

**ME 201: Manufacturing Processes
Fall Semester Only**

Type (check one): Required: ✓ Elective:

2005-2006 Catalog Data: Production of common engineering materials. Heat treatment theory and processes. Study of machining, casting, metal forming, fabrication of plastics, ceramics, composites, welding, inspection, material testing, automation. Plant tours. Reports. Demonstrations. Two lectures and one three-hour lab each week. *One semester; three credits.*

Prerequisites: ME 121

Co-Requisites: None

Textbook: E.P. DeGarmo et al., *Materials and Processes in Manufacturing*, Ninth Edition, John Wiley & Sons, 2003.

Other Required Materials: None

Other References: ASTM Standards, SAE Handbook

Instructor: Dr. Yeu-Sheng Paul Shiue, Professor of Mechanical Engineering

Course Objectives:

1. Develop knowledge of manufacturing processes and common materials
2. Develop detailed understanding of real, state-of-the-art manufacturing operations
3. Develop understanding of manufacturing in the context of the global economy

Prerequisites by Topics:

1. Ability to use parametric design software (e.g. Pro/ENGINEER)

Topics:

1. Overview of materials and manufacturing processes
2. Materials science; metals, non-metals
3. Welding processes
4. Chip type manufacturing processes
5. Metal forming
6. Casting
7. CNC machining (e.g. Fadal VMC-15 & ROMI M17) and CAM
8. Robotics, concurrent engineering, design for producibility
9. Field trips and presentations

Class Schedule: Two 50-minute class sessions plus a 3-hour lab each week

Prepared by: Dr. Yeu-Sheng Paul Shiue **Date:** 22-Aug-05

**Professional Component:
ME 201 – Manufacturing Processes**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input checked="" type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input checked="" type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice