### ENT 151  
ENGINEERING MATERIALS  
3

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Credit hours</th>
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<tbody>
<tr>
<td>ENT 151</td>
<td>ENGINEERING MATERIALS</td>
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**DESCRIPTION:**  
This course will provide the student with a basic understanding of materials and the important practical considerations that must be used in material selection and specification in design, manufacturing and failure analysis.

**CONTACT HOURS PER WEEK:** 2 Lecture, 1 Lab hours per week.

**REQUIREMENT:** This is a required course in the Mechanical Engineering Technology associate degree program.

**PREREQUISITE(S):** none

**COURSE COORDINATOR:** Associate Professor Gary S. Drigel

**TEXT**  
*Engineering Materials Properties and Selection*  
9th edition  
ISBN # 0137128428 / 9780137128426

**COURSE OBJECTIVES**  
Upon successful completion of this course the student will have an understanding of the following:

1. How to think and where to find information specifically associated Engineering Materials.
2. The basic properties and practical applications of metals, ceramics polymers and composites.
3. The properties and characteristics that must be considered when using and specifying materials for design and fabrication purposes.
5. The terminology, processes, specifications and heat treatments of aluminum, copper, and other metal alloy systems.
6. The numerous specification organizations and how to obtain copies of their specs.

**OUTCOMES ADDRESSED:**  
This course is a constitute course and is therefore not directly assessed. It will contribute to **Outcome 2** “Fundamental knowledge of engineering materials and how these materials are used in the design of machine components and systems” which is assessed in ENT 278. It will also contribute to **Outcome 4** “Fundamental knowledge of modern manufacturing methods, especially in the areas of machining, quality control, and process control” which is assessed in ENT 252.
METHOD OF EVALUATION:
ENT Department Standard for awarding letter grades: Each faculty member will use the following percentage scale in assigning letter grades in their courses, with the following allowances:
- the end (or ends) of any range can be adjusted by 1 point (+/-)
- the assignment of the D- or F may deviate by a few points (2-3) from the values shown
- faculty may elect to not use +/- grades

<table>
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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>A+</td>
<td>97-100</td>
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<tr>
<td>A</td>
<td>93-96.9</td>
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<tr>
<td>A-</td>
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<tr>
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<td>87-89.9</td>
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<tr>
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<tr>
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<tr>
<td>F</td>
<td>&lt;60</td>
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TOPICAL OUTLINE:
Introduction
Chapter 1        Structure & Properties
Chapter 2        Properties and Selection
Chapter 3        Steel Products
Chapter 4        Heat Treatment of Steels
Chapter 5        Carbon and Alloy Steels
Chapter 6        Stainless Steels
Chapter 7        Corrosion
Chapter 8        Non Ferrous Metals
Chapter 9        Polymers
Chapter 10       Polymers and Composites
Chapter 11       Polymer Fabrication
Chapter 12       Polymer Selection

TERM PAPER PRESENTATIONS

METHOD OF PRESENTATION:
Course is delivered in traditional classroom lecture and lab sessions.

MIAMI UNIVERSITY LEARNING COMMUNITY
Miami University is committed to fostering a supportive learning environment for all students irrespective of individual differences in gender, race, national origin, religion, handicapping condition, sexual preference, or age. Students should expect, and help create, a learning environment free from all forms of prejudice. Disparaging comments, sexist or racist humor, or questioning the academic commitment of students based upon these individual differences are behaviors that undermine our learning community. If such behaviors occur in class, please seek the assistance of your instructor or department chair.

Prepared by: Gary S. Drigel 3/2013