Freshman Learning Community Proposal
Earth Crisis!

1. What is the theme you propose for your group of courses? In what ways do you think this theme speaks to issues important to our freshman population?

The theme for our mixed cluster covering GE areas B1 (physical science), B3 (science elective), and D (social science) will be the critical analysis of environmental issues and problems, from scientific and social perspectives, and from global to local scales. The name of our cluster will be “Earth Crisis!” We believe this theme will speak to our freshmen because of the pervasiveness of environmental issues in popular media including movies (i.e., An Inconvenient Truth), music (‘Earth Crisis’ was actually the name of a vegan rock band from the 90’s!), talk shows, and television. Environmental problems are increasingly affecting all aspects of life, including all aspects of human society. For example, global warming is now a topic of everyday conversation, whether in academia, the legislature, or American living rooms. A recent (March 2010) Gallup poll indicated that Americans' attitudes are shifting toward becoming less worried about the threat of global warming and less convinced that its effects are already happening. 48% of Americans now believe that the seriousness of global warming is generally exaggerated, up from 41% in 2009 and 31% in 1997. The lack of understanding by the American public of the social and scientific implications of environmental crises is alarming. Global warming will be but one of the topics we will seek to explore in our cluster. We will also explore topics that directly affect people living in the Bay Area like earthquakes, fires, tsunamis, and floods. Students will have an opportunity to examine the potential effects of earth crises on our everyday lives.

2. List the three courses (prefix, number, title, units)

GEOL 2301 Natural Hazards (4) (approved for Area B1 Physical Science)
ENVT 2001 Environmental Perspectives (4) (approved for Area D)
ENSC 2802 Global Environmental Issues (4) (approved for Area B Science elective)

3. Explain how the theme will be used to integrate course content in each course. (Describe the contribution of each discipline’s perspective on the theme that will help create a coherent learning experience for the students.)

In Fall quarter, students will learn about the science behind natural disasters in GEOL 2301. In this Physical Science GE course, students will learn about the earth processes that lead to such things as volcanoes, earthquakes, hurricanes, floods, landslides, tsunamis, etc. They will learn about how the activities of humans may serve to increase the “disaster” level of such natural physical phenomena. In ENVT 2001 during the Winter quarter, students will apply social science methodologies to further investigate the natural phenomena explored in Fall quarter and explore their effects on humans societies and social structures. For example, after learning about the geologic processes that result in earthquakes in Fall quarter in GEOL 2301, students will learn about the differential effects that phenomena such as earthquakes have in developing vs. developed nations in Winter quarter in ENVT 2001. They will learn that the impact of a natural disaster in a developing nation is generally measured in terms of loss of human lives, whereas in a developed nation it is measured in terms of economic and environmental impact. During the Spring quarter, in ENSC 2802, the students will integrate aspects of the science and social science they explored in Fall and Winter, explore the life science aspects of environmental science that were not covered in Fall and Winter, and apply that integrated knowledge to investigations of
major California environmental problems. Students in spring will work in teams to investigate major environmental problems that will be presented to the class in the form of wikis using Blackboard.

4. Explain how each course in the proposed learning community will support student learning of each of the lower division general education area learning outcomes and General Education requirements (passed by Academic Senate February 17, 2004). Please use the GE course application forms to address this question. (If the course has already been approved for GE credit, and the current application form was used, please attach a copy. If the course has not yet been approved for GE credit, the use of the application form will permit review for GE credit, even if the cluster application is not selected. (http://www.csuhayward.edu/ge/subcommitte/ge/learningoutcomes.htm). Please note: for mixed area learning communities, courses must meet learning outcomes in each area covered by the learning community. For example, a learning community with a course in humanities, one in social science, and one in science must demonstrate that the learning outcomes in humanities, social science, and science are met by the relevant courses.

ENSC 2802, GEOL 2301 and ENVT 2001 have previously been approved for GE credit. Attached please find the GE application forms.

5. Attach course outlines for the three courses. Each course outline should indicate how the theme would be used in the course and any student activities that cross all three courses. (For example, will there be common reading(s) in the three courses? Will there be common assignments, or assignments on which students work the entire year? Will students keep a cluster portfolio? Etc.)

