Course Outline, Winter 2022

updated Jan 04, 2022

GEOG 360: Analyzing Sustainability

Zoom link for online sessions: click here

Instructor:	**Teaching assistant:**
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RATIONALE

How do we transition society to operate in ways that are more *sustainable*? This is one of the grand challenges this century. We may not know all of the solutions needed—or how best to realize them at different scales—but major advances have been made in understanding and addressing complex sustainability challenges, such as climate change and natural resources management. This course will introduce you to some key concepts in sustainability science as well as approaches to taking an analytic approach to assessing "*What is sustainable?*". The course is structured to encourage dialogue and 'learning by doing' through four modules: (1) Cost-benefit analysis; (2) Climate change ethics and climate policy; (3) Balancing trade-offs among multiple ecosystem services; and (4) Conservation planning and protected areas design. Other concepts will be addressed in class discussions.

COURSE CALENDAR DESCRIPTION

Examines challenges to sustainability through a series of case studies to illustrate the analytical approaches used to understand the linkages between scientific-technological, socio-economic, political-institutional, ethical, and human behavioural aspect of systems. Includes cases that are thematic and place-based, national and international, spanning from the local to global scales.

PREREQUISITES

ENVR 201 or equivalent; and GEOG 203 or ENVR 200 or ESYS 200 or equivalent; or permission of instructor.

Note: Students from various academic backgrounds can take this course, but should have some experience (and motivation) in working with analytical methods related to interdisciplinary environmental problems. Useful background courses might include systems modelling, statistics, or quantitative methods. **Strong knowledge of Microsoft Excel is *required* (e.g., formula entry, plotting, absolute versus relative cell references, etc.).**

COURSE STRUCTURE

3 credits. The course is taught on Tuesday & Thursday from 11:35-12:55am online. The course is structured as 4 modules, each dealing with a different case study that uses different analytical tools, spanning interdisciplinary sustainability themes in environmental studies and environmental science. Typically, we will cover a module over a series of class meetings (including lectures, labs, and discussions), as shown in the preliminary weekly schedule on the next page. Students are expected to participate in class discussions, and there will be opportunities to present the results of group work at the end of the term.

COURSE EVALUATION

Lab Reports [3] & Group presentation [1] (12.5% each)	50%
Summaries of papers/mini-exercises [4] (2.5% each)	10%
Mid-term exam (in-class exam)	10%
Final exam (take-home)	25%
Overall class participation (attendance at lectures, discussions, and labs is expected)	5%

WEEKLY SCHEDULE *(preliminary, subject to change)*

Module	Date	Topic	Description
Intro	Jan 6, Thurs	Introduction to class	
Intro	Jan 11, Tues	Excel tutorial: Basic & advanced functions	Lab
1.1	Jan 13, Thurs	Intro to Cost-benefit analysis (CBA)	Lecture*
1.2	Jan 18, Tues	Cost-benefit analysis of a national park I	Lecture/Lab
1.3	Jan 20, Thurs	Cost-benefit analysis of a national park II[§]	Lab
1.4	Jan 25, Tues	Cost-benefit analysis of a national park III	Lab
1.5	Jan 27, Thurs	CBA and PES: case studies	Paper discussion^
2.1	Feb 1, Tues	The ethics of climate change policy	Lecture**
2.2	Feb 3, Thurs	Climate change ethics I	Lab*
2.3	Feb 8, Tues	Climate change ethics II	Lab
2.4	Feb 10, Thurs	Climate change ethics III	Lab
2.5	Feb 15, Tues	Ethics and global climate change: Emissions accountability and responsibility	Paper discussion^
3.1	Feb 17, Thurs	Ecosystem services: tradeoffs and interactions	Lecture**
3.2	Feb 22, Tues	Ecosystem service tradeoffs I	Lab*
	Feb 24, Thurs	Ecosystem service tradeoffs II	Lab
—	*Feb 28- Mar 4*	*Reading Week*	*No class*
3.3	Mar 8, Tues	Ecosystem service tradeoffs III	Lab
3.4	Mar 10, Thurs	Modeling land use and multiple ecosystem services at the landscape scale	Paper discussion^
3.5	Mar 15, Tues	Guest lecture (TBA)	**
Exam	Mar 17, Thurs	Midterm Exam	In-class exam
4.1	Mar 22, Tues	Conservation planning: basic principles	Lecture*
4.2	Mar 24, Thurs	Marine protected area (MPA) design I	Lab
4.3	Mar 29, Tues	MPA design II	Lab
4.4	Mar 31, Thurs	MPA proposals: Group presentations I	Presentations
4.5	April 5, Tues	MPA proposals: Group presentations II	Presentations
Finale	April 7, Thurs	Sustainability standards and certification	In-class discussion^
Finale	April 12, Tues	Analysing Sustainability: Review & synthesis	Lecture/Discussion *(Final take home exam posted.* ***Due date subject to McGill scheduling****)*

[§] Last class before add/drop deadline

^ Paper summary due on myCourses before class

**** Lab assignment is posted on myCourses***

***** Lab assignment due on myCourses before class***

LEARNING OUTCOMES, ASSESSMENT & TEACHING STRATEGIES

Outcomes	Assessment	Strategies
Recognize various dimensions of sustainability	Paper summaries, exercises, and contribution to discussions.	Read papers, write summaries, and participate in discussions.
Use existing tools to measure aspects of sustainability	Lab reports and presentations. Mid-term and final exam.	Practice problem solving and data analysis.
Interpret results within a broader social & environmental context, recognize alternative value perspectives	Paper summaries and contribution to discussions. Lab reports and presentations. Final exam.	Read papers, write summaries, and participate in discussions. Practice problem solving and data analysis.
Practice leadership skills and team-based problem-solving	Teamwork and consensus building. Group presentations.	Collective engagement in problem solving tasks. Present as a group.
Communicate complex concepts in accurate but broadly understood ways	Presentation skills. Paper summaries.	Present as a group. Critically read papers.

