

Course Outline

Earth Sciences 4490E: SENIOR THESIS

Environmental Sciences 4999E: HON RESEARCH PROJECT

1. Course Information

Course Information

Lectures: Wednesday 9.30 AM–10.30 AM

Plus, independent research with your supervisor and attendance at regular colloquium of the Earth Sciences Department (Fridays 1.30–2.30 pm, see email announcements from the ES Department).

List of Prerequisites

ES 4490E: Registration in Year 4 of an Honours Specialization offered by the Department of Earth Sciences, or permission of the Department. A list of available projects for the upcoming 2026-2027 academic year is posted online. Students have to contact potential supervisors in advance.

ENVIRSCI 4999E: Year 4 registration in the Honours Specialization in the Environmental Science module. Ideally, you have arranged a project with a supervisor before completing registration. A list of available projects for the upcoming 2026-2027 academic year is posted online.

Unless students have either the prerequisites for this course or written special permission from the Department of Earth Sciences to enroll in it, they may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on their academic record. This decision may not be appealed.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Alina Shchepetkina	ashchep@uwo.ca		N/A	By appointment

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

3. Course Syllabus, Schedule, Delivery Mode

ES 4490E: A presentation of research on a chosen problem. Original data must be generated from field or laboratory studies and analyzed using appropriate methodologies. The results must be integrated into the existing literature on the topic. Independence in the conducting and reporting of research must be demonstrated.

ENVIROSCI 4999E: Explore the investigative nature of science by performing an experimental or theoretical research project under the supervision of a faculty member while making connections

between two or more scientific disciplines. Key aspects of the project may include experimental design, instrumentation, data collection and analysis, and the communication of results.

Antirequisite(s): Biology 4970F/G, Biology 4998E, Biology 4999E, Chemistry 4491E, Earth Sciences 4490E, Environmental Science 4970F/G, Environmental Science 4999E, Computer Science 4490Z, Physics 4999E.

Learning outcomes:

After successfully completing this course, students will be able to:

1. Plan and develop safe and ethical laboratory and field procedures to independently collect and record scientific data.
2. Organize and analyze data, assess and control data quality, and report and interpret basic quantitative findings in textual, tabular, and graphical forms to reach a scientific conclusion.
3. Communicate analyses effectively with interdisciplinary audiences through written reports and oral presentations that adhere to the norms and standards of their discipline.
4. Independently complete a research project with direction from an expert.

Classes begin: September 9, 2026; January 4, 2027

Fall Reading Week: October 10 – 18, 2026

Winter Reading Week: February 13 – 21, 2027

Classes end: December 9, 2026; April 9, 2027

Lectures will mostly occur during the Fall term with a few meetings in the Winter term when you will predominantly work on your thesis. Before the first lecture, the students are encouraged to read through the syllabus to ask questions during the lecture and make sure to secure a supervisor and a topic of research. Any additional information, if needed, will be announced via OWL.

Lecture topics (in white) and **other deadlines** (in blue) include:

Date	Topic	Comments
Sept 9	Introduction and course requirements	Submit “ Project Declaration ” form on OWL by next lecture: include Supervisor, Project title, Description (less than 100 words).
Sept 16	Writing a proposal/introduction	Submit “ Reader Selection Form ” on OWL by next lecture. If you have not yet secured 2 readers, speak to your supervisor for suggestions: you will need them in place to mark the thesis. Readers should hold a PhD and may be faculty members in the Department of Earth Sciences, Professors Emeriti, postdoctoral researchers, or researchers/faculty from other Canadian universities.
Sept 23	Thesis structure. Abstracts and Formatting	Health & Safety Forms to be completed before next lecture. Send to swood83@uwo.ca and ange.muir@uwo.ca and submit on OWL.
Sept 30	No class	<i>National Day for Truth and Reconciliation</i>
Oct 7	Responsible use of Gen AI	Delivered by Teaching & Learning Team
Oct 14	No class	<i>Reading week</i>
Oct 21	Library training #1	Meet at Taylor Library Instruction room and bring your laptop to the training session.