The first course in this cluster, GEOL 2301 Natural Disasters, will introduce the students to physical earth processes and how the scientific method is applied to studying such processes. In the second course, ENVT 2001 Environmental Perspectives, students will continue to examine those same environmental phenomena examined in the fall, but will examine the sociological and societal effects of these natural disasters. In the third course, ENSC 2802 Global Environmental Issues, students will use the same textbook used in ENVT 2001 and will apply the general social science and science knowledge gained in the first two classes to investigations of environmental issues specific to California. Students in ENSC 2802 will develop their research projects in the form of wikis (see ENSC 2802 syllabus that describes the wiki projects) that will allow them to work individually and as part of teams. These wikis may be saved as part of electronic portfolios.

Approved by Department Chairs:

_________________________  ___________________________  __________
Signature                          Department                     Date

_________________________  ___________________________  __________
Signature                          Department                     Date

_________________________  ___________________________  __________
Signature                          Department                     Date
Signatures of three faculty members: Ideally, the person who will teach the courses will participate in the cluster planning. We acknowledge, however, the difficulties of staffing departments face and understand that the person who plans the new cluster may not be the person who teaches the cluster course. In these cases, we expect the faculty member who plans the cluster will provide a thorough orientation to the expectations and methods developed for the learning community to the actual instructor.

We each agree, if selected, to meet on the following three days for an end-of-Spring or Summer Seminar on interdisciplinary curriculum and pedagogy and course integration

Proposals should be submitted as soon as possible and no later than Friday, April 6, 2007. Please submit 12 copies of the proposal (these will be kept and passed on to each committee that acts on the proposals.)

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1 While College approval for application of courses to meet GE requirements is not required, College approval assures support for departmental participation.
Request to apply GEOL 2301 to lower division general education requirements
B1 (Physical Science) and B3 (Science Elective)

GEOL 2301 Natural Hazards (4)
Geologic processes and their effects on human populations. Topics include earthquakes, landslides, volcanic eruptions, coastal erosion, floods, atmospheric and water pollution. Not for geology major credit. Designed for Physical Science G.E. students.

Discussion about how this course addresses the Lower Division Natural Science Learning Outcomes

Physical Science (1) Outcome 1
Students should be able to demonstrate broad science content knowledge in the physical sciences such as the nature and structure of matter, Earth’s place in the Universe, or the conservation of energy and matter.

Science Elective (B3) Outcome 1
Students should be able to demonstrate broad science content knowledge in the physical, life or interdisciplinary sciences.

This course examines content in Physical Geology and students will gain knowledge in the following areas:

- Plate tectonics
- Volcanology
- Earthquakes and seismology
- Mass wasting
- Climate change
- Severe storms
- Extraterrestrial impacts

Students will demonstrate their understanding of the content of the course through examinations, homework exercises, and/or web activities.

Physical Science and Science Elective (B1 & B3) Outcome 2
Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics, and the interpretation of numerical graphical data) to (physical) science problems.

Students will have the opportunity, in both the lecture and laboratory sections, to interpret graphical data and perform simple numerical calculations. In this course, we will stress the connection between mathematics and science. It is important that students understand that science is a way of describing the physical world and that we can achieve a deeper understanding through quantitative skills. As an example:

If isotope $^2X$ has a half-life of 100 years, what percentage of $^2X$ will remain after 300 years?
This problem may be solved iteratively:
After 100 years, \((0.5)(100\%) = 50\%\) remaining.
After another 100 years (200 years total), \((0.5)(50\%) = 25\%\) remaining.
After another 100 years (300 years total), \((0.5)(25\%) = 12.5\%\) remaining

Alternatively, the problem can be solved simply when the time period is a simple multiple of the half-life:
\((100\%)(0.5)^3 = 12.5\%\)

This simple example gives us the ability to gain a deeper appreciation of the nature of radioactive decay through a very simple calculation. In addition, this problem reinforces mathematical skills (e.g., iteration, percentages) and science content such as geochronology.

Students will have the opportunity to interpret graphical data that describe the physical world. In the top figure, three seismograms at different locations are presented for a single earthquake. Students will learn the principles behind interpreting these data to determine the location of an earthquake (epicenter) through triangulation (illustrated in the lower figure). In addition, students will manipulate the seismic data to determine the Richter magnitude of the earthquake.

