SENV 3301A: Wicked Problems in Environmental Policy

Course description: Wicked problems, as formulated by Rittel and Weber (1973), defy technical solutions, foster inherent conflict among numerous stakeholders, persist indefinitely and are characterized by a high degree of uncertainty among other challenges. Furthermore, those charged with addressing these challenges have no right to make mistakes as they attempt management, because even well-intentioned errors often hold severe consequences. Environmental challenges at the global and local scales often illustrate these traits. This course will explore several wicked environmental problems including wildlife poaching and trafficking, management of hazardous industrial pollutants and invasive species spread prevention, among other dilemmas. As we examine these problems we will learn about and assess the potential of a variety of policy frameworks to reduce the intractability of these issues. Examples of some of the approaches we will learn about are adaptive management, precautionary principle, frame analysis and risk assessment.

Learning objectives: We will pursue five learning objectives:
- Identify and elaborate on the characteristics of wicked problems;
- Analyze the environmental, social, political and economic features of several wicked problems and construct evidence-based critiques of the conventional policy and management proposals used to address these challenges;
- Describe the principles and roles of systems thinking, frame analysis, adaptive management, structured decision making, the precautionary principle and other innovative policy and planning approaches to management of wicked problems;
- Demonstrate how new perspectives, tools and techniques for managing wicked problems could be used to raise awareness and improve management of these complex problems;
- Build and apply collaborative problem solving.

Instructor: Dr. Curt Gervich. Cgerv001@plattsburgh.edu. 540-818-1896.
I am an associate professor in SUNY Plattsburgh’s Center for Earth and Environmental Science. I hold a master’s degree in Natural Resource Planning from the University of Vermont and a PhD in Environmental Planning and Design from Virginia Tech. Within the realm of environmental planning my research and teaching interests are in environmental leadership, decision making and moving beyond conflict. I study these themes as they relate to municipal energy planning, sustainable agriculture and watershed planning, among other topics. At SUNY

Course structure: This course contains three concurrently running activities. On any given day we will take part in activities that address these three areas:

- **Problem analysis case studies** - through a series of in-class and out-of-class activities we will collaboratively research and deconstruct several wicked problems including wildlife trafficking and poaching, hazardous industrial pollution and carbon emissions among others.
- **Theory-to-practice discussion** - we will read about and critique historical and conventional methods for managing wicked problems, and compare these approaches to a variety of innovative theoretical frameworks and policy proposals that environmental professionals believe offer improved opportunities for addressing pervasive and insidious environmental challenges.
- **Application of skills** - We will discuss and assess the potential application of the theoretical frameworks we learn about to a variety of wicked problems. Our skill development will culminate in development of educational games that address aspects of a particular wicked problem: India’s sanitation crisis.

Readings: The following readings will be provided. Additional readings will be identified by students and the instructor throughout the term. There is no textbook for the course.

<table>
<thead>
<tr>
<th>Date</th>
<th>Case Study Research</th>
<th>Theoretical Frameworks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3. <em>Innocentive Game Challenge</em>- <em>Wash Away Mobile Game Challenge</em>. UBS Optimus Foundation. <em>(in class)</em></td>
</tr>
<tr>
<td>Date</td>
<td>Assignment 1</td>
<td>Assignment 2</td>
</tr>
<tr>
<td>------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
Assessment: Students will be assessed in three ways (detailed instructions and rubrics will be provided):
1. **Weekly assignments (40%)** - you will have the opportunity to elaborate and apply the theoretical frameworks we explore through a variety of weekly writing assignments.
2. **Game project (40%)** - students will work in teams to create a game that raises awareness about a wicked problem. This term all teams will address *India’s sanitation and toilet crisis*. Your games should illustrate the characteristics of this challenge that foster wickedness, and provide an opportunity for participants to investigate management options for this issue. Additionally, your games should be based on evidence and accurately represent the scope and complexities of the dilemma.
3. **Participation in class discussion and activities (20%)** - to have a demanding, professional and thought-provoking experience will require focused and rigorous participation by all. Therefore a portion of your grade will be based on participation. I will assess participation by observing your engagement in class discussions, contributions to brief in-class research projects, and my interactions with your game development team. Furthermore, each of you will be asked to perform a self-assessment of your engagement in all aspects of this class but especially of your role as a member of your project team. You will also be asked to perform an assessment of each member of your team. These assessments will be combined with those that the instructors perform on each student in the class.

Grading: Grades will be assigned on a straight percentage basis: 90-100% is an A, 80-89% is a B, 70-79% is a C, 60-69% is a D, and <60% is an F, with + and - grades assigned to high and low scores within those ranges.

Course Calendar

**Week 1**

**Monday evening, 6/22, 7:30pm-9:30pm:** Fishbanks Simulation

**Tuesday, 6/23, 9am-10:30am:** Case study- Marine protected areas. Assignment- description and causal loop diagram of wicked problem.

**Thursday, 6/25, 1:00pm-5:00pm:** Case study- Sanitation in India. Introduce game project.

**Week 2**

**Tuesday, 6/30. 9am-10:30am:** Case Study- Wildlife poaching and trafficking. Assignment- frame analysis of wildlife poaching and trafficking.

**Thursday, 7/2, 1:00pm-5:00pm:** Case study- habitat conservation planning and the Endangered Species Act. Game project work day.
Week 3
Tuesday, 7/7. 9am-10:30am: Case study- reducing carbon emissions. Assignment- develop a proposal to adaptively manage carbon emissions in New York state.
Thursday, 7/9. 1:00pm-5:00pm: Case study- Industrial pollutants in the USA. Game project work day.

Week 4
Monday evening, 7/13. 7:30pm-9:30pm: Toxic Release! Simulation
Tuesday, 7/14. 9am-10:30am: Case study- hydraulic fracturing. Assignment- RAFT writing assignment.
Thursday, 7/16. 1:00pm-5:00pm: Case study- drought and water use in the western US. Game project work day.

Week 5
Tuesday, 7/21. 9am-10:30am: Case study- Renewable Energy and the Carbon Wedge. Assignment- RAFT writing assignment.
Thursday, 7/23. 1:00pm-5:00pm: Case study- aquatic invasive species and boater spread prevention. Game project work day.

Week 6
Tuesday, 7/28. 9am-10:00am: Pilot your games!
Wednesday, 7/29. 7:30pm-9:30pm: Game night!
Thursday, 7/30. 10:00am-10:30pm: brief reflection.