

**IE 304: Production and Service Systems Planning and Design
Spring 2022**

Instructor: U. Mahir Yıldırım

Office Hours: by appointment and via Zoom

E-mail: mahir.yildirim@sabanciuniv.edu

Lectures: Tuesday 11:40-13:30 in FMAN 1099

Thursday: 16:40-17:30 Online

Zoom links:

[IE 304 - Tuesday - Lecture Zoom Meeting \(Spring 2022\)](#)

[IE 304 - Thursday - Lecture Zoom Meeting \(Spring 2022\)](#)

Passcodes: umySU22

Recitations (Online):

Please note the schedule changes of B1 and B2 sections

Beyza Öztürk (beyzaozturk@sabanciuniv.edu)

Zoom links:

A1 Tuesday 13:40-14:30 – [IE 304 - Recitation A1 - Zoom Meeting \(Spring 2022\)](#)

B1 Tuesday 16:40-17:30 – [IE 304 - Recitation B1 - Zoom Meeting \(Spring 2022\)](#)

Zeren Alpoğuz (zereنالpoguz@sabanciuniv.edu)

Zoom links:

A2 Tuesday 13.40-14.30 – [IE 304 - Recitation A2 - Zoom Meeting \(Spring 2022\)](#)

B2 Tuesday 17.40-18.30 – [IE 304 - Recitation B2 - Zoom Meeting \(Spring 2022\)](#)

Course Description: This course introduces students with the design and operation of manufacturing and service facilities. We present a conceptual description and classification of modern production environments and address major issues faced during the planning and control of their operation. We focus on the decomposition of the overall production planning and control problem to a number of subproblems, and the development of quantitative techniques and analytical tools for addressing the arising subproblems. The topics include (but are not limited to) assembly lines, sequencing and scheduling, flexible manufacturing systems, group technology and cellular manufacturing, and facilities planning and design.

Although the focus is on manufacturing systems, the application of the methodologies for service systems is covered as well. The students are expected to have a solid background in operations research.

Course delivery: Classes are planned to be given in classrooms. Those who prefer so can follow the courses remotely online. Recitations are to be held online. All lectures and recitations will be recorded and uploaded to SUCourse+. We expect you to observe social distancing and wear masks appropriately when in class. Online students can ask their questions in the Zoom chat box.

Suggested Text Book

Ronald G. Askin, Charles R. Standridge, *Modeling and Analysis of Manufacturing Systems*, John Wiley, New York, 1993. [TS155.6 .A75 1993]
Heragu. S. *Facilities Design*, 3rd edition. CRC Press, 2008. [TS177 .H47 2008]

Grading

Midterm 1	30% (April 5, 2022, in class)
Midterm 2	30% (May 17, 2022, in class)
Final Exam	40%

Important Rules:

1. You have to have a valid reason for not taking an exam. If a proof such as a medical report is not brought to me before or within the first three days of the exams you will NOT be given a make-up exam and will be assumed to score 0 in the exam you have missed. The make-up exams may need be scheduled after the final exam and be comprehensive.
2. Be respectful to your TA's! The professor will deal with the objection hours.

Tentative Schedule

Week	Dates		Topic	Recitations
	Tuesday 11:40- 13:30	Thursday 16:40- 17:30		
1	01.03.2022	03.03.2022	Introduction	
2	08.03.2022	10.03.2022	Assembly Lines	Recitation 1
3	15.03.2022	17.03.2022	Assembly Lines	Recitation 2
4	22.03.2022	24.03.2022	Single Machine Scheduling	Recitation 3
5	29.03.2022	31.03.2022	Single Machine Scheduling	Recitation 4
6	05.04.2022	07.04.2022	Midterm 1	
7	12.04.2022	14.04.2022	Multiple Machine Scheduling	Recitation 5
8	19.04.2022	21.04.2022	Multiple Machine Scheduling	Recitation 6
9	26.04.2022	28.04.2022	Flexible Manufacturing Systems	Recitation 7
10	03.05.2022	05.05.2022	Spring Break	
11	10.05.2022	12.05.2022	FMS, Group Technology	Recitation 8
12	17.05.2022	19.05.2022	Midterm 2	
13	24.05.2022	26.05.2022	Group Technology	Recitation 9
14	31.05.2022	02.06.2022	Facility Layout	Recitation 10
15	07.06.2022	09.06.2022	Facility Layout	

Topics to be covered and the corresponding references:

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| 1. Introduction | Askin& Standridge -Ch1 |
| 2. Assembly Lines | Askin& Standridge -Ch2 |
| 3. Single Machine Scheduling | Askin& Standridge -Ch4 |
| 4. Flow Shop and Job Shop Scheduling | Askin& Standridge -Ch4 |
| 5. Flexible Manufacturing Systems | Askin& Standridge -Ch5 |
| 6. Group Technology and Cellular Manufacturing | Askin& Standridge -Ch6, Heragu-Ch6 |
| 7. Facility Layout | Askin& Standridge -Ch7, Heragu-Ch1-4 |