This specific exercise is incorporated into the course through classroom discussions and a web-based module entitled Virtual Earthquake.

Students will demonstrate their understanding of this learning outcome through examinations, homework exercises, and/or web activities.

Physical Science and Science Elective (B1 & B3) Outcome 3
Students should be able to demonstrate a general understanding of the nature of science, the methods applied to scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.
The content of this course includes the analysis of a large amount of scientific observations and data. Examples in class are used to demonstrate the nature of science, empiricism and experimentation. Through this course, students will begin to evaluate scientific data and claims. For example, Wegener’s hypothesis known as *Continental Drift* will be contrasted with the modern theory of plate tectonics as an example of the scientific method and modern definitions of science. Through these examples, students will gain an appreciation of the methods of science and how science differs from other fields of knowledge and pseudoscience.

Students will demonstrate their understanding of this learning outcome through examinations, homework exercises, and/or web activities.
Natural Hazards  
GEOL 2301  
Department of Geological Sciences  
California State University, Hayward

Instructor: Dr. Luther M. Strayer  
Office: 353 N. Science Building  
Phone: (510) 885-3083  
email: lstrayer@csuhayward.edu  
Office Hours: Mondays & Tuesday 11:30 – 12:30 p.m.

Lecture Section: Monday and Wednesday 1:20 – 3:00 p.m  

Course Requirements:  
| Homework | 15% | Second Mid-Term Exam | 25% |
| First Mid-Term Exam | 25% | Final Exam | 35% |

Cheating on exams will result in a zero grade for that exam, for all persons involved, and my strongest efforts to have you expelled from the University.

This course fulfills the B1 OR B3 lower division natural science general education requirements.

The student learning outcomes include:
1. Students should be able to demonstrate broad science content knowledge in the physical sciences such as the nature and structure of matter, Earth’s place in the Universe, or the conservation of energy and matter.
2. Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics, and the interpretation of numerical graphical data) to physical science problems.
3. Students should be able to demonstrate a general understanding of the nature of science, the methods applied to scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.
**Schedule (Always Subject To Revision)**

| Week 1 | Introduction - Chapt. 1 Energy sources of disasters  
|        | Chapt. 1 & 2 Plate tectonics and earthquakes  
| Week 2 | **Chapt. 2 continued**  
|        | Chapt. 3 Basic principles of EQ geology & seismology  
| Week 3 | **Dr. Martin Luther King’s Birthday Day - No Class**  
|        | Chapt. 3 continued  
| Week 4 | Chapt. 4 Earthquakes in Western North America  
|        | **MID-TERM EXAMINATION #1 Chpts. 1-3**  
| Week 5 | Chapt. 4 continued  
|        | Chapt. 5 Earthquakes in the rest of North America  
| Week 6 | Chapt. 5 continued  
|        | Chapt. 6 Volcanoes  
| Week 7 | Chapt. 6 continued  
|        | **MID-TERM EXAMINATION #2 Chpts. 4-6**  
| Week 8 | Chapt. 7 Volcanism and plate tectonics  
|        | Chapt. 7 continued  
| Week 9 | Chapt. 8 Mass Movements  
|        | Chapt. 12 Floods  
| Week 10 | Chapt. 15 Impacts with objects from space  
|        | Review & wrap-up / catch-up day  
| Week 11 | **FINAL EXAM - Wednesday**  

**Final Exam:** Exam Week Wednesday, 2:00 – 3:50 p.m (*check this!*). The exam will be cumulative, but will emphasize material covered since the second mid-term exam.
Application for General Education Credit
for Lower Division Social Science Course (Area D1-3)

Course title___ Environmental Perspectives___
Course number__ENVT 2001_______

Courses approved for general education credit must provide students with explicit instruction in the approved student learning outcomes. Please be as specific as possible, pointing to topics, readings, assignments, activities and assessments that illustrate how the course meets the requirements. Attach the course syllabus and any assignments and/or assessments needed to support your explanations.

Please use this template as a guide to address ALL of the following learning outcomes.

Courses in this area acquaint students with fundamental principles and methods of inquiry, theoretical problems, and applications grounded in social science disciplines whose field of study is human behavior in its social environment.

