

Introduction to Wind Power

Outline of Instruction

Course Information

Organization	Monroe County Community College, Applied Science and Engineering Technology
Development Date	March 3, 2011
Course Number	ELEC 158
Potential Hours of Instruction	60
Total Credits	3

Description

The course introduces the field of wind energy. The course will cover the history and development of the wind industry, along with its terminology, technologies, electronics, power generation and storage, on / off grid operation, siting, and permitting. Safety, economics, and environmental issues will be covered as well.

Major Units:

1. Introduction to Wind
2. Energy and Power
3. Characteristics of Wind – estimating energy output
4. Technology evaluations
5. Wind turbine system technology
6. The Grid – On and Off
7. Battery systems
8. Safety
9. Installation
10. Economics of Wind Energy Systems
11. Careers in Energy

Types of Instruction:

Instruction Type	Contact Hours
Classroom Presentation	30
On-Campus Laboratory	30

Co-requisites

ELEC 125 (Fundamentals),
ELEC 156 (Intro to Renewable Energy Systems)
MATH 119 (Elementary Tech Math) or qualifying COMPASS score

Exit Learning Outcomes

General Education Outcomes

- A. Communicate ideas in writing using the rules of standard English
- B. Communicate information in writing using the rules of standard English
- C. Apply mathematical approaches to the interpretation of numerical information
- D. Apply mathematical approaches to the analysis of numerical information
- E. Demonstrate an understanding of the process of scientific inquiry
- F. Use computer technology to retrieve information
- G. Use computer technology to communicate information

Course Outcomes

- 1. Identify and measure wind resources
- 2. Identify and explain the usage of the components in a wind energy system
- 3. Pick appropriate sites for turbine installation
- 4. Predict available energy for a given site / turbine combination
- 5. Analyze site load requirements
- 6. Configure and size appropriate turbine installation to meet system requirements
- 7. Analyze wind-power systems integration issues
- 8. Size and configure appropriate backup systems
- 9. Identify and address safety issues
- 10. Calculate the economics and payback period for wind system financing
- 11. Investigate and keep up to date on evolving wind technologies
- 12. Discuss environmental issues for wind systems
- 13. Analyze and present the economic issues for wind power – small, community, and utility grade