MC492: Wicked Problems in Environmental Governance
Fall 2011

Course Information

Tuesdays and Thursdays 10:40 to 12:20
369L Case Hall (Seminar Room in North Case)
Course Web Page: http://www.angel.msu.edu

Instructor Information

Professor Daniel Kramer
Office: 370 North Case Hall
Phone: (517) 432-2199
Email: dbk@msu.edu
Office Hours:

- Tuesday 1 to 3 p.m.

The best way to reach me is during my office hours. I am also readily available by appointment. To set up an appointment, talk to me in class, leave a phone message or send me an email.

Course Overview

"For every complex question there is a simple answer, and it is wrong." *H.L. Mencken*

"The significant problems we face cannot be solved at the same level of thinking we were at when we created them. *Albert Einstein*

"True genius lies in the capacity for evaluation of uncertain, hazardous and conflicting information." *Winston Churchill*

"Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them." *Laurence J. Peter*

"The only difference between a problem and a solution is that people understand the solution." *Charles Kettering*

"I am not young enough to know everything." *Oscar Wilde*

Some problems are more difficult to resolve than others. For the most complex problems, profound social and cultural values come into play. That is these problems exist within a social context. In these cases, the processes of defining shared values, common goals,

desirable outcomes, and acceptable risks become political and social. Such problems are difficult even to formulate. Technical analyses alone, those which do not integrate social values and deliberation, are inadequate. Problems that do not lend themselves to easy formulation, much less easy solutions, are referred to as “wicked problems.” Wicked problems are also characterized by scientific uncertainty and inherent complexity. This seminar focuses on wicked environmental problems and the challenges they pose for governance from local to global scales. We’ll consider alternative theoretical frameworks for approaching wicked problems.

In their seminal article, “Dilemmas in a General Theory of Planning,” Rittel and Webber list ten characteristics of wicked problems.

1. *There is no definitive formulation of a wicked problem. The information needed to understand the problem depends on one’s idea for solving the problem.*
2. *Wicked problems have no stopping rule (i.e. there is no clear solution end point). Stopping occurs when the solution is “good enough” or when financial, political, and social resources expire.*
3. *Solutions are not true or false but rather good or bad.*
4. *There are no immediate or ultimate tests for solutions to wicked problems.*
5. *Solutions to wicked problems are typically one-shot, and all solutions change the problem that you are trying to fix.*
6. *Solutions to wicked problems are neither enumerable nor mutually exclusive.*
7. *Every wicked problem is unique.*
8. *Every wicked problem can be considered a symptom of another problem. Problems are layered.*
9. *Because people formulate wicked problems differently, their solutions differ as well.*
10. *Problem solvers have no right to be wrong in the case of wicked problems (i.e. there is no scientific method for solving policy problems).*

Evidence of wicked problems comes from many disciplines - product designers, engineers, city planners, program managers, and policy makers. All warn that traditional methods of problem solving are not working and no apparent alternatives are in sight.

This course is divided into three sections. The first opens with an introduction to wicked problems, complexity, and uncertainty. Here, we consider our capacity as citizens, analysts, and policy makers for dealing with problems plagued with great complexity and uncertainty. Thomas Homer-Dixon, in his book, ***The Ingenuity Gap***, asks whether we are up to the task of managing problems an increasingly uncertain and complex world.

The second section of this course is a series of case studies in which we consider specific environmental problems beset with complexity, surprise, and uncertainty in the environmental, political, economic, and social realms. We consider climate change in Elizabeth Kolbert’s book ***Field Notes from a Catastrophe***. We consider the role of interest groups, media campaigns, and deliberate deception in Oreskes and Conway’s book, ***The Merchants of Doubt***. We then look at the complex problems of water scarcity (Pearce’s ***When the River Runs Dry***) and biodiversity loss (Quammen’s ***The Last Dodo***).

The last section of the course considers frameworks for dealing with wicked problems. In particular, we'll rely on Brian Walker's book, ***Resilience Thinking***, to present the concept of resilience. The paradigm of resilience suggests that our systems of governance and our societies must learn to be adaptive in order to manage complex and uncertain problems.