		Topics covered: use of Zotero/Mendeley and databases (Web of Science, Scopus, GeoRef, and Google Scholar). Delivered by Dan Sich
Oct 28	Library training #2	Meet at Taylor Library Instruction room. Topics covered: Search tips and approaches to finding knowledge sources not found in commercial databases (i.e., grey literature); appropriate use of AI (i.e. as an inquiry tool); OA publishing and predatory journals. Delivered by Dan Sich
Nov 4	Writing a Methods section	
Nov 11	No class	<i>Remembrance Day</i>
Nov 16	Written Proposal Submission by 4 PM	To supervisor and on OWL. A grade penalty of 5% per day from assignment mark will apply to submissions made more than 48 hour after the deadline. Supervisors to submit “ Thesis Proposal Rubric ” to Instructor by Nov 30, 4 PM (students have to instruct their supervisors)
Nov 18	Lightning talk # 1: tell the class about your project (2 min, 1 slide, no animations)	By Nov 16, upload your slide for the Lightning Talk #1 (pdf) on OWL. Missed talk (without accommodation) 2% deduction from course mark.
Nov 25	Results versus Discussion	
Dec 2	Best practices for presentations	
Dec 9	Lightning talk # 2: update of your research: what works, what doesn't (2 min, 1 slide, no animations)	By Dec 7, upload your slide for the Lightning Talk #2 (pdf) on OWL. Missed talk (without accommodation) 2% deduction from course mark.
Jan 15	Presentation to department #1	By Jan 13, upload your presentations on OWL (pdf). Missed presentation (without accommodation) 10% deduction from course mark.
Feb 10	Research ethics	Delivered by Teaching & Learning Team
Feb 17	No class	<i>Reading week</i>
Feb 24	Building healthy relationships with supervisors and peers	Delivered by CTL
March 1	Thesis Draft Submission (near complete draft of thesis with all sections included) by 4 PM	To supervisor and on OWL. A grade penalty of 5% per day from assignment mark will apply to submissions made more than 48 hours after the deadline. Supervisors to submit “ Thesis Draft Rubric ” to Instructor by March 15, 4 PM (students have to instruct their supervisors)
March 3/10	Writing successful grants and company reports	Delivered by ES professor
March 31	Final Thesis Submission by 4 PM	Upload your final thesis on OWL. A grade penalty of 5% per day from assignment mark

		will apply to submissions made more than 48 hours after the deadline.
April 2	Presentation to department #2	By March 31, upload your presentations on OWL (pdf). Missed presentation (without accommodation) 10% deduction from course mark.
April 14	Readers submit thesis evaluations to instructor; thesis back to students	Readers use Rubric for a BSc Thesis, send grades and comments to Instructor only (students have to instruct their readers). Instructor will distribute evaluations to students.
April 21	Introduce revisions and re-submit final version of thesis by 4 PM.	To supervisor and upload on OWL. Supervisor grades thesis and revisions and submits a Thesis Approval Form (students have to instruct their supervisors).

4. Course Materials

This course does not have a textbook. Independent research will require extensive reading of scientific literature that is sought out by the student and in some cases recommended by their supervisor.

All course material will be posted to OWL Brightspace: <https://westernu.brightspace.com/>

Students are responsible for checking the course OWL Brightspace site regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL Brightspace site, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

	4490E and 4999E	Value	Evaluator	Due date
1	Written Thesis Proposal	10%	Supervisor	Nov 16 (Supervisor returns by Nov 30)
	Interview/meeting with supervisor			
2	Presentation to department	10%	Department	Jan 15
3	Thesis draft	10%	Supervisor	March 1 (Supervisor returns by March 15)
	Interview/meeting with supervisor			
4	Colloquium attendance and participation (ask Qs)	10%	Instructor	Both Fall and Winter terms (Fridays 1.30-2.30 pm)
5	Final Thesis*	40%	Readers (2)	March 31 (Readers return by Apr 14)
6	Final presentation to department	10%	Department	April 2
7	Experimental work and revisions*	10%	Supervisor	April 21

*The final thesis and experimental work are essential components of the course. You must pass both to receive a passing grade. If you fail one or both of these but have an average above 50%, you will be assigned a grade of 45%.

Time investment

You will get out of this course what you put in. In addition to the mandatory classes and thesis presentations, you are expected to attend regular lab meetings, weekly department colloquiums (take place on Fridays 1.30-2.30 pm), and one-on-one meetings with your supervisors as required by your supervisor. On top of this, anticipate investing at least 15 h/week in the various aspects of your research, ranging from reading to experimental work, to writing.

Data management and backups

Discuss with your supervisor their expectations and lab protocols for data recording and backups. Expect to provide the original of your lab notebook and both summarized and raw data in electronic format to them when you finish your thesis. Computer failure or loss of data will not be grounds for accommodation or appeal. Keep off-site backups of your data. For your lab notebook, you might take a photo of each full page of your lab notebook, and back that photo up on the cloud. For data entered into spreadsheets, as well as drafts of your work, raw data in electronic format (e.g., electronic images), and collections of journal articles, ensure that these are backed up on the cloud, even if it is just by emailing them to yourself periodically (although there are much more satisfactory solutions).

Lightning talks

You will give two lightning talks in the Fall term during class. During the first one, tell the class about your project. For the second one, provide an update of your research: what works, what doesn't. Lightning talks are quick and to the point. You will have 2 minutes and one slide (NO animations) so make the most of it! Giving these talks is mandatory. If you miss a talk (without accommodation), there will be a 2% deduction on your course grade.

