

GENERAL EDUCATION COURSE PROPOSAL
UNIVERSITY OF MARY WASHINGTON

Use this form to submit **EXISTING** courses for review. If this course will be submitted for review in more than one category, submit a separate proposal for each category.

COURSE NUMBER:	FSEM 100DD		
COURSE TITLE:	ENERGY RESOURCES IN THE 21ST CENTURY		
SUBMITTED BY:	Charles Whipkey	DATE:	1/22/08
<i>This course proposal is submitted with the department's approval. (Put a check in the box to the right.)</i>			X
<i>If part of a science sequence involving two departments, both departments approve.</i>			

THIS COURSE IS PROPOSED FOR (check one).

First-Year Seminar (<i>indicate in the rationale if this will also count for major credit</i>)	X
Quantitative Reasoning	
Global Inquiry	
Human Experience and Society	
Experiential Learning	
Arts, Literature, and Performance: Process	or
	Appreciation
Natural Science (<i>include both parts of the sequence</i>)	

NOTE: See the report entitled "General Education Curriculum as Approved by the Faculty Senate," dated November 7, 2007, for details about the general education categories and the criteria that will be used to evaluate courses proposed. The report is available at www.jtmorello.org/gened.

RATIONALE: Using only the space provided in the box below, **briefly** state why this course should be approved as a general education course in the category specified above. *Attach a course syllabus.* **Submit this form and attached syllabus electronically as one document to John Morello (jmorello@umw.edu).** All submissions **must** be in electronic form.

FSEM 100DD, Energy Resources in the 21st Century, was successfully taught during the Fall 2007 semester. As required by the new Gen. Ed. rules, students took an active role in that class and will continue to do so in the future. The class will have weekly reading assignments, which could include book chapters, technical papers, popular articles, and Internet publications. Some readings will be selected by me and others by the students themselves. Students will participate in weekly class discussions based on the readings and other material that may be assigned or that they obtain through their own research. Students will be quizzed on the material prior to class discussions to ensure that everyone is ready to participate. Each student will assemble and present a PowerPoint talk to the class on a particular energy resource or related topic, and each student will prepare a detailed written paper on some aspect of an energy resource or environmental concern. I am also in the process of identifying lab and field experiences that will enhance the class.

FSEM 100DD: Energy Resources in the 21st Century

Fall 2008

Instructor: Dr. Charles Whipkey
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Office hours: to be announced

Rationale: Most of the world's energy is derived from petroleum. The price of crude oil recently has hovered around \$100/barrel and the price of gasoline at the pump has recently been nearly \$3.00 per gallon. Some analysts are predicting a peak in worldwide oil production within the next few years that will create shortages and drive prices upward at an accelerating pace. In any case, most crude oil production has shifted over the past few decades to politically unstable areas, or to areas that are openly hostile to the U.S. and other western nations. As a result, oil supplies are uncertain and the potential for higher prices and shortages is always present. Other conventional fossil fuels, such as coal and natural gas, have their own issues of supply, cost, and environmental problems. In addition, CO₂ emissions from fossil fuels may be leading to profound changes in the Earth's climate. As a result of all of these factors, alternatives to petroleum and other fossil fuels could be of great importance over the next few decades.

During this course you will...

1. Investigate the basic science and technology relating to oil, gas, coal and potential alternative energy sources.
2. Discuss the technical, economic, and political feasibility of alternative energy sources and the likelihood that they will make a contribution to our energy supply.
3. Examine the environmental impacts of both fossil fuels and alternative energy sources.
4. Prepare reports (written and oral) on individual energy sources and the issues associated with them.

Readings:

One book is required for this class: *Energy, the Master Resource* by R.L. Bradley and R.W. Fulmer. This book will be used as a basis for class discussions.

Other readings will consist of book chapters, technical papers, press articles and Internet material.

Format of class

Part I: Basics of Energy Technology and policy

Resource: Relevant chapters in *Energy, the Master Resource*.

Preparation for class: Prepare a one page typed summary (in bullet form) describing the main points of each chapter under discussion. Include, on a second page, the thoughts, disagreements, comments, and questions that you wish to bring up to the class.

Format of the class: Discussion will be led by two students chosen by drawing names of all class attendees on the day of the class. A quiz will be given on the material prior to class discussion. Discussion leaders will summarize the main points of the chapter and ask for feedback and discussion from the class.

Part II: Discussion of Individual Energy Resources

Resources: Technical papers (or book chapters) discussing the nature of the resource (e.g. in a discussion of oil shale, at least one paper that explains exactly what oil shale is) and its potential as an energy source. One or more popular articles (magazine, newspaper, Internet) discussing the potential, problems, politics, environmental impacts, etc., of the resource will also be included.

Preparation for class: Prepare a one page typed summary (in bullet form) describing the main points of each resource under discussion. Include, on a second page, the thoughts, disagreements, comments, and questions that you wish to bring up to the class.

Two students, working together, will prepare and present a 20 minute PowerPoint session during class each week. All students should read all materials and be prepared to discuss them during class.

Format of the class: Discussion will led by the two students assigned to each topic. A quiz will be given on the material prior to class discussion. All students will participate in discussion of the topic.

Deliverables and presentations

PowerPoint presentation As discussed above you will be responsible for a 20-minute PowerPoint presentation later in the semester. Details will be discussed during the course of the semester.

Report A written report will be prepared by each student on a *specific aspect* of an energy source that could be important in the 21st century (a specialized aspect of your PowerPoint topic). The subject and treatment of your report must be approved by the instructor. The report must be factual, in that it must be technically accurate, but it also must include your assessment of the potential usefulness or economic practicality of the fuel or technology. A draft of the report will be due several weeks before the end of classes. The final report will be due during the final exam period.

Grading will be based on...

1. Preparedness based on chapter outlines and quizzes. Chapter outlines will be graded on accuracy, completeness, and succinctness. Quizzes will be graded on appropriate criteria, which may vary based on the nature of the quiz. Preparedness will count for 30% of your class grade..

2. Participation as assessed by the instructor. This is a seminar class and as such can only be successful if students take the initiative during our discussions. Make notes of items that caught your attention in the readings, and bring those points up for discussion. Be prepared to defend any position that you take because others may disagree. Participation during class discussions will account for 30% of your class grade.

3. PowerPoint presentation I will assess the quality of you PowerPoint presentation based on images, text, and delivery. The PowerPoint will account for 20% of the grade.

4. Report The report will count for 20% of the final class grade. Grading will be based on accuracy, organization, clarity of writing, and references.