

**IE 304: Production and Service Systems Planning and Design
Fall 2021**

Instructor: Baris Balcioglu
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Office Hours: by appointment and via Zoom

Lectures: Tuesday 12.40-14.30 in FASS G062
Friday: 9.40-10.30 in FMAN 1099

Zoom link:

<https://sabanciuniv.zoom.us/j/93077927219?pwd=MFVvTkRRUHdpMIFvRlVmcE5sZlNOQT09>

Pass code: susu2020

Recitations (Online):

Beyza Öztürk (beyzaozturk@sabanciuniv.edu)

A1 Wednesday 16.40-17.30

B1 Wednesday 17.40-18.30

Zoom link for A1-B1:

<https://sabanciuniv.zoom.us/j/4406154105?pwd=c3YyM0dqalA4ZzFsOUNsZGINNGVOUT09>

Meeting ID: 440 615 4105 Passcode: 9dHwrh

Melis Tuvana Sarioğlu (mtuvana@sabanciuniv.edu)

A2 Wednesday 16.40-17.30

B2 Wednesday 17.40-18.30

Zoom link for A2-B2: <https://sabanciuniv.zoom.us/j/99722466784>

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% (November 2, 2021, in class)

Midterm 2 30% (December 14, 2021, 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.

Topics to be covered:

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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 -Ch2, Heragu-Ch8 |
| 7. Facility Layout | Askin& Standridge -Ch2, Heragu-Ch1-4 |