Sustainability Approaches

ERS 400 (Fall 2019)

Lectures/Seminars: Monday and Wednesday (1:00 pm -2:20 pm)

Instructor
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Office Hours:
Mon. & Wed. 2:30-4:00am
or by appointment
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> "You have to act as if it were possible to radically transform the world. And you have to do it all the time." - Angela Davis
>
> "Courage my friends; tis not too late to save the world" - Tommy Douglas

Overview: In this course you will critically examine how individuals and societies can respond to social-ecological complexity, uncertainty and change, and in ways that are more equitable and just. In doing so we will explore selected approaches, concepts and tools to foster sustainability. We will build on material covered in previous SERS courses, and further emphasize the application of systems thinking concepts in the context of real-world cases and your own interests.

Course approach and objectives: We live in a human-dominated earth system. Sustainable responses to local and global challenges will test our individual and collective capacities to cope, adapt and deliberatively transform our interactions with nature. This course will emphasize actionable concepts and encourage transdisciplinary thinking as a foundation to foster sustainability.

Our approach to the class is: 1) systemic - thinking in terms of social and ecological connections and feedbacks across scales; 2) critical - not accepting the obvious explanation and challenging the relationships of power that influence sustainable outcomes (generally and in regards to your own focus); and 3) applied – developing and using concepts, tools and skills in the context of some real-world challenges, with an emphasis on your own interests and career aspirations.

At the end of this course, you should be able to:

- Reflect on your own training and experience as it relates to social-ecological complexity, uncertainty and change (local to global), and to broader efforts to advance sustainability;
- Understand and assess various approaches as they are applied at local to global scales to deal with sustainability challenges;

- Critically assess the assumptions underlying sustainability ideas and applications and by extension, your own interests and experiences; and
- Leverage your understanding of linked social and ecological system sustainability, and to propose and communicate strategies for change with reference to your own interests and future aspirations.

Course activities involve a mix of lecture, interactive and group discussions, and application of course approaches and concepts to a 'sustainability challenge'. We will use a range of examples and cases, both close to home and internationally. Guest speakers and multi-media (e.g., video) may be used to supplement course content. The core assignment (a team based project) requires critical thinking and reflection, and we will use class time to advance our thinking on these projects.

Readings: There is no required course text. Core (***required***) readings are listed in the course schedule (below), and they are accessible through the course LEARN site or via the UW Library. Readings will focus on selected sustainability approaches, concepts and tools that are conducive to transdisciplinary sustainability research and practice, and in relation to the themes and assignments we cover in the course.

Readings from past SERS courses are also a valuable resource – please revisit and use them as appropriate.

Additional helpful resources can be found in: "Readings in Sustainability Science and Technology" by Kates (2010). It is available for free online: http://www.hks.harvard.edu/centers/cid/publications/faculty-working-papers/cid-working-paper-no.-213

Course requirements and evaluation:

Reading responses (5 @ 2% = 10%): Effective participation in class and in the context of your group project requires an effort to engage with readings. Five reading responses (of a possible 6) are required. Your reading responses must be submitted to LEARN prior to the posted due date and time. Marks will be assigned to reflect (a) completion of reading response; (b) evidence of engagement with core ideas in readings (i.e., what are they, why are they important, what's missing); and c) your thoughts on the implication for your group project. Please note that quantity of response is not be equated with quality. Reading responses need only be a maximum of 400-500 words and may include bullet points or other forms of summary. You will not be graded on grammar (unless the response is not decipherable!)

Quizzes (2 @ 20% = 40%): The quizzes are scheduled for October 7th and November 20th. Quizzes will focus on key concepts and information covered in class, including main ideas in the readings and related resources. The quizzes will include a mix of multiple choice, short and longer-answers and will be done during regularly scheduled class time.

