
EVPP 336 | Tackling *Wicked* Problems in Society & the Environment

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[+ Graduate student name & contact
information]

Class Schedule: Monday lectures, 1:30 pm -
2:45 pm; recitation sections, days and times as
assigned

Location(s): TBD

Office Hours: Email to schedule; Fridays, 10
am-noon or at other times by appointment

Course description and objectives

The search for scientific bases for confronting problems of social policy is bound to fail, because of the nature of these problems. They are "wicked" problems, whereas science has developed to deal with "tame" problems.
— Horst W. J. Rittel & Melvin M. Webber (1973)

In 1973, Rittel and Webber wrote a seminal paper with the enigmatic title, “Dilemmas in a general theory of planning.” In this article—which has now been cited almost 23,000 times—they introduced the concept of “wicked problems,” in which there is no definitive formulation of the problem or solution. Because these problems are characterized by complexity, uncertainty, and divergence of human values and viewpoints, they are prone to becoming mired in controversy and failures of governance. Unfortunately, many of our most pressing global social and environmental issues today—ranging from climate change and biodiversity loss to food insecurity and environmental injustice—fall into this category. To understand the nature of these problems, we must understand the systems from which they arise and their dynamics. This course introduces some of the foundational literatures on wicked problems, systems thinking, and collective governance. Over the term, students will:

1. Characterize what constitutes a wicked problem
2. Describe basic elements of systems and their dynamics
3. Identify how different human perspectives and values relate to preferences for solutions across varying scales and global contexts
4. Assess social, environmental, and economic dimensions of current problems, including equity and justice, for the purpose of making policy recommendations
5. Use research to illuminate pathways for social change

These learning outcomes address educational goals that are relevant both to Mason Impact and the Mason Core: Mason Impact + Civic Engagement and Community Learning, Global Contexts, and Just Societies. Each of their specific learning outcomes are further described below.

Mason Impact (Impact + Civic Engagement and Community Learning, CECiL)

This course takes a problem-based learning approach. During the term you will engage in two projects that will require thinking through the lens of socio-ecological systems in order to diagnose human-environment interactions at various scales. For each project, you will prepare a report/memo on the topic, analyzing possible approaches, and present it. You will be required to base your research on citations that are of sufficient quality that they could be used by a decision-maker in credibly making the claim to others. Small group discussions in your recitation sections, and invited speakers, will support you as you research and write the assignments. Through these course components, the following learning outcomes will be met:

1. [MI-O1] Understanding how to conduct research and use knowledge to address societally important socio-environmental issues;
2. [MI-O2] Exploring people's differing worldviews and ways of knowing, and being able to relate how they affect their preferences for individual and collective responses;
3. [MI-O3] Engaging in inquiry about socio-environmental challenges as "wicked problems" in a series of increasingly challenging assignments.

Global Contexts

As human societies have become increasingly interconnected, rising needs for energy, food, and natural resources are met through global supply chains with worldwide environmental impacts. These socio-ecological systems are connected across both temporal and geographic scales. In order to understand how these systems function—and assess levers of change—we must consider how interactions across local, national, transnational, and global scales may affect outcomes for people and the ecosystems on which they depend. As you conduct the three course projects, you will be prompted to think about the ways in which a globally interconnected world changes the nature of the societal challenges that we face and contemplate our own roles within it. During the term, you will:

1. [GC-O1] Identify and explain how socio-environmental interconnections across the globe can affect natural resource use and societal conditions, such as equity and environmental justice.
2. [GC-O2] Demonstrate knowledge of how global contexts can affect phenomena within communities and specific socio-environmental systems.

3. [GC-O3] Apply an understanding of the experiences, perspectives, values, and expertise, or positionality, that you bring in analyzing solutions to global socio-environmental problems, such as climate change and biodiversity loss.

Just Societies

“Wicked problems” cannot be solved by technocratic solutions alone—they require consideration of the values and perspectives of the people who are involved and/or will be impacted. Throughout the class we will discuss the conditions under which environmental injustices can arise and how to develop decision-making processes that are more likely to be inclusive and considered fair and legitimate. As you consider the dynamics of socio-ecological systems, and their actors and governance, you will:

1. [JS-O1] a) Relate how environmental justice has been defined in federal policy and by differing communities;
b) Use those terms to engage meaningfully with peers about course issues.
2. [JS-O2] Articulate obstacles to environmental justice, and strategies for addressing them, in response to socio-environmental issues at different scales of governance.

