

IE 304 Production and Service Systems Planning and Design Spring 2020-2021

Instructor	Lecture	Day/Time	Office Hours	Zoom ID
Bülent Çatay		M 11:40–13:30	W 14:00–15:00 or by appointment	342 586 8236
TA	Recitation	Day/Time	Office Hours	Online Link
Can Boyacıoğlu	A1	T 17:40–18:30	R 14:00–15:00	zex-goqc-uye
Zeren Alpoğuz	B1	M 17:40–18:30	W 16:00–17:00	hqy-kyic-itj
Çağrı Doğuş İyican	A2	T 17:40–18:30	F 17:00–18:00	512 885 1007
Çağrı Doğuş İyican	B2	M 17:40–18:30		
Raci Berk İslim			R 17:00–18:00	682 368 2154

Objectives:

This course is intended to introduce the students to the design and operation of manufacturing and service facilities. We will present a conceptual description and classification of modern production environments and address major issues faced during the planning and control of their operation. We will 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, emphasis will be given to introduce the application of methodologies covered for manufacturing systems to service systems as well. The students are expected to have a solid background operations research.

Recommended Textbook:

Modeling and Analysis of Manufacturing Systems. R.G. Askin and C.R. Standridge, John Wiley, 1993. [TS155.6 .A75 1993]

Facilities Design, 3rd edition. S. Heragu. CRC Press, 2008. [TS177 .H47 2008]

Additional References:

Principles of Sequencing and Scheduling. K.R. Baker and D. Trietsch, Wiley, 2009.

Facility Layout and Location: An Analytical Approach. R.L. Francis, L.F. McGinnis, and J.A. White, Prentice Hall, 1992.

Production and Operations Analysis. S. Nahmias, Irwin/McGraw-Hill.

Course Delivery:

The course consists of 2-hour synchronous (live online) lecture session and 1-hour asynchronous session during which you are expected to study on your own. All lectures are pre-recorded and will be available on Google Drive. So, you are expected to watch them before joining the online lectures. The online lectures will be mainly dedicated to the discussion of the recorded material and is expected to be interactive based on the questions and issues you raise.

Note that you must attend the synchronous