Theory of change report (40%): Regardless of our intellectual footing (e.g., ecology, policy, restoration, governance, etc.) or applied aspirations (e.g., resource manager, researcher, outreach, education, etc.), we need a theory of change to guide our sustainability efforts, and ideally, a 'systems-informed' theory of change. You will develop a 'theory of change' as part of a small team (of approximately four or five individuals) and in the context of an issue that is of shared interest (see list of potential projects and themes). To facilitate your efforts, we will approach the theory of change through a series of phases, the combination of which will be your ToC:

Phase I: Defining your 'wicked' sustainability problem of interest (e.g., focal point and future scenarios / aspirations, and framing)

Phase II: Interventions for change (e.g., drivers and leverage points for change – coalitions, behaviours and governance responses, education/awareness, etc.)

Phase III: Critical reflections on opportunities and barriers to change (e.g., challenges of societal learning for change, negotiating power, and tracking progress)

**Note that class-based activities and time will be used to develop material for the group project in relation to each of these Phases. I will be available to provide informal feedback on early versions and drafts of your projects during office hours.

***Note also that 10% of the final grade will include a peer evaluation within your group (collaborate effectively and share the workload and all will work out well – if there are differences of opinion within a group, come and talk with me as a group and we'll sort it out)

Theory of change presentation (10%): Each team will present their theory of change project during class times (November 25th and 27th). Attendance in both classes is mandatory. Further guidelines for presentations will be provided.

SERS 400 (Fall 2019)

Week	Dates and Class Activities	Readings/Resources
1	Sept 4: Course introduction (protect, restore, reform and transform)	Sachs et al. 2019; Nagendra, 2018; Ripple et al. 2017 (see also Bull et al. response); Spangenberg 2011
2	September 9: Building your 'theory of change' for sustainability September 11: Guest speaker – Shauna Mahajan (World Wildlife Fund); organizing project teams and introduce ToC assignment	James 2011; Taplan and Clark 2012; Fuller Transformation Collaborative. (2019)
3	September 16: Sustainability as a 'wicked problem' September 18: 'Workshopping' your ToC: Phase I	Meadows, 1999; Rittel and Weber, 1973
4	September 23: Visions and scenarios of the future September 25: 'Workshopping' your ToC: Phase I (con't) *Informal group report back on initial progress	Farledeau et al. 2019; Merrie et al. 2017; Vaidyanathan 2018; MEA 2005 (Chapter 8 – skim only)
5	September 30: Strategies for change – understanding how we 'frame' sustainability challenges October 2: Discussion activity – 'SDG Mapping Tool'	Lele e al. 2018; Ommer et al. 2018; Preiser et al. 2017
6	October 7: Strategies for change – shifting behavior October 9: Quiz #1 (in class); check-in on ToC Phase I	Byerly et al. 2018; Cinner 2018; Fischer et al. 2012
7	October 14 and 16: No class – reading week	

8	October 21: Strategies for change – science/policy coalitions and knowledge co-production October 23: Guest Panel / Discussion	Beier et al. 2016; Luc Hoffman Institute 2018; Mckibbon 2018; Miller and Wyborn 2016;
9	October 28: Strategies for change: Governance and policy October 30: 'Workshopping' your ToC: Phase II	Berkes. 2017; Clark 2016; Lemos and Agrawal 2006
10	November 4: Strategies for change: Understanding and analyzing 'power' November 6: Discussion activity; 'Workshopping' your ToC: Phase II (con't)	Brisbois and de Loe, 2015; Jentoft 2007; Raik et al. 2008
11	November 11: Strategies for change – Tracking progress and learning through change November 13: 'Workshopping' your ToC: Phase III	Christiano and Neimand, 2017; Semuels 2019; Reed et al. 2010
12	November 18: Seeds of a good Anthropocene November 20: Quiz #2 (in class); check-in on ToC Phase II and III	Bennett et al. 2015; Tallis et al. 2018.
113	November 25: Group presentations (attendance in class required) November 27: Group presentations (attendance in class required)	
14	December 2: No class – work on final project reports	

Required Readings

Week 1: Introduction

Nagendara, H. 2018. The global south is rich in sustainability lessons. Nature. 557: 485-488.

