EnvirSci 1021F – Course Outline
Environmental Science & Sustainability

1. Course Information

Course Information: Environmental Science 1021 – Environmental Science and Sustainability
Academic Term: Winter 2026; **Course Duration**: Jan 5 – April 9; **Exam Period**: Apr 11– 30
Location & Time:
Lecture Hours: 2 hours/week (please do the readings before class and come prepared for discussion)
Tutorial Hours: 1 hour/week immediately following class

2. Instructor Information

Instructor	Email	Phone	Office Hours
Dr. Neil R. Banerjee	neil.banerjee@uwo.ca	Ext 83727	By appointment

I encourage you to post questions about the course content in the online Forums. If you need to contact me about something private, please email at neil.banerjee@uwo.ca

Students must use their Western (@uwo.ca) email addresses when contacting their instructors and put the course code (1021) in the subject line. Please read the syllabus before asking or posting a question.

Office hours – There are no regular office hours. If you need to speak with me, please email and I'll set up an appointment to meet. Don't be shy – I'm happy to talk with you.

TAs	Email	Student Group by Last Name
TBD		

You will be assigned to a specific TA (see above and on OWL) based on your surname who will help mentor you throughout the scientific literacy and communication aspect of the course.

Your TA will act as your first point of contact for any inquiries. Please ask to set up appointments with them using your Western (@uwo.ca) email address and put the course code (1021) in the subject line.

3. Course Syllabus, Schedule, Delivery Mode

Course Description

This half-course introduces the science of environmental sustainability through the lens of Earth's dynamic systems. Students will investigate how Earth's ecological processes function, how they are impacted by human activity, and what sustainable solutions are being proposed and implemented globally. Engaging with key environmental issues, including climate change, biodiversity loss, water and air pollution, food and energy security, and resource use, students will gain scientific background necessary to critically evaluate current events and policy discussions. Special emphasis is placed on understanding feedback loops, ecosystem interactions, and environmental decision-making at local to global scales. The course is designed to be accessible and engaging for students from all academic backgrounds; curiosity and a willingness to think critically about complex environmental problems are essential.

Key dates

- ☐ Classes begin: **January 5**
- ☐ Academic Integrity Quiz <u>MANDATORY</u>: **Wednesday, January 21**
- ☐ Mid-term Test: **Wednesday, February 25th in class**
- ☐ Mid-term *Makeup* Test: **Wednesday, March 4th at 7:00 pm**
  * Only available to students with an approved accommodation from your faculty advisors. If you miss the makeup and have an approved accommodation you will be able to write the mid-term the next time the course is run. This is the only makeup available. No exceptions.
- ☐ Scientific Report submission #1 deadline: **Thursday, March 5th at 5:00 pm**
- ☐ Revised Scientific Report submission #2 deadline: **Thursday, April 9thth at 5:00 pm**
- ☐ Deadline to post in the Forums: **Thursday, April 9thth at 5:00 pm**
- ☐ Deadline for Quizzes: **Thursday, April 9thth at 5:00 pm**
- ☐ Classes end: **Thursday, April 9thth**
- ☐ Final Exam set by the Registrar's office **April 12th to 30th**
- ☐ Final Exam Makeup **TBD**

Lecture Schedule

- Week 1   January 7:   Class Introduction
- Week 2   January 14:   Chapter 1 Environmental, Science, and Information Literacy
- Week 3   January 21:   Chapter 2: Ecology
- Week 4   January 28:   Chapter 3: Evolution and Biodiversity; Essay Mini Workshop
- Week 5   February 4:   Chapter 4: Human Populations and Environmental Health
- Week 6   February 11:   Chapter 5: Managing Resources: Environmental Economics and Policy
- Week 7   February 18:   **NO CLASS – Reading Week**
- Week 8   February 25:   MIDTERM (Chapters 1-5)
- Week 9   March 4:   Essay Mini Workshop
- Week 10 March 11:   Chapter 6: Water Resources
- Week 11 March 18:   Chapter 7: Geological and Land Resources
- Week 12 March 25:   Chapter 8: Food Resources
- Week 13 April 1:   Chapter 9: Conventional Energy: Fossil Fuels
- Week 14 April 8:   Chapter 10: Air Quality and Climate Change

Delivery Mode

The course is designed with flexibility and accessibility at its core. While lectures are held weekly in person, most of the course content is delivered through the Macmillan Achieve online platform, which gives you the freedom to engage with course materials on your own schedule and at your own pace. Achieve provides a rich suite of interactive tools, such as readings, animations, adaptive quizzes, and self-assessment, that support a variety of learning styles and offer personalized feedback as you progress. Because so much of the foundational material is available 24/7 through Achieve, in-person lectures are designed to deepen your understanding, explore complex ideas, and connect the science to real-world environmental issues. When available, guest speakers will join us to share firsthand insights from environmental research, policy, and activism, further enriching the classroom experience. If circumstances require lectures may temporarily shift to an online format. Whether you're a science major or exploring environmental issues for the first time, this course is structured to empower you as an independent learner.

