

ENVSC 15
Course Syllabus
Introduction to Energy (3 units)
Fall 2014 Section E5905
M&W 1:15-2:40PM Room HM HU125

Instructor: Jason Robert Patton

email: jason-patton@redwoods.edu

Course Website: http://www.science.earthjay.com/?page_id=815

Required Text: Richard Wolfson, Energy, Environment, and Climate, 2nd ed., 2012

Supplies: three ring binder for class handouts including blank paper for drawing illustrations and notes during class; colored pencils for making illustrations; calculator

Contact: Please don't hesitate to email me with any questions, comments, or concerns. I welcome any feedback or suggestions. Please do not use myCr messaging to get in contact with me. The best way to contact me for any reason is by sending an email directly to my College of the Redwoods email jason-patton@redwoods.edu

Course Description

An introductory study of humanity's past and present use of available energy resources and an examination of potential future directions in energy use. Students will learn about the physical principles of energy resources and consider issues of environmental impact, economics, and sustainability.

Course Learning Outcomes

1. Describe how the scientific method is used to understand natural phenomena.
2. Provide examples of how energy transfers through Earth's systems.
3. Distinguish between renewable and non-renewable energy sources.
4. Explain potential environmental impacts of energy sources.

Grading

Your final grade will be comprised of:

<u>Summary</u>	<u>Points</u>
Participation	100
Course Notes and Illustrations	100
Activities (7, 20 points each)	140
Homework (8, 20 points each)	160
2 Mid Terms (150 points each)	300
Research Project Proposal	50
<u>Research Project/Presentation</u>	<u>150</u>
Total	1000

There are 1000 points available and grades are assigned by the percentage of total points as follows:

1000-940=A	939-900=A-	899-870=B+	869-830=B	829-800=B-
799-770=C+	769-700=C	699-670=D+	669-600=D	<599=F

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Classroom Conduct

Side conversations among classmates are disrespectful and disruptive to the instructor and your fellow students. Questions or comments about the course material are welcome at all times but should be approached in a respectful manner.

The use of cell phones, iPods, or other items that may distract you, your instructor, or your classmates are not permitted during class. All such devices must be turned off.

You may not leave the room during an exam or quiz unless you are ready to turn in your finished exam.

Academic Honesty

You are encouraged to work together to review notes from lectures, to work on problems from the text, and to formulate ideas for any take-home assignments. However, all work you turn in must be your own independent, original work.

In the event that any work is copied from another student, zero credit will be given to all students involved (regardless of who copied from whom).

Any sources of information used in your written work must be referenced (regardless of whether the material was copied word-for-word). This includes your text book and all internet sources (reference these by including the name and URL). Any work including un-referenced material from another source (regardless of whether it was copied word-for-word) will be given zero credit.

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

Academic dishonesty in any form may be reported to the vice president of CR, as per the student code of conduct available at <http://www.redwoods.edu/District/Board/New/Chapter5/Ap5500.pdf> See in particular page 9, Article VIII which begins "Students are expected to demonstrate qualities of morality, integrity, honesty, civility, honor, and respect."

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

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Tentative Class Schedule*

<u>Date</u>	<u>Topic</u>	<u>Readings</u>
Week 1	Lecture 1: Energy and Society Lecture 2: What is energy?	CH-1, 2 CH-3
Week 2	Lecture 3: Labor Day Lecture 4: Energy and Heat <u>Energy and Heat Activity (1)</u>	CH-4
Week 3	Lecture 5: Fossil Fuels <u>Fossil Fuel Activity (2)</u> Lecture 6: Fossil Fuels	CH-5
Week 4	Lecture 7: Nuclear Energy <u>Radioactivity Activity (3)</u> Lecture 8: Nuclear Energy cont.	CH-7
Week 5	Lecture 9: Terra and Luna <u>Geothermal Activity (4)</u> Lecture 10: Terra and Luna cont. (Research Proposal Due prior to class)	CH-8
Week 6	Lecture 11: Study Guide Mid Term #1 Lecture 12: Mid Term #1	
Week 7	Lecture 13: Review Mid Term #1, Solar Energy <u>Solar Energy Activity (5)</u> Lecture 14: Solar Energy cont.	CH-9
Week 8	Lecture 15: Solar Energy cont. Lecture 16: Solar Energy cont.	CH-10
Week 9	Lecture 17: Climate Forcing <u>Climate Forcing Activity (6)</u> Lecture 18: Climate Forcing cont.	CH-13
Week 10	Lecture 19: Impact Fossil Fuels <u>Group Carbon Budget Activity, due at end of class (7)</u> Lecture 20: Study Guide Mid Term #2	CH-6

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- Week 11 Lecture 21: **Mid Term # 2 (Notebook Due)**
 Lecture 22: Review Mid Term #2
- Week 12 Lecture 23: **Veteran's Day**
 Lecture 24: Presentations
- Week 13 Lecture 23: Presentations
 Lecture 24: Presentations
- Week 14 FINALS WEEK (**Research Paper due via email by Sat Dec 7, 8PM**)

*** Note: Instructor reserves the right to make changes to course schedule as deemed necessary.**

College of the Redwoods Resources and Information

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

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Course Expectations

Class will start on time at 1:15 PM. You are responsible to be present for and be attentive to all the material covered in class. If you need to leave the class early, please let me know before the class starts.

This is a college-level science class, and will require a commitment of your time outside of class. This at-home time will enable you to digest the material we cover in class and help when you are asked on the exams to apply these concepts to different problems and applications.