Course Objectives

- Students will have a good understanding of scientific uncertainty and common misconceptions of scientific uncertainty
- Students will have a good understanding of the nature of wicked problems
- Students will gain familiarity with climate change, water scarcity, and biodiversity loss
- Students will improve their oral and written communication skills
- Students will improve their critical thinking, reading and summarization skills
- Students will gain a broad overview of the interaction between science and public policy with respect to addressing wicked problems
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Pedagogy and Discussion Leaders

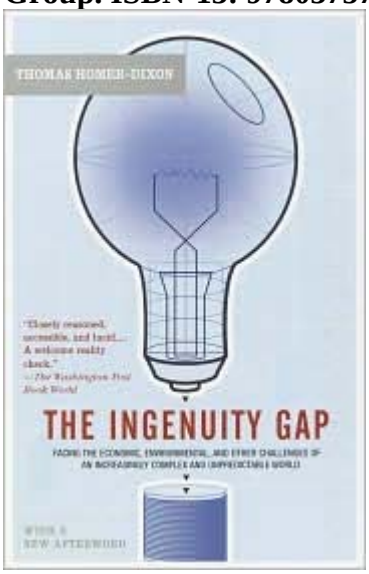
Because this is a seminar, I share the responsibility of pedagogy with students. For each class period, one student will be responsible for preparing questions on the readings and posting them on ANGEL by **8 pm the day before class**. The discussion leader is also responsible for ***initiating and maintaining*** class discussions. Your efforts will constitute a major portion of your participation and collegiality grade. Below are some possible questions and suggestions to consider when preparing for your turn as discussion leader.

- *What questions capture the readings thesis or central idea?*
- *What particular quotations express the thesis?*
- *What are the key points in the flow of the argument? Do you agree or disagree with the key points?*
- *What are the key terms (i.e. new concepts, names, organizations) in the reading?*
- *What quotations are particularly important, interesting, provocative, or controversial?*
- *How does the perspective presented compare with previous readings?*
- *How do the central ideas in the reading relate to our own lives and experiences – those of students, those of us in the developed world, women, men etc.?*
- *How would you refute the arguments presented?*
- *What are the strengths and weaknesses of the reading?*
- *Are there issues that the author is ignoring which you think are relevant to the discussion?*
- *Does the reading have relevance for different times and places?*
- *Be provocative.*
- *Be challenging.*

Resources and Readings

Required Texts

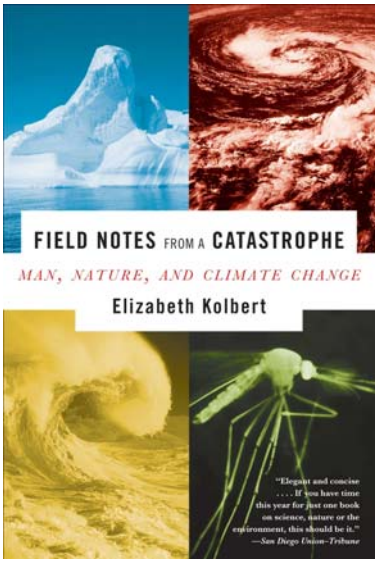
Homer-Dixon, Thomas F. 2002. *The Ingenuity Gap: Facing the Economic, Environmental, and Other Challenges of an Increasingly Complex and Unpredictable Future.* Knopf Publishing Group. ISBN-13: 9780375713286. 496 pages.



Synopsis: *Despite all of society's advances, our problems proliferate. Wars abound, environmental degradation accelerates, economies topple overnight, and pandemics such as AIDS and tuberculosis continue to spread. The Internet and other media help to disseminate knowledge, but they've also created an "info-glut" and left us too little time to process it. What's more, advances in technology have made the world so bewilderingly fast-paced and complex that fewer people are able even to grasp the problems, let alone generate solutions. That space between the problems that arise and our ability to solve them is "the ingenuity gap," and as we careen towards an increasingly harried and hectic future, the gap seems only to widen.*

