Sustainability Approaches

ERS 400 (Winter 2019)

Lecture: Monday (12:30 pm -2:20 pm)
Tutorial: Thursdays (9:30 am – 10:20 am or 1:30 pm – 2:20 pm)

Instructors:
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Faculty of Environment
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Office Hours:
Monday 2:30-4:30am
or by appointment
Office: 2013

> "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

Overview: This course examines how individuals and societies deal with and respond to social-ecological complexity, uncertainty and change, and emphasizes selected concepts, approaches and tools to foster environment and resource sustainability. The course builds on material covered in previous SERS courses, and further emphasizes the application of systems thinking concepts in the context of real-world cases and your interests.

Course approach and objectives: We live in a human-dominated earth system. Sustainable responses to the local and global changes humanity has created 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 and discussion (e.g., through tutorial activities). We draw on 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. Assignments are intended to encourage critical thinking and reflection, and should be tailored to your specific interests.

Readings: The required course text, "Sustainability Science", argues that sustainability is a transformative process. The full reference for the text is:

König, Ariane. 2017. *Sustainability Science: Key Issues in Environment and Sustainability.* Routledge: London and New York.

This text is not available in the UW bookstore. However, it is easily purchased (and more cheaply) as an e-book at the publishers website at: https://www.routledge.com/Sustainability-Science-Key-Issues/Konig-Ravetz/p/book/9781138659285

You may seek to obtain the paperback version (either via the publishers website or Amazon) but if you do, please confirm that it will be delivered quickly.

Supplementary readings are listed in the course schedule (below), and they are accessible through the course LEARN site or via the UW Library. Readings (course text and supplementary articles) will focus on selected 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 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: Evaluation in this course is built around three main assignments and tutorial activities. The main assignment includes independent components each of which is linked.

(1) Theory of change: 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 your theory of change in the context of an issue that is of particular interest to you. Further details on these assignments and their due dates will be made available. To facilitate your efforts, we will approach the theory of change through a series of phases:

Phase I: Defining your 'wicked' sustainability problem of interest (e.g., focal point and future scenarios / aspirations, and framing) (25%)

Phase II: Coalitions and strategies for sustainability (e.g., interventions, drivers and leverage points for change – coalitions, behaviours and governance responses) (25%)

Phase III: Communicating and synthesizing your theory of change (e.g., learning for change, negotiating power, and bringing it all together) (25%)

(2) Tutorial participation and short responses (25%)

Each tutorial is designed to help you progress with, or to provide you with, material for your major assignment – your 'theory of change'.

There are five (5) concise tutorial 'responses' required (see schedule for tutorial 'discussions' – each of these will be the basis of a response due one week later and submitted on LEARN). Each response is worth 5%. However, the best four of these will be the basis of your mark (20%).

A further 5% will be allocated by the TA for participation (i.e., attendance, substantive contribution to tutorial discussions and activities).

SERS 400 (2019)

Week	Dates and Lecture Themes	Tutorial Activity	Readings/Resources
1	January 7: Course introduction (protect, restore, reform and transform)	No tutorials	Chapter 1, 3 (course text) Ripple et al. 2017; Bull et al. 2017
2	January 14: Building your 'theory of change' for sustainability	Tutorial meet and greet	Chapter 3, 18 (course text) James 2011; Taplan and Clark 2012
3	January 21: Sustainability as a 'wicked problem'	*Mini-Workshop*: Theory of Change Phase I	Chapter 8, 5 (course text) Rittel and Weber, 1973; Filbee-Dexter et al. 2017;
4	January 28: Sustainability frames and you	*Discussion*: Seeing yourself in sustainability challenges	Chapter 4 (course text) Ommer 2018; Clark and Wallace 1999;
5	February 4: Visions and scenarios of our social-ecological future(s)	*Discussion*: Visioning the future	Chapter 6 (course text) Merrie et al. 2017; IPBES 2016
6	February 11: Science, policy and coalitions for change	*Mini-Workshop*: Theory of Change Phase II	Chapter 2, 14 (course text) Citanovic et al. 2017; Hall et al. 2008; McKibben 2018 Guest panel on 'Creating Coalitions for Change'
7	February 18 – Reading week		
8	February 25: Strategies for sustainability - behavioural change	*Discussion*: Strategies for a good anthropocence	Chapter 19 (course text) Cinner 2018; Fischer et al. 2012.

