Initiator of this proposal: J. Michael Daniels  
Name: J. Michael Daniels  
Phone: 766-2142  
Dept.: Geography

Requested Action (check one or more):
- [ ] Add new course
- [x] Change course description
- [ ] Change title
- [ ] Change credit hours
- [ ] Change prerequisites
- [ ] Change number
- [ ] Change grading system

Semester and year action requested to take effect: Spring 2007

(Please note: changes in credit hours, grading method, or course level cannot go into effect for a semester if early registration has begun. Changes will be effective the following semester.)

Existing Course:

<table>
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<tr>
<th>Prefix</th>
<th>Number</th>
<th>Title</th>
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<tr>
<td>GEOG</td>
<td>3480</td>
<td>Environmental Change</td>
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Proposed Course:

<table>
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<tr>
<th>Prefix</th>
<th>Number</th>
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<tr>
<td>GEOG/ESS</td>
<td>3480</td>
<td>Environmental Change</td>
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</table>

Abbreviated title (18 character maximum including spaces):

E N V | C H A N G E

List any currently approved University Studies Program (USP) designation(s): none

Request for University Studies Program (USP) Approval

Contact Rollin Abernethy at 766-4287 with any questions on USP:

- Integrated Cultural Context
- Humanities
- Social Sciences
- Arts
- Cultural Diversity in the United States
- Global Awareness
- Intellectual Community
- Information Literacy
- Oral Communication
- Physical Activity and Health
- Quantitative Reasoning I
- Quantitative Reasoning II
- Integrated Science
- Biological Science
- Physical Science
- Earth Science
- U.S. and Wyoming Constitutions
- Writing I
- Writing II
- Writing III

Rationale for the change or new course proposed:

Note: For 1000- and 2000-level courses, also address articulation with the Statewide Course Catalog (consult Janet Timmerman at 766-3152).

The rationale for the proposed course change is two-fold. First, the course will fulfill an important role in the newly designated Earth System Science program. The course will be required of all ESS majors. Cross-listing the existing course, GEOG 3480, as an ESS course will facilitate its integration with ESS. Second, the course will fulfill the WB and G USP requirements. This change is important as a result of the concentrated curriculum of ESS majors. The course content is inherently aligned with the rationale of the Global Awareness USP requirement, and proposed changes to course assignments will make the course satisfy the Writing B requirement.
Current Credit Per Semester: Fixed hours 3 Variable hours: _____ to _____; career max. _____

Proposed: Fixed hours 3 Variable hours: _____ to _____; career max. _____

Current Grading System: A/F ☐ S/U ☐

Proposed: A/F ☐ S/U ☐

Current Prerequisites: GEOG 1010 or equivalent

Proposed: GEOG 1010 or any USP S, SB, SE or SP course. Any WA course.

Current Course Description (limit of 50 words):
Examines changes in the bio-physical environments and landscapes of Earth during its habitation by humans. Emphasizes integrated approaches to reconstructing past environmental conditions based on climatological, ecological, geological and archeological evidence.

Proposed (limit of 50 words):
Examines changes in the bio-physical environments and landscapes of Earth during its habitation by humans. Emphasizes integrated approaches to understanding environmental changes based on climatological, ecological, geological, archeological, and historical evidence. Explores how humans have modified Earth’s environments and how societies have responded to natural and anthropogenic environmental change.

Current Cross Listings with: N/A
Note: Cross listed courses have the same course number, title, description, and prerequisites, but different departmental prefixes, e.g. WMST 2420 and POLS 2420.

Proposed cross listings with: ESS

Current Dual Listings (grad/undergrad) with: N/A
Note: Dual listed courses have the same departmental prefix and the same last 3 digits of the course number, e.g. ZOO 4425 and ZOO 5425.

Proposed dual listings with: N/A

What courses does this new or modified course RESEMBLE or OVERLAP, in content or title, and how does it differ? (Attach statement of support from other program(s) if appropriate.)

