

ENVIRSCI 3350G: Research Techniques in Environmental Science

Course Outline

1. Course Information

1.1 Course description

Course name and number: Research Techniques in Environmental Science (ENVIRSCI 3350G)

Academic term: Winter term 2025/2026.

1.2 Course prerequisites

Environmental Science 3300F/G or special permission of the program coordinator. Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course, and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

1.3 Course format

Classes will be divided into two parts. The first part will include lectures, presentations, videos, and discussions. The second part of the class will be practical - you will put everything you just learned to practice, using tools including MS Office Excel, Word, and PowerPoint. Group work and individualized learning will also take place at this time.

Most of the in-class exercises and assignments are built directly on the material preceding it and each constitutes a building block of the final product. For that reason, it is important that you keep a copy of all your assignments and in-class exercises for future reference, participate in each class, keep to the schedule, and not fall behind.

2. Instructor Information

Instructors	Email	Office	Office Hours
Dr. Katsu Goda	kgoda2@uwo.ca	BGSB 1076	Online – Zoom, After the class
TA			

When contacting, please use only Western (@uwo.ca) email address and include the course code **ENVIRSCI 3350** into the subject line of your email.

3. Course Syllabus, Schedule, Delivery Mode

3.1 Course description

This multi-module course is intended to provide the theoretical and practical knowledge required by Environmental Science students to undertake independent research. Over the semester, we will address conceptual and technical aspects of research, as well as all phases of the research process. Because this is an essay course, it will involve written assignments. This course is designed to guide you while preparing your research proposal, thesis, or project.

By the end of the course, you will be able to prepare a professional research proposal and deliver a professional presentation. During the course, you will work on the process, presentation, management, and personal skills and you will discover the three phases of the research process. You will learn to formulate various types of research questions, define the variables and groups, and formulate objectives, and hypotheses. You will learn techniques to prepare a literature review and keep your literature sources organized. You will learn how to prepare infographics including the purpose of the study, conceptual framework, and study design layout. You will learn how to prepare a time flow chart, data entry sheets, and budget for your research. You will learn methods of data collection, sampling procedures, and instruments for data collection and will practice preparing collected data for analyses. You will learn to use advanced tools in MS Office including Word, Excel, and PowerPoint.

Classes begin: January 5th, 2026

Reading Week: February 14th – 22nd, 2026

Classes end: April 9th, 2026

Exam period: April 12th – 30th, 2026

3.2 Classes schedule

The schedule presented here is meant to highlight important due dates and to give you an idea of what activities are planned for each class. The lecture topics, layout, and deadlines may change as the semester develops. All assignments must be submitted individually to OWL before their deadline. If you have any concerns, please speak about this with the instructor early in the course - do not leave such concerns to the last minute.

Lecture	Part I	Part II	Assignments
Lecture 1	Introduction to the course Research - Step 1: Formulating a research problem, p.1/2	Research idea brainstorming	
Lecture 2	Research - Step 1: Formulating a research problem, p.2/2	Word: structure of a research proposal	Individual assignment 1
Lecture 3	Research - Step 2: Conceptualizing a research design, p.1/2	Group presentations of research topics and conceptual framework	PPT presentation 1 Research proposal, part 1/3
Lecture 4	Research - Step 2: Conceptualizing a research design, p.2/2	Excel: time management and budget	
Lecture 5	Research - Step 3: Constructing an instrument for data collection	Excel: data collection form	
Lecture 6	Research - Step 4: Selecting a sample	Excel: sample size calculation	Individual assignment 2

Reading week			
Lecture 7	Research - Step 5: Writing a research proposal	Group consultations - project	Research proposal, part 2/3
Lecture 8	Research - Step 6: Collecting data	Research - Step 7: Processing and displaying data	
Lecture 9	Research - Step 7: Processing and displaying data Research - Step 8: Writing a research report	Excel: data processing, analysis, statistics	Individual assignment 3
Lecture 10	Course Summary How to prepare a good presentation Group consultations		Research proposal, part 3/3
Lecture 11	Group presentations of research proposals, part 1/2		PPT presentation 2
Lecture 12	Group presentations of research proposals, part 2/2		PPT presentation 2

3.3 Delivery mode - Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online synchronously (i.e., at the times indicated in the timetable). The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor. When in-person delivery mode becomes available, the course content will be delivered in a face-to-face mode.

4. Course Materials

4.1 Course materials

[1] Kumar Ranjit, *Research Methodology: A step-by-step guide for beginners*. SAGE Publications, 4th or 5th edition, ISBN 9781446269978, 2014

[2] Montello Daniel R., Sutton Paul, *An Introduction to Scientific Research Methods in Geography and Environmental Studies*. Sage Publications; 2nd edition (Dec 26, 2012), ISBN-10: 1446200752, ISBN-13: 978-1446200759

Classes summary, guides, supplemental information, description of assignments, and other materials will be posted on OWL. Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) 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 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.

4.2 Technical requirements

During the face-to-face classes, please work on the desktop computers in the lab; please do not use your laptops. You are required to use the MS Office package for all assignments. Make sure you have online access to all the files you will be working on during the course. You may use 'One Drive' or any other service. Please have the MS Office package installed on your personal computer before the first lecture.

