

ME 435: Intermediate Manufacturing
Fall or Spring Semester Elective

Type (check one): Required: _____ Elective: _____

2005-2006 Catalog Data: Introduction to advanced parametric computer-aided design and manufacturing (CADM) techniques. Students learn to design parts and assemblies using tools that enable parametric design. A design project is carried through from “blank screen” to production of computer numerical control (CNC) code and fabrication. Also provided is an introduction to structural and thermal analysis tools that are integrated with the CADM program. An oral report on advanced manufacturing technology is required. Occasional field trips to local manufacturing facilities. *One semester; three credits*

Prerequisites: ME 201 and Senior standing

Co-Requisites: None

Textbook: Class notes

Other Required Materials: None

Other References: None

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

Course Objectives:

1. Provide advanced instruction in modern manufacturing technologies
2. Master parametric design practice
3. Develop ability to use CNC technology

Prerequisites by Topics:

1. Solid modeling
2. Manufacturing processes

Topics:

1. Creating manufacturing models
2. Generating CNC code
3. Using the Fadal VMC-15
4. Parametric design exercises
5. Thermal analysis using Pro/MECHANICA
6. Structural analysis using Pro/MECHANICA
7. Motion simulation using Pro/MECHANICA
8. Introduction to sheetmetal design
9. In-class report

Class Schedule: Three 50-minute sessions per week

Prepared by: Dr. Yeu-Sheng Shiue

Date: 24-Oct-05

**Professional Component:
ME 435 – Intermediate Manufacturing**

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 checked="" type="checkbox"/> Significant <input type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input checked="" type="checkbox"/> Economic <input 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