

SMEA 550C
WINTER 2021
Wednesdays 12:30-2:20, PST on Zoom

The theory and practice of linking knowledge with action to address modern environmental challenges

Instructors: Mary Ann Rozance rozance@uw.edu
Office Hours by Appointment

Course Description

Meeting modern environmental challenges requires new perspectives, approaches, collaborations, and knowledge – and new ways of linking scholarship with society. This two-credit, reading and discussion-based seminar will explore the theory and practice of linking knowledge with action in support of progress on critical environmental challenges. Concepts will be illustrated using examples from efforts to inform societal responses to climate change. We will review both foundational and emerging literature on topics including:

- Defining and developing actionable science
- Integrating across multiple disciplines and sectors to incorporate extra-scientific knowledge to address societal problems (transdisciplinary research)
- Collaborating with non-academic communities to generate societally relevant information (knowledge co-production)
- Facilitating the transfer of knowledge from science producers to users (knowledge brokering)
- Groups that facilitate the exchange of information between science and society (boundary organizations)
- Ethical considerations in actionable science
- Defining and evaluating success in linking knowledge to action

Students will be expected to come to weekly meetings prepared to actively discuss reading assignments, and to participate in the course's online discussion board. Credit/no-credit only.

Course Structure

This seminar is a 2-credit course, meeting once-weekly for one hour and fifty minutes. Students will review each paper and address each other's questions through a mix of small and large group discussion and by posting to the course discussion board. Students will be assigned to groups to co-lead one discussion during the course.

Course Readings

All required readings, podcasts and videos will be posted to Canvas one week in advance for each class. Readings and materials on syllabus are subject to change but will be confirmed one week prior.

Weekly Reflection Posting to Canvas Discussion Board

Students are required to submit a reflection post to the Canvas discussion board by **10 AM every Wednesday**, before class.

The reflection post must include:

1. A short paragraph discussion about something you find interesting about the reading(s) and how the reading relates to your work/research (minimum 5 sentences)
2. One discussion question related to the reading(s) OR One question for guest expert
3. Comment on one other student's posting

Co-Lead Class *Breakout* Discussion

Students will be responsible for coordinating with the instructor and leading seminar discussions. Each student will be assigned to a group that will work as a team to design and lead a discussion for a specific week. The assigned group guides the discussion to convey key points of the required articles, define key terms, and pose discussion questions or activities.

Groups are welcome to use whatever discussion format they want including slides, small group or large group discussion, or other activities. Students are strongly encouraged to use small breakout rooms along with some form of notetaking where all groups can view each other's discussion (e.g. Mural.co, Google Docs). Student discussion leaders are encouraged to review the Canvas discussion board to see how the class is thinking about the reading(s).

Groups are required to consult with the instructor about their proposed discussion plan by the Monday afternoon of the week they lead the discussion (either email or scheduled meeting is fine). This is to cover logistics and timing as the online format can create new challenges for discussion-based courses.

Here are two helpful resources to prepare for leading a discussion, more formal guidance will be shared during the first week of class:

<https://apps.carleton.edu/curricular/history/resources/study/leaddiscussion/>

<https://teachingcommons.stanford.edu/resources/teaching-resources/teaching-strategies/how-lead-discussion/discussion-leading-guidelines>

Guests from the Field

Most of the weeks we will have experts from the field join for the second half of class. These guests will have time set aside to introduce themselves and their work. Groups leading a discussion with outside guests will be informed prior and can work with the course instructor to discuss ways to integrate them into the discussion.

Course Grading

Full credit will be given for consistent preparation, leading a group discussion, and active participation in discussions and the class discussion board.

Course Schedule

Below is the expected schedule of topics/readings; however, these may be adjusted due to reordering of topics, special guest speakers, or late-breaking topics/readings.