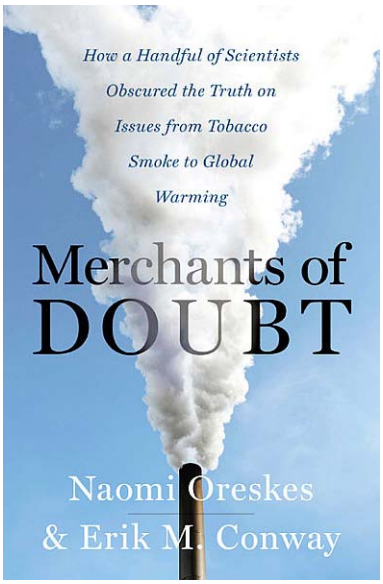
As he explores the possible consequences of this gap, Thomas Homer-Dixon offers an absorbing assessment of the state of the world and our ability to fix it. Culling from an astounding array of fields–from economics to evolution, political science to paleontology, computers to communications –he integrates his vast knowledge into an accessible and engaging argument. This is a book with profound implications for everyone that we can ill afford to ignore.

Kolbert, Elizabeth. 2006. *Field Notes from A Catastrophe: Man, Nature, and Climate Change.* Bloomsbury USA. ISBN-10: 1596911301. 240 pages.



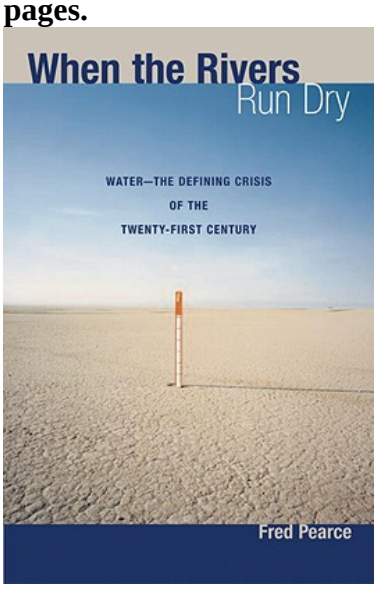
Synopsis: *Long known for her insightful and thought-provoking political journalism, author Elizabeth Kolbert now tackles the controversial and increasingly urgent subject of global warming. In what began as groundbreaking three-part series in the New Yorker, for which she won a National Magazine Award in 2006, Kolbert cuts through the competing rhetoric and political agendas to elucidate for Americans what is really going on with the global environment and asks what, if anything, can be done to save our planet. Now updated and with a new afterword, Field Notes from a Catastrophe is the book to read on the defining issue and greatest challenge of our times.*

Oreskes, Naomi & Erik M.M. Conway. 2011. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.* Bloomsbury Press. ISBN-13: 978-1608193943. 368 pages.



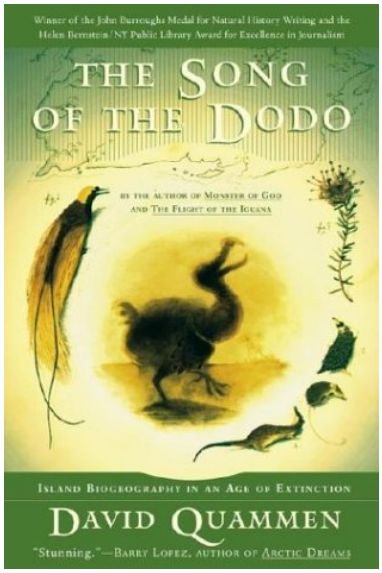
Synopsis: *Merchants of Doubt was one of the most talked-about climate change books of recent years, for reasons easy to understand: It tells the controversial story of how a loose-knit group of high-level scientists and scientific advisers, with deep connections in politics and industry, ran effective campaigns to mislead the public and deny well-established scientific knowledge over four decades. The same individuals who claim the science of global warming is "not settled" have also denied the truth about studies linking smoking to lung cancer, coal smoke to acid rain, and CFCs to the ozone hole. "Doubt is our product," wrote one tobacco executive. These "experts" supplied it.*

Pearce, Fred. 2007. *When the Rivers Run Dry*. Beacon Press. ISBN-13: 978-0807085738. 336 pages.



