace Hazardous Materials Information Systems
<http://uwo.ca/hr/learning/required/index.html>
- Safe Campus Community
<http://uwo.ca/hr/learning/required/index.html>

If you are working in a laboratory setting, you will require

- Laboratory Safety and Hazardous Waste Management
<http://uwo.ca/hr/learning/required/index.html>

If you are working with live animals, biohazards or radiation, you will need to complete the appropriate

training course(s) prior to working with animals or these materials. Please consult with your supervisor as to type of additional training you may require. Once you have completed the necessary training, you must provide your supervisor with proof of completion (e.g. certificate) for her/his records.

Supervisor & Joint Supervisor Roles and Responsibilities:

Potential Supervisors or Joint Supervisors will submit project outlines to Course Coordinator for posting in the winter term prior to the next academic year. Typically projects will be of sufficient nature to net reasonable results in a 4 to 5 month period.

Supervisors of student projects are expected to:

1. Arrange for the appropriate infrastructure and provide direction/guidance for the proposed work.
2. Ensure that projects provide sufficient challenge to students, and comply with expectations established within the Faculty of Science.
3. Provide feedback on written work (especially the Research Proposal and Thesis).
4. Evaluate the performance of students for whom they are supervisor.
5. Be available to meet with students on a regular basis.
6. Integrate students into the existing laboratory and ensuring they are treated respectfully.
7. Ensure students receive the necessary health and safety training as well as any other relevant training (e.g. animal care, human ethics) prior to the start of the project.
8. Ensure that members of the Advisory Committee are aware of course procedures and timelines.

Joint Supervisors have the same responsibilities as sole Supervisors.

Co-supervisor Roles and Responsibilities:

Co-supervisors attend all meetings and will take on all supervisory responsibilities if necessary. They are not responsible for supervising the research or grading, but will usually adopt an advisory role.

Reader Roles & Responsibilities:

Readers are expected to:

1. Be familiar with the course procedures and timetables.
2. Attend the Progress Meeting
3. Grade the Research Proposal, Progress Report & Oral Presentation, and thesis.
4. Provide written feedback the Research Proposal and Progress Report, and provide these directly to the student and Supervisor.

Advisors:

Advisors are expected to:

1. Be familiar with the course procedures and timetables.
2. Attend advisory meetings
3. Provide guidance to students.

Evaluation and Grading

Assessment	Value/Weight	Evaluator
Proposal & Presentation	15%	Readers
Progress Report & Presentation	20%	Readers & Supervisor
Thesis	25%	Readers
Experimental Work	25%	Supervisor
Public Presentation and Questions	15%	Examiners

Note: In order to pass the course, it is mandatory that you complete the thesis.

Note: Late assignments will not be accepted, unless prior approval has been received due to legitimate circumstances.

Course Policies and Other Information

Use of OWL:

- Course announcements, links and resources will be posted on OWL
- Regularly (at least once/week) log on to the course website for class announcements or postings.

Classroom Environment Rules of Conduct:

1. **All technology not being used for class purposes should be turned off, disabled or not used** (i.e. phones, tablets, computers). Answering emails, surfing the web and chatting online are not acceptable uses of technology in the classroom. **Remember**, other people around you can see what you are doing on your laptop. This can be a distraction to your classmates.
2. **Class starts on time.** If you come in late, please do so quietly. You are responsible for the material presented and obtaining handouts if you arrive late or miss a class.
3. **Please treat all class members and the professor with respect in class.** This includes keeping noise levels down during class.

Email Policy

1. **Use your Western email account ONLY when contacting your professor.** Personal accounts might be intercepted by "SPAM" filters and be sent to junk mail.
2. **It is important that you include "ENVSCI4999E" in the subject of any emails that you send, at least for the first few emails.** This will help sort through the many emails received daily and respond as quickly as possible.
3. Generally, all emails will be responded to within 48 hours during weekdays (not including holidays). Emails will *usually* be addressed during regular work hours (9-5). I may choose, at my discretion, to respond outside these hours, depending on availability.

Accessibility

Please discuss with your supervisor and/or Course Coordinator if you require workshop material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

Accommodation for Medical Illness or Other Serious Circumstances

If you are unable to meet **ANY** course requirement due to illness or other serious circumstance, you must provide valid medical documentation or other supporting documentation to the Dean's office as soon as possible and contact the instructor immediately. It is your responsibility to make alternative arrangements with the instructor once the accommodation has been approved by the Dean's office and the instructor has been informed. Please see for further information:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

Student's requiring academic accommodation due to illness for any assignment/exam should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) if you visit Student Health Services.

The Student Medical Certification form can be downloaded from this site:

<https://studentservices.uwo.ca/secure/index.cfm>

This site also has the Policy on Accommodation for Medical Illness.

Plagiarism Rules and Scholastic Offenses

"Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar)."

This concept applies with equal force to all assignments, including laboratory reports, diagrams, and computer projects. Students wishing more detailed information should consult their instructor, Department Chair or their Dean's office. In addition, they may seek guidance from a variety of current style manuals available in the University's libraries.

"Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:"

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

The following guide will help you avoid committing an academic offence:

<http://www.uwo.ca/ombuds/student/cheating.html>

Support Services

The **Writing Support Centre** can help students to improve their writing skills. Writing resources and/or expert writing counsellors are available to you. <http://www.sdc.uwo.ca/writing>

The **Student Development Centre** has many other support services available to students.

<http://www.sdc.uwo.ca/>

The website for **Registrarial Services** is:

<http://www.registrar.uwo.ca>

Schedule for Environmental Science 4999E, 2017-18

Date	Task
Sep 5-15	Meet with Supervisor to organize project, select Readers, start working on research proposal, complete Project Registration Form and return to Course Coordinator (due Sep 15). Submit names of Readers on OWL by Sep 15.
Before data collection begins (i.e. ASAP)	You must complete ALL safety training BEFORE data collection begins. All students must complete: Worker Health and Safety Training Awareness, WHMIS-Workplace Hazardous Materials Information Systems, Safe Campus Community . If you are working in a laboratory setting, you will require Laboratory Safety and Hazardous Waste Management . See page 4 for details. Please consult with your supervisor regarding which additional required lab safety is needed.
Sep 12	Tues night classes commence. 6:30-8:30 pm, SH 2355. Schedule and topics to be posted on OWL
Oct 16 4:30 pm	Proposals due. Follow guidelines on OWL. Return the signed Proposal Approval Form to the Course Coordinator. Upload a copy of your Research Proposal and your signed Proposal Approval Form to OWL.
No later than Dec. 21	Book your Progress meeting! Don't wait until after the holidays.
Jan 8 4:30 pm	Progress Reports due. Follow guidelines on OWL.
No later than Jan 26	Progress Meeting complete. Return Progress Evaluation Form and a copy of your Progress Report to Course Coordinator.
by Feb 28	Experimental work complete (ideally)
Mar or Apr	Presentation DUE Envirocon (date TBA)
Apr 11 4:00 pm	Thesis due. Follow guidelines on OWL. Complete Thesis Approval Form and return to Course Coordinator.