Week/Date	Topic/Readings
1. 1/6	Foundation and Introduction: <i>*Complete this reading before class</i>

	<p>Stokes, Donald. 1998. Completing the Bush Model: Pasteur's Quadrant. Lubchenco, Jane. 1998. Entering the Century of the Environment</p> <p><i>For further reading:</i> Science The Endless Frontier: A report to the President by Vannevar Bush, Director of the Office of Scientific Research and Development, July 1945 Saving Science by Daniel Sarewitz in The New Atlantis: A Journal of Technology and Society</p>
2. 1/13	<p>Conceptual models of the linkages between research-based knowledge and action Focus on: Van Kerkhoff and Lebel. 2006. Linking Knowledge and Action for Sustainable Development Read and Reflect: King, L., & Tadaki, M. 2018. A framework for understanding the politics of science. In R. Lave, C. Biermann, & S. Lane (Eds.), Handbook of critical physical geography. Optional Video: Accelerating Collective Learning and Action for Enhanced Resilience- Panel with scientists and managers https://www.youtube.com/watch?v=8uKQ77FsxdY</p> <p><i>For further reading (referenced in Van Kerkhoff and Lebel 2006):</i> Scott, J. 1998. <i>Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed</i> Jasanoff and Long Martello. 2001. <i>Earthly Politics: Local and Global in Environmental Governance.</i> Bocking, S. 2004. <i>Nature's Experts: Science, Politics and the Environment</i></p>
3. 1/20	<p>Managing boundaries between knowledge and action Cash, D.W. et al. Knowledge systems for sustainable development. PNAS 2003. Gieryn, T.F. Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists. 1983. American Sociological Review.</p> <p><i>For further reading:</i> Sarkki, et al. 2013. Balancing credibility, relevance and legitimacy: a critical assessment of trade-offs in science-policy interfaces. Science and Public Policy</p> <p><i>Guest:</i> Guillaume Mauger, Research Scientist, Climate Impacts Group</p>
4. 1/27	<p>Useful Science Lemos, M.C., et al. 2012. Narrowing the Climate Information Usability Gap. Beier et al. 2017. A how-to guide for coproduction of actionable science. Watch video: How Do Policymakers Access and Use Evidence to Address Complex Problems? https://vimeo.com/373169680</p> <p><i>For further reading:</i> Kirchhoff, C.J. et al. 2013. Actionable knowledge Cvitanovic, et al. 2015. Overcoming Barriers to knowledge exchange for adaptive resource management</p>

	<p>Guest: Ronda Strauch, Climate Change Researcher and Adaptation Advisor, Seattle City Light</p>
<p>5. 2/3</p>	<p>Transdisciplinarity and Unequal Power Lang et al. 2012. Transdisciplinary research in sustainability science Alonso-Yanez et al. 2019. Mobilizing transdisciplinary collaborations: collective reflections on decentering academia in knowledge production. Kūlana Noi'I Document, Hawaii Sea Grant Watch Video: Co-Producing Tribal Resources for Climate Change Vulnerability Assessment, https://nwcasc.uw.edu/resources/actionable-science-webinars/</p> <p><i>For further reading:</i> Pohl et al. 2017. Ten reflective steps for rendering research societally relevant. Indigenous Science Declaration for the March for Science Norstrom et al. 2020. Principles for knowledge co-production in sustainability research</p> <p>Guest Expert: Meade Krosby, Senior Scientist, Climate Impacts Group/Deputy Director, NW CASC</p>
<p>6. 2/10</p>	<p>Community Representation in Actionable Science Arnstein, S. 1969. A ladder of citizen participation. <i>J. Am. Inst. Plan.</i> 35: 216-24. Turnhout, E. et al. 2020. The politics of co-production: participation, power, and transformation. Stroble, J., S. Rahman (eds.), and the Climate Equity Community Task Force. Section II: Sustainable & Resilient Frontline Communities. In: King County 2020 Strategic Climate Action Plan.</p> <p><i>For further reading:</i> Schell et al. 2020. The ecological and evolutionary consequences of systemic racism in urban environments. Spectrum of Community Engagement to Ownership (1-page) An Unfair Share, CIG Report from the Front and Centered Work (Executive Summary, Chapter 1, Chapter 2 (pages 1-14), skim remainder) Our People, our planet, our power (Executive Summary, Introduction, & Methods (pages 3-16), skim remainder)</p> <p>Guest: Jamie Stroble, Climate Director, The Nature Conservancy of Washington</p>
<p>7. 2/17</p>	<p>Science Communication and Knowledge Brokering Turnhout, E., et al. 2013. New Roles of Science In Society: different repertoires of knowledge brokering Snover, A.K., C.L. Raymond, H.A. Roop, H. Morgan, 2019. No Time to Waste. Briefing paper prepared by the Climate Impacts Group, UW, Seattle. (skim) Identify and share an actionable science product</p> <p><i>For further reading and viewing:</i> Michaels, S., 2009. Matching knowledge brokering strategies</p>

