

Course:

ISE 489/589 Integrated Product and Process Design – 4 credit hours, Call number: 04028/04050

Catalog description:

Prereq: Senior standing. Special topics, devoted to study of concurrent engineering methods in product development. Lectures and lab projects on product design and specification, process engineering, NC machining, Tool design, and Costing. 4 lectures

Sessions:

MW 9:10-11:00, Grover Center E 205

Instructor:

Dr. Dusan Sormaz, Room 277, Stocker Center

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Office Hours:

M 8:00-9:00 am, 11:00-12:00 pm, T 9:00-11:00 pm or by appointment

Textbook:

Andrew Kusiak, *Computational Intelligence in Design and Manufacturing*, John Wiley, 2000.

Bibliography:

R. Creese, M. Adithan, B.S. Pabla, *Estimating and Costing for the Metal Manufacturing Industries*, Marcel Dekker, 1992.

R. Creese, *Introduction to Manufacturing Processes and Materials*, Marcel Dekker, 1999.

P. F. Ostwald, J. Munoz, *Manufacturing Processes and Systems*, 9th edition, John Wiley, 1997.

D. D. Bedworth, M. R. Henderson, P. M. Wolfe, *Computer Integrated Design and Manufacturing*, McGrawHill, 1991.

T.-C. Chang, R. A. Wysk, H.-P. Wang, *Computer-Aided Manufacturing*, 2nd edition, Prentice Hall, 1997.

The Course Objective:

This course will teach methods for integration of design and manufacturing. The goal of the course is to provide students exposure to modern methods in product design, process design, and cost analysis that are preliminary phase for any manufacturing system design.

The course will be laboratory based with several practical projects in design and manufacturing in CIM lab.

Lab and Computer usage:

Students will be using machine and equipment in CIM Lab (294 Stocker) and NC programming software in IMSE computer lab (292 Stocker). Lab time for CIM lab will be assigned for each project and posted on the lab board.

Requirements:

Readings - Please read the chapters before the class in which they will be covered.

Lab projects - There will be 4 lab projects in which you will use software and machines to design and produce several products. Students will work in groups of two on these projects.

Homeworks – There will be 4-5 homework assignments in which you will solve problems from the material covered in the class.

Oral presentation – Each student will give an oral presentation – mini lecture - to the class about the assigned subject.

Final exam - The final exam will be held at the end of the quarter in classroom. It will include all the material covered in the class.

Reading assignments – Few reading/summary assignments outside textbook.

Grading Policy:

Lab projects 35%

Homeworks 20%

Oral presentation 10%

Final exam 25%

Reading assignments 10%

Attendance Policy:

Attendance to all sessions is required. No enforcement policy will be in effect, but students are responsible for all material covered in the class.

Academic Misconduct:

No unauthorized collaboration of any kind is permitted during any of the examinations, or homeworks. All suspected cases will be treated according to the University Policy as stated in the Catalog and the Student Handbook.

Tentative Schedule:

1. Week (9/6-10) Modern Manufacturing (Ch. 1)
2. Week (9/13-17) Features in Design and Manufacturing (Ch. 3)
3. Week (9/20-24) Dimensioning and Tolerances (Ostwald, Ch. 24)
4. Week (9/27-10/1) Process Engineering and Process Planning (Ch. 5)
5. Week (10/4-10/8) NC Control and Programming (Manual)
6. Week (10/11-15) Setup Reduction (Ch. 6)
7. Week (10/18-22) Selection of Manufacturing Equipment (Ch. 9)
8. Week (10/25-29) Cost Modeling and Analysis (Creese, ch 3, 4, 5)
9. Week (11/1-5) Group Technology (Ch. 10)
10. Week (11/8-12) Design for Agility (Ch. 15)
11. Week (11/15) Review for final exam

Tuesday 11/23/04 Final exam starts at 10:10 am