Ripple et al. 2017. World Scientists' Warning to Humanity: A Second Notice. BioScience. 67(12): 1026-1028 (see also Bull et al. 2017 for a blog response: Also available at https://www.iccs.org.uk/blog/when-ripple-becomes-flood-why-we-didnt-sign-ripple-et-als-world-scientists-warning-humanity)

Spangenberg, J.H. 2011. Sustainability science: a review, an analysis and some empirical lessons. Environmental Conservation. 38(3): 275-287.

Week 2: Theory of change

James, C. 2011. *Theory of Change Review*. Report commissioned for Comic Relief. 31 pp.

Taplin, D. and H. Clark. 2012. Theory of Change Basics: A Primer on Theory of Change. ActKnowledge, New York.

Fuller Transformation Collaborative. 2019. "The art of systems change: Eight guiding principles for a green and fair future." Washington, DC: World Wildlife Fund.

Week 3: Sustainability as a wicked problem

Meadows, D. 1999. Leverage Points: Places to intervene in a system. Sustainability Institute. Hartland, VT. 19 pgs.

Rittel, H. and M. Weber. 1973. Dilemmas in a General Theory of Planning. *Policy Sciences* 4: 155-169.

Week 4: Visions and scenarios

Falardeau, M., et al. 2019. A novel approach for co-producing positive scenarios that explore agency: case study from the Canadian Arctic. Sustainability Science (2019) 14:205–220

Merrie et al. 2017. Radical ocean futures-scenario development using science fiction prototyping. Futures.

Vaidyanathan, G. 2018. Imagining a climate-change future, without the dystopia. Proceedings of the National Academy of Sciences. 115(51): 12832-12835.

***MEA 2005 (Chapter 8 – Four Scenarios). Millennium Ecosystem Assessment – Ecosystems and Human Wellbeing. Island Press, Washington D.C.*

Week 5: Sustainability frames

Lele, S. et al. 2018. Framing the Environment. In Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity, Sharachchandra Lele et al. (Ed.). Cambridge, MA: MIT Press

Preiser et al. 2017. Navigating alternative framings of human-environment interactions: Variations on the theme of 'Finding Nemo'. Anthropocene. 20: 83–87

Ommer, R.E. 2018. Curiosity, interdisciplinarity, and giving back. *ICES Journal of Marine Science* 75(5): 1526-1535

Week 6: Behavioural change

Byerly, H. 2018. Nudging pro-environmental behavior: evidence and opportunities. Frontiers in Ecology and the Environment. 2018; 16(3): 159–168.
Cinner, J. 2018. How behavioral science can help conservation. Science. 362(6417): 889-890.
Fischer, J., et al. 2012. Human behavior and sustainability. Frontiers in Ecology and the Environment 10(3): 153-160.

Week 7: Reading week

Week 8: Knowledge co-production and coalitions for change

Beier, P. et al. 2016. A How-to Guide for Coproduction of Actionable Science. Conservation Letters.
Miller, C. and C. Wyborn. 2016. Co-production in global sustainability: Histories and theories. Environmental Science and Policy.
Luc Hoffman Institute. 2018. Doing science differently: Co-producing conservation outcomes (Synthesis paper). 24. Pp.
McKibben, B. Nov, 2018. *How extreme weather is shrinking the planet.* The New Yorker

Week 9: Governance and policy

Berkes, F. 2017. Environmental Governance for the Anthropocene? Social-Ecological Systems, Resilience, and Collaborative Learning. Sustainability. 9, 1232.
Clark, S. 2016. A guide to making policy in the common interest: principles for sound policy making. *Mosaic Magazine*: 64-70.
Lemos, M.C. and A. Agrawal. 2006. Environmental governance. Annual Review of Environment and Resources. 31: 297-325.