Course structure

The class is divided into lecture sessions, held on Mondays, and weekly recitation sections. The recitation sections are designed to provide students with an opportunity to participate in more interactive hands-on exercises and discussions.

Assignments and grading

You will have three large graded assignments plus weekly questions to answer on the Discussion Board in Blackboard. Together, these assignments will constitute your grade for the term. You will be given a rubric prior to each assignment that details all required components and their associated point value. Extra credit opportunities in which you can earn up to 5 percentage points will also be available.

Assignment 1: Comparison of socio-ecological case studies

The goal of this first assignment is to introduce you to the many ways that different peoples govern natural resources across the globe within the context of global environmental and societal changes, such as climate change and increasing natural resource needs. You will search Arizona State University’s global database of case studies of socio-ecological systems (<https://seslibrary.asu.edu/case>) and select two focused on a similar natural resource, such as forests or fisheries. You will compare and contrast the different systems and forms of governance, and determine whether they support Ostrom’s rules for managing the commons.

Assignment 2: Exploring human-environment interactions on Mason's Fairfax campus

As a class, we will explore how and where Mason students, faculty, and staff interact with their environment—both the things that we can see (recycling and waste) and aspects that can be less visibly apparent (air and water pollution). Even locally experienced phenomena—such as campus extreme heat, food insecurity, and plastic waste—have their roots in globally interconnected socio-ecological systems. Both in individual written assignments and working with your recitation section group, you will map the social, environmental, economic, and equity implications of an interaction on campus between people and the environment, as well as the different stakeholders who are involved and their perspectives. You will submit individual work for the project and work with a team of fellow students to write and present your assessment for the university's Facilities staff.

Assignment 3: Writing a memo on environmental policy approaches

In the final assignment, you will consider the function and governance of socio-ecological systems within the Commonwealth of Virginia. You will research a current environmental challenge and its socioeconomic, equity, and global dimensions for the purpose of making policy recommendations to an elected official. The class will meet with the representative or their staff member during a class period in which you will contribute to the discussion of the policy issue. You will also condense your argument into an elevator speech that you will deliver to your instructor and fellow students in class.

Grade distribution overview

1	Comparison of socio-ecological case studies	15%
2	Mason's human-environment interactions	25%
3	Environmental policy memo	25%
4	Recitation section assignments/questions	35%
*	[<i>Extra credit, TBD (Field trips)</i>]	5%

Loss of points

Please watch for emails from the instructor in regard to preparation for upcoming classes, and please attend all classes. Lack of preparation for class may incur loss of points.

Attending class is vital to your success in the course. One unexcused absence is permitted. Failure to attend more than one class will result in a loss of 1 point per class period. If you have a medical—or other—reason for missing class, please provide a letter from your physician or equivalent. If you face difficulties in attending class, please let me know.

Grades

Your final letter grade will be assessed based on the total points you have accumulated through completing the assignments. Grades will not be curved.

A+	97-100	B+	87-89	C+	77-79	D	65-69
A	93-96	B	83-86	C	73-76	F	0-64
A-	90-92	B-	80-82	C-	70-72		

Course Schedule (subject to change)

Week	Date	Topics	Readings & Assignments
Week 1	Aug. X lecture; Aug. X recitation sections	<ul style="list-style-type: none"> • Introductions • Course overview • Envisioning just, sustainable futures 	<p><i>Reading due Monday: None</i></p> <p><i>Reading due Wednesday:</i> Editors. (2020). Imagine a world without hunger, then make it happen with systems thinking. <i>Nature</i>, 577(7790), 293–294. Wyborn, C., Davila, F., Pereira, L., Lim, M., Alvarez, I., Henderson, G., Luers, A., Martinez Harms, M. J., Maze, K., Montana, J., Ryan, M., Sandbrook, C., Shaw, R., & Woods, E. (2020). Imagining transformative biodiversity futures. <i>Nature Sustainability</i>, 3(9), 670–672.</p>
Week 2	Aug. X lecture; Aug. X recitation sections	<ul style="list-style-type: none"> • Wicked problems 	<p><i>Reading due Monday:</i> Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. <i>Policy Sciences</i>, 4(2), 155–169. Head, B. W. (2022). <i>Wicked problems in public policy</i>. Springer. — Chapter 2: The rise of ‘wicked problems’-Uncertainty, complexity, and divergence</p>
Week 3	(<i>Labor Day</i>); Sept. X lecture	<ul style="list-style-type: none"> • Socio-ecological systems 	<p><i>Reading due Wednesday:</i> Folke, C., Biggs, R., Norström, A., Reyers, B., & Rockström, J. (2016). Social-ecological resilience and biosphere-based sustainability science. <i>Ecology and Society</i>, 21(3).</p>

