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:

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
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<tbody>
<tr>
<td>Classroom Presentation</td>
<td>30</td>
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<tr>
<td>On-Campus Laboratory</td>
<td>30</td>
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</tbody>
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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