	<p>Watch video: What Can Successful Communication Look Like in Actionable Science? Examples from the Climate Adaptation Science Centers, https://nwcasc.uw.edu/resources/actionable-science-webinars/</p> <p>Guest Expert: Crystal Raymond, Adaptation Specialist Climate Impacts Group</p> <p>Learning Objectives: Understand different mechanisms and roles of communicating science; Identify at least 1 example of an effective science communication strategy and why it was effective</p>
8. 2/24	<p>Ethical Considerations in Actionable Science</p> <p>Watch video: Improving ethical practice in transdisciplinary research Projects https://nwcasc.uw.edu/resources/actionable-science-webinars/</p> <p>C.A.R.E. Principles for Indigenous Data Governance</p> <p>Wynecoop, M.D. <i>et al.</i> 2019. Getting back to fire <i>sumés</i>: exploring a multi-disciplinary approach to incorporating traditional knowledge into fuels treatments.</p> <p>Listen: Monique Wynecoop, Fire Ecology Chat: https://fireecology.org/feco-podcast/4 (7 min)</p> <p><i>For further reading and listening:</i></p> <p>Chief, Meadow, and Whyte. 2016. Engaging southwestern tribes in sustainable water resources topics and management</p> <p>Guidelines for Considering Traditional Knowledges in Climate Change Initiatives Fourth National Climate Assessment, Chapter 15: Tribes and Indigenous Peoples https://nca2018.globalchange.gov/chapter/15/</p> <p>Best practices for collaborative climate adaptation research between tribal and non-tribal partners https://nwcasc.uw.edu/resources/actionable-science-webinars/</p> <p>NW CASC 2020 Deep Dive Keynote Address by Monique Wynecoop (https://vimeo.com/468420310)</p> <p>Guest: Monique Wynecoop, Fire Ecologist and Tribal Liaison, US Forest Service</p>
9. 3/3	<p>Evaluation and Societal Impacts of Actionable Science Efforts</p> <p>Muhonen, R., Benneworth, P., & Olmos-Peñuela, J. (2020). From productive interactions to impact pathways: Understanding the key dimensions in developing SSH research societal impact. <i>Research Evaluation</i>.</p> <p>Edwards, D. M., & Meagher, L. R. (2020). A framework to evaluate the impacts of research on policy and practice: A forestry pilot study. <i>Forest Policy and Economics</i>.</p> <p>"Room for everyone's talent: towards a new balance in the recognition and rewards of academics"</p> <p><i>For further reading:</i></p> <p>Wall et al. 2017. Developing Evaluation Indicators to improve the Process of co-producing usable Climate Science.</p> <p>Guest: Alison Meadow, Associate Research Professor, University of Arizona</p>
10: 3/10	<p>Boundary Spanning and the Role of Boundary Organizations</p> <p>Parker, J. And Crona, B. 2012. On being all things to all people: Boundary organizations and the contemporary research university</p>

	<p>Norström, A.V. et al. 2020. Principles for knowledge co-production in sustainability research.</p> <p><i>For further reading:</i> Buizer, J., Jacobs, K., & Cash, D. 2016. Making short-term climate forecasts useful: Linking science and action Guston, D.H. 2001. Boundary organizations</p> <p><i>Guest:</i> Amy Snover, Director Climate Impacts Group/University Director NW CASC</p>
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Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy \(https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/\)](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form \(https://registrar.washington.edu/students/religious-accommodations-request/\)](https://registrar.washington.edu/students/religious-accommodations-request/)