

ISE 502/402 Manufacturing Systems

Winter 2005

Credit Hours: 4, ***Prereq:*** None/Senior Only, ***Call Number:*** 03995-03981

Description:

Applications of industrial and systems engineering techniques, principles, practices, and methodologies as they relate to the operation, analysis, management, planning and design of manufacturing systems. Classification of manufacturing systems with respect to different attributes and discussion of various components of manufacturing systems. Topics include Assembly Lines, Transfer Lines, Manufacturing Cells and Job Shop Systems and Flexible Manufacturing Systems along with solution procedures such as heuristics, mathematical modeling and simulation.

Sessions:

MW 3:10pm-5:00pm, Stocker Center 198

Instructor:

Dr. Gürsel A. Süer, Room 274, Stocker Center

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Office Hours:

MW 2:00-3:00pm, TTh 3:30pm-4:30pm or by appointment

Textbook:

Ronald G. Askin and Charles R. Standridge, Modeling and Analysis of Manufacturing Systems, John Wiley, 1993.

Reference Books:

Mikell Groover, Automation, Production Systems, and Computer-Integrated Manufacturing, Prentice-Hall, 1987.

Nanua Singh, Systems Approach to Computer-Integrated Design and Manufacturing, John Wiley, 1996.

JT Black, The Design of the Factory with a Future, McGraw Hill, 1991.

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

JT Black and Steve Hunter, Lean Manufacturing Systems and Cell Design, SME Press, 2003.

Course Objective:

To prepare students to analyze and design manufacturing systems considering various possible options and configurations. To help them understand the importance of integrated and robust design concepts. To provide an understanding of the available tools and when to use them.

After the course, students will be able to apply the approaches discussed and the tools used to design manufacturing systems.

Computer Usage:

Students can use spreadsheet (Excel, 1-2-3 Lotus, etc.) to solve homework problems. Software is available in Ohio University and ENT computer labs (Stocker rooms 127, 264, 267, 305, 308, 414). If you don't have an account, please see the lab administrator in room 264A. Mathematical programming software and simulation programs will be available in the IMSE Computer Lab 292 .

Homeworks:

Homework problems will be assigned every Wednesday and they will be due the following Monday. In addition to weekly problem assignments, computer lab assignments will also be given on Wednesdays and they will be due Thursday 5:00pm.

Project:

A project will be assigned on designing a manufacturing system with various components. Project groups will consist of 2-3 members. The project results will be presented at the end of quarter.

Exams:

Two midterm exams will be given. Exams will be announced at least one week in advance. Students must take the exams on the date and the time scheduled. Exceptions can only be made if the student submits a written request before the exam with valid reasons and if it is approved by the instructor. A bonus question can also be asked in some exams. Final exam is comprehensive.

Quizzes:

I am planning to give weekly quizzes. It will include the material covered in the previous week (unless otherwise stated).

Readings:

You are recommended to read the material to be covered before the class.

Grading:

Midterm I	20% (Tentatively scheduled for January 31, Monday)
Midterm II	20% (Tentatively scheduled for February 28, Monday)
Final Exam	20%
Homework	15%
Quizzes	10%
Project	15%

Attendance Policy:

Attendance to all sessions is strongly recommended. Students are responsible for all of the material covered in the class.

Academic Misconduct:

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

Tentative Schedule:

1. January 3-7 Manufacturing Systems, Chp 1
2. January 10-14 Assembly Lines, Chp 2
3. January 17-21 Assembly Lines, Chp 2
4. January 24-28 Assembly Lines, Transfer Lines, Chps 2& 3
5. Jan 31-Feb 4 Cellular Manufacturing, Chp 6, **EXAM I**
6. February 7-11 Cellular Manufacturing, Chp 6
7. February 14-18 Cellular Systems, Chp 6
8. February 21-25 Flexible Manufacturing Systems, Chp 5
9. Feb. 28-March 4 Job Shop Systems, Chp 4, **EXAM II**
10. March 7-11 General Manufacturing Systems, Chp11

Final Exam is scheduled on Tuesday March 15, at 12:20 pm in the same classroom.