Health and Safety

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. Once you have completed the necessary training, you must provide your supervisor with proof of completion (e.g., certificate) for her/his records. All required training courses are available in OWL Brightspace (<https://www.uwo.ca/hr/learning/required/index.html>):

1. AODA — Accessibility in Service — OR AODA — Accessibility in Teaching
2. Building Inclusivity through Anti-Racism — BIAR1E
3. CyberSmart Training— CSE001
4. Worker Health and Safety Awareness — HSAW01
5. Supporting Disclosures of Gender-Based and Sexual Violence at Western — GBSVE1
6. Western Safe Campus Community — WSCC01
7. Workplace Hazardous Materials Information System (WHMIS) — WHM103

If you are working in a laboratory, you may also need to do one or more of:

- Biosafety and Biosecurity — BIOS01
- Laboratory Safety & Hazardous Waste Management — LBHW01
- Laser Safety Awareness
- Radiation Safety Awareness
- X-Ray Safety — XRAY01

And any additional training in animal handling and procedures or radiation safety, as required by your situation. All certificates should be packaged into one pdf file and sent to Stephen Wood (swood83@uwo.ca) and CCed to Ange Muir (ange.muir@uwo.ca).

Essential Learning Requirements

Even when Academic Consideration is granted for missed coursework, the following are essential to earn a passing grade in this course: final thesis and experimental work and revisions.

When a student has not demonstrated proficiency in an essential learning requirement listed above, and when the shortfall results from a granted Academic Consideration, they will be withdrawn (WDN) from the course. The student may appeal to the Associate Dean (Academic) for reinstatement with an Incomplete (INC) standing. Where an appeal for INC is granted, their maximum course load may be reduced during the term in which they complete the outstanding course requirements.

Information about Missed Coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs*, posted on the Academic Calendar: https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person. The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage: https://registrar.uwo.ca/academics/academic_considerations/. All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

Deadlines: The 48-Hour No-Late-Penalty Period

All assignments and reports with a stated due date include an automatic 48-hour period after the deadline during which students may still submit without a late penalty (see for comments *Lecture topics and other deadlines*). For example, if an assignment is due on November 5, they may submit it until November 7 without penalty. After this 48-hour period, no further submissions will be accepted, and students do not need to request Academic Consideration for a missed deadline; their grade for this component will be calculated as described above (i.e., grade reduction applied).

6. Additional Statements

6.1 Religious Accommodation

When a recognized religious holiday either requires a student to be absent from the University, or requires or prohibits an activity that makes it impossible for them to complete an academic requirement scheduled that day, they are entitled to accommodation. No student will be penalized for an absence for religious reasons, and an alternative means of satisfying the requirement will be arranged. This accommodation is provided in accordance with the University's policy on Accommodation for Religious Holidays:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

The student should submit their requests through the Student Absence Portal (SAP), identifying the conflict and the specific course component(s) affected (e.g., test, midterm, exam).

Midterms and Tests: If a religious observance conflicts with a midterm test, they must submit their request no later than **one week** before the test. Their instructor will arrange an early sitting of the test. As set out above, no makeup test is offered for any other reason; this early sitting is available specifically for this accommodation.

Final Examinations: If a religious observance conflicts with the final exam, the student must submit their request no later than **two weeks** before the exam. Their instructor will arrange a Special Examination to take place no later than one month after the end of the examination period.

Students are responsible for finding out what was covered in any class they miss due to a religious observance, and for taking the appropriate steps to keep up with the course.

If a suitable arrangement cannot be reached between a student and their instructor, they should consult the Undergraduate Chair of the department offering the course, and if necessary, the Associate Dean (Academic) of the Faculty of Science.

For a list of recognized religious observances, please visit the calendars posted on the Equity, Diversity & Inclusion website - <https://www.edi.uwo.ca> (About Us – Resources – Additional Resources – Calendars).

6.2 Academic Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

6.3 General Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

Use of @uwo.ca email: In accordance with policy, https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, the centrally administered e-mail account provided to students will be considered the individual's official university email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

Requests for Relief (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:

https://uwo.ca/univsec/pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf

Procedures on Request for Relief from Academic Decision (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf

6.4 Scholastic Offences

Policy on Scholastic Offences:

https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the **possession** of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, hidden cameras and wireless earbuds.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at a student's desk, on their person, or within reach during an assessment will be treated as a scholastic offence, **even if the device is not in use**.

Effective September 2026, the typical penalty for this offence is a failing grade in the course AND a 12-month prohibition on retaking the course.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is their responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is the student's responsibility to seek clarification before using any AI tools in academic work.

6.5 Support Services

Academic Advising. Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/advising/>.

Mental Health Support. Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Gender-Based and Sexual Violence. Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If a student has experienced GBSV (either recently or in the past), they can find information about support services for survivors, including emergency contacts, at:

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Accessibility for Coursework. A student may contact the course instructor if they require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to them. If they have any questions regarding accommodations, they may also contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html

Learning Development and Success. Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help students improve their learning skills. The facility offers strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Student Councils.

Student-run support services are offered by the University Students' Council (<https://westernusc.ca>) and the Science Students' Council (<https://www.westernssc.ca>).