

NEW COURSE PROPOSAL

PROGRAM: BIOLOGICAL AND PHYSICAL SCIENCES

- 1. Catalog Description of the Course.** *[Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]*

CHEM 344. ENERGY AND SOCIETY (3)

Three hours of lecture per week.

Survey of the physical, chemical, and engineering principles involved in the production of energy from current and potential sources and the economical, environmental, and political issues surrounding energy production.

The course will also examine factors that influence worldwide energy policy. Examples of topics included: energy conservation, efficient usage and transportation of energy, energy resources, fossil fuels, active and passive solar energy, biomass, fuel cells, nuclear (fission and fusion) processes, and hydroelectric, tidal, geothermal, and wind power.

Same as PHYS 344. GenEd: B1 and Interdisciplinary

PHYS 344. Energy and Society (3)

Three hours of lecture per week.

Survey of the physical, chemical, and engineering principles involved in the production of energy from current and potential sources and the economical, environmental, and political issues surrounding energy production.

The course will also examine factors that influence worldwide energy policy. Examples of topics: energy conservation, efficient usage and transportation of energy, energy resources, fossil fuels, active and passive solar energy, biomass, fuel cells, nuclear (fission and fusion) processes, and hydroelectric, tidal, geothermal, and wind power.

Same as CHEM 344. GenEd: B1 and Interdisciplinary

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment
Lecture	3	1	25
Seminar			
Laboratory			
Activity			

- 3. Justification and Learning Objectives for the Course.** (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*

Elective and General Education course B1 and Upper division Interdisciplinary

Students who successfully complete this course will be able to:

- Describe the scientific method and how it is used to approach scientific problems
- Explain the basic physics and chemistry scientific principles that are involved in energy generation and distribution
- Integrate chemical and physical concepts as they relate to energy generation and utilization
- Explain the scientific principles behind and limitations of various energy sources
- Identify the environmental impact of various energy sources
- Evaluate current and future energy sources from the standpoints of efficiency, economic viability, and environmental impact

4. Is this a General Education Course

YES

NO

If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	X
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	
E (Human Psychological and Physiological Perspectives)	

5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]

What is Energy?
Measurement and Conservation of Energy
Energy in the Biosphere
Primary Sources of Energy
Patterns of Consumption
Efficient Transportation of Energy
Energy Conversion
Energy Use
Oil and Gas
Coal
Electrical Energy and Electricity Production
Electricity Distribution
Nuclear Power - Fission
Nuclear Power - Fusion
Hydroelectric Power, Tidal Power and Wave Power
OTEC and Geothermal
Wind Power
Biomass
Solar Power – Photovoltaic
Solar Thermal
Energy Storage
Fuel Cells and Hydrogen Economy
Passive Solar Design
Energy Conservation
Energy Resources
Social and Economic Issues
Energy and the Environment
Energy and the Future

6. References. [Provide 3 - 5 references on which this course is based and/or support it.]

C. R. Humphrey, T. L. Lewis, and F. H. Buttell *Environment, Energy, and Society: A New Synthesis*, Wadsworth 2001.
E. S. Cassedy, P. Z. Grossman *Introduction to Energy: Resources, Technology, and Society*, 2nd Ed., 1999.
H. H. Schobert and H. Schobert *Energy and Society: An Introduction*, Cambridge, 2001.
V. Smil *Energies: An Illustrated Guide to the Biosphere and Civilization*, MIT Press 1998.
J. J. Kraushaar, R. A. Ristinen *Energy and Problems of a Technological Society*, John Wiley & Sons, 1993.
J. Ramage *Energy: A Guidebook*, 2nd Ed., Oxford, 1983.

7. List Faculty Qualified to Teach This Course.

Dr. Simone Aloisio, Dr. Philip Hampton, Dr. Geoff Dougherty

8. Frequency.

a. Projected semesters to be offered: Fall _____ Spring X Summer _____

9. New Resources Required.

None.

10. Consultation.

Attach consultation sheet from all program areas, Library, and others (if necessary)
(See Attached Form)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

____Philip Hampton____	____1/8/03____
Proposer of Course	Date

Consultation:

Prof. Geoff Dougherty

Date