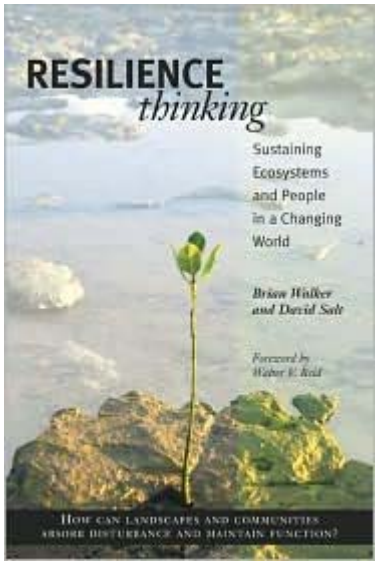
Synopsis*: In this groundbreaking book, veteran science correspondent Fred Pearce travels to more than thirty countries to examine the current state of crucial water sources. Deftly weaving together the complicated scientific, economic, and historic dimensions of the world water crisis, he provides our most complete portrait yet of this growing danger and its ramifications for us all.*

Quammen, David. 1997. *The Song of the Dodo: Island Biogeography in an Age of Extinction*. Scribner. ISBN-13: 978-0684827124. 704 pages.



***Synopsis**: In a wonderful weave of science, metaphor, and prose, David Quammen, author of The Flight of the Iguana, applies the lessons of island biogeography - the study of the distribution of species on islands and island-like patches of landscape - to modern ecosystem decay, offering us insight into the origin and extinction of species, our relationship to nature, and the future of our world.*

Walker, Brian & David Salt. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*. Island Press. ISBN-10: 1597260932. 192 pages.



***Synopsis:** Increasingly, cracks are appearing in the capacity of communities, ecosystems, and landscapes to provide the goods and services that sustain our planet's well-being. The response from most quarters has been for "more of the same" that created the situation in the first place: more control, more intensification, and greater efficiency.*

"Resilience thinking" offers a different way of understanding the world and a new approach to managing resources. It embraces human and natural systems as complex entities continually adapting through cycles of change, and seeks to understand the qualities of a system that must be maintained or enhanced in order to achieve sustainability. It explains why greater efficiency by itself cannot solve resource problems and offers a constructive alternative that opens up options rather than closing them down.

In Resilience Thinking, scientist Brian Walker and science writer David Salt present an accessible introduction to the emerging paradigm of resilience. The book arose out of appeals from colleagues in science and industry for a plainly written account of what resilience is all about and how a resilience approach differs from current practices. Rather than complicated theory, the book offers a conceptual overview along with five case studies of resilience thinking in the real world. It is an engaging and important work for anyone interested in managing risk in a complex world.

Other Readings

N.Y. Times

We are fortunate to have free access to the N.Y. Times in the college, and we should make use of this resource. **As part of your participation grade**, I am requiring that each student present one N.Y. Times article related to course content and lead a very short discussion (5-10 minutes) on that article. This can happen at any time during the course. This assignment is meant to challenge you to connect the course content with events in the news cycle. In addition, as informed and engaged citizens, it is important to daily consult with a reputable news source.

Other

All other readings including journal articles and newspaper articles to be handed out in class or posted to ANGEL.

Grading

Your grade will be based on the following tasks:

Participation and Collegiality:	20%
• *Attendance*	
• *Class Participation*	
• *NY Times Assignment*	
• *Paper Proposal*	
• *Paper Draft*	
Response Paper #1:	15%
Response Paper #2:	15%
Response Paper #3:	15%
Research Paper	25%
Oral Presentation	10%

Important Due Dates for Assignments

Response Paper #1	October 4
Research Paper Proposal	October 13
Response Paper #2	October 25
Research Paper Draft	November 15
Response Paper #3	November 22
Oral Presentation	Nov. 29th - Dec. 16th
Research Paper	December 16

Evaluation Criteria for Written Work

- **3.4 to 4.0** – The student has written an ideal essay; ideal because it directly answered the question, supported its argument with accurate evidence, and it presented the argument in a well-organized, stylistically- and grammatically-correct format that followed the writing guidelines. A paper of this caliber shines with original thought and strong, relevant evidence presented in a clear, understandable format. It is obvious that the student has absorbed and thought through the material in a very sophisticated manner.
- **2.8 to 3.4** – The student has obviously read and understood the material and has offered an answerable question and a direct answer to the question with accurate

evidence. It is weaker than it could have been because it leaves a few questions unanswered or overlooks a critical element of the problem. A paper in this grade range may contain an occasional spelling, grammatical, or stylistic error, but generally is quite sound.

