

Course Code & No. - Section: ENVS 253
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Course Title (Credits): Alternative Energy Systems (3)
Term & Year: Fall / 2015
Course Ref. No. (CRN): 80091

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Office Hours: After class and by appointment

Class Meeting Time: W 1600-1845
Location: TCES 205

Course Description

ENVS 253: Alternative Energy Systems I (3) [OC]

A design, installation and maintenance course in small-scale energy systems. Topics include photovoltaic's, wind energy, solar domestic water and space heating, hydro-power, and alternative vehicles. Students will do energy assessment to determine feasibility of a spectrum of energy choices. Combines theory with hands-on practice.

Student Outcomes

Upon successful completion of this course, a student will be able to:

1. Define the basic principles of alternative energy, demonstrate interdisciplinary work, and articulate the need for alternative energy systems and appropriate technology.
2. Assess the state of the field today and illuminate examples of useful projects, theories and trends.
3. Convey problems and issues that have led to the need for argued change, recognize the barriers to implement shifts in current thought and infrastructure, and locate opportunities/constraints with strategies for achieving alternative energy goals/needs.
4. Apply critical examination and analyses to complex problems, case studies, and situations with the ability to formulate sustainable solutions to diverse multifaceted conflicts.
5. Understand their role and ability to be vehicles for positive momentum in society.

Methods of Assessing Student Outcomes

Student outcomes will be assessed using the following:

1. Class participation/attendance
 2. Weekly reflections
 3. Individual presentation
 4. Group presentation
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5. Final project
6. Student self assessments

Instructional Strategies

This class will utilize the Internet, movie clips, lectures, texts, class discussions, current news, group work, case studies, guest lectures and field trips.

Energy use, demand, and creation conceptualize this course. The theme of this class is: What simple and practical measures can we take to make a substantial impact on energy consumption? Is it necessary to shift the current paradigm of energy generation/production/consumption?

Helpful Websites

sightline.org, grist.org, postcarbon.org, aashe.org, solarliving.org, ccathsu.com

It is required that each student email me one website that they feel is useful to our class, at least one time during the semester. A brief synopsis of why this website is helpful to ENVS 253, and sharing this resource with the class as a brief individual presentation is expected.

Required Texts and Materials

1. Steeby, Donald. (2011). *Alternative Energy: Sources and Systems (Go Green with Renewable Energy Sources)*. Delmar Cengage Learning.
2. Laptop computer (one that meets the published SNC Laptop Requirements)

Recommended Texts and Materials

1. *The APA Style Handbook*; Third Edition, Able Baker; Addison-Wesley; (c) 2006; ISBN: 0-201-78129-8
2. *Little, Brown Compact Handbook*, seventh edition (or 6th); Jane Aaron; Pearson/Longman.

Attendance

This class will be conducted in the style of a seminar. Attendance is a mandatory requirement for successful completion of this course, as is class participation. Please see me for any conflicts that might prevent you for attending or participating in class.

Weekly Reflections

Students will be required to submit one reflection for each classroom session held. There is no length limit required. Rather, content should articulate a summation of what was covered, learned, and/or taken away from class the previous week as well as pose one question from either our class or the assigned reading.

Individual Presentation

Each student will prepare and present an individual research proposal to the class, based on their intended final research project.

Research Project

The culminating experience for this class is to design an alternative energy project that could be useful in the Tahoe Basin. More details will be discussed regarding the project during the first quarter of the semester. Students will be expected to come up with an original idea that can be based in theory and/or practice. A developed proposal will be due at the mid-term, and a final project submission will be due as your final exam. In addition, your final paper/project must be done in a way that's useful to the online knowledge center known as appropedia (appropedia.org). We will all sign up as members of the site as well make use of its numerous resources throughout the semester.

Class Requirements

The following is a list of course requirements:

All students are required to bring a laptop computer to each class meeting; cell phones must be turned off during class; all Students must arrive to class on time

Prim Library Resources

Using the library's resources effectively (not just Internet resources) contributes to developing each of SNC's core themes by exposing students to high quality academic resources, diverse opinions, new ideas, and a future that includes building on a liberal arts education. In this course, you will be expected to utilize the library's resources (either on-site or remotely) as you complete your assignments.

Prim Library Resources:

1. Materials on reserve (when applicable):
2. Reference materials
3. Books (can be checked out)
4. Electronic databases (for peer-reviewed research articles, reviews, newspaper and magazine articles)
5. Hardcopy periodicals: Prim Library has current subscriptions for Science, New Scientist, Science News, and National Geographic Magazine. Full-text articles from many more periodicals are available through the electronic databases.
6. Lib Guides: <http://Libguides.sierranevada.edu> These web pages contain instructions about how to use resources available at Prim Library, how to evaluation the appropriateness of information from the Internet for a research paper, how to cite sources, and other topics related to finding and using information.

Sanctions for Cheating and/or Plagiarism**The Honor Code**

The faculty of SNC believes students must be held to high standards of integrity in all aspects of college life in order to promote the educational mission of the College and to encourage respect for the rights of others. Each student brings to the SNC community unique skills, talents, values and experiences which, when expressed within the community, contribute to the quality of the educational environment and the growth and development of the individual. Students share with members of the faculty, administration

and staff the responsibility for creating and maintaining an environment conducive to learning and personal development, where actions are guided by mutual respect, integrity, responsibility and trust. The faculty and students alike must make diligent efforts to ensure high standards are upheld by their colleagues and peers as well as themselves. Therefore faculty and students accept responsibility for maintaining these standards at Sierra Nevada College and are obligated to comply with its regulations and procedures, which they are expected to read and understand.

