REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology Studies

Semester(s) Offered: Regularly

Prefix & Course Number: MET 2200 Crosslisted With*: 

Course Title: Materials of Engineering (2+2)

Credit Hours: 3 (2+2)

Contact Hours: Lecture 30 Lab 30 Internship ___ Practicum ___

Schedule Type(s): B Grading Mode(s): L

Repeat* (Variable topics):
*(Pertinent only if the course can be repeated; enter maximum number of hours that can be earned by taking this course.)

Restrictions (Variable Topics Course): NONE

Prerequisite(s): MTH 1110 or MTH 1400 with grade of “C” or better

Corequisite(s): NONE

Prerequisite(s) or Corequisite(s): CHE 1100 or CHE 1800 with grade of “C” or better

Banner Enforced:
Prerequisite(s): CHE 1100 or CHE 1800 (can be concurrent): MTH 1110 or MTH 1400
Corequisite(s): None
Prerequisite(s) or Corequisite(s): NONE

Catalog Course Description:
This lecture/laboratory course deals with basic properties of metals and non-metals, including the properties and behavior that govern their selection and design. Materials covered include ferrous and non-ferrous metals, composites, plastics, ceramics, glass, wood, rubber and adhesives.

Required Reading and Other Materials will be equivalent to (Title, Author, Publisher, Copyright Date):


SPECIFIC (MEASURABLE) STUDENT BEHAVIORAL LEARNING OBJECTIVES:

APPROVED:

Department Chair/Institute Director

Dean

Associate VP, Academic Affairs

*If crosslisted, attach completed Course Crosslisting Agreement Form
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Upon completion of this course the student should be able to demonstrate:
1. Relate to the mechanical properties of engineering materials.
2. Identify the physical properties of materials as related to the mechanical, thermal, chemical, and electrical properties as found from laboratory experiences.
3. Apply material knowledge to the manufacturing process.
4. Identify metals using their atomic lattice structure.
5. Relate metallic phases to behavioral characteristics.
6. Analyze and identify pure and alloyed metals by their microstructure.
7. Identify and relate annealing, precipitation hardening, and tempering processes to the heat-treatment of metals.
8. Identify types, structures, properties and fabrication techniques of plastics, ceramics, and composite materials.

OUTLINE OF COURSE CONTENT (Major Topics and Subtopics):

I. Properties of Metals
   A. Mechanical
   B. Thermal
   C. Electrical
   D. Optical

II. Metals and Their Structures
    A. Atomic Lattice Structure
    B. Pre Metal and Alloy Structure

III. Characteristics of Metallic Phases
     A. Mechanical Behavior
     B. Thermal Behavior
     C. Electrical Behavior

IV. Microstructure of Alloys
    A. Two-phase Alloys
    B. Fe-C System
    C. Commercial Alloys

V. Heat Treatments of Metals
   A. Annealing
   B. Precipitation
   C. Hardening and Tempering

VI. Plastics
    A. Structures
    B. Types
    C. Properties
    D. Fabrication Techniques
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VII. Ceramics
   A. Structure
   B. Types and application
   C. Properties
   D. Fabrications Techniques

VIII. Composites
   A. Coatings
   B. Reinforced Materials
   C. Wood

**EVALUATION OF STUDENT PERFORMANCE:**

Homework, tests, and laboratory projects and reports.