

Course: ISE 440/540 – Facility Planning and Design - 4 credit hours

07168/07169

Sessions: T-Th 12:10-2:00, RTech 315

Catalog description:

The process of designing and laying out a facility with an emphasis on manufacturing facilities. Issues addressed include selecting the type and quantity of production and handling equipment; alternatives for material flow; qualitative and quantitative methods for developing the facility layout; determining the appropriate size for the departments and the facility; and utilizing software as appropriate for determining the facility design

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Office hours: Mon./Weds. – 3:00-4:30
 Thurs. – 10:00-11:00

Detailed schedule available at <http://www.ent.ohiou.edu/~masel>

Textbook: Manufacturing Facilities: Location, Planning, and Design, (3rd Edition), Sule (2009), ISBN 978-1-4200-4422-5

Course objectives:

This course will cover the procedure for developing the layout of a facility (manufacturing and non-manufacturing) starting from an empty lot (known as a greenfield layout). The same methods are often applied within an existing facility to redesign the layout so that new processes can be integrated or the flow within the facility can be improved.

The full layout development process generally includes the following tasks: defining processes and services to be performed in the facility; grouping processes into departments; selecting the equipment for each department; arranging the equipment within a department; and arranging departments within the facility. In addition, there is often supporting equipment—such as material handling equipment and utilities—that must be selected for the facility. All of these methods will be covered in the class, with particular emphasis on the generation of alternate layouts of the departments in a facility.

Course outcomes:

- Describe the steps involved in designing a new manufacturing facility
- Specify the equipment requirements for a manufacturing facility
- Specify the space requirements for a manufacturing facility
- Create a from-to chart for a given production plan
- Select the appropriate material handling equipment for a facility
- Design alternate layouts for the departments within a facility
- Select the layout for a facility and justify the selection
- Use facility design software to generate and analyze layouts

Attendance policy:

Attendance will not be taken for lecture classes, but students are expected to be present for all class periods and are responsible for all material covered in class.

Grading policy:

Assignments:

- Homework assignments (≈1 per week) 25%
 - Design project 25%
 - One midterm in class—closed book (Thursday, April 30) 25%
 - Final exam—closed-book (Friday, June 12 at 2:50 pm) 25%
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- 100%

Graduate students will have additional problems on the homework assignments and exams. Graduate students will also make an individual presentation about a journal article on facility layout. This presentation will count as 20% of the homework grade.

Grading Scale:

A	94% - 100%	A-	90% - 93%		
B+	87% - 89%	B	84% - 86%	B-	80% - 83%
C+	77% - 79%	C	74% - 76%	C-	70% - 73%
D+	67% - 69%	D	64% - 66%	D-	60% - 63%
				F	0% - 59%

Academic misconduct:

Cheating will not be tolerated. If you copy from another person, plagiarize, turn in someone else’s work as your own, or otherwise fail to maintain a high standard of academic honesty, you will receive a 0 on the assignment and the case will immediately be referred to the university judiciary office.

Tentative schedule:

Wk	Tues.	Topic(s)	Thurs.	Topic(s)	Chap.
1	3/31	Intro to Facility Design	4/2	Planning a product/service	1-2
2	4/7	Production Charts	4/9	Production Systems	4
3	4/14	Machine Selection	4/16	Lean Manufacturing	5-6
4	4/21	Lean Manufacturing	4/23	Plant Layout	12
5	4/28	Plant Layout	4/30	MIDTERM	13
6	5/5	Material Handling Principles	5/7	Material Handling Equipment	8-9
7	5/12	Material Handling Design	5/14	Storage and Warehousing	10-11
8	5/19	Warehouse Operations	5/21	Facility Services	11, 7
9	5/26	Structure Design	5/28	Site Selection	7, 15
10	6/2	Facility Location	6/4	Presentations	17