

Syllabus for Engr 303I

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I. TITLE: The Role of Energy in Society

II. CATALOG DESCRIPTION: An introduction to the basics of energy, its production and uses. Also included, is a detailed look at the environmental and social impact of each type of energy.

III. PURPOSE: This course is primarily designed for students who are interested in understanding how energy impacts our lives and the lives of our children by decisions that we make today. It is hoped that students use independent thinking to express their ideas effectively in oral and written communication; to understand methodologies used in energy production, to analyze and evaluate data presented in this course to reach logical conclusions; to understand the role and application of technology and science in formulating solutions to environmental problems; and to understand the importance of energy in our society in making responsible environmental decisions.

IV. COURSE OBJECTIVES: At the conclusion of this course students will have:

- I. An understanding of the fundamental laws of energy, specifically Newton's First Law and Second Laws of Motion.
- II. Enhanced understanding of energy utilizing the knowledge learned and applying it to today's society.
- III. Displayed the ability to adequately discuss the role of energy in our society and express opinions developed through free thinking and deductive reasoning. These attributes will be displayed by discussion group free forum and exams.
- IV. Discussed current and future sources of energy development and their possible impact on the environment and society.
- V. Utilized the Internet and current literature to conduct research on energy conservation ideas and incorporate them into their daily lives. One of the two projects conducted during the semester is an energy study of one of their residences. The other project will provide a better understanding to NIMBY, Not In My Backyard Syndrome, and the challenges that utilities face when building new power generating systems.

V. CONTENT OUTLINE:

Energy

Oil and Natural Gas

Coal

Fossil Fuels and Greenhouse Effect

Energy from Water

Biomass

Solar Energy

Geothermal Energy

Wind Energy

Nuclear Energy

Electricity: Smart Use of Energy

Energy Storage

Transportation

Housing

Smart Energy Consumption

Hydrogen

VI. INSTRUCTIONAL ACTIVITIES:

1. This course is designed to promote scientific literacy associated with energy and our environment through active learning. Since this course is taught primarily as a large assembly, active learning activities are more readily utilized in the discussion session; but modified techniques are still used in the lecture hall. Group discussion, project teams, and collaborative research dealing with studies of past energy successes and failures are utilized.
2. This class also promotes critical thinking skills by helping students develop an investigative approach to asking questions and deriving their own opinions with regard to energy, the environment and social impact. All weekly discussion assignments require written responses and an application of the concepts previously discussed. Slides, videotapes, and DVDs are used in the lecture and discussion group to demonstrate basic concepts.
3. Two team projects will be undertaken during the semester to enhance the understanding of the cost of energy and how decision-making will affect future generations. Three major exams will be administered during the semester and the lowest grade will be dropped, not taking a test will not constitute the lowest grade. There will also be a final exam.

VII. GRADING PROCEDURES:

- Class/homework: 15%
- Discussion group participation: 15%
- Projects: 20%
- Exams: 25%
- Final Exam: 25%

VIII. ATTENDANCE POLICY: Attendance will be taken and students are expected to attend lecture and discussion groups. Good attendance is required for a good grade.

IX. ACADEMIC HONESTY: Cheating and plagiarism will not be tolerated.

X. TEXTBOOK:

Our Energy Future, 2009 Edition, Ngo and Natowitz

XI. NOTICE:

Syllabus is subject to change at any time without notice.
No late homework will be accepted

XII. WEBSITE:

Desire to Learn

Emergency Procedures. Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at www.bert.siu.edu, Department of Safety's website www.dps.siu.edu (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.