			Ostrom, E., & Cox, M. (2010). Moving beyond panaceas: A multi-tiered diagnostic approach for social-ecological analysis. <i>Environmental Conservation</i> , 37(4), 451–463.
Week 4	Sept. X lecture; Sept. X recitation sections	<ul style="list-style-type: none"> • Governing the commons • Scales of governance 	<p><i>Reading due Monday:</i></p> <p>Ostrom, E. (2015). Reflections on the commons. In <i>Governing the commons: The evolution of institutions for collective action</i>. Cambridge University Press.</p> <p>Ostrom, E. (2010). Polycentric systems for coping with collective action and global environmental change. <i>Global Environmental Change</i>, 20(4), 550–557.</p>
Week 5	Sept. X lecture; Sept. X recitation sections	<ul style="list-style-type: none"> • Systems dynamics, Part I 	<p><i>Reading due Monday:</i></p> <p>Meadows, D. H. (2009). <i>Thinking in systems: A primer</i> (D. Wright, Ed.). London, UK: Earthscan.</p> <p>— Chpt 1: The basics</p> <p>— Chpt. 2: A brief visit to the systems zoo</p>
Week 6	Sept. X lecture; Sept. X recitation sections	<ul style="list-style-type: none"> • Systems dynamics, Part II 	<p><i>Reading due Monday:</i></p> <p>Meadows, D. H. (2009). <i>Thinking in systems: A primer</i> (D. Wright, Ed.). London, UK: Earthscan.</p> <p>— Chpt 5: System traps ... and opportunities</p> <p>— Chpt. 6: Leverage points</p>
Week 7	Oct. X lecture;	<ul style="list-style-type: none"> • Ways of knowing 	<i>Due Oct. X before class—</i>

 Oct. X recitation sections

- **Action research**

Assignment 1: Comparison of socio-ecological case studies

Reading due Monday:

Brown, V. A. (2010). Collective inquiry and its wicked problems. In *Tackling wicked problems* (pp. 61–83). Routledge.

Ison, R. (2008). Systems thinking and practice for action research. In P. Reason & H. Bradbury (Eds.), *The Sage handbook of action research: Participative inquiry and practice (2nd ed)*. SAGE Publications.

 Week 8

 Oct. X lecture
(note, Tuesday);
Oct. X recitation sections

- **Environmental movements**
Social change

Reading due Monday:

Rootes, C. (2007). Environmental movements. In D. A. Snow, S. A. Soule, & H. Kriesi (Eds.), *The Blackwell Companion to Social Movements* (pp. 608–640). Oxford, UK: Blackwell Publishing.

Crutchfield, L. R. (2018). *How change happens: Why some social movements succeed while others don't*. Newark, NJ: John Wiley & Sons.

— Introduction: How change happens

 Week 9

 Oct. X lecture;
Oct. X recitation sections

- **Justice**

Reading due Monday:

Bullard, R. D. (2020). From civil rights to Black Lives Matter. In M. Mascarenhas (Ed.), *Lessons in environmental justice: From civil rights to Black Lives Matter and idle no more*. Sage.

Gilio-Whitaker, D. (2019). *As long as grass grows: The Indigenous fight for environmental justice, from colonization to Standing Rock*. Beacon Press.
 — Chapter 1: Environmental justice theory and its limitations for Indigenous peoples

Week 10 Oct. X lecture;
 Oct. X recitation sections

- **Systems in policy analysis and policymaking**

Reading due Monday:
 Dunn, W. N. (2017). Policy analysis in the policymaking process. *In Public policy analysis: An integrated approach* (6th ed.). Routledge.
 Robertson Munro, F., & Cairney, P. (2020). A systematic review of energy systems: The role of policymaking in sustainable transitions. *Renewable and Sustainable Energy Reviews*, 119, 109598.

Week 11 Oct. X lecture;
 Nov. X recitation sections

- **Approaches to policymaking and public management**

Due Nov. X before class—Assignment 2: Exploring human-environment interactions on Mason’s Fairfax campus

Reading due Monday:
 OECD. (2017). Chapter 1. Systems approaches in the public sector: From theory to practice. *In Systems approaches to public sector challenges: Working with change*. OECD.
 Verweij, M., & Thompson, M. (Eds.). (2006). The case for clumsiness. *In Clumsy solutions for a complex world: Governance, politics and plural perceptions*. Springer.

