Introduction to Engineering & Technology
Outline of Instruction

Course Information
Organization: Monroe County Community College, Applied Science and Engineering Technology
Development Date: 10/5/2008
Course Number: METC 100
Instructional Level: Mechanical Engineering Technology
Total Credits: 3

Description
This course introduces the field of engineering technology. Concepts related to the engineering profession are presented, including economics, ethics, research, problem solving, communication, and typical engineering problems. A major component of the course includes presentation of mathematic and scientific tools that have utility in future engineering courses and the engineering career, including computer software. Historic examples are used throughout the course to demonstrate the typical problems that were successfully solved, as well as engineering failures, and the impact of technology on society. Students are encouraged to communicate and collaborate with each other on problems. Groupwork is required, as well as participation in the course's discussion forum. The end goal of the course is to give the student a feel for the engineering experience.

MAJOR UNITS
1. Introduction to Engineering
2. Energy, Power, Units and Conversion
3. Problem Solving Techniques
4. Problem Solving Tools
5. Understanding and Communicating Results
6. Engineering Economics
7. Engineering Ethics
8. Social Issues
9. Engineering Successes
10. Engineering Failures
11. Engineers as Personalities - Case Studies

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>The methods of instruction utilized in this course will include but not be limited to assigned readings and research, discussion board participation, report generation, and problem solving.</td>
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Learner Supplies

Scientific Calculator.
Microsoft Excel Software.
Prerequisites
High School Algebra

Exit Learning Outcomes

General Education Outcomes
A. Communicate ideas in writing using the rules of standard American English
B. Demonstrate an understanding of the process of scientific inquiry
C. Use computer technology to retrieve information
D. Use computer technology to communicate information

Course Outcomes
1. Apply conversions between different units of work and energy
   You will demonstrate your competence:
   o by solving problems involving work and energy
   Your performance will be successful when:
   o you calculate the correct answers to problems involving work and energy
2. Apply problem solving techniques and analysis tools to solve technical problems
   You will demonstrate your competence:
   o by solving problems involving work and energy
   o by applying analysis tools to solve engineering problems
   Your performance will be successful when:
   o you calculate the correct answers to problems involving work and energy
   o you correctly apply software tools to assist in solving problems involving work and energy
3. Perform basic research required to solve problems
   You will demonstrate your competence:
   o by obtaining data from external sources relevant to solving problems
   Your performance will be successful when:
   o you perform analysis to determine critical information required
   o you perform research to obtain necessary critical information
4. Analyze projects and determine the reasons for success or failure
   You will demonstrate your competence:
   o by evaluating actual historic projects and reporting on the outcomes
   o by inspection of actual artifacts at museums or historic sites and reporting on the findings
   Your performance will be successful when:
   o you present logically sound analysis in a clear, legible format
   o you extract technical issues from historic examples
   o you recognize technical factors in current engineering topics
5. Communicate and prepare reports of results
   You will demonstrate your competence:
   o by preparing reports of analysis and research results
   Your performance will be successful when:
6. **Recognize the impact on society and the environment of technical issues**
   You will demonstrate your competence:
   - by preparing reports of analysis and research results
   - by evaluating actual historic projects and reporting on the outcomes
   - by inspection of actual artifacts at museums or historic sites and reporting on the findings
   Your performance will be successful when:
   - you present logically sound analysis in a clear, legible format
   - you extract social impact from historic examples
   - you recognize social issues in current engineering topics

7. **Evaluate ethical issues resulting from technology**
   You will demonstrate your competence:
   - by evaluating actual historic projects and reporting on the outcomes
   - by inspection of actual artifacts at museums or historic sites and reporting on the findings
   Your performance will be successful when:
   - you extract ethical criteria from historic examples
   - you recognize ethical issues in current engineering topics

8. **Work and contribute as a member of a team**
   You will demonstrate your competence:
   - by preparing reports of analysis and research results
   Your performance will be successful when:
   - you contribute to work done by a group.