ESG 100 INTRODUCTION TO ENGINEERING SCIENCE (REQUIRED)

Credit: 3 Contact Hours: 3 hour tutoring per week

COURSE CATALOG DESCRIPTION:
An overview of the development and application of engineering principles in response to social, industrial, and environmental problems from ancient times to the present. Engineering methods and theory through case studies and real-world applications. Creativity and problem solving techniques of modern engineering through participation in a design project as well as learning through analyses of engineering disasters.

PRE- OR COREQUISITE(S): none


COURSE LEARNING OUTCOMES

| Understanding the role of engineers in problem solving and design | a c e g | Presentation |
| How engineers apply some basic numerical concepts in problem solving | a e | Portfolio assignment |
| Understanding the role of engineering ethics | f h | Portfolio assignment |
| The PEOs and SOs of the Engineering Science program and how they apply to the curriculum | i | Assignment |

COURSE TOPICS:
Week 1. The Engineering Science program: PEOs and SOs
Week 2. The engineering profession: importance of ethics, communication
Week 3. Some engineering fundamentals: relating math to the real world
Week 4. Begin multidisciplinary design project: design of a “mousebot”
Week 5. Introduction to mechanics, thermal issues; continue project
Week 6. Introduction to electronics; continue project
Week 7. Introduction to materials and materials selection; continue project
Week 8. Presentations on materials research; continue project
Week 9. Additional presentations; Complete “mousebot”
Week 10. The problem of energy; understanding energy and power
Week 11: Experimentation with wind power; wind turbine design
Week 12: Continue wind turbine design; aerodynamics
Week 13: Group design project
Week 14: group design project continued
Week 15: Final presentations
CLASS/ LABORATORY SCHEDULE:

<table>
<thead>
<tr>
<th>ESG Fall</th>
<th>100</th>
<th>Intro to Eng Science</th>
<th>LEC</th>
<th>1</th>
<th>MWF</th>
<th>10:30 AM</th>
<th>11:25 AM</th>
</tr>
</thead>
</table>

CURRICULUM

This course contributes 3 credit hours toward meeting the required 48 hours of engineering topics.

STUDENT OUTCOMES (SCALE 1-3):

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 – Strongly supported 2 – Supported 1 - Minimally supported

LEAD COORDINATOR(S) WHO PREPARED THIS DESCRIPTION AND DATE OF PREPARATION:

Gary Halada, May 19, 2010