PHYS 162  Solar and Alternative Energies  Fall 2012

Class times: Tuesday and Thursday 10:00-11:30 AM  Location: 100 WIL

Instructor: Miriam Deutsch. Office: 275 WIL  Tel: 6-5973  Email: miriamd@uoregon.edu
Office hours: Monday 2-3pm, Thursday 3-4pm, Friday 2-3pm, or by appointment.
Note: I will not be holding office hours on Thursday Oct. 11, Friday Oct. 12, and also on Thursday and Friday Nov. 22-23 (Thanksgiving break.)

TAs:
Brian Hake. Office: 255a WIL (enter through 255 WIL, in back) Email: bhake@uoregon.edu
Office hours: Tuesday 4-5pm, or by appointment.
Ben Allen. Office: 231 WIL  Email: ballen4@uoregon.edu
Office hours: Wednesday 11am-12pm, Thursday 9-10am, or by appointment.

You may also get help from any Physics GTF at the Physics Drop-in Center, located in 147 WIL. Check schedule posted on the door for hours.

Attendance policy: Attendance is not required, nevertheless strongly recommended. Lectures will cover materials which are mostly in the textbook, but will often address different approaches to solving problems, expand on examples in the text and solve problems not necessarily from your book.

Course text: The required text is Energy, Environment and Climate by R. Wolfson (second ed.)

Course outline:

We've embarked on the beginning of the last days of the age of oil. Embrace the future and recognize the growing demand for a wide range of fuels or ignore reality and slowly – but surely – be left behind.

-Mike Bowlin, chairman and CEO of ARCO (now BP), speech in Houston, 9 Feb 1999

This quotation practically says it all. Earth’s fossil fuel reserves are limited, and will eventually be depleted. Furthermore, experts unanimously agree that the rapid increase in use of fossil fuels over the past two centuries has led to an accelerated rate of global climate change, with the tipping point for catastrophic outcomes not yet known (or have we passed it…?)

This course aims to introduce you to the basic concepts and terms associated with energy and its various sources. We will cover the following topics:

1. Energy – definition, fundamental concepts and uses
2. Fossil fuels as an example of an “optimal” energy source
3. Solar energy – a bottomless renewable energy source
4. Other renewable energy sources – hydropower, wind, earth, biomass
5. Nuclear energy – clean but risky
6. Hydrogen – the other bottomless energy source

Homework: Reading assignments will be posted weekly. Assessment quizzes (worth extra credit, see below) will be posted on Blackboard for you to take before the lectures. Homework will be assigned weekly and will usually be due the following week.

Homework submission: Completed assignments should be placed in the drop-box labeled “PHY 162” located in the west end of the Willamette Hall basement. This is the only acceptable mode for submitting homework. You may not email your completed assignment to either me or the TAs, unless specifically instructed to do so. Assignments sent by email will not be graded and will be marked as
not submitted. Completed homework assignments may not be submitted through Blackboard. Homework submitted up to 24 hours late will not be graded and will only be marked as submitted for 20% of the full credit. Homework submitted later than that will receive a grade of 0 points, as if not submitted. Submission deadlines will be strictly imposed. Special circumstances and/or emergencies may be accommodated on a case-by-case basis. In such cases you should contact me as soon as possible to discuss your specific needs. Do not assume you will receive a deadline extension without discussing the matter first with me.

Solutions to Homework: Solutions to homework problems will also be posted on Blackboard. It is important you review them, as they might hold additional information to what we do in class. I also like to reuse some homework problems in exams, and the solutions will often serve as study guides.

Course web site: http://blackboard.uoregon.edu/ I will post homework assignments, course announcements and handouts. Solutions to homework problems and tests will also be posted here. You will need to check regularly for updates.

Exams and grade determination: Exam and grade breakdown are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Scheduled for</th>
<th>% Weight of final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam #1</td>
<td>Oct. 18, in class</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Exam #2</td>
<td>Nov. 13, in class</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Dec. 7, 8am, in class</td>
<td>30%</td>
</tr>
<tr>
<td>Homework</td>
<td>Weekly</td>
<td>40%</td>
</tr>
<tr>
<td>Self Assessment Quizzes</td>
<td>Weekly</td>
<td>Up to 7 points in extra credit</td>
</tr>
</tbody>
</table>

Extra Credit: Completing the assessment quizzes posted on Blackboard will earn you up to 7 points in extra credit. This credit is for participation in the assessment, and will not depend on your actual quiz score. You should make an effort to complete these quizzes, as I will reuse some of the questions in subsequent class exams. Participation in class will also earn you up to 5 points in extra credit. Questions, comments and disagreements are all welcome – I’d love to hear what you have to say!

Your final grade in the course will be determined as follows:

<table>
<thead>
<tr>
<th>Final score</th>
<th>86-100</th>
<th>71-85</th>
<th>56-70</th>
<th>40-55</th>
<th>Below 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

The broad number ranges will allow room for +/- grades. If I find it necessary, I will curve the grades. Note: The highest grade of any standard curve will be A. I reserve the grade of A+ only to special cases, when a student’s performance is clearly above the norm. In statistics such cases are known as outliers. Hence an average score of 95% does not guarantee you a final grade of A+.

Students with Disabilities: If any aspects of the program hinder you from fully participating in this course, please notify me as soon as you become aware of them. You may also contact Disability Services in 164 Oregon Hall, Tel: 346-1155.