**SS289 – Environment, Science, and Technology**

**Spring 2016**

**Weir 208**

**TR 9:30-10:45**

**Instructor:** Taylor Dotson

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**Office Hours:** TBA

**Course Description:**

Despite all the recent advances in scientific understanding and technological capabilities, most environmental problems continue to be characterized more by disagreement than consensus and progress toward their amelioration remains laggard. Hope and enthusiasm for technoscientifically oriented approaches to solving problems like climate change, however, show no signs of waning, even with their poor track records.

The aim of this course is to challenge STEM students to leave behind their hopes (illusions?) that improved scientific understandings will necessarily produce political consensus on environmental controversies or that advances in “green technologies” will inevitably produce a more sustainable world. Rather than presume that disagreement about wicked and tenancious problems like climate change, genetically-modified organisms (GMOs), etc. is the product of ignorance, students will explore its cultural, political, and communicative roots. Moreover, students will critically examine commonly proposed solutions, like “green” consumerism and renewable energy technologies, inquiring into not only their technical drawbacks but also the limits to any approach to social problems that ignores sociopolitical factors.

**Pre-requisites/Co-requisites:** None

**Place in Curriculum**: General Education Core requirement, Area 4 – Social Sciences

**Course Learning Outcomes**:

This course explores the political, economic, cultural, and technoscientific dimensions of environmental problems. By the end of the course, it is anticipated that students will be able to: (1) Recognize and articulate the myriad sources of disagreement for a variety of environmental controversies, (2) Articulate the limitations of consumer oriented solutions to environmental issues, (3) Analyze proposed solutions to environmental problems with regard to their potential for producing unintended consequences and other limitations, and (4) Explain how solutions could be made more effective by better taking into account the sociopolitical context of environmental issues.

**Program Learning Outcomes**:

Students will:

1. Identify, describe, and explain human behaviors and how they are influenced by social structures, institutions, and processes within the contexts of complex and diverse communities.

2. Articulate how beliefs, assumptions, and values are influenced by factors such as politics, geography, economics, culture, biology, history, and social institutions.

3. Describe ongoing reciprocal interactions among self, society, and the environment.

4. Apply the knowledge base of the social and behavioral sciences to identify, describe, explain, and critically evaluate relevant issues, ethical dilemmas, and arguments.

**Course Requirements**:

**Required Texts:**

1) Hulme, Mike. 2009. *Why We Disagree About Climate Change.* New York: Cambridge University Press.

2) Szasz, Andrew. 2007. *Shopping Our Way to Safety: How We Changed from Protecting the Environment to Protecting Ourselves.* Minneapolis, MN: Minnesota University Press.

3) Zehner, Ozzie. 2012. *Green Illusions: The Dirty Secrets of Clean Energy and the Future of Environmentalism*. Lincoln, NE: University of Nebraska Press.

**Note:** Other required readings will be emailed out by the instructor as a pdf. It is strongly encouraged that students print out and annotate electronically received readings.

**Assignments**

The structure of this course requires careful reading in preparation for engaged class discussion. Students will be expected to have extracted the main arguments and evidentiary basis for claims within the readings, taking copious notes, prior to that day’s class. Students are strongly encouraged to do the assigned readings in groups so that more class lecture and discussion time can be devoted to going beyond the readings rather than merely review them.

Students may miss no more than two classes without incurring a significant penalty to their attendance grade (full letter grade per day). Moreover, any absence will negatively affect the student’s participation grade. Penalties can only be avoided by completing an additional reading and writing assignment.

This course consists of readings, class discussions, midterm exam, presentation, and final group research project.

**Participation:** Students will be graded on their appearing prepared to discuss and respond to questions regarding that day’s reading, which entails comprehending the author’s main claims, logic, and evidentiary bases. Periodically, I will informally ask a few students (selected randomly) to be prepared to discuss the following class day’s readings at length in order to ensure that participation is broadly distributed among the class.