- **2.2 to 2.8** – The student appears to have engaged with most of the relevant materials and has attempted to address the posed question, but has not written an answer that clearly, fully, or accurately answers the question. Any one of several elements may have gotten in the way of a good paper, including a lack of relevant evidence, a poorly organized paper, occasional oversimplifications, spelling, grammatical, or stylistic mistakes, or factual errors.
- **1.5 to 2.2** – The student has not directly answered the question and appears to have an incomplete grasp of the subject. Often, a paper of this quality will contain a number of oversimplifications of the material, grammatical and stylistic mistakes, and factual errors.
- **Below 1.5** – The student has submitted a paper that strays from the posed question and provides little accurate and relevant evidence. Generally, a paper that earns below a 1.5 will have poor organization, several spelling, grammatical, and stylistic mistakes, and it will fail to demonstrate an understanding of the issue.

Evaluation Criteria for Participation and Collegiality (Based on attendance, participation, collegiality, and effectiveness as discussion leader.)

Generally, I expect students to read all of every day's assigned readings, identify each reading's argument and assess its evidence, and bring to class questions and analyses of the readings for discussion.

- **4.0:** Students who earn a 4.0 are consistently excellent colleagues. They are always present and prepared for class, and they bring interesting and relevant questions and comments to bear on the subject material. They are equally good listeners and show a genuine interest in their fellow students' thoughts. These students have completely bought into the class and made it better through their contributions, energy, and hard work. ***Unexcused missed classes: 0 to 1.***
- **3.0**: A student who earns a 3.0 may have missed two or three classes throughout the semester but generally has been an active and enthusiastic participant in the course. Other students who earn a 3.0 may have been in class and prepared for class every day, but will have occasionally articulated ideas without reference to the direction of the conversation; that is, they actively participated in discussions without listening to their colleagues' previous statements. ***Unexcused missed classes: 2 to 3.***
- **2.0**: A student who earns a 2.0 is very much an average student. He or she will miss two or more classes throughout the semester or will come to class several times during the semester without having fully read and understood the assigned materials. Other such students will be prepared for class and will come to every class meeting, but will not fully participate in class activities and discussion; instead, they hold back, waiting for others to ask the tough questions or take the chance at making a mistake. Still other students who earn a 2.0 will occasionally dominate a class discussion and use rhetorical tactics that limit other students' participation. ***Unexcused missed classes: 3 to 4.***

- **Lower than 2.0:** Students who earn a 1.0 or a 0 in the participation and collegiality portion of their grade will have missed more than three classes or will have come to class several times without being fully prepared for the class meeting. In the class discussions and activities, lower than average colleagues will avoid participating or will occasionally attempt to dominate the discussions. ***Unexcused missed classes: greater than 4.***

Response Papers

Response papers are 5 to 6 page responses to one or two questions. Response papers will test your understanding of and ability to synthesize class readings, class discussions, documentary films, guest contributions, and student presentations. Think of the response papers as take-home essay exams with less breadth and more depth.

- Papers should be submitted electronically before class on the due date. NO PAPER COPIES.
- 5 to 6 double spaced pages, 12-point font, 1 inch margins all around.
- Punctuation, grammar, and source attribution should be near perfect.
- Papers should include a thesis statement, a "roadmap" of the paper's organization, clear transitions, subheadings when appropriate, paragraphs with topic sentences, and a logical and coherent sequencing of ideas.
- Papers should be properly referenced. You should use abbreviated citations in the text of your paper using the following format – (Johnson and Wilson 2004). Sources should be fully cited in your list of references at the end of your paper using the following format.