Week 12	Nov. X lecture; Nov. X recitation sections	<ul style="list-style-type: none"> • Policy memo project • Presentations to University Sustainability 	No reading
Week 13	Nov. X lecture; Nov. X recitation sections	<ul style="list-style-type: none"> • Motivating social change 	<p><i>Reading due Monday:</i> Crutchfield, L. R. (2018). <i>How change happens: Why some social movements succeed while others don't</i>. Newark, NJ: John Wiley & Sons.</p> <ul style="list-style-type: none"> — Chapter 1: Turn grassroots gold — Chapter 2: Sharpen your 10/10/10/20 = 50 vision — Chapter 3: Change hearts and policy
Week 14	Nov. X lecture; <i>Thanksgiving break</i>	<ul style="list-style-type: none"> • Socio-ecological systems of the future 	<p><i>Reading due Monday:</i> Crawford, K. (2021). <i>The atlas of AI: Power, politics, and the planetary costs of artificial intelligence</i>. Yale University Press.</p> <ul style="list-style-type: none"> — Introduction (Everyone) — Chapter 1: Earth (Everyone) — Pick one or more other chapters of your choice (Chapters 2-6)
Week 15	Nov. X lecture; Nov. X recitation sections	<ul style="list-style-type: none"> • Memo elevator speech presentations 	<p><i>Due Nov. X before class—Assignment 3: Writing a memo on environmental policy approaches</i></p> <p>No reading</p>

Week 16 Wed., Dec. X • **Policy memo discussions** **No reading**
*(final exam time;
1:30 pm – 4:15 pm)*

Possible syllabus changes

As the instructor, I reserve the right to make changes to the syllabus. Students will be given ample notice regarding any major changes to the course plan.

Late assignments

Assignments turned in late will be penalized by deducting 5% from the total points for each day it is late.

Gender identity and pronoun use

If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use “she/her/hers” for myself. You may address me as “K. L.” or “Dr./Prof. Akerlof” in email and verbally. Mason provides tools to change your name and pronouns on Mason records, see <https://registrar.gmu.edu/updating-chosen-name-pronouns/>.

Course materials and student privacy

I will not be video recording the classes except in rare instances. However, the PPTs from each meeting will be available on Blackboard. All course materials posted to Blackboard or other course sites are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

- Video recordings of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class
- Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class.

General

This course adheres to all university policies described in the academic catalog. Please pay close attention to the following policies:

- **Students with disabilities**
Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union

Building I, Suite 2500 or can be reached at ods@gmu.edu or (703) 993-2474.

- **Diversity and inclusion**

One of the goals for the course is to create a learning environment that fosters respect for people across identities. As a class, we welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

- **Academic integrity: Mason's Honor Code**

At George Mason University, Academic Integrity is demonstrated in our work, community, the classroom and research. We maintain this commitment to high academic standards through Mason's Honor Code. It is an agreement made by all members of our community to not "cheat, steal, plagiarize, or lie in matters related to your academic work." Students sign an agreement to adhere to the Honor Code on their application for admission to Mason and are responsible for being aware of the most current version of the code.

The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using the appropriate format for this class. A simple listing of books or articles is not sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting.

If you have any doubts about what constitutes academic integrity, please see me or

view Mason's Academic Integrity Training Module at https://oai.gmu.edu/trainingmodule/story_html5.html.

- **Academic integrity: Use of AI text-generation tools**
Any text generated by an artificial intelligence (AI) text-generation tool (such as ChatGPT) is not accepted in this class as “the student’s own work,” and so will be considered similarly to text published on paper or online or text composed or significantly edited/altered by another person. The use of such text without proper attribution is a violation of academic integrity.
- **Dropping the course**
You are responsible for understanding the university’s policies and procedures regarding withdrawing from courses found in the current catalog. You should be aware of the current deadlines according to the [Academic Calendar](#).
- **Email**
All course information will be sent to your George Mason University email account, including changes to the class schedule due to weather conditions. Students must use their Mason email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.
- **Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking**
George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote community well-being and student success. We encourage students and employees who believe that they have been sexually harassed, sexually assaulted or subjected to sexual or interpersonal misconduct to seek assistance and support. University Policy 1202: Sexual Harassment and Misconduct speaks to the specifics of Mason’s process, the resources, and the options available to students and employees.

As a faculty member, I am designated as a “Non-Confidential Employee,” and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, stalking, sexual exploitation, complicity, and retaliation to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance or



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support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.