N/A

Current Activity Type (Select only one major category):
☑ Lecture
☐ with separately scheduled Laboratory Section
☐ with separately scheduled Discussion Section
☐ Independent Study
☐ Practicum
☐ Studio
☐ Internship
☐ Seminar
☐ Research
☐ Clerkship
☐ Lesson

Proposed: Lecture
Material Resources required:
Will additional teaching space (such as a networked computer classroom), equipment, travel, support budget, TV production, or library holdings be required? If so, please specify what resources are needed and the source or sources of the necessary funding for these resources.
Networked computer classroom.

Personnel Resources required:
Who will be available to teach this course and will this course affect the instructor's teaching load?
J. M. Daniels: Instructor currently teaches this course every spring semester and will continue to do so.

Impact on Other Courses:
What will be taught less often? What course or courses might be discontinued?
"None", "Not Available" or similar responses are not acceptable and may result in the proposal being denied.
Instructor currently teaches this course every spring semester and will continue to do so. Therefore no classes will be taught less often and no course or courses might be discontinued.

For modifications involving a change in credit hours, dual listing, and/or change in course description, attach both current and proposed syllabi.

For Course Committee Use Only:

Current Course:
Prefix  Number

Proposed Course:
Prefix  Number

Record of Approval
Department/Program head(s):

Date  9/17/06

Robert D. Kelly

9/18/06

College(s) Approval:

Date  10-11-06

Andrew Sheehy

Graduate School Dean:
(Required for all 4000- and 5000-level courses)

University Studies Committee: Approved for
Disapproved for
Chair:

Recommendation of University Course Review Committee:

Approve
Table
Disapprove
Chair:

Secretary:

Comments of Course Review Committee:
UNIVERSITY STUDIES COURSE PROPOSAL FORM: EXISTING COURSES

Course Number and Title: GEOG/ESS 3480

Effective Date: Spring 2007 Credit Hours: 3

Request prepared by
Typed Name: J. Michael Daniels Date: 5 Sep 2006

Title: Assistant Professor Department: Geography

Telephone: 6-2142 Signature: 

APPROVE FOR UNIVERSITY STUDIES (Mark each that apply, but no more than two) Attach criteria review sheets for each category requested.

Cultural Context:
- C--Integrated Cultural Context
- CH--Humanities
- CS--Social Sciences
- CA--Arts
- D--Diversity in the United States
- G--Global Awareness
- I--Intellectual Community
- L--Information Literacy
- O--Oral Communication
- P--Physical Activity and Health

Quantitative Reasoning
- QA--Quantitative Reasoning 1
- QB--Quantitative Reasoning 2

Natural Sciences
- S--Integrated Science
- SB--Biological Science
- SP--Physical Science
- SE--Earth Science
- V--U.S. and Wyoming Constitutions

Writing
- WA--Writing 1
- WB--Writing 2
- WC--Writing 3

If this course is a 1000 or 2000 level, has it gone through the articulation process with the Wyoming community colleges? If not, please contact Janet Timmerman at 766-3152.

PLEASE ATTACH A DETAILED SYLLABUS FOR THE PROPOSED COURSE.

Department Head Date Dean College Date

Approved for USP University Studies Committee Date
College of Arts and Sciences

University Studies Program
A&S Department/Program Resource Commitment Form

Department/Program  ___Geography______________________________
Course Prefix and Number  ____GEOG/ESS 3480__________ Credit hours____3____
Title of Course  ___Environmental Change______________________________
USP Designation(s) being requested ________WB and G__________________________
How many courses from your unit are approved USP offerings  _9_____________________
Who is available to teach the course? J. Michael Daniels

If you are proposing a new course, what course/courses will not be taught or will not be taught as frequently so that the faculty can teach the new course? Not a new course

If this course exceeds the A&S USP Course limit, please give rationale for USP Course consideration (you must address the uniqueness and necessity of this within your unit and within the college; if your unit offers courses that have the same USP designation(s) explain how this course differs): Does not exceed the 10 course limit.  N/A

Scheduling - Indicate number of sections and seats you plan to offer in each semester, using currently available resources:

<table>
<thead>
<tr>
<th></th>
<th>Fall:</th>
<th>Spring:</th>
<th>Summer:</th>
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<td>sections</td>
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Department Head’s Signature  [Signature]  date 9/17/06

By this signature, you are indicating that, if this course is approved for a University Studies Course, you will offer the number of sections and seats indicated above on a regular basis for 5 years using currently available resources.