  Johnson, Tom and Bill Wilson. 2004. Collisions of Culture: Globalization and the Environment. *Journal of Globalization and the Environment*, volume 3(4): 15-34.
- I will also consider the depth of understanding and creativity demonstrated in your papers.
- ***Tip: Proofread, proofread, proofread***

Research Proposal

The research proposal is intended to be a short, ungraded assignment. Below are my expectations for the research proposal.

- The proposal should 1 to 2 double spaced pages including your list of references
- The proposal must clearly state your research question.
- The proposal must provide a short rationale for why the research is important.
- The proposal will summarize current thinking on the topic and the relevance of your thesis.
- The proposal will present an outline, either in text or bullet form which describes the organization and logical structure of the argument presented in your research paper.
- The proposal should enumerate the sources you might use in order to demonstrate that there is adequate material. Sources may change as you develop your paper.

Oral Presentation

Each student will provide an oral presentation of their research in class. Below are my expectations for the presentations.

- You may present your research in any format you choose – PowerPoint, Prezi, a poster, a video, a simulated dialogue, short story, poem etc.
- Regardless of the presentation format, you should present your thesis and your argument clearly.
- Presentations should be roughly 20 minutes in length. In addition, each student will be allotted 10 minutes for questions and answers.
- Presentations should not be read. Note cards are fine as long as you are not reading from them.
- Presentations will be evaluated by your peers and me.

Research Paper Draft

- Use same guidelines as for Final Research Paper (below)

Final Research Paper

Your research paper should both be a descriptive and a prescriptive analysis of a topic related to wicked problems in environmental governance. Below are my expectations for the research paper.

- Papers should be submitted electronically before class on the due date. Only the final draft should also be submitted in paper form.
- The rough and final drafts should be roughly 25 double spaced pages in length, 12-point font, 1 inch margins all around.
- Punctuation, grammar, and source attribution should be near perfect.
- Papers should include an organizational plan, clear transitions, subheadings when appropriate, paragraphs with topic sentences, and a logical and coherent sequencing of ideas.
- Papers must include a thesis statement which expresses the intent of the paper.
- Papers need to present a unique argument. That argument may be based on logic or on empirical observations (data).
- Papers must include the following sections: 1) introduction, 2) data and methods (if applicable), 3) results (if applicable), 4) discussion, 5) conclusion, and 5) references.
- Papers should be properly referenced. You should use abbreviated citations in the text of your paper using the following format – (Johnson and Wilson 2004). Sources should be fully cited in your list of references at the end of your paper using the following format.

  Johnson, Tom and Bill Wilson. 2004. Collisions of Culture: Globalization and the Environment. *Journal of Globalization and the Environment*, volume 3(4): 15-34.
- I will consider the depth of understanding and creativity demonstrated in your papers.
- ***Tip: Proofread, proofread, proofread***

Policies

Attendance

Attendance is required for this class. I understand that occasional emergencies (illness or family emergencies) may occur. In such cases, you should notify me before class begins that you cannot attend. If you don't speak to me in person, you can leave a voice mail or email message with your phone number and the reason you won't be attending class that day. You are responsible for finding out what you missed in class.

Classroom Conduct

Students whose behavior is disruptive either to the instructor or to other students will be asked to leave the class. Everyone's experience and opinions will be valued. Not everyone must agree, even with the instructor, however, differing points of view must be communicated respectfully.

Diversity

This course is intended for students with a variety of interests and backgrounds. The diversity of ethnicities, cultural backgrounds, races, perspectives, experience, and ways of addressing problems among students is one of the most enriching aspects of any course. I will encourage students to acknowledge classroom diversity by listening attentively and politely to one another especially when opinions of students differ.

Grading Grievances

Students with a grievance regarding grading should submit to me in writing the nature of their grievance and their proposed remedy within 48 hours of having received the returned assignment. I will then discuss the grievance with the student.

Late Work

Late work will be docked one full letter grade for every day (not class day) the work is late.