Week 10: Learning for sustainability

Christiano, A. and A. Neimand. 2017. Stop Raising Awareness Already. Stanford Social Innovation Review. Spring, 2017. 9 pp.
Reed, M. S., A. C. Evely, G. Cundill, I. Fazey, J. Glass, A. Laing, J. Newig, B. Parrish, C. Prell, C. Raymond, and L. C. Stringer. 2010. What is social learning? Ecology and Society: rZZ. [online] URL: http://www.ecologyandsociety.org/volXX/issYY/artZZ/
Semuels, A. 2019. Is this the end of recycling? The Atlantic: https://www.theatlantic.com/technology/archive/2019/03/china-has-stopped-accepting-our-trash/584131/
This American Life [Podcast]. Jan, 2007. My brilliant plan. https://www.thisamericanlife.org/324/my-brilliant-plan

Week 11: Power and sustainability

Brisbois, M.C. and R.C. de Loë. 2015. Power in collaborative approaches to governance for water: A systematic review. *Society and Natural Resources* 29(7):775-790.

Jentoft, S. 2007. In the power of power: The understated aspect of fisheries and coastal management. Human Organization. 66(4): 426-437.
Raik, D., A. Wilson and D. Decker. 2008. Power in Natural Resources Management: An Application of Theory. *Society and Natural Resources* 21(8): 729-739.

Week 12: Seeds of a 'Good Anthropocene'

Bennett, E. et al. 2016. Bright spots: seeds of a good Anthropocene. *Frontiers in Ecology and the Environment* 14(8): 441–448.
Tallis et al. 2018. An attainable global vision for conservation and human well-being. *Frontiers in Ecology and the Environment* doi:10.1002/fee.1965

Course policies and important information: Please note the following: 1) All assignments must be completed to receive a mark for the course; 2) Requests for extensions of any assignment must be done so in writing in advance of the assignment due date; 3) In the event of an illness, a supporting medical certificate completed by a physician must be provided; and 4) Extensions may be granted for significant emergencies at the discretion of the Instructor.

Academic integrity

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: http://uwaterloo.ca/academicintegrity. ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students: http://uwaterloo.ca/academicintegrity/Students/index.html

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also complete the following tutorial: https://uwaterloo.ca/library/get-assignment-and-research-help/academic- integrity/academic-integrity-tutorial

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. Within ENV, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties which may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline: https://uwaterloo.ca/secretariat-general-counsel/policies- procedures-guidelines/policy-71. Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance: https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70

Intellectual property

Students should be aware that this course contains the intellectual property of their instructor(s), TA, and/or the University of Waterloo. Intellectual property includes items such as: Lecture content, spoken and written (and any audio/video recording thereof); Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides); Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor(s), TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository). Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

Students with disabilities:

AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Mental health and wellbeing

The University of Waterloo, the Faculty of Environment and our Departments/Schools consider students' wellbeing to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. Please note that help is available. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services http://www.uwaterloo.ca/counselling-services is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more. Additional information is posted on the LEARN site (under 'course syllabus and administration')

Religious Observances

Students need to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

Unclaimed assignments

Unclaimed assignments will be retained until one month after term grades become official in Quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.

Communications with instructor(s)

All communication with students must be through either the student's University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account.

Co-op interviews and class attendance

Co-op students are encouraged to try and choose interview time slots that result in the least amount of disruption to class schedules. When this is challenging, or not possible, a student may miss a portion of a class meeting for an interview. Instructors are asked for leniency in these situations; but, a co-op interview does not relieve the student of any requirements associated with that class meeting.

When a co-op interview conflicts with an in-class evaluation mechanism (e.g., test, quiz, presentation, critique), class attendance takes precedence and the onus is on the student to reschedule the interview. CECA provides an interview conflict procedure to manage these situations. Students will be required to provide copies of their interview schedules (they may be printed from WaterlooWorks) should there be a need to verify class absence due to co-op interviews.