9	March 4: Strategies for sustainability – governance and policy	*Workshop*: Theory of Change Phase III	Chapter 1, 19 (course text) Armitage 2008; Clark, 2016
10	March 11: Learning and communicating for sustainability	*Discussion*: Learning through change and uncertainty	Chapter 1, 15, 16 (course text) Pinter 2013; This American Life Podcast 2007
11	March 18: Power and sustainability	*Discussion*: What is power and why does it matter?	Chapter 17 (course text) Raik et al. 2006; Brisbois et al. 2015;
12	March 25: Seeds of a 'Good Anthropocene'	*Drop-in session*: Questions, concerns about final assignment	Bennett et al. 2016; Tallis et al. 2018; Heinberg 2018
13	April 1: Wrap-up	No tutorials/labs	

**Blue (Phase I Assignment) | Orange (Phase 2 Assignment) | Green (Phase 3 Assignment)

Supplementary Readings

Week 1: Introduction

Ripple et al. 2017. World Scientists' Warning to Humanity: A Second Notice. *BioScience* 67(12): 1026-1028.

Bull et al. 2017. Available at https://www.iccs.org.uk/blog/when-ripple-becomes-flood-why-we-didnt-sign-ripple-et-als-world-scientists-warning-humanity

Week 2: Theory of change

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

James, C. 2012. *Theory of Change Review*. Report commissioned for Comic Relief. 31 pp.

Week 3: Sustainability as a wicked problem

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

Filbee-Dexter et al. 2017. Ecological surprise: concept, synthesis and social dimensions. *Ecosphere* 8(12): 1-12.

Week 4: Sustainability frames and you

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

Clark, T.W., and Wallace, R.L. 1999. The professional in endangered species conservation: an introduction to standpoint clarification. *Endangered Species Update* 16(1): 9.

Week 5: Visions and scenarios

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

IPBES. 2016. The methodological assessment report on scenarios and models of biodiversity and ecosystem services: Summary for policy makers. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany. 32pp.

Week 6: Science, policy and coalitions for change

Citanovic, C., McDonald, J .and A. Hobday. 2016. From Science to Action: Principles for undertaking environmental research that enables knowledge exchange and evidence-based decision-making. Journal of Environmental Management. 183: 864-874.

Hall, K.L., Feng, A.X., Moser, R.P., Stokois, D., and Taylor, B.K. 2008. Moving the science of team science forward: collaboration and creativity. *American Journal of Preventative Medicine* 35(2): S243-S249.

McKibben, B. Nov, 2018. *How extreme weather is shrinking the planet.* The New Yorker

Week 7: Reading week

Week 8: Strategies for sustainability - behavioural change

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 9: Strategies for sustainability – governance and policy

Armitage, D. 2008. Governing the commons in a multi-level world. *International Journal of the Commons.* 2(1): 7-32.
Clark, S. 2016. A guide to making policy in the common interest: principles for sound policy making. *Mosaic Magazine*: 64-70.

Week 10: Learning for sustainability

Pinter, L. 2013. *Measuring Progress Towards Sustainable Development Goals.* International Institute for Sustainable Development Working paper.
This American Life [Podcast]. Jan, 2007. My brilliant plan. https://www.thisamericanlife.org/324/my-brilliant-plan

Week 11: Power and sustainability

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.
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.

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.
Heinberg, R. 2018. As climate changes, we need the arts more than ever. ENSIA. https://ensia.com/voices/arts/
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

Week 13: Wrap-up

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.