ENR 8785: Research Paradigms, Spring 2019  
T/R 2:20 to 3:40 in Kottman 333C

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Course Description and Objectives

Catalog description:

An examination of science philosophy, scientific method, and contemporary paradigms applied to problems in environmental and natural resources management.

Full Description:

The objective of this course is to broaden your understanding of science in your discipline and introduce you to research and management paradigms for the natural resources and environmental sciences. We seek broader understanding of science as it is applied to the unique value-laden problems of environment and natural resources. Throughout this course, you will be exposed to wide-ranging literature dealing with social studies of science, bridges between quantitative and qualitative methods of inquiry, comparisons of natural and social sciences, approaches that emphasize stakeholder participation in science and management, and aspects of the interface between science and society. A thorough knowledge of readings will provide a basis for seminar discussions, some short lectures, and student writings/presentations.

Our goal is to help you as students (and us as instructors) break down the disciplinary barriers that inhibit a comprehensive understanding of environmental and natural resources science and management. We will explore concepts and discuss readings under a variety of subject headings, some representing concepts that have achieved “buzzword” status (e.g., everyone in our field has used, at one point or another, the term “sustainability,” but, in all likelihood, have not paused to consider what the term means or was intended to mean). Because of the format for this course, we expect that students will thoughtfully read all of the assigned readings and come to class prepared to lead and participate in probing and insightful discussions.

Student Performance Objectives

As a consequence of this course, the student will demonstrate the ability to

1. Describe the philosophical underpinnings of science as a way of knowing;
2. Compare and contrast natural and social science, as well as quantitative and qualitative research methods;
3. Incorporate concepts of scientific method and/or philosophy into the student’s own research,
4. Explain concepts related to management paradigms of sustainability, coupled human-ecological systems, adaptive management, and civic science;
5. Understand the role of science in policy making;
6. Identify key components of the “post-modern” paradigm and its challenge to traditional science;
7. Integrate social and natural science into the student’s own research.
Recommended Textbooks:


Additional readings from journal articles, books, and other sources will be made available electronically through the Carmen/Canvas web program (https://carmen.osu.edu/#).

Assignments and Grading:

Your final grade will be out of a total of 100 possible points that will be assigned as follows:

1. Class Participation = 30 points
   Participation scores will be based on participation and leadership in classroom discussions. Regular attendance is a necessary, but not sufficient, condition for meaningful participation. Students will take turns leading a discussion on one of the readings. In addition, students will select one reading of interest and find an outside reading related to it, and summarize that outside reading and how it links to the required reading. On some weeks we will hold a supplemental Thursday session to engage in informal discussion with visiting scholars and OSU faculty. Participation is expected at these sessions.

2. Autobiographical writing assignment, 1-2 pages, single spaced = 20 points
   Expound on the questions we raised in the first day of class. You should your writing around the following questions: What is a world view, and what is yours? How do you define science? How do you differentiate the natural and social sciences, and what is the relationship between the two? What does your worldview have to do with how you understand or practice science? What led you to pursue a doctoral degree, and in environment and natural resources, no less?

3. Mid-term Writing Assignment = 50 points

   The historian of science Thomas Kuhn used the word *paradigm* to refer to the set of practices that define a scientific discipline at any point in time. Thus, the paradigm of a particular scientific discipline comprises:

   - *what* is to be observed and scrutinized
   - the kind of *questions* that are supposed to be asked and probed for answers in relation to this subject
   - *how* these questions are to be structured
   - *how* the results of scientific investigations should be interpreted
   - *how* is an experiment (or research in general to be conducted, and *what* equipment is available to conduct the experiment.

   1) Think about the specific scientific discipline where your dissertation research is or will be centered and attempt to identify what elements in your area of study might satisfy the criteria listed above and thereby constitute the paradigm under which you work.
2) Thinking more closely about your particular research problem, briefly identify and explain the theory or theory set that will guide your research.

3) To the extent that you are able at this stage of your doctoral program, identify questions or deduce testable hypotheses from your theory base. These hypotheses do not necessarily have to be those that you will test with your dissertation research project, although it would be advantageous if they were.

4) Discuss how you might apply various modes of inquiry such as inductive or deductive-nomological model or hypothetico-deductive scientific method to your dissertation or a research problem in your field. What might be the benefits and limitations that you would encounter in using these approaches to doing science in your discipline?

5) How do you imagine that your research will connect with other disciplines or contexts of environment and natural resources?

3. End-term communication assignment = 50 points – Group project, TBD.

The minimum point percentages to achieve a given grade are as follows:

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<th>Grade</th>
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<td>A</td>
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Class Meetings: We will meet on Tuesdays and Thursdays, from 2:20 to 3:40, to discuss readings as described in the course outline below. In addition, we may occasionally meet on Thursdays at a time to be arranged, to interact with invited guests and learn about their approaches and philosophies related to science and management. Some of the guest speakers will be presenting at the School’s Thursday seminar series.

Availability of Accommodations: If you need an accommodation based on the impact of a disability, you should contact one of the course instructors to arrange an appointment as soon as possible. At the appointment we can discuss the course format, anticipate your needs and explore potential accommodations. We rely on the Office For Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted the Office for Disability Services, we encourage you to do so.

Method of Dealing with a Language Barrier: This course will be conducted in English. Students who have difficulty communicating in English are encouraged to seek assistance from sources outside the classroom. Arrangements can be made for enabling students with speech, hearing, or visual impairment to participate in the course, e.g., through assistance of transcribers or readers.

Academic Misconduct: Submitting plagiarized work to meet academic requirements, including the representation of another’s works or ideas as one’s own; the unacknowledged use and/or paraphrasing of another person’s work; and/or the inappropriate unacknowledged use of another person’s ideas; and/or the falsification, fabrication, or dishonesty in reporting research results, shall be grounds for charges of academic misconduct.