☐ Approved; forwarded to University Studies Committee
☐ Denied; course returned to department/program

Dean Oliver Walter’s signature  [Signature]  date 9/18/06
University Studies Program
Criteria Review Sheet

Writing 2 (WB)

University Studies Program writing courses will assist students to achieve knowledge of writing conventions, to develop reading, writing, and critical thinking skills, and to gain competence in rhetorical knowledge.

For WB, students will demonstrate the ability to:
1. Produce writing through a variety of assignments that include discipline based and/or interdisciplinary purposes, forms, and audiences.
2. Find, evaluate, analyze, and synthesize information using sources in a specific discipline and/or interdisciplinary field, and document appropriately such sources.
3. Make effective use of multiple drafts, of revision and editing, of computer technology, of peer and instructor comments, and of collaboration in the achievement of discipline based and/or interdisciplinary final written works.
4. Use appropriate research skills in at least one extensive writing assignment.
1. Recognize the purposes and needs of audiences in a specific discipline and/or interdisciplinary field and follow the conventions of format and language appropriate to that discipline and/or interdisciplinary field.
2. Observe the accepted conventions of spelling, grammar, structure, and punctuation for Standard English or another language.

Course Prefix & Number: GEOG/ESS 3480 Credit Hours: 3

Course Title: Environmental Change

Please attach a detailed course syllabus that includes the objectives or outcomes for the course and the means to assess the extent that students reach them.

List any prerequisites including placement (WA or equivalent must be a prerequisite):

GEOG 1010 or any USP S, SB, SP or SB course. Any WA course.

What is the anticipated student/teacher ratio? 20:1

1. Using information from the syllabus, please describe how this course meets the learning goals (outcomes) and criteria for the WB category. You may respond by answering the questions A-H below. Alternatively, you may cite any 4 to 5 assignments from your syllabus, analyzing them so as to convey to the subcommittee exactly how those assignments, individually or in combination, fulfill the 8 outcomes for a WB class. Keep your analysis to a page in length. Realize that your audience is the USP committee who may or may not be familiar with the assumptions of your field. Be clear and concise. Address all 8 outcomes.
A. Describe the writing occurring through a variety of assignments that include discipline based and/or interdisciplinary purposes, forms, and audiences.

Students will be assigned three separate writing assignments (two specific and one extensive) over the course of the semester that will focus on scientific assessments of environmental change. These writing assignments will improve students’ abilities to explain complex discipline-specific and interdisciplinary scientific research in clear, plain English. Writing assignments for the course will include: 1) a brief (5-page) review of a book dealing with human-environment interactions; 2) a brief (5-page) examination/summary of an outstanding debate in the scientific literature with relevance to global environmental change issues; 3) a research report from a semester-long project in which students gather, organize, and analyze data to address a specific question related to human/environment interactions.

B. How will students find, evaluate, analyze, and synthesize information using sources in a specific discipline and/or interdisciplinary field, and document appropriately such sources?

Students will be introduced to bibliographic reference databases (e.g. GEOBASE, JSTOR, Web of Science) through in-class demonstrations. Students will use these databases to research the published literature on a relevant topic of their choice. Students will cull data from journal articles and from available on-line archives of environmental data (e.g. NOAA’s National Climate Data Center and World Data Center for Paleoclimatology, IPCC Data Distribution Center). Students will organize data from these sources using standard spreadsheet and/or database software and will analyze information using simple GIS-based and statistical methods. Throughout the development of this research project, students will be introduced to standard methods of scientific research and carefully instructed on the proper citation and documentation of original sources.