Environment 2001 supports student acquisition of knowledge and skills described in the lower division "GE Social Science Outcomes". Specifically, this class supports items number 1, 3, and 5.

1. Students will demonstrate, orally and in writing, recognition of the application of disciplinary concepts derived from at least three social or behavioral sciences in the study of human behavior, individually and in society.

Environment 2001 introduces how behaviors of human beings and human society make changes to our living environment consequently how such changes of environment influences our own well being, our economic development, and our society's sustainable future. Students learn theories of ecosystem conservation, models of sustainable ecosystems. They learn, through their exams and essays, to use these theories and models to compare with human society and economic system. They also learn the practical applications of environmental conservation to urban development, forest and rangeland management, aquatic ecosystem protection.

3. Students will demonstrate, orally and in writing, the ability to describe how human diversity and the diversity of human societies influence our understanding of human behavior, individually and in societies, both local and global.

Environment 2001 demonstrates that human beings had become the super-power in natural, surpassing all other agents in the natural in shaping our living environment. Students learn that individual behavior plays an important role in environment protection and natural resource conservation. Through their essay pages, these concept will be engraved in their minds which will serve as an important principal in guiding their person behavior in their future lives.

5. Students will demonstrate, orally and in writing, the ability to describe major positions and contrasting arguments made on one or more significant contemporary issue area confronting US society as applied to human behavior. (Possible areas include: biomedical and health issues, class, crime, discrimination, education, energy, environment, gender, global economy, immigration, military intervention abroad, poverty, race, technology.)

Environment 2001 spent a good portion of time in discussing our energy and environment issues. Air pollution, water pollution, and global warming derived from fossil fuels consumption have given serious challenges to human being's development. Whether the technology can solve these
problems in the short or long run remains to be discussed. Students learn that the U.S. can play a pivotal role in dealing with environmental changes that the world is facing.
Course Objectives
This course is designed to familiarize the students with basic environmental concepts. The course is concerned mainly with the human environment, their problems and causes: ecosystem balance, human population growth, depletion of fossil fuels and our search for alternatives, air and water pollutions, solid and hazardous waste disposal, climate changes, deforestation, and rangeland management. Possible solutions to these problems will also be discussed.

Course Outline
1. What happened to the human environment;
2. Physical world and ecological systems;
3. Human population growth and problems;
4. Energy issues;
5. Environmental pollution and solutions;
6. Solid waste and pest control;
7. Global climate changes.
8. Sustainable economics
* Outlines and keywords for each topic are available on Blackboard under Course Materials.

Textbook
Richard Wright: Environmental Science, 9th Edition, Prentice Hall. In addition to the text book, other material: pictures, charts, tables, and videos that elaborate environmental issues will be shown in class.

Grading
1. Three non-cumulative tests will be given (30 points each). For each exam, there will be 50 multiple-choice questions (half points each) and 5 short answer questions (one point each).
2. Online exercises (quiz-like questions) of 3 points for each chapter. You will do this online using Blackboard under Course Material section.
3. Attendance will count for 10 points. There is a sign up sheet which you have to put your initials on. Each unauthorized absence results in a 2-points reduction of your total score.
4. Grade scale: A > 130  B 115-129.9  C 100-114.9  D 85-99.9  F < 85

<table>
<thead>
<tr>
<th>Exams</th>
<th>90 points</th>
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<tbody>
<tr>
<td>Homework</td>
<td>50 points</td>
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<tr>
<td>Attendance</td>
<td>10 points</td>
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<td>Total</td>
<td>150 points</td>
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Exam 1   April 24
Exam 2   May 17
Exam 3   8:00 section on June 12
            10:00 section on June 14
## Tentative Lecture Schedule