**Students on their laptops or otherwise preoccupied with a digital device will receive a zero for that day’s participation grade**. Students are encouraged to take handwritten notes so as to avoid the alluring pull of email and other computerized distractions. Listening attentively but otherwise not participating will earn students a non-zero (but also non-passing: e.g., <50%) participation grade. Finally, students should put their phones on vibrate and keep them in their book bags or pockets.

**Midterm:** The midterm exam will evaluate the student’s understanding of the cases and arguments presented in the first half of the class. The test will consist of a number of short answer and brief essay questions.

**Presentation:** Students either solo or in pairs (depending on numbers) will be responsible for preparing and giving a presentation that teaches one to two chapters of material to the rest of the class. Presentations will be 15 to 20 minutes and outline the background of the case as well as its connection to course readings/concepts being discussed that week. Basic source material for these presentations will be provided to the student-pairs, who will only perform outside research only if absolutely necessary to put together a cohesive presentation or update the material.

**Documentary Review:** Students will watch a documentary on an environmental issue (of their own choosing), producing an 800-1000 word written review. Details on the required structure of the review will be discussed in class.

**Group Project:** Students will be divided into small groups and dedicate the last four weeks of the course to researching a case of environmental controversy or an ongoing environmental problem (e.g., Fracking, GMOs, Industrial Toxins, Peak Oil, etc.) and characterizing it using relevant course concepts. Considerable in-class time will be set aside for groups to conduct outside research, peer review, and assist one another in improving their thinking and analysis. This research will culminate in a 20 page research paper as well as 20-30 minute presentation. Fairness in grading will be assured through self and peer evaluations.

**Course Schedule**:

**SCIENCE, UNCERTAINTY, AND VALUES: ENVIRONMENTAL CONTROVERSIES**

**Tue Jan 19 –** Review of Course & Syllabus – Hulme, “The Discovery of Climate Change” p. 35-52.

**Thu Jan 21 –** Hulme, “The Performance of Science” p. 72-108.

Myth of Authoritativeness. Disagreement. Consensus. Foundationalism

**Tue Jan 26 –** Hulme, “The Endowment of Value” p. 109-141.

Partisanship. The Good Life. What is Nature?

**Thu Jan 28 –** Hulme, “Things We Believe” p. 142-177.

Ideology. Governing Mentalities.

**Tue Feb 2 –** Hulme, “The Things We Fear” p. 178-210.

Risk. Dread. Precaution. Cognitive Biases.

**Thu Feb 4** – Hulme, “The Communication of Risk” p. 211-247.

Deficit Model. Participatory Science. Communicative and Cognitive Frames.

**Tue Feb 9 –** Hulme, “The Challenges of Development” p. 248-283.

Development. Sustainable Development. Modernity.

**Thu Feb 11 –** Hulme, “The Way We Govern” p. 284-322.

Governance. Technological Fixes. Intelligent Trial and Error. **[Exam Review Sheet Distributed]**

**Tue Feb 16 –** **Review Day. How to Think About Disagreement and Controversies.**

Skim Hulme, “Beyond Climate Change” p. 322-365.

Climate Changes as a Cultural, Not Merely Natural, Phenomenon

 **Thu Feb 18 – [Exam I]**

**Tue Feb 23 – Review Exam + Introduce Next Section + “The Inverted Quarantine” + Get Volunteers for First Student Presentations + Distribute Rubric for Documentary Reviews**