Due dates for assignments: Lab reports are generally due at the beginning of class of the next module (but check the specific due dates stated on the assignment handout). Paper summaries and mini-exercises are usually due before the associated class (see *myCourses*).

Lab reports: Please follow the instructions on the assignment hand-out in order to complete the lab reports. The instructions provide the basis for what is needed to complete the report, but it may require some thinking, work, insight, and time. The instructor will indicate where and how to submit the reports (a hard-copy in class or via *myCourses*).

Group presentation: In one assignment (Module #4) you will work in small groups and present your work collectively. A group grade will be assigned to the presentation. In addition, all students will complete an evaluation of their own contributions, and their peers' contributions to the group project. Based on this peer-evaluation, as well as the instructor's own observations of contributions to group project, individual grades may be adjusted up or down from the group average grade.

Paper summaries: These are 250-300 word (maximum) summaries of peer-reviewed journal articles (see the example template on *myCourses* for specific details). The summaries are to be submitted as a hard-copy in class. The paper will be assigned (and posted on *myCourses*) at least one week prior to the scheduled paper discussion.

Participation and discussion: Active participation and engagement in the course material is a critical component of this class. This can be particularly important on discussion days. Sustainability issues are complex and can only be fully understood by analyzing and debating each case from multiple perspectives. The class is therefore designed to foster interaction and discussion, and I hope you take advantage of this opportunity to learn collectively through discussion, participation, and peer support during the lab periods.

Exams: The exams will test your ability to apply an analytical tool like the ones we have explored in class to solve a specific problem or issue posed to you. Your aim is then to analyze the results of the analysis in the broader context of the multiple dimensions of sustainability. Exams will be similar to the labs, but you will work on your own. The due date for the final (take-home) exam to be determined by central university scheduling.

Academic integrity. McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/integrity/). Work submitted for evaluation as part of this course may be checked with text matching software within MyCourses. Note that if the Profs or the course TAs suspect plagiarism or cheating it is immediately out of our control and the case goes directly to the Associate Dean, Student Affairs. If you, in any way, are unclear as to what might constitute plagiarism or cheating, please talk about this with the Student Contact TA or Profs during our office hours. [*L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site http://www.mcgill.ca/integrity/)*.]

Language: In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. [*Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue*.]

Announcements: Announcements will be made on myCourses. Information on myCourses is considered known to all.

Late policy: Unless you have a written and official excused absence (that you have discussed with me, and I have approved), there will be 5% deduction for every day an assignment is late, starting after the beginning of class when the assignment is due.

Changes to evaluation scheme: In the event of extraordinary circumstances beyond the University's control, the evaluation scheme in a course is subject to change, provided that there be timely communications to the students regarding the change.

Copyright: Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. This includes note-sharing websites. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

Dialogue: In a course involving discussions around present-day issues among people from multiple backgrounds, you may at some point be confronted with ideas, words, or opinions that make you uncomfortable. These might come from your peers, the instructor, or a guest speaker. If such a situation arises, you are encouraged to bring it up with the person at the origin of the discomfort and/or with the instructor or the TA, to the extent that you feel safe doing so. Opening dialogue can help clarify positions, dispel misunderstandings, and sometimes help the person at the origin of the discomfort see realities they weren't aware of. This helps foster a culture of respect, openness, and care in academia.

Etiquette and "netiquette": Please use appropriate and respectful language with each other and with the instructor, whether in person or online. Emails starting with "hey prof" and/or containing multiple grammatical errors will be ignored. To maintain a clear and uninterrupted learning space for all when attending remote teaching, you should keep your microphone muted throughout your class, unless invited by the instructor to speak. You should follow instructors' directions about the use of the "chat" function on remote learning platforms.

Mutual respect is expected at all times among instructors, teaching assistants, support staff and students at McGill University. Students are referred to the webpage of Student Rights and Responsibilities https://www.mcgill.ca/students/srr/. Aggressive behavior, whether overt or passive, will not be tolerated. This includes offensive or harmful language arising in contexts such as usernames, visual backgrounds or chat boxes in the context of remote learning.

Recording of lectures: By enrolling in a remote course, you accept that fixed sessions may be recorded. You must consent to being recorded if you are attending a lecture or participating in a component of a course that is being recorded. You will be notified through a "pop-up" box in Zoom if a lecture or portion of a class is being recorded. If you are not comfortable being in a class that is recorded, you may decide to not take part by logging off Zoom. Students who log off should watch the video recording later in MyCourses. In addition to the recording of your image and voice, your name (or preferred name) may be displayed on screen, and your instructor may call your name during the lecture. As such, this personal information will be disclosed to classmates, whether during the lecture or in viewing the recording. By remaining in classes that are being recorded, you accept that personal information of this kind may be disclosed to others, whether during the lecture or in viewing the recording.

Special Needs: If you have a disability, you are welcome to contact the instructor to arrange a time to discuss your situation. Please also make contact with the Office for Students with Disabilities.