<table>
<thead>
<tr>
<th>Day</th>
<th>Lecture</th>
<th>chapters</th>
<th>Note</th>
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<tbody>
<tr>
<td>1</td>
<td>Course introduction</td>
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<td>+ <em>Finite Ocean video</em></td>
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<tr>
<td>2</td>
<td>Introduction</td>
<td>ch.1</td>
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<td>3</td>
<td>Ecosystem &amp; physical environment</td>
<td>ch.2-3</td>
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<td>4</td>
<td>Ecosystem Capital</td>
<td>ch11</td>
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<td>5</td>
<td>Human population growth</td>
<td>ch5</td>
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<td>6</td>
<td>Over population</td>
<td>ch6</td>
<td>+ <em>People Bomb video</em></td>
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<td>7</td>
<td>Exam 1</td>
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<tr>
<td>8</td>
<td>Soil erosion</td>
<td>ch8</td>
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<td>9</td>
<td>Fossil Fuels</td>
<td>ch.12</td>
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<td>10</td>
<td>Nuclear Energy</td>
<td>ch.13</td>
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<td>11</td>
<td>Renewable Energy</td>
<td>ch.14</td>
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<td>12</td>
<td>Water resources</td>
<td>ch7</td>
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<tr>
<td>13</td>
<td>Video</td>
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<td>+ <em>Cadillac Desert video</em></td>
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<tr>
<td>14</td>
<td>Exam 2</td>
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<tr>
<td>15</td>
<td>Air pollution</td>
<td>ch21</td>
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<td>16</td>
<td>Water pollution</td>
<td>ch17</td>
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<tr>
<td>17</td>
<td>Pest Control</td>
<td>ch16</td>
<td></td>
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<td>18</td>
<td>Solid waste</td>
<td>ch18</td>
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<td>19</td>
<td>Climate change</td>
<td>ch20</td>
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<td>20</td>
<td>Sustainable communities and economics policy</td>
<td>ch22</td>
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<tr>
<td>21</td>
<td>Exam 3</td>
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**Note:**

If you have a documented disability and wish to discuss academic accommodations, or if you would need assistance in the event of an emergency, please contact me as soon as possible.

+ means that sections of the video will be shown if time permits.
GE Student Learning Outcomes

1. Students will demonstrate, orally and in writing, recognition of the application of disciplinary concepts derived from at least three social or behavioral sciences in the study of human behavior, individually and in society.
2. Students will demonstrate, orally and in writing, recognition of the inquiry methods used by at least one of the social or behavioral science disciplines.
3. Students will demonstrate, orally and in writing, the ability to describe how human diversity and the diversity of human societies influence our understanding of human behavior, individually and in societies, both local and global.
4. Students will demonstrate, orally and in writing, some knowledge of the political, social, and/or economic institutions of a country other than the United States.
5. Students will demonstrate, orally and in writing, the ability to describe major positions and contrasting arguments made on one or more significant contemporary issue area confronting US society as applied to human behavior. (Possible areas include: biomedical and health issues, class, crime, discrimination, education, energy, environment, gender, global economy, immigration, military intervention abroad, poverty, race, technology.)
Application for General Education Credit
for Lower Division Science Elective (Area B3)

Course title: Global Environmental Issues
Course number: ENSC 2802

Courses approved for general education credit must provide students with explicit instruction in the approved student learning outcomes. Please be as specific as possible, pointing to topics, readings, assignments, activities and assessments that illustrate how the course meets the requirements. Attach the course syllabus and any assignments or assessments needed to support your explanations.

Please use this template as a guide to address ALL of the following learning outcomes.

Purpose of Science GE: The goal of lower division general education in the natural sciences is to gain basic knowledge and learn key principles in the life and physical sciences as essential for an informed citizenry. In addition, students should recognize the experimental and empirical methodologies characteristic of science and understand the modern methods and tools used in scientific inquiry.

1. Students will demonstrate a broad science content knowledge in the physical, life, or interdisciplinary sciences.

This course is designed to be a vehicle for integrating a range of science skills and knowledge into an examination of critical science-based issues that affect the lives of CSUEB students as well as all Californians. Students are given an opportunity to apply the knowledge they have gained and further the interests they have and will acquire in other science classes by studying, evaluating and communicating to their professor(s) and peers the nature, significance and potential solutions to ongoing or predicted environmental problems in the state. Through class instruction and through individual guided research, each student will develop a more profound knowledge of the natural sciences and how the physical and biological components interact with other non-science areas to create the multifaceted environmental problems faced by this increasingly populated state. This class will provide a broad-based education in the natural sciences as well as a balanced exposure to the application of both the life and physical sciences through the examination of environmental problems. Environmental issues will form the backdrop for an interdisciplinary examination of science topics.

