

**The Ohio State University
Freshman Seminar Program
Proposal Sheet**

Course Information.

1. Attach a sample syllabus that includes the following. Sample syllabi can be found at <http://freshmanseminars.osu.edu>.
 - a. The course goals,
 - b. A brief description of the content,
 - c. The distribution of meeting times,
 - d. A weekly topical outline,
 - e. A listing of assignments,
 - f. Grade assessment information (including whether the course will be graded by letter grades or Satisfactory/Unsatisfactory),
 - g. The required textbooks and/or reading list, and
 - h. The academic misconduct and disability services statements (sample statements can be found at <http://artsandsciences.osu.edu/currofc/resources.cfm>).

2. Attach a brief biographical paragraph that includes the current research interests, teaching awards and honors, and undergraduate courses taught by the participating instructor(s). The paragraph will be included in materials for first-year students.

Yiyang Wu, Department of Chemistry, College of Mathematical and Physical Sciences

Proposer's Name(s) and Academic Unit(s)

Signature(s) of Proposer(s)

wu@chemistry.ohio-state.edu

E-mail Address(es) of Proposer(s)

247-7810

Contact Phone Number

March 31, 2006

Date of Submission

Signature(s) of Head(s) of Academic Unit(s)

Please indicate how many quarters you would like to offer the seminar and which quarters: ____ AU ____ WI X SP

Once per year

This request form and the attachments should be mailed to the Program Coordinator, Rod Romesburg, 105F Brown Hall, 190 West 17th Avenue, or e-mailed to Rod Romesburg at romesburg.2@osu.edu. For additional information, please call 292-6248.

Global Energy Challenge and Alternative Energy Technologies

Syllabus

Instructor: Yiying Wu, 1045 Evans, wu@chemistry.ohio-state.edu

Text: James Howard Kunstler, *“The Long Emergency”*

Web Resources (Nathan Lewis’s webpage): <http://nsl.caltech.edu/energy.html>

Credits: 1 quarter credit course

Course Description: Finding renewable and environmental friendly energy resources is a grand challenge for the future. This seminar course will introduce students to the issues of the environmental factors and limited resources associated with fossil fuels, and present an overview of alternative energies including nuclear, hydroelectric, geothermal, ocean/tides, wind, biomass and solar energies. The course will emphasize the importance of chemistry, materials and nano technology to clean energy issues and thus stimulate students’ interests in these majors. General concepts of solar cells, batteries and hydrogen storage will be introduced.

Course Format: The class will meet once per week (48 minutes). In the first part of this class, students are encouraged to discuss the possible changes that will happen with the ending of cheap fossil fuels. In the second part, the alternative energies will be introduced, with special focus on solar energy. Each topic will be presented in the form of seminars at a level that can be understood by freshman students. The students will be encouraged to participate in the discussions. A lab tour will be arranged to have some hand-on experiences of assembling a solar cell. Readings will be provided the previous week for the topic to be covered. By the end of the quarter students will have a clear perspective of the global energy challenge, and also a general idea of the available alternative renewable energies.

Grading: This seminar will be graded S/U. To receive a satisfactory grade a student must:

- o Participate in class discussions (20%)
- o Complete all assignments to the satisfaction of the instructor.

The assignments include

- (1) A review of the book “The Long Emergency” by Kunstler (40%). After reading the book, each student will be asked to write an essay (~800 words) that comments on the opinions presented in the book. For example, will globalism wither, and the consumer economy be a strange memory? This book review will be due during the fifth week.
- (2) Pick one of the alternative energy resources discussed in class and write a summary (40%). The summary (~ 800 words) should critically assess the issues of sustainability, environmental impact, cost, and technology challenge. Each student will choose a topic during the 4th

week after discussing with the professor. The summary is due during final week.

Class Schedule:

Week 1: What will life be like if there is no oil tomorrow? –Modernity and the fossil fuel dilemma

Week 2: Global energy consumption and the terawatt challenge

Week 3: Fossil fuels and the environmental impacts: nature bites back

Week 4: Overview of alternative renewable energies

Week 5: Solar energy: Conventional p/n junction cells and new-generation solar cells

Week 6: A lab tour: how to assemble a dye-sensitized solar cell?

Week 7: Hydrogen-storage materials for mobile applications

Week 8: Issues and challenges facing rechargeable lithium batteries

Week 9: Impact of nano technology to clean energy

Week 10: Can we predict our energy future?

Academic Misconduct: Students are reminded that academic misconduct is a violation of the code of Student Conduct and, per faculty rule 3335-31-02, must be reported to the Committee on Academic Misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp).

Disability Services: Students with disabilities that have been certified by the Office for Disability Services should inform the instructor as soon as possible of their needs, and will be appropriately accommodated. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

Biography:

Dr. Yiying Wu received his B.S. in chemical physics from the University of Science and Technology of China in 1998, and his Ph.D. in chemistry from the University of California at Berkeley in 2003. He then did his postdoctoral research at the University of California, Santa Barbara, and joined the chemistry faculty at The Ohio State University in the summer of 2005. Dr. Wu is interested in designing and synthesizing nanostructured functional materials with optical, electronic, magnetic, biomedical, photovoltaic and thermoelectric applications. Dr. Wu taught General Chemistry (Chem 121) in autumn 2005.