Fall 2006
ENV 312
Energy and the Environment

Course Syllabus
- Draft Version -

Overview

Basic Information
Program: Program in Environmental Science
Course Prefixes: ENV 312 (CRN 46543)
Course Title: Energy and the Environment
Credit Hours: 4
Class Hours: Thursdays from 6:00 to 9:00 PM
Class Location: Science & Engineering Building 187
Course Website: http://personalwebs.oakland.edu

Instructor(s)' Information
Name: James Leidel
Office: Facilities Management Building (Room Q)
E-mail: leidel@oakland.edu
Phone: 248.370.4990
FAX number: 248.370.4442
Mailing Address: Facilities Management Building
Oakland University
Rochester, MI 48309
Office Hours: Before and after class or by appointment.
Feel free to leave a voicemail or email message any time.

OU Catalog - Course Description
Basic facts of energy: sources, forms, the roles it plays, and its ultimate fate.
Includes study of laws limiting energy utilization, energy flow patterns, effects of energy use on the environment and analyses of current energy related problems.

Prerequisite: Sophomore standing; mathematics proficiency and MTH 011 level.
Required Text

**Energy and the Environment**
Robert Ristinen & Jack Kraushaar
384 pages, paperback
J. Wiley & Sons (1998)
ISBN 0471172480

Other Utilized Texts (suggested reading)

**The Atmospheric Environment: Effects of Human Activity**
Michael McElroy
360 pages, hardcover
ISBN 0691006911

**Renewable Energy (2nd edition)**
Godfrey Boyle
452 pages, paperback
ISBN 0199261784
**Course Goals and Objectives**

1. Comprehend existing world, US, and local energy use and its impact on the environment, economy, and global climate. Students should come away with a thorough understanding of fossil fuel pollutants, acid rain, issues with nuclear energy, ozone depletion, and climate change.

2. Comprehend both conventional and renewable energy resources, their magnitude, availability, as well as past, present, and forthcoming technologies for capturing and integrating these resources into our energy infrastructure.

3. Be familiar with energy conservation, conventional energy conversion, & combined heat and power.

4. Be familiar with the theory underlying alternative energy conversion technologies.

**Course Policies and Procedures**

**Web Site**

There is a web site for this course containing up to date syllabus, schedule, assignments, and all handouts. For the most part, paper copies will not be given, and it is your responsibility to check the site frequently for updates.

The web site address is: [http://personalwebs.oakland.edu/~leidel/ENV312/index.htm](http://personalwebs.oakland.edu/~leidel/ENV312/index.htm)

**Field Trips (2)**

One lecture period will consist of a combined onsite and offsite field trip to the Oakland University photovoltaic installation, and to the Uni-Solar manufacturing facility in Auburn Hills, approximately 5 miles from campus.

A second period will consist of a visit to the Southfield, MI DTE Solar-Hydrogen fuel station behind the Detroit Edison Southfield Service Center.

Please make every effort to attend these exciting tours. A total of 10 points will be given for the mandatory attendance of these tours.

**Biodiesel Laboratory Exercise**

One laboratory will be assigned of soy oil transesterification to methyl ester, or biodiesel. Students will bring in a liter of vegetable oil of their choice and transform it chemically into a clean and renewable diesel fuel substitute that can be blended with normal diesel and used directly in any diesel engine.

**Projects (2)**

There will be one, relatively short and well defined study project and one much longer study project that will assigned early in the semester for presentation to the class near the end of the semester. More information will be available in the detailed course schedule and assignments.
Homework
A number of homework assignments will be given throughout the semester. The homework will be randomly collected throughout the semester for grading. Homework is your responsibility to complete. It is the single best way to prepare for quizzes and the final exam. All quiz and exam material will be covered during lectures and be embodied within the homework exercises.

Quizzes
A number of short quizzes (6-7) will be given throughout the semester to allow for both the student and instructor to continually monitor the comprehension of the course materials. Combined with a small field trip attendance grade, quizzes will be equal in point value to the comprehensive final. If the seventh quiz is reached before the end of the semester, your lowest quiz score will be dropped. Quizzes will be utilized in place of mid semester exams.

Final Exam
The final exam will be based on material covered in class, homeworks, and in the required text. You should find the final (and quizzes) to be reasonably straightforward if you have understood the lecture material and have read and have understood the text and handouts. Strict adherence to Oakland University Academic Conduct is your responsibility.

No make-up exam will be given. Should you miss an exam for non-legitimate reasons, you will receive a grade of zero on the missed examination. If you miss an examination for a legitimate reason, we can negotiate. If you turn in written assignments late, there will be a grade penalty of 20% each day the assignment is late.

Grading
There will be several randomly collected homework assignments, one laboratory assignment, two independent study projects, six or seven quizzes, and a comprehensive final exam. A small component of the grade based on attendance to the two field trips as well.

<table>
<thead>
<tr>
<th></th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>25 points (total for all HW)</td>
</tr>
<tr>
<td>Biodiesel lab report</td>
<td>25 points</td>
</tr>
<tr>
<td>Short study project #1</td>
<td>25 points</td>
</tr>
<tr>
<td>Study project #2</td>
<td>50 points</td>
</tr>
<tr>
<td>Six quizzes</td>
<td>90 points (15 each)</td>
</tr>
<tr>
<td>Field trip attendance</td>
<td>10 points total</td>
</tr>
<tr>
<td>Final exam</td>
<td>100 points</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>325 points</strong></td>
</tr>
</tbody>
</table>

The above point system is approximate, and may be revised as necessary.

The maximum number of points that any student can accumulate towards the final grade will be approximately 325. I will grade using a sliding curve scale. Worst case: scores that are 90% or higher will receive a grade of 4.0; point totals between 75% and 90% will receive grades between 3.0 and 3.9; between 60% and 74%, 2.0 and 2.9; between 45% and 59%, 1.0 and 1.9. This is a new course, so care will be taken to be equitable and fair in light of no prior grading history.
Project reports will be graded on the basis of the science and environmental content of the work as well as on the quality of the writing, including spelling, grammar, punctuation, etc.

Class Attendance
It is imperative that you avoid missing classes. We will be covering a vast number of topics and materials across the fields of energy resources, engineering, alternative energies, air pollution, and the science of climate changes. All of the content covered in class or in the assigned readings is important, and any of it could be the subject of an exam question. Lectures will be used to focus and amplify selected text subjects, to provide examples and images, to discuss current events, and to answer questions.

While the course matter is very extensive in breadth, most subjects are not treated in detail, and the content is not particularly difficult. No special scientific background is assumed.

Cell Phones
Please be conscientious to the instructor and other students. Cell phones are to be turned off during class period. You may not leave the classroom to answer phone calls and return.

Academic Conduct
The University’s regulations that relate to academic misconduct will be fully enforced. I insist on seeing your own work. Any student suspected of cheating by copying on exams, changing answers on exams after they are scored, having another person take an exam, obtaining exam questions prior to the exam time, use of any previous student’s course work, plagiarism, obtaining undeserved points on group work, or by other means will be referred to the Academic Conduct Committee. Students found guilty of academic misconduct face suspension or permanent dismissal. OU subscribes to a search service for identification of plagiarized material (TurnItIn.com). You will be required to submit your written assignments to this service. Anyone found by the Academic Conduct Committee to be guilty of misconduct will also receive a 0.0 grade for the course from the instructor in addition to whatever sanction(s) the Committee decides.

Special Considerations
Students who may require special considerations should work with Disabilities Support Services and the instructor to arrange accommodation.