Learning Outcomes
By the end of this course, students will be able to:

- *Analyze major environmental challenges* and apply scientific principles to evaluate and address them.
- *Understand ecological and sustainability concepts* that shape natural systems and human-environment interactions at multiple scales.
- *Apply systems thinking and scientific inquiry* to assess the sustainability of environmental practices, interpret data, and propose evidence-based solutions.
- *Develop and communicate science-informed arguments* by conducting independent research and participating in structured writing and discussion assignments.
- *Demonstrate critical thinking and effective communication* of environmental topics in both written and verbal formats.

4. Course Materials

• **Required textbook.** Students need to purchase ONE of these editions. Access to the Macmillan Achieve Learning Platform is required. The print version is not required.

Environmental Science for a Changing World
eBook with Achieve 150 Day Access
Author: Karr, Edition: 4E, UWO Bookstore SKU: CEB_CODEID=51607, Price: $89.00

Environmental Science for a Changing World
Print Textbook with Achieve 150 Day Access
Author: Karr, Edition: 4E, UWO Bookstore SKU: 9781319570224, Price: $153

Bookstore website: https://tinyurl.com/w9taxwxk (prices same as above)
Publisher's website: https://tinyurl.com/yc5b6547 (price may differ from the bookstore)

• **Technical Requirements**: A device connected to the internet running the following software…

From: https://tinyurl.com/yvdv4v6u

Supported browsers
Achieve is available in these browsers:
- Chrome: 126.0.6478.126 + two previous versions
- Firefox: 127.0.2 + two previous versions
- Safari: 17.5 + two previous versions
- Edge: 126.0.2592.87 + two previous versions

Multimedia requirements
- To view PDFs, you will need the latest version of Adobe Reader.
- Various video players/codecs depending on the title: Brightcove, Apple QuickTime, Windows Media Player, RealPlayer, and Ogg Vorbis.
- Some content requires Microsoft Office (Word, Excel, PowerPoint).

Other considerations
- You'll need to allow session cookies.
- The recommended screen reader software for Achieve is JAWS, NVDA, or VoiceOver for Mac OS (latest public releases).
  - **Note:** Please review supported browser versions and hardware specifications for these products.
- You can also download an e-book (for your Achieve course) to read offline on a computer or mobile device.

This class will use iClicker Cloud, a student response system for you to answer questions about the course content and receive immediate feedback. You will access iClicker Cloud by downloading the iClicker Student app to your mobile device or access it from the iClicker site (iclicker.com) through a laptop. Further instructions will be provided on OWL and in class.

System requirements: https://tinyurl.com/bd33ku68

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

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.

5. Methods of Evaluation

Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

- ☐ 25%   Mid-Term **Wednesday, February 25th in class**
  - *Covers Chapters 1 – 5*

- ☐ 25%   Final Exam (**Date and time to be determined by the Registrar's office**)
  - *Covers Chapters 6 – 10. The final exam is __not__ cumulative.*

- ☐ 35%   Scientific Report. Submitted in 2 parts: *See Detailed Information on OWL.*
  - o   25%   Submission of first version: **Thursday, March 5th at 5:00 pm**
  - o   10%   Submission of second version: **Thursday, April 9thth at 5:00 pm***

  - *Submission of the revised (second) version of the Scientific Report is NOT MANDATORY. **If you are happy with your grade on Assignment #1 you DO NOT NEED TO SUBMIT ASSIGNMENT #2.** If no submission for Assignment #2 is made, the grade for Assignment #2 will be the same as that for Assignment #1. So do your best on version 1 to decrease your workload!

  - **IMPORTANT**: When you submit your assignments, you will get a Turnitin score. Scores of up to 25% are not unusual, because literally thousands of essays on this topic have been submitted worldwide. Scores more than 25% could indicate a problem. You **MUST** check your score and ensure it is below 25% otherwise the following penalties will be **automatically applied**:

  - Turnitin Scores of 26-30% will receive a 10% deduction.
  - Turnitin Scores of 31-35% will receive a 20% deduction.
  - Turnitin Scores of 36-40% will receive a 30% deduction.
  - Turnitin Scores of 41-45% will receive a 40% deduction.
  - Turnitin Scores of 46-50% will receive a 50% deduction.
  - Turnitin Scores above 50% will receive a grade of zero (0) and you will be contacted.