In the case of online classes, make sure you have access to a computer, a reliable Internet connection, and a webcam with a microphone.

5. Methods of Evaluation

5.1 Grade breakdown

The overall course grade will be calculated as listed below:

Individual work and assignment	30%	of final grade
• Assignment 1	10%	2-page research outline
• Assignment 2	10%	Study design (timeline, budget, sample size)
• Assignment 3	10%	Data visualization and analysis
Group work - research proposal	50%	of final grade
• Research proposal, part 1/3	10%	Research proposal – Introduction
• Research proposal, part 2/3	20%	Research proposal – Draft
• Research proposal, part 3/3	20%	Research proposal – Final
Group work - research proposal	20%	of final grade
• Group presentation 1	5%	Introduction, literature review, and conceptual work
• Group presentation 2	15%	Final research proposal

5.2 Description of assignments

Individual assignments: various in-class exercises include organizing the research proposal structure, data management, time management, budgeting, data collection and analysis, etc.

Research proposal, part 1/3: Introduction, Literature review.

Based on a short literature review, formulate a research problem, identify the variables, and construct a hypothesis with objectives. Prepare the context within which your study is important. Include conceptual framework. It needs to be submitted with the files and folders that support your literature review.

Research proposal, part 2/3: Draft version of the research proposal.

This should be an almost complete proposal with a proper document layout, including an abstract, literature review, detailed research design, hypothesis, objectives, and context within which your study is important. This must include an overall description of the research method and study design, a discussion of methods and instruments of data collection, sample choice, a timeline, budget, bibliography, etc. You should also include a description of what is still missing and will be done at a later stage; however, you should endeavor to make the first draft as complete as possible. All previous comments must be addressed. It needs to be submitted together with an Excel file with all tables, analyses, calculations, etc.

Research proposal, part 3/3: Final version of the research proposal.

This is the culminating product of the course which includes - in an integrated and thoroughly edited document - everything you have been working towards in the course. It should include detailed and revised information included in the draft of your research proposal. This must include a sample of a designed experiment, anticipated results, fill-in forms, survey or questionnaire, timeline, limitations, bibliography, appendixes (if any), etc. All previous comments must be addressed. It needs to be submitted together with an Excel file with all tables, analyses, calculations, etc.

Presentation 1: Research topic and conceptual framework.

Group presentation of all proposed research topics, their concepts + choice of the research proposal topic. Include conceptual framework.

Presentation 2: Research proposal. Group presentation of the final research proposal.

5.3 Group work grade

You will work individually and in groups. It is expected that the workload to be evenly distributed among the group members and that all members to participate equally at all stages of the project. The final grade for group assignments will be applied to all students within the group unless it becomes clear that a group member(s) did not participate equally in the project. In such a case, the final decision will be based on the main instructor's judgment.

5.4 Student absence and classes participation

You are expected to attend every class session. You will get from this course only as much as you put in. You need to take initiative and responsibility for your learning. You will be expected to demonstrate active engagement in the class. If you cannot participate in the class due to illness or other serious circumstances, please contact the instructor immediately with a detailed explanation. It may be possible to arrange for a recorded lecture or online class if the instructor is informed early enough.

Excused absences require evidence of a valid medical or emergency reason (with the Academic Counselor's approval) or prior consultation with the instructor. Each unexcused absence will result in a 2% drop in your final grade. Whether excused or unexcused absence, you are responsible for work missed (this includes missed in-class exercises/assignments, presentations, and research proposal deadlines) and you must arrange for any make-up work to be finalized before 1-week after the deadlines. In case the make-up work was not arranged by you before the deadline, you will receive 0% for the missed requirement.

5.5 Missed deadline

If you are unable to meet a course requirement, please follow the procedures below.

- **Assessments worth less than 10% of the overall course grade:** for work worth less than 10% of the total course grade, the instructor is empowered to grant academic considerations without referring the student to their academic counselors. Please contact the instructor with a request for a solution for dealing with a missed work (e.g., an extension, make-up opportunity, or reweighting) within 48 hours. Any make-up work needs to be finalized before 1-week after the deadline. In case the make-up work was not arranged by you before 1-week after the deadlines, you will receive 0% for the missed requirement. *Please note that in all cases where documentation (medical or otherwise) is required, it can only be collected by the student's Dean's Office Academic Counselling unit.
- **Assessments worth 10% or more of the overall course grade:** by policy, academic considerations for work totaling 10% or more of the final course grade can be granted only by the student's Faculty of Registration (typically by their academic counselors). In such cases, students should be directed as follows. For work totaling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf. The

Student Medical Certificate is available at:

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

6. Additional Statements

6.1 Religious Accommodation

When conflicts arise with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible, but not later than two weeks prior to the writing of the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays - <https://www.edi.uwo.ca>.

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](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

6.5 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 your responsibility to seek clarification before using any AI tools in academic work.

6.6 Support Services

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/counselling/>.

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.

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 you have experienced GBSV (either recently or in the past), you will 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.

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

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on 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.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.