Consequences of Violating the Student Honor Code

SNC students and faculty share the responsibility for maintaining an environment of academic honesty. Thus, all are responsible for knowing and abiding by the SNC Faculty/Student Honor Code published in the current SNC Catalog. Faculty are responsible for presenting the Honor Code and the consequences of violating it to students at the start of their classes AND for reporting all incidences of academic dishonesty to the Provost. Students are responsible for knowing what constitutes CHEATING, PLAGIARISM and FABRICATION and for refraining from these and other forms of academic dishonesty. Violations of the Honor Code become part of a student's academic record.

1st Offense: Student receives a zero for assignment/exam and counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

2nd Offense: Student fails course and receives counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

3rd Offense: Student is expelled.

Grading

Assignment	Number of assignments	Points
Class Participation/Attendance	Weekly	40%
Reflections	Weekly	20%
Midterm/Individual Presentation	1	10%
Final Project	1	30%
Student Self Assessment/Website Link	1	Mandatory
Total		100%

Grading Scale:

A+ 100-98 A 97-93 A- 92-90 B+ 89-87 B 86-83 B- 82-80 C+ 79-77 C 76-73 C- 72-70 D+ 69-67 D 66-63 D- 62-60 F 59 and below

Assignments are due on the announced date unless alternate arrangements have been made with me in advance of the due date. Otherwise, late assignments will have a 1/3rd of a grade deducted for every day they are late. For example, if you submit your reflection for a given week 3 days late and receive a grade of 10/10, the grade entered will be 7/10. It's best to contact me prior to missing any class deadlines. Assignments are meant to add to our collective learning experience and should not be an impediment to your successful completion and academic achievement in the course.

ADA Accommodations

In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, students with a documented disability are eligible for support services and accommodations. If a student wishes to request an accommodation, please contact the Director of Academic Support Services, Henry Conover, at (775) 831-1314 x7534, hconover@sierranevada.edu, office in Prim Library: PL-304.

The SNC Email System

The SNC email system is the official communication vehicle among students, faculty members and administrative staff and is designed to protect the confidentiality of student information as required by the Family Educational Rights and Privacy Act of 1974 Act (FERPA). Students should check their college email accounts daily during the school year.

Students have a right to forward their SNC e-mail to another e-mail account (for example, @hotmail or @gmail). However, confidentiality of student information protected by FERPA cannot be guaranteed for SNC e-mail forwarded to an outside vendor. Having email redirected does not absolve a student from the responsibilities associated with official communication sent to his or her SNC email account.

The Sierra Nevada College Mission Statement:

Sierra Nevada College graduates will be educated to be scholars of and contributors to a sustainable world. Sierra Nevada College combines the liberal arts and professional preparedness through an interdisciplinary curriculum that emphasizes entrepreneurial thinking and environmental, social, economic and educational sustainability.

The Core Themes:

Liberal Arts Professional Preparedness
Entrepreneurial Thinking Sustainability

Class Schedule

Below is a tentative itinerary for the semester, which is subject to change based on notice you'll receive either in class or through email.

- Aug. 19 Course Overview, Student Expectations, Interests, Backgrounds, Reading and Reflection Assignments, Introduce Appropedia, Discuss Final; **Read Chapter 1**
- Aug. 26 Appropriate Technology for the Private Home; **Read Chapter 2 and 3**
- Sept. 2 SNC History of Alternative Energy; **Read Chapter 4**
- Sept. 9 Solar Discussion; **Read Chapter 5**
- Sept. 16 Wind Energy, Case Study: Cape Cod Wind Farm; **Selected Reading from Appropedia and Outside Sources/Prepare for Midterm ; Read Chapter 6**
- Sept. 23 Sustainability and the Home; **Selected Reading from Appropedia and Outside Sources; Read Chapter 7 and 8**
- Sept. 30 Alternative Energy and Electrical Wiring Lab; **Skim Chapter 9-12**
- Oct. 7 Solar Water Heating and Energy Audits and Assessments, Solar Water Heater Installation, Insulation, Home Appliances, Lighting, etc.
- Oct. 14 Midterm, Presentation **Read Chapter 13**
- Oct. 21 Prepare for Final Paper/Project Workshop; **Read Chapter 14**
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- Oct. 28 Alternative Energy and Plumbing; **Selected Readings**
- Nov. 4 Appropriate Technology Cross-Fertilization with Alternative Energy, CCAT (Campus Center for Appropriate Technology; Hydro Power, Good, Bad, Where, When, How is it Appropriate and/or Useful; **Read Chapter 15**
- Nov. 11 No Class-Veterans Day
- Nov. 18 Alternative Vehicles, Transportation, Biking, Mass-Transit, Alternative Strategies, **Prepare for Final Paper/Project**
- Nov. 25 Thanksgiving Break-No Class; **Prepare for Final Paper/Project**
- Dec. 2 Class Review, Other Alternative Energies and Appropriate Technologies; **Prepare for Final Paper/Project and Presentation**
- Dec. 10 Final Paper/Project/Presentation Due (Thursday, Finals Week-1830-2130)

Other Potential Additions to Class: Pennelyes Goodshield, Sustainable Nations; Arne Jacobson, Alternative Energy Professor, Humboldt State University; Schatz Energy Laboratory (Hydrogen); Geothermal; TCES and LEED; Off-the-grid/Grid technologies; Case Study: Proposed Lake Tahoe Biomass Plant; Case Study: Green Capitalism; Case Study: Bottled Water; Case Study: Nuclear Energy
