

Common Course Outline

ENVS 166

Energy and Technology

3 Semester Hours

The Community College of Baltimore County

Description

Energy is a critical resource for human societies with important implications for economies, global security, and environmental protection. Students in ENVS 166 will learn the language of energy, identify basic energy system components, and investigate energy generation, transmission and distribution systems. Students will also explore the fundamentals of energy consumption through analysis of energy use and its cost. The course will strike a balance between global energy flows and the details of energy use by individuals. Other topics include the technology and infrastructure involved in energy use, energy economics, and energy policy. Emphasis is placed on problem solving and identifying ways to improve energy efficiency through energy management at all levels.

3 credits; 3 lecture hours; Prerequisite: ENVS 101 - "Introduction to Environmental Science" and Math 083 or placement testing at that level.

Overall Course Objectives

Upon successful completion of ENVS 166, a student will be able to:

1. Identify global energy flows and proportions of types of energy resources, which support those flows.
2. Calculate personal energy consumption.
3. Describe the technology necessary to deliver energy to consumers.
4. Identify energy requirements of buildings and quantify those needs.
5. Evaluate the use of energy in transportation, commerce, and industry.
6. Understand various approaches to improving energy efficiency and energy conservation.
7. Find useful sources of information about energy and its use.
8. Estimate the magnitude of components of energy balances, in both energy units and dollars.
9. Understand and quantitatively estimate environmental impacts of energy use.
10. Be aware of the effects of energy use on the economy of a firm, a state, or a nation.
11. Develop informed views about energy policy based on critical evaluation of information sources.

Major Topics

Energy balances and the flow of energy
Sources of energy and their use
Heat transfer calculations
Energy generation technology
Energy use technology - Buildings, Transportation, Commerce and Industry
Environmental impacts of energy use, including greenhouse gas emissions
Economics of energy use
Government energy policy and regulation of the energy sector

Course Requirements

Instruction will include reading assignments, lectures, class discussions, demonstrations, group projects, and local experts as guest speakers. Grading will be based on written or oral exams, written assignments or papers, assigned projects, and participation in class discussions and activities.

Date Revised - 1/13/04