You will spend 6 to 9 hours per week on course material outside of class. You are encouraged to set aside a specific time each week outside of class devoted solely to each course:

- o Reviewing lecture notes and in-class exercises each week
- o Reading the textbook
- o Completing homework assignments and research project
- o Studying for exams

Note that 6 hours per week at home is the average minimum to pass. Some students may require more time at home just to pass; for some in this course that may be enough to get an A. A student who is very attentive in class, asks questions, and takes careful notes will need less at-home time.

Absences: It is difficult to do well in this class without attending all the lectures. I understand there will be an occasional absence due to illness or emergency, however I consider more than two to three absences per semester excessive. If you do miss a class:

1. Obtain the course material online (PowerPoint slides, extra reading, and handouts). The slides will include information about any homework or in-class exercises that were assigned. Most assignments and handouts referenced by the slides will be in your handouts.
2. Next, try to obtain a copy of lecture notes from a classmate since there are many things we cover that are not spelled out directly on the slides or handouts.
3. Read the required reading covering the material you missed.
4. After this, feel free to contact me by email with any questions.

Final grade active attendance boost: If your final course grade after rounding to the nearest whole number is within 1 point of a grade transition (C to C+, D to C, A- to A, etc.) I will give you the boost needed to obtain the higher grade if you have actively attended most classes and succeeded in many of the in-class pop quiz questions. More than 2-3 unexcused absences is considered excessive and will disqualify you from

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this opportunity. Conduct not in accordance with that outlined below will also prevent you from receiving this bonus.

Computer skills: This class will require computer use outside of class. Activities involving the 4 skills listed below will be included throughout the semester. In addition, you will be expected to check myCR regularly for announcements. If any of the items listed below seem foreign to you, you are encouraged to sign up this semester for CIS 100 "Basic Computer Skills", a beginning computer literacy course at CR.

1. Send and receive email from your CR Google email account.
2. Open a web browser, and access a web page if you are given the web address.
3. Access course material (handouts, slides, announcements, etc.).
4. Open Microsoft word (.doc or .docx), Microsoft Excel (.xls or .xlsx) and Adobe .pdf documents to read their contents.

*** Please note that this document is informational and subject to change.**

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Homework: Homework from the text will be assigned Wed the week before it is due. People will bring their questions regarding the homework to class the Monday after it is assigned so we can work through them together. Homework is due in class on Wed. We will review the homework on the following Monday. Ideally, the student should read the chapter and work on the homework prior to class on Monday so that we know if there are any questions.

Activities: Each week we will focus on a specific topic and we will use some of the class time to develop these themes. Some weeks will include activities. You may need to spend some time out of class completing the activities. There are 7 activities throughout the course, each worth 20 points and they are due by the beginning of the following class.

Mid-Term Exams: The 2 midterms are worth 150 points each. The exams are a mix of multiple choice, true/false, short answer, and essay questions based on the lectures, activities, homework, and course reading. Mid-term exams cover the material since the beginning of the course or the last exam, or whatever is most recent.

Missing an exam: All make-up exams should be arranged for in advance possible. In the event of an emergency or sudden illness that prevents you from attending the exam, you must contact me as soon as possible and arrange a time for the exam to be completed before our next regular class time. If you miss an exam (and do not contact me to make it up) or if you arrange a makeup that you do not take, you will receive a zero for that exam.

Research Project and Presentation: Each student will participate in a group project which is comprised of an energy source design paper and a presentation of their paper results to the class in the last couple of weeks of class. Students will prepare a 2-4 page proposal for their research project and submit this proposal electronically to the instructor. The proposal will be in times new roman font size 12, double spaced. The final report will also be submitted in an electronic format with a length of 5 to 8 pages, in times new roman font size 12, double spaced. There will be two figures and one plot, chart, or table. The figures, plots, charts, and tables will have descriptions for each of them. The oral presentation will be ~12 minutes long with ~3 minutes for class discussion. The presentation can be made in the form of a PowerPoint presentation or a poster presentation.

Course Notes and Illustrations: Each lecture may include handouts (of the presentation for that day) and several on-board illustrations that relate to the specific topic being discussed for that day. You can use the handouts to take notes and your notebook to

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copy and label any illustrations. You are required to have a three-ring binder containing these handouts and your notes taken during every class. You will turn in your notebooks at the end of the semester along with your activities and homework that has been completed through the semester. These will be evaluated during the second mid-term exam. Credit is given for careful reproduction of the illustrations including any notes, labels, and graphs. Keep your notes and course material organized and in chronological order.

Reading: In this syllabus I provide a list of required reading in the Wolfson text *Energy, Environment, and Climate* textbook for each week. The student is expected to read the assignment before class. This reading is essential to your comprehension of the material in this course and will be a key to your success. Periodically I will ask you questions from the reading at the beginning of class, before we have covered the material in lecture. These answers will count towards your activity grade for the day and can count towards the "active attendance grade boost" (see below).

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Semester & Year:	Fall 2014
Course ID and Section Number:	ENVSCI 15 Section E5905
Number of Credits/Units:	3
Day/Time:	M&W 1:15-2:40PM
Location:	HM HU125
Instructor's Name:	Jason "Jay" R. Patton
Contact Information:	Office location and hours: no office Phone: 707.407.0021 home Email: jason-patton@redwoods.edu
Course Description: An introductory study of humanity's past and present use of available energy resources and an examination of potential future directions in energy use. Students will learn about the physical principles of energy resources and consider issues of environmental impact, economics, and sustainability.	
Student Learning Outcomes:	
<ol style="list-style-type: none"> 1. Describe how the scientific method is used to understand natural phenomena. 2. Provide examples of how energy transfers through Earth's systems. 3. Distinguish between renewable and non-renewable energy sources. 4. Explain potential environmental impacts of energy sources. 	
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Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.	
<p>The student code of conduct is available on the College of the Redwoods website at: http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf</p> <p>Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.</p>	
College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.	