**CAN WE SAVE OURSELVES THROUGH CONSUMER ACTION?**

**Thu Feb 25 –** Szasz, “Suburbanization as Inverted Quarantine” p. 56-95 in *Shopping Our Way to Safety.*

**Tue Mar 1 – [Student Presentations; Chapters 3-5]**

**Thu Mar 3 –** Szasz, “Consequences of Inverted Quarantine – Imaginary Refuge” p. 171-194

**Tue Mar 8 –** Szasz, “Consequences of Inverted Quarantine – Political Anesthesia” p. 195-238.

Other themes: Barriers; Governing Mentalities

**[Volunteers for next set of student presentations]**

**CAN TECHNOLOGY SAVE US? TECHNOLOGICAL FIXES AND UNINTENDED CONSEQUENCES**

**Thu Mar 10 –** Zehner, “Solar Cells and Other Fairy Tales” p. 3-30. In *Green Illusions.*

**Tue Mar 15 – [Spring Break]**

**Thu Mar 17 – [Spring Break]**

**Tue Mar 22 – [Student Presentations; Chapters 2-4]**

**Thu Mar 24 – [Student Presentations; Chapters 5-7]**

**Tue Mar 29 –** Zehner, “The Alternative-Energy Fetish” and “The First Step”, p. 149-186.

**Thu Mar 31 – [Student Presentations; Chapters 10-12]**

**Tue Apr 5 – [Student Presentations?; Chapter 13] +** Zehner, “Asking Questions” p. 331-348.

**RESEARCH PROJECTS: ENVIRONMENT CONTROVERSIES/PROBLEMS**

**Thu Apr 7 – Picking Projects/Groups. How to Do Research? What is Good Writing? [Documentary Review Due]**

**Tue Apr 12** **–** **[Workshop I: State of Science; Disagreement, Uncertainty and Complexity]**

**List of references due.**

**Thu Apr 14 – [Workshop II: Differences in Values, Beliefs]
Tue Apr 19 – [Workshop III: Risk and Communication of Risk]**

**Thu Apr 21 – [Workshop IV: Consumer Action and Technological Fixes]**

**Tue Apr 26 – [Workshop V:** **Social Fixes][Rough Draft Due]**

**Thu Apr 28 – [Group Presentations I]**

**Tue May 3 – [Group Presentations II]**

**Thu May 5** – **[Group Presentations III; Papers Due Friday at Midnight]**

**[Finals Week]**

**Grading**:

A = 100-94%; A- = 93-90%: B+ = 89-87%; B = 86-84%; B- = 83-80%; C+ = 79-77%; C = 76-74%; C- = 73-70%; D = 69-60%; F=<60%

**Breakdown:**

Attendance and Participation 20%

Presentation 10%

Midterm 25%

Documentary Review 15%

Final Project 30%

**Counseling and Disability Services:**

**Reasonable Accommodations**

New Mexico Tech is committed to protecting the rights of individuals with disabilities. Qualified individuals who require reasonable accommodations are invited to make their needs known to the Office of Counseling and Disability Services (OCDS) as soon as possible. To schedule an appointment, please call 835-6619.

**Counseling Services**

New Mexico Tech offers mental health and substance abuse counseling through the Office of Counseling and Disability Services. The confidential services are provided free of charge by licensed professionals. To schedule an appointment, please call 835-6619.

**Academic Honesty**: New Mexico Tech’s Academic Honesty Policy for undergraduate students is found starting on page 60 of the NMT Undergraduate Catalog, <http://www.nmt.edu/images/stories/registrar/2014-2015_UNDERGRADUATE_Catalog_FINAL.pdf>

New Mexico Tech’s Academic Honesty Policy for graduate students is found starting on page 59 of the NMT Graduate Catalog, <http://www.nmt.edu/images/stories/registrar/2014-2015_GRADUATE_Catalog_FINAL.pdf>.

You are responsible for knowing, understanding, and following this policy.

**Respect Statement:** New Mexico Tech supports freedom of expression within the parameters of a respectful learning environment. As stated in the New Mexico Tech Guide to Conduct and Citizenship: “New Mexico Tech’s primary purpose is education, which includes teaching, research, discussion, learning, and service. An atmosphere of free and open inquiry is essential to the pursuit of education. Tech seeks to protect academic freedom and build on individual responsibility to create and maintain an academic atmosphere that is a purposeful, just, open, disciplined, and caring community.”