  - Turnitin Scores above 50% will be scrutinized for originality in the written content. If evidence of plagiarism is found, you will be reported to the Dean. Plagiarism is a serious offense (see note on plagiarism below) and is treated seriously in this class.

- ☐ 5%   Class Participation.
  - Forum Participation Deadline: **Thursday, April 9thth at 5:00 pm**
  - Participation in iClicker Cloud polls/quizzes and is required.

- ☐ 10%   10 Graded Quizzes: **Thursday, April 9thth at 5:00 pm**
  - You should try to complete the quizzes each week as you read the related chapters.
  - The quizzes are automatically administered through the Achieve Learning system.
  - **Don't wait to submit your quizzes until the last minute!** Last minute computer problems will not be accepted as grounds for accommodation.

Scientific Report (Essay)

- Details about the requirements for the Scientific Report (essay) can be found on the OWL site.

- Because this is an "essay course" completion of the essay assignment and <u>a minimum grade of 50% on the second submission is required to pass the course</u>.

- The essay is worth 35% and is submitted in two different versions. The first version will be worth 25% of your course grade. You will receive feedback on this version that you can use to improve your essay and resubmit for the second version, which is worth 10% of the course grade. Revising your essay to improve its content, based on feedback from your TA, is an opportunity both to improve your writing and to increase your grade.

- Submission of the revised (second) version of the essay is NOT MANDATORY. **If you are happy with your grade on Assignment #1 you DO NOT NEED TO SUBMIT ASSIGNMENT #2.** If no submission for Assignment #2 is made, the grade for Assignment #2 will be the same as that for Assignment #1.

- The revised (second) version of the essay may be submitted at any time up to the final submission. ***<u>If you do not make any changes for the second submission, please do not resubmit.</u>*** All assignments submitted will be marked. As this is the final submission you may receive a lower mark than you did on Assignment #1 if you do not improve it.

- Every effort will be made to complete the grading of the essay in a timely fashion. Questions about the essay should be posted to the forum or communicated to your TA in an email.

- All essay submissions must be made through OWL. Email attachments will not be graded. Submission problems must be communicated to the instructor and TA before the deadline.

- When you submit an assignment, you will receive an email receipt from OWL and an email receipt from Turnitin.com. **Keep these for your records.**

- **Please note:** When you write your essay, you are **not** allowed to copy and paste **ANYTHING** (even if it's just part of a sentence!) from **ANYWHERE**. This includes text from websites, papers, books, other students, generative AI (e.g., ChatGPT), etc. You may not generate text with artificial intelligence and directly copy it into your paper. You are not allowed to copy and paste paragraphs and then change several words. Paraphrasing is plagiarism. You must gather ideas for your report then **write the entire paper in your own words**. If *any* part of your paper is determined to be plagiarized, that part of your paper will **NOT** be marked. **NO EXCEPTIONS!**

Use of Generative Artificial Intelligence (AI) for the Scientific Report

The use of Generative AI is not required in this course but it's proper use as described below is encouraged for those interested in this technology.

Generative AI uses sophisticated models that can generate responses to "prompts" from existing examples and patterns. Generative AI models use natural language processing (NLP), neural networks, and deep learning AI algorithms to extract patterns in data. However, you should be aware that all Generative AI platforms (like ChatGPT) still tend to make up facts and fake citations. You are responsible for any inaccurate, biased, offensive, or otherwise unethical content you submit regardless of whether it comes from you or a Generative AI platform.

I acknowledge that some students may be interested in exploring the use of Generative AI as a learning tool and other may not. I have chosen not to ban its use in this course. Instead, I require that all Scientific Reports **MUST** contain one of the two following statements on the title page:

1) *I **did not** use artificial intelligence in creating this paper*; or
2) *I **did** use artificial intelligence in creating this paper. I affirm I did not generate text with artificial intelligence and directly copy it into my paper.*

You __*may*__ use of Generative AI (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) to get you started, summarize ideas, help improve your writing for clarity, and/or help you when you are stuck. If you choose to do this, you **MUST** include a brief description of the following **AT THE END** of your Scientific Report:

- Software and version used.
- A complete list of prompts.
- How the generative AI was used (e.g., brainstorming, preparing an outline, discovering facts about the topic, locating background information, improving grammar/spelling/structure, etc.).

