CATALOG DESCRIPTION

Fundamentals of manufacturing processes (metal forming, forging, metal cutting, welding, joining, and casting); selection of metals, plastics and other materials relative to the design and choice of manufacturing processes.

COURSE PREREQUISITES

ME 108 and ME C85/CE C30.

TEXTBOOK(S) AND/OR OTHER REQUIRED MATERIAL


COURSE OBJECTIVES

Understand a broad range of manufacturing processes. Be able to select a suitable process (or sequence of processes) for the manufacture of a given component. Be able to perform force and power calculations for manufacturing processes. Be able to suggest changes in component design for the improvement of manufacturability.

DESIRED COURSE OUTCOMES

Upon completion of the course the student should have:

The ability to identify, formulate, and solve engineering problems relating to manufacturing; the ability to apply mathematics, basic science, and engineering science to the solution of manufacturing problems; the ability to design a component and select a manufacturing process or sequence of processes suitable for its production; the ability to interpret the results of engineering investigations.

TOPICS COVERED

Mechanical properties of engineering materials; metal casting; forging; wire drawing; extrusion; rolling; sheet metal shearing; bending; deep drawing; manufacturing with

TOPICS COVERED (Cont.)

polymers and composites; powder metallurgy; material removal basics; tool wear and tool life; cutting tool materials; turning, milling, and drilling; grinding; non-traditional material removal processes; rapid prototyping; soldering; microelectronic component manufacturing.
CLASS/LABORATORY SCHEDULE

Three hours of lecture and one hour of discussion per week.

CONTRIBUTION OF THE COURSE TO MEETING THE PROFESSIONAL COMPONENT

This course contributes primarily to the students’ knowledge and understanding of manufacturing processes.

RELATIONSHIP OF THE COURSE TO ABET PROGRAM OUTCOMES

An ability to apply knowledge of mathematics, science, and engineering; an ability to design a system, component, or process to meet desired needs; an ability to identify, formulate, and solve engineering problems; a recognition of the need for, and an ability to engage in lifelong learning; a knowledge of contemporary issues; an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

ASSESSMENT OF STUDENT PROGRESS TOWARD COURSE OBJECTIVES

- Homework assignments on a biweekly basis
- Hour exams
- Final exam

PERSON(S) WHO PREPARED THIS DESCRIPTION: Klaus J. Weinmann  Feb. 26, 2006