2. Students will demonstrate the application of quantitative skills (such as statistics, mathematics, the interpretation of graphical data, etc.) to scientific problems.

Students will be required to apply quantitative skills to the analysis of such diverse topics as population growth, nuclear energy, background extinction rates, and water quality. They will be asked to examine relationships between different facets of information, for example the comparison between increase in atmospheric carbon dioxide levels and changes in climate. As another example, students will learn about the First and Second Laws of Thermodynamics and learn to apply these laws in their interpretations of how energy is used efficiently and inefficiently (e.g., Did you know that only about 20% of the high-quality energy in gasoline is transformed into usable mechanical and electrical energy by the typical automobile?). Quantitative analysis of graphical, statistical and mathematical information, such as that noted above, will be stressed throughout the class, both in class instruction and in the student analysis and presentation of research topics. Students must clearly demonstrate the application of quantitative skills including the ability to understand and perform statistical and mathematical procedures and interpret tabular and graphical data ranging from histograms and scatter-plots to maps and venn diagrams.

3. Students will demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the
physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

Students will develop a clearer understanding of the complex nature of a range of important environmental issues through the examination of scientific methods of investigation and discussions of topics that constitute science vs. pseudoscience. As an example, topics to be discussed will include evolution, the scientific evidence in support of evolution, and scientific methods for studying evolution. We will also examine physical earth processes such as plate tectonics, and will discuss evidence for continental drift with its effects on the biogeography of different groups of organisms. We will require students to conduct thematic research projects to evaluate the information available about the scientific bases for and implications of different California environmental problems. Students will learn to identify, assess and synthesize a wide array of information from different sources and data types to arrive at a clear understanding of a topic about which they had only limited prior knowledge.
ENSC 2802: Global Environmental Issues

Classes: MWF @ 1:20-2:30 pm
Location: SC N215
Office hours: Dr. Lee: @ MWF 12-1:00pm, RO 204 or by appointment
Dr. Opp: @ MW 10-11:30, SC S325 or by appointment

Catalog Description: Human impact on the biologic and geologic environment in California. Resource needs, waste issues, species diversity and ecosystem degradation (Satisfies GE Credit Requirement B Science Elective for Non-Science Majors).

Course Objectives: This course is a broad-based examination of the major principles and fundamentals of environmental science coupled with a survey of the range of important environmental problems facing us today in California that illustrate the complex interplay between natural and anthropogenic systems.

Learning Outcomes: This course requires you to demonstrate a broad scientific knowledge of the physical, life, and interdisciplinary sciences you have gained from GEOL 2300 and ENVT 2000 in fall and winter, both through the execution of quizzes and exams and in the fulfillment of a research project to prepare a scientific Wiki on a chosen environmental problem in California. In interpreting published data on your chosen environmental problem and in responding to class materials on selected environmental issues, you must clearly demonstrate the integration of science and social science knowledge gained from the other courses in this cluster, as well as the application of quantitative skills including the ability to understand and perform statistical and mathematical procedures and interpret tabulated and graphical data, ranging from histograms and scatter-graphs to thematic maps. By applying social, biological and physical scientific knowledge and principles to the applied issues of environmental problems in California, you will demonstrate and develop a heightened appreciation for science, the methods applied in social and scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. You must exercise appropriate judgment and seek out solid examples of objective scientific data and peer-reviewed results concerning environmental issues.

Required Textbooks: There is one required textbook for this course. Note that this is the same textbook required for ENVT 2000.


You will be expected to examine daily newspapers, surf web-pages, watch television news programs and/or to listen to quality news radio programs like those on KQED 88.5 FM to catch
any breaking stories relating to the California environment. You will need to access the worldwide web outside classroom hours and will be expected to browse the web using Internet search engines. Internet access and browsing software is available to be used free of charge on most campus computers. We will use Blackboard as a means of communication with you concerning this class. Plan to visit the Blackboard course site often as we will frequently post important information for class, including vocabulary lists, answers to quizzes, articles to read, etc.