Scholastic Dishonesty (http://www.vps.msu.edu/SpLife/reg3.htm#1.00)

The principles of truth and honesty are fundamental to the educational process and the academic integrity of the University; therefore, no student shall:

- claim or submit the academic work of another as one's own.
- procure, provide, accept or use any materials containing questions or answers to any examination or assignment without proper authorization.
- complete or attempt to complete any assignment or examination for another individual without proper authorization.
- allow any examination or assignment to be completed for oneself, in part or in total, by another without proper authorization.
- alter, tamper with, appropriate, destroy or otherwise interfere with the research, resources, or other academic work of another person.
- fabricate or falsify data or results.

Students with Disabilities

Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Such students also should contact *The Resource Center for Persons with Disabilities* (RCPD), 120 Bessey Hall, (517) 353-9642 and visit their web site at http://www.rcpd.msu.edu/Home/.

Course Readings and Calendar

Date	Day	Reading Assignment	Pages	Assignments Due
1-Sep	Thurs	INTRODUCTIONS		
6-Sep	Tues	*Homer-Dixon - Prologue and Chapters 1 & 2: Pages 1 - 70*	*70*	
8-Sep	Thurs	*Homer-Dixon - Chapters 3 & 4: Pages 71 - 120*	*50*	
13-Sep	Tues	*Homer-Dixon - Chapters 5 to 7: Pages 121 - 190*	*70*	
15-Sep	Thurs	*Homer-Dixon - Chapters 8 & 9: Pages 191 - 246*	*78*	
20-Sep	Tues	*Homer-Dixon - Chapters 10 & 11: Pages 247 - 312*	*66*	
22-Sep	Thurs	*Homer-Dixon - Chapters 12 & 13: Pages 313 - 391*	*79*	
27-Sep	Tues	*Kolbert - Part I, Chapters 1-4: Pages 5 - 90*	*85*	
29-Sep	Thurs	*Kolbert - Part II, Chapters 5-10: Pages 91 - 190*	*99*	
4-Oct	Tues	*Oreskes & Conway - Introduction - Chapter 3: Pages 1 - 106*	*105*	First Responses Paper
6-Oct	Thurs	*Oreskes & Conway - Chapters 4-5: Pages 107 - 168*	*61*	
11-Oct	Tues	*Oreskes & Conway - Chapters 6, 7, and Conclusion: Pages 169 - 265*	*94*	
13-Oct	Thurs	*Pearce - Chapters 1 - 8: Pages 1 - 66*	*65*	Research Proposal
18-Oct	Tues	*Pearce - Chapters 9 - 14: Pages 67 - 130*	*63*	
20-Oct	Thurs	*Pearce - Chapters 15 - 23: Pages 131 - 218*	*87*	
25-Oct	Tues	*Pearce - Chapters 24 - 34: Pages 219 - 312*	*93*	Second Response Paper
27-Oct	Thurs	*Quammen - Chapters 1 & 2: Pages 9 - 114*	*105*	
1-Nov	Tues	*Quammen - Chapter 3: Pages 115 - 258*	*143*	
3-Nov	Thurs	*Quammen - Chapter 4: Pages 259 - 382*	*123*	
8-Nov	Tues	*Quammen - Chapters 5 & 6: Pages 383 - 448*	*65*	
10-Nov	Thurs	*Quammen - Chapters 7 & 8: Pages 449 - 546*	*97*	
15-Nov	Tues	*Quammen - Chapters 9 & 10: Pages 547 - 626*	*79*	Research Paper Draft
17-Nov	Thurs	*Walker - Chapters 1 to 3: Pages 1 to 73*	*73*	
22-Nov	Tues	*Walker - Chapters 4 to 6: Pages 74 to 154*	*81*	Third Response Paper
24-Nov	Thurs	THANKSGIVING BREAK		
29-Nov	Tues	STUDENT PRESENTATIONS		
1-Dec	Thurs	STUDENT PRESENTATIONS		
6-Dec	Tues	STUDENT PRESENTATIONS		
8-Dec	Thurs	STUDENT PRESENTATIONS		
16-Dec	Fri	FINAL EXAM PERIOD (7:45 - 9:45 a.m.) STUDENT PRESENTATIONS		Final Research Paper