C. How will students make effective use of multiple drafts, of revision and editing, of computer technology, of peer and instructor comments, and of collaboration in the achievement of discipline based and/or interdisciplinary final written works?

Two short assignments will be due approximately four and eight weeks in to the semester (book review and debate summary). Revision and feedback techniques for these two assignments are designed to familiarize students with standard techniques of proofreading/editing, without putting potentially

For the first assignment, I will critique students’ first submission without making detailed proofreading/editorial marks. I will meet with students individually and verbally explain their most common grammatical and stylistic errors. They will then proofread/edit their own work with a detailed list of proofreading marks I will provide. Students will receive grades based on the quality of: 1) their initial submission; 2) their proofreading/editing; 3) their final submission.

For the second assignment, students will anonymously proofread/edit their peers' assignments. Students will revise their work based on peer critiques. Grades will be based on the quality of: 1) their original submission; 2) the proofreading/editorial comments the provide to a peer; 3) their final submission.
D. How will students demonstrate their appropriate research skills in at least one extensive writing assignment?

The extensive writing assignment will be a research report based on a semester-long individual and collaborative research project. Students will work independently assessing some facet of environmental change in a specific geographical area. Toward the second part of the semester students will be responsible for organizing into groups based on broader continental-scale regions and comparing/analyzing regional to global trends. Data for the project will come from published journal articles and available on-line archives of environmental data (e.g. NOAA's National Climate Data Center and World Data Center for Paleoclimatology, IPCC Data Distribution Center). The final writing assignment will be individual but will incorporate results from both individual and group findings.

E. How will students recognize the purposes and needs of audiences in a specific discipline and/or interdisciplinary field and follow the conventions of format and language appropriate to that discipline and/or interdisciplinary field?

In both short writing assignments proofreading and editing components of the will be geared toward accepted methods of citation, construction, grammar and style for scientific writing. In the extensive writing assignment, environmental change will be evaluated from the perspective of at least three independent lines of evidence (e.g. borehole data, corals, fauna, ice cores, loess, pollen, speleothems, tree rings, sedimentology). Evidence from these individual disciplines and techniques will be synthesized in an interdisciplinary approach to understanding environmental change.

F. How will students demonstrate their knowledge and application of reading, writing, and critical thinking skills; and rhetorical knowledge (learning to adapt arguments, evidence, style, etc. for readers in a specific discipline)?

Students will submit their written assignments for instructor evaluation. Assignments will be evaluated on the basis of content (thoroughness, level of detail, relevance, originality), style (organization, clarity, grammar), references (appropriateness, quantity, format), and for the research report, the quality of accompanying abstract (clarity, succinctness). These bases for evaluation will ensure

G. Discuss the variety of interdisciplinary and discipline-related purposes, forms and audiences.

The overall content of the course is inherently tied to specific disciplines (e.g. palynology, dendroclimatology, alluvial stratigraphy, historical analysis, etc.) and at the same time requires synthesis of these disciplines to develop a broad perspective of human interactions with Earth's bio-physical environments. Writing assignments for the course will be embedded within this perspective of discipline-specific detail and interdisciplinary synthesis. Writing assignments will also be geared to specific audiences: the first two short assignments directed toward a
general, educated public, and the extensive research report directed toward a scientific audience.

H. How will students demonstrate their ability to observe the accepted conventions of spelling, grammar, structure, and punctuation for Standard English or another language?

Students’ writing will be evaluated and critiqued by the instructor and other students, and will be subsequently revised on the basis of standard spelling, grammar, syntax, style and punctuation in the English language. The instructor has sufficient experience evaluating these standards through his own published work and his editorial and reviewing responsibilities to international scientific journals.

2. If embedded in another course, has an appropriate portion of the course been dedicated to the instruction and feedback of writing? Is this detailed in the syllabus? Describe.

The course content, learning objectives, assignments, and grading criteria have been aligned to allow the simultaneous fulfillment of WB and G requirements. Because assessments of environmental change are so fundamentally linked to the scientific literature through which these assessments are made, scientific writing (and the analysis of scientific writing) plays an integral role in the development of environmental change research. The syllabus demonstrates both the content of the course and the emphasis on instruction and feedback of writing that is central to that content.