Course Format: This course will be co-taught by the ENSC Advisors for Biology (Option A) and for Environmental Systems and Resource Management (Option C), Dr. Sue Opp and Dr. Michael Lee. You should arrive on time and attend each class taking summary notes of important concepts and data, and ask questions and make observations about aspects that interest you. You will occasionally be given short articles to read about topics concerning environmental issues in California. Part of your grade will be based on participation in discussions regarding these articles and other classroom activities. So, come to class prepared!! There will be six quizzes in class; your lowest quiz grade will be dropped automatically, so only your top five quiz scores will count. There will also be two mid-terms and a Wiki project. As well as presenting your Wiki, you will also be designated one or more Wikis to critique based on a series of criteria provided by your instructors. Details on Wiki development and objectives will be provided. The two mid-terms will cover the material provided to you in classes and through assigned readings throughout the course. If you have any problems with the course material, with an assignment, or in attending all the classes, please see us during our office hours. All written work must be your own work, printed or typed and double-spaced. You will be expected to closely follow written guidelines on your Wiki project.

Expected topic schedule, date and required readings (subject to modification):

<table>
<thead>
<tr>
<th>DATE</th>
<th>CLASS TOPIC</th>
<th>REQD. READINGS</th>
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<tbody>
<tr>
<td>4/2</td>
<td>Introduction to course (Opp)</td>
<td>Syllabus</td>
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<tr>
<td>4/4</td>
<td>Environmental problems – California overview (Lee)</td>
<td>Chapter 1</td>
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<tr>
<td>4/6</td>
<td>Science, matter and energy – basic principles for environmental science (Lee)</td>
<td>Chapter 2</td>
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<td>4/9</td>
<td>Evolution &amp; biodiversity (Opp) QUIZ #1</td>
<td>Chapter 4</td>
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<td>4/11</td>
<td>Climate &amp; biodiversity (Opp)</td>
<td>Chapter 5</td>
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<td>4/13</td>
<td>Library research &amp; evaluation of literature sources (Jennifer Laherty)</td>
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<td>4/16</td>
<td>Intro. To Wikis (Opp &amp; Terry Smith) QUIZ #2</td>
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<tr>
<td>4/18</td>
<td>Ecosystems – ecological principles (Opp)</td>
<td>Chapter 3</td>
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<td>4/20</td>
<td>Ecosystem functions (Opp) - Wiki topic description due</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>4/23</td>
<td>Ecology (Opp) QUIZ #3</td>
<td>Chapter 6</td>
</tr>
<tr>
<td>4/25</td>
<td>Group Discussions – Wiki topics (Lee)</td>
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<td>4/27</td>
<td>Human ecology (Opp)</td>
<td>Chapter 7</td>
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<tr>
<td>4/30</td>
<td>Sustaining biodiversity (Opp) QUIZ #4</td>
<td>Chapter 8 &amp; 9</td>
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<tr>
<td>5/2</td>
<td>Sustaining biodiversity (Opp)</td>
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<tr>
<td>5/4</td>
<td>First Midterm Exam (Opp) 1:20-2:30pm in classroom</td>
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<tr>
<td>5/7</td>
<td>Agricultural problems (Lee) - Wiki bibliography due</td>
<td>Chapter 10</td>
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<tr>
<td>5/9</td>
<td>Agricultural problems (Lee)</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Chapter</td>
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<tr>
<td>5/11</td>
<td>Water problems (Lee)</td>
<td>Chapter 11</td>
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<td>5/14</td>
<td>Water problems (Lee) <strong>QUIZ #5</strong></td>
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<td>5/16</td>
<td>Geological problems (Lee)</td>
<td>Chapter 12</td>
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<td>5/18</td>
<td>Geological problems (Lee)</td>
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<td>5/21</td>
<td>Energy problems (Lee) <strong>QUIZ #6 – Draft of Wiki due</strong></td>
<td>Chapter 13</td>
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<td>5/23</td>
<td>Environmental toxins and hazards (Lee)</td>
<td>Chapter 14</td>
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<tr>
<td>5/25</td>
<td>Atmospheric problems (Lee)</td>
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<td>5/28</td>
<td><strong>Memorial Day – No Class</strong></td>
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<td>5/30</td>
<td>Atmospheric problems (Lee)</td>
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<td>6/1</td>
<td>Problems of waste (Lee)</td>
<td>Chapter 17</td>
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<tr>
<td>6/4</td>
<td><strong>Wiki Presentations</strong> (Opp, Lee)</td>
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<tr>
<td>6/6</td>
<td><strong>Wiki Presentations</strong> (Opp, Lee)</td>
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<tr>
<td>6/8</td>
<td><strong>Wiki Presentations</strong> (Opp, Lee)</td>
<td></td>
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<tr>
<td>6/11</td>
<td><strong>Second Midterm Exam</strong> (Lee) 2:00-3:10pm in classroom</td>
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</table>