Why can't we directly copy words from an AI engine into my essay? There are multiple reasons: 1) this is considered plagiarism (which means presenting others' words as if they were our own); 2) I have already created several essays using various Generative AI models so Turnitin is already good at detection and you will likely get a very high similarity index; 3) AI engines are notoriously unreliable on facts; 4) AI engines reproduce biases and prejudices from their source material; and 5) using AI to generate text robs you of the chance to develop your own critical thinking on the subject. The point of this essay course is to help you develop your ability to think critically. Writing is a mechanism to convey your critical thinking. The act of writing helps you cultivate your own intelligence. Not artificial intelligence.

The Exceptional Contributor: "The Class Was Better Because You Were Here"

As part of the learning process, I expect all students to participate actively. Please make your comments, questions, and Forum Posts engaging, thought provoking, and relevant. Remember that 5% of your grade is assigned to participation. Here are some guidelines to keep in mind:

- You come to class prepared and ready to learn.
- You make highly attentive and constructive comments.
- You ask questions that are penetrating or help clarify.
- You contribute strategically (understanding that there are other students in the class).
- You actively encourage others to express their ideas.
- You use language that communicates interest in what others are saying.
- You complete quizzes and assignments on time.
- You interact constructively with the TAs and instructor.
- You are aware of your responsibilities for the course as outlined in this Syllabus.

General 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://www.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.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Midterm (Wednesday, February 25th in class)
- Final Examination scheduled during official examination periods

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

Midterm: Students that have an excused absence (accommodation from an academic advisor) will receive the following accommodations:

- A make-up midterm will be offered on **Wednesday, March 4th at 7:00 pm**
- If you have a legitimate reason for missing both the mid-term and the make-up midterm, you will receive an "incomplete" (INC) in the course and write the midterm the next time the course is offered. **The final exam is not cumulative and will not be re-weighted. No exceptions.**

Scientific Report (Essay)
- **Late assignments** submitted within two hours of the deadline will receive a 2% penalty.
- For 5 days following the normal "**Due Dates**" (including weekend days) reports may be submitted but will be subject to a mark deduction of **10 % per day late**.
- No reports will be accepted after 5 days.
- Accommodation from an academic advisor will result in automatic transfer of the weight for the first deadline to the second deadline.
- Accommodation from an academic advisor on the second deadline will result in an automatic 48-hour extension.
- Late penalties may be reduced only upon the recommendation of an academic advisor.

Quizzes
- The quizzes are automatically graded through the Achieve Learning system. There are no accommodations for the quizzes. Do them early. **Don't wait to submit your quizzes until the last minute!** Last minute computer problems will not be accepted as grounds for accommodation.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under Special Examinations), especially for those who miss multiple final exams within one examination period.

Essential Learning Requirements
Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

You must receive a 50% overall to pass the course. Because this is an "essay course" completion of the essay assignment and a grade of 50% in the second submission is also required to pass the course.

Coursework with Assessment Flexibility

Quizzes: This course has 10 quizzes that are available for the entire term. Completing them on time is expected and will contribute to your participation mark. Should extenuating circumstances arise during the term, students do not need to request Academic Consideration for missed quizzes. Instead, students should make up the quizzes when they are able. All quizzes must be completed by **Thursday, April 9thth at 5:00 pm**. NO EXCEPTIONS. There are no accommodations for the quizzes.

6. Additional Statements

6.1 Religious Accommodation

When a recognized religious holiday or observance conflicts with an examination, test, or other scheduled academic obligation, students must request accommodation via the University's Student Absence Portal (SAP). This request should identify the conflict and specify which course component(s) (e.g. test, midterm, exam) are affected.

Students are encouraged to submit the SAP request as early as possible, but no later than two weeks before any examination, or one week before any mid-term test or quiz, to allow sufficient time for adjustment.

The SAP request serves as official notification to both the course instructor and the Academic Advising Office, in accordance with University policy: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

The Faculty of Science considers religious accommodations as scheduling conflicts. Instructors should provide either a make-up exam or an earlier sitting of the same exam to accommodate the student.

For more information on recognized religious holidays, please visit the Diversity Calendar posted on the Equity, Diversity & Inclusion website - 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.

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, and wireless earbuds or headphones.

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

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

Use of Generative AI Tools

Unless otherwise stated, (e.g., *Scientific Report*) 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.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

This class will use iClicker Cloud, a student response system for you to answer questions about the course content and receive immediate feedback. You will access iClicker Cloud by downloading the iClicker Student app to your mobile device or access it from the iClicker site (iclicker.com) through a laptop. Further instructions will be provided on OWL and in class.

In the event of a health lockdown, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at:

   https://remoteproctoring.uwo.ca.

6.5 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/.