3. Explain how the assessment method(s) used for this course demonstrate student achievement of the learning outcomes for the WB category. Explain how this assessment might provide information that can be used to improve accomplishment of desired learning outcomes.

Assessment methods in this course are based on writing evaluation, critique, feedback and revision. Assessment of student’s comprehension of course content will also be based on two written examinations. The learning objectives for the WB requirement are carefully aligned with both course content and assessment methods. These objectives include the development of editorial/proofreading skills, practice with revision, immersion within a specific scientific discipline, and the ability to apply effective rhetorical skills to convey scientific information plainly. By assigning short writing assignments earlier in the semester and focusing the assessment of those assignments on productive revisions, the course will work toward complete achievement of desired learning outcomes through the progress of their culminating research project.

4. What other factors should the committee consider?

The ESS curriculum was approved by the associated colleges, the University and the Board of Trustees with the assumption that GEOG 3480 would be cross-listed as GEOG/ESS 3480 and with the assumption that it would fulfill the WB and G requirements of the University Studies Program.
University Studies Program
Criteria Review Sheet

Global Awareness (G)

By taking global awareness courses, students should acquire knowledge of the global organization and interdependence of human societies. Such knowledge will foster students’ ability to identify and discuss contemporary global issues and to connect world events to personal experience. An awareness of the conditions, beliefs, behaviors, and practices of a variety of cultures will help students to function productively in an increasingly globalized world. Global awareness courses should point to one or more of the following:

1. The ability to compare and contrast the unique characteristics of world cultures and the universality of human experience through examination of traditions, social organization, and ways of life.

2. The ability to analyze and understand the interconnectedness of global and local concerns.

3. The ability to recognize and interpret the aesthetic traditions and artistic representations that emanate from a culture located primarily outside the United States.

Courses in this category should serve to broaden the student’s perspective and increase an understanding of the way diverse groups of people make sense of the world in which they live. G courses should help students to understand the relationship between contemporary and historical experience.

While not limited to studies of culture, courses in this category must focus on human activity and institutions. Subject matter that is based on the physical world and natural phenomena must focus on human interaction with and response to these phenomena.

Course Prefix & Number: GEOG/ESS 3480 Credit Hours: 3

Course Title: Environmental Change

*Please attach a detailed course syllabus that includes the objectives or outcomes for the course and the means to assess the extent that students reach them.*

List any prerequisites: GEOG 1010 or any USP S, SB, SP or SB course. Any WA course.

1. Using information from the syllabus, please describe how this course meets the learning goals (outcomes) and criteria for the G category by answering the following questions:

   A. How will students develop the ability to compare and contrast the unique characteristics of world cultures and the universality of human experience through examination of traditions, social organization, and ways of life?
Human-environment interactions represent the core subject matter of this course. Students will be introduced not only to how different peoples and cultures have initiated environmental changes, but also how their cultural perceptions have influenced their responses to these changes. Cultural attitudes toward and the environment play an extremely important role in shaping human adaptation. These concepts will be conveyed through lectures, readings, writing assignments and a semester-long research project.

B. How will students develop the ability to analyze and understand the interconnectedness of global and local concerns?

Environmental change is inherently both a local and global issues. Specific human modifications of Earth’s bio-physical environments occur at a range of spatial scales, extending from the site specific to the regional. Cumulatively, these modifications have transformed Earth’s atmosphere, vegetation, soils and landforms at a truly global scale, especially since the development of early agricultural societies throughout the world, and recently through the intensification of industrial activity centered in the developed world. Course lectures and readings will stress the interconnectedness of global and local concerns.

C. How will students develop the ability to recognize and interpret the aesthetic traditions and artistic representations that emanate from a culture located primarily outside the United States?