**Evaluation and Grading Procedures:** The following scheme will be used for grading this class:

- 2 Mid-Term Exams: 50%
- Research Wiki: 20%
- Quizzes (5 quizzes * 5% each – lowest score dropped): 25%
- Participation: 5%
- TOTAL: 100%

Grading will be based on our general expectations as well as the relative standards within the class group. The final grade (A-F) will be decided based on the 100-point total. The course is worth 4 units of credit.

Grade Table:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent work, generally top 10-20% of class. (A- = 90-92, A = &gt;=93)</td>
<td>90-100%</td>
</tr>
<tr>
<td>B</td>
<td>Good work, average to above average achievement. (B- = 80-83, B = 84-86, B+ = 87-89)</td>
<td>80-89%</td>
</tr>
<tr>
<td>C</td>
<td>Adequate work, average to below average achievement. (C- = 70-73, C = 74-76, C+ = 77-79)</td>
<td>70-79%</td>
</tr>
<tr>
<td>D</td>
<td>Pass, but below average achievement. (D = 60-65, D+ = 66-69)</td>
<td>60-69%</td>
</tr>
<tr>
<td>F</td>
<td>Fail, inadequate work compared to expectations.</td>
<td>&lt;60%</td>
</tr>
<tr>
<td>C/N C</td>
<td>Credit requires attainment of C- or higher (i.e. &gt;= 70%).</td>
<td></td>
</tr>
</tbody>
</table>
Incompletes: You will be issued with an incomplete (I) if you fail to complete enough work to be given a fair grade, and where this is justified on grounds of illness, bereavement or other extenuating circumstances approved by the instructor. This work must be made up at a later date to receive an A-F grade. Where insufficient work is submitted to calculate a final grade and no instructor approval has been secured, an unauthorized incomplete will be given (WU). This work cannot be made up and thus the WU is equivalent to an F (see CSUH catalog). WU's are normally given to students who fail to withdrawal yet never actually come to class or stop coming to class part way. I do not drop you from this class; you must do so yourself.
The student learning outcomes include:

1. Students should be able to demonstrate broad science content knowledge in the interdisciplinary physical and lifes sciences such as the nature and structure of matter, Earth’s place in the Universe, or the conservation of energy and matter.
2. Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics, and the interpretation of numerical graphical data) to physical science problems.
3. Students should be able to demonstrate a general understanding of the nature of science, the methods applied to scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

**Students With Disabilities:** If you have a documented disability and wish to discuss academic accommodations, or if you would need assistance in the event of an emergency, please contact Drs. Opp or Lee as soon as possible so that we can make appropriate arrangements. Students with disabilities needing accommodation should either speak with us or with the Student Disability Resource Center. As Robinson Hall does not yet have an elevator and my office is on the second floor, Dr. Lee has an alternative location to meet students with mobility difficulties and will do so upon request. Such students dropping in during his office hours should use the campus phone on the first floor of Robinson Hall to let him know that they need an alternative venue. You need to dial 5-3155 to connect to his office, RO 204. Alternatively, dial 885-3155 from a cell phone. You may also make an appointment ahead of time.

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**Please sign, detach and return the following:**

PRINT YOUR NAME _______________________________ NET ID __________________

“All the work that I will submit for grading as part of this course, ENSC 2800 Environmental Problems of California, will be entirely my own work. I will follow accepted procedures in constructing my Wiki from numerous secondary sources and will cite all of these sources in presenting the ideas, information and data contained in my Wiki. I accept that there is a bond of trust between professor and student and declare that my work this quarter will in no way violate that bond. I accept that the consequences of violating this trust may entail my receiving a zero for my Wiki, an F for this course, or in disciplinary action from the university, depending on the severity of the transgression.

Signed ___________________________________________ Date __________________

”