Department of Industrial and Engineering Technology  Course No.  MN-170
Title of Course:  Industrial Materials and Testing   New:  Fall, 2002

Catalog Description and Credit Hours of Course:

A comprehensive introduction to the basic science of industrial materials. Topics include: alloying of metals; steels and cast irons; heat treatment; non-ferrous metals; polymeric materials; destructive and non-destructive testing.

The course meets three times a week for two lecture periods (50 minutes each) and one lab period (110 minutes) for three (3) hours of credit.

Prerequisite(s):  MA-134 and CH-181

Purposes or Objectives of Course:

1. Classify materials according to origin, properties, and applications in industry.
2. Differentiate between material similarities and differences appropriate to the selection and use.
3. Use standardized test methods to perform both destructive and non-tests.

Expectations of Students:

The purpose of manufacturing is a highly integrated and time dependant activity. As such, this class curriculum is highly integrated and designed to be time dependant as well. Therefore, students will be expected to treat each test, written assignment and lab project as having a production deadline.

1. Complete all projects in a timely and professional manner. Each project may be evaluated individually and as a group activity employing “normal” quality control standards. Projects are designed to demonstrate the importance of material selection and processing characteristics.
2. Satisfactorily pass all tests. These tests will include material presented in the textbook, lectures, and projects.
3. Students are responsible for all lecture notes, homework problems, quizzes, and other activities related to course content.
4. Students are responsible for completing all projects, even though time constraints may require students to complete some projects outside normal class/lab hours.
5. As a general rule, late work will not be accepted. However, it is recommended that students with late assignments set an appointment with instructor to ensure that the material in the assignment is understood within the context of the class.
6. Definitions and vocabulary of Engineering Materials and Testing are key elements in this class and will be emphasized accordingly.

Course Content or Outline:

<table>
<thead>
<tr>
<th>Course Content or Outline</th>
<th>Weeks</th>
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<tbody>
<tr>
<td>1. Basic Science of Materials including structures, phases, and crystals</td>
<td>1 - 3</td>
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<tr>
<td>2. Non-Ferrous Materials, alloys, and solubility</td>
<td>4 – 6</td>
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<tr>
<td>3. Ferrous Materials, alloys, and solubility</td>
<td>7 - 9</td>
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<tr>
<td>4. Heat Treatment, hardness testing, and tensile testing</td>
<td>10 - 12</td>
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Textbook:


Note: Machinery’s Handbook is considered to be a supplemental text throughout the Manufacturing Engineering Technology major and therefore each student will be required to provide their own copy.

Student Evaluation:

Evaluation is based on a total accumulation of points earned on all assignments including homework problems, quizzes, and other activities related to course content. The approximate distribution of points is as follows:

- Homework: 20%
- Projects/Reports: 30%
- Tests/Quizzes: 50%

Your total score will be reflected as a percentage of 100, approximately following:

- A = 100 – 90
- B = 89 – 80
- C = 79 – 70
- D = 69 - 60
- F = Below 59

Required Materials and Equipment (assessed fees):

1. Approved ANSI Z87.1 of Fed/ GG-G35 lb, safety glasses or goggles are required for laboratory activities and observing demonstrations unless otherwise indicated by instructor. (Safety glass are available for purchase through the class at a cost of $4.50 each pair).

2. Other safety type clothing or equipment will be supplied by the instructor as needed. However, students have the option to purchase a shop apron ($5.00) for the protection of their street clothing during laboratory activities.

3. There is a $15.00 lab fee for this course to cover the cost of materials and samples used for testing.

4. The lab fees and any additional fees for purchase of safety glasses, shop aprons, and additional materials will be billed to students at the end of the semester.