Aesthetic traditions that inform environmental perception are an important determinant of human-environment interactions. For example, the first human settlers of Australia, 40 thousand years ago, encountered a landscape significantly more forested than that which was found by the first European settlers in the 17th and 18th centuries. Aboriginal cultural traditions surrounding fire, landscape appreciation and the relationship between humans and the environment may have played a large role in the apparent coincidence between deforestation and human settlement of Australia. Examples like this are woven throughout this course, in lectures, readings and writing assignments, so that students are able to view human-environment interactions from both western and non-western perspectives.

D. How will this course serve to broaden the student’s perspective and increase an understanding of the way diverse groups of people make sense of the world in which they live?

In order to understand environmental change and the human causes and responses to that change, a truly global perspective must be taken. Examples from a variety of different places, landscapes, environments and cultures will broaden students’ perspectives of how humans interact with their bio-physical environments. The range of time-scales considered in the course, from early agricultural societies through contemporary post-industrial societies, will ensure representation of a diversity of experiences. Students’ appreciation for this diversity will be assessed through writing assignments, written examinations, and a semester long research project.

E. How does this course focus on human activity and institutions or human interaction with and response to the physical world?
The subject matter of the course focuses specifically on how humans interact with natural environments, specifically the atmosphere, biosphere, hydrosphere and lithosphere. This interaction is considered from a variety of perspectives, including human impacts on natural environments, human responses to environmental change, and human attitudes and perceptions to their surroundings. This subject forms the core of a significant body of literature within Geography and cognate disciplines.

2. Explain how the assessment method(s) used for this course demonstrate student achievement of the learning outcomes for the G category. Explain how this assessment might provide information that can be used to improve accomplishment of desired learning outcomes.

Assessment methods in this course are based on writing evaluation, critique, feedback and revision. Assessment of student's comprehension of course content will also be based on two written examinations. The learning outcomes for the G requirement are carefully aligned with both course content and assessment methods. Instructor evaluation of written assignments and examinations will ensure that students understand the global diversity of human-environment interactions and the inherently linked relationships between local and global concerns.

3. What other factors should the committee consider?

The ESS curriculum was approved by the associated colleges, the University and the Board of Trustees with the assumption that GEOG 3480 would be cross-listed as GEOG/ESS 3480 and with the assumption that it would fulfill the WB and G requirements of the University Studies Program.
Geography/ESS 3480
Environmental Change

Instructor: Michael Daniels
332 Arts and Sciences
766-2142
jmd@uwyo.edu
Office Hours: T 3:00-6:00

Meeting: MW 3:10-4:25, 210 A&S

Website: www.uwyo.edu/jmd

Prerequisites: GEOG 1010 or any S, SB, SE, or SP course. Any WA course.

Description: This course examines changes in the bio-physical environments and landscapes of Earth during its habitation by humans—roughly the past 2 million years. This period of Earth’s history has witnessed dramatic and rapid changes in Earth’s climate, which in turn have generated significant changes in Earth’s physical and biological environments. Throughout this time, humans have adapted to these changes and have also caused environmental changes of their own.

In this course we will learn about techniques that allow us to interpret past environmental changes—these techniques arise from the fields of archaeology, climatology, ecology, geography, geology, and history. We will use these techniques to address two fundamental questions: 1) How have humans directly or indirectly modified the bio-physical environments of Earth; and 2) How have humans adapted to environmental changes? We will examine these questions from the earliest human origins to the present and will use examples from around the globe.

In addition to traditional lectures, the course will involve two short writing assignments and a hands-on research project in which students gather, organize, and analyze data to address a specific question related to human/environment interactions.

This course fulfills the Global Awareness (G) requirement of the 2003 University Studies Program. Global Awareness (G) courses strive to broaden our perspectives through the exploration of viewpoints from other societies, cultures, religions, or geopolitical regions. With an eye on both historical and contemporary experience, G courses are designed to challenge our assumptions about the ways of the world and to help us understand and embrace global cultural diversity.
Proposed Syllabus

**Textbook:**

**Writing:**
In addition to an extensive research report based on the term project described below students will complete two short writing assignments. One will be a brief (5-page) review of a book dealing with human-environment interactions. Another will be a brief (5-page) examination/summary of an outstanding debate in the scientific literature with relevance to global environmental change issues. Both assignments will be edited/proofread by the instructor or your peers, returned with recommendations for revisions, and revised.

This course fulfills the Writing 2 (WA) requirement of the 2003 University Studies Program. Intermediate writing courses (WB) provide students with opportunities to further develop and refine their writing. These courses require writing for a variety of purposes and audiences, including the use of discipline-based or interdisciplinary research skills to locate, evaluate, analyze, and synthesize information in at least one extensive writing assignment. In WB courses, students further refine their writing through revision and editing, and practice the accepted conventions of Standard English.

**Term Project:**
Students will complete a research project that involves identification, collection, organization, analysis, interpretation and presentation of existing environmental data. Students will gather data from library-based and on-line sources (especially NOAA WDC for Paleoclimatology). We will devote Mondays to working on this project. Students will work independently on the project at first, but will come together later in the semester to develop regional synthesis of environmental change. Final reports will be written individually and will employ standard scientific writing conventions.

**Exams:**
One mid-term and one final exam will cover material that emphasizes lectures and readings from the textbook and supplemental sources.

**Assignments:**

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<th>Assignment</th>
<th>Deadline</th>
<th>Percent of Grade</th>
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<tr>
<td>5-page book review</td>
<td>Week 4</td>
<td>15</td>
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<tr>
<td>5-page debate summary</td>
<td>Week 8</td>
<td>15</td>
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<tr>
<td>Research report</td>
<td>Week 14</td>
<td>30</td>
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<tr>
<td>Mid-term exam</td>
<td>Week 7</td>
<td>20</td>
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<tr>
<td>Final exam</td>
<td>Week 15</td>
<td>20</td>
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Weekly Content Outline

1  Introduction
   The history of environmental change studies; philosophical perspectives on the human/environment interface.
   Readings: Goudie, pp. 1-7

2-3  The Agency of Humans on Earth
   The long term relationships between human culture and environmental systems from the dawn of culture in the Pleistocene to the Scientific/Industrial Revolution of the 18th-20th centuries.
   Readings: Goudie, pp. 8-28

4-5  Human Modifications of the Biosphere
   The impact of human cultural, social, and economic systems on the organic component of Earth's environment. This section will examine the early human use of fire, domestication of plants and animals, deforestation for agriculture, and contemporary issues such as fire suppression and tropical deforestation.
   Readings: Goudie, pp. 29-137

6-7  Human Modifications of the Soil Community
   Modification of the soil community, including both qualitative and quantitative changes induced by human activities. Included in this section will be discussions of soil pollution, changes in soil chemistry, and erosion.
   Readings: Goudie, pp. 138-176

8-9  Human Modifications of Hydrological Systems
   Quantitative and qualitative modifications in the hydrological cycle: the movement of water from ocean basins to atmosphere to terrestrial runoff. Since most human modifications occur during the runoff phase of the cycle, discussions will focus on irrigation, flood control and water resource development
   Readings: Goudie, pp. 177-234

9-10 Human Modifications of Landforms
   Humans as geomorphic agents. From small-scale modifications such as agricultural terracing, stream channelization and slope stability issues, to larger scale modifications such as strip-mining and urbanization.
   Readings: Goudie, pp. 235-301

11-12 Human Modifications of the Atmosphere
   Next to alterations in the biosphere (to which they are closely related), human modifications of the atmosphere are the most significant changes in the global environmental system. Discussed in this section will be such issues as deterioration of the ozone layer and its consequences, the potential for global warming through enhancement of the natural greenhouse effect, and general considerations of air pollution through human activities.
Readings: Goudie, pp. 302-349

13-15 The Changing Global Environment

*What are the prospects for the global environment in the middle of the 21st century? Are current views of environmental disaster worst-case scenarios or are they accurate predictions of what probably will happen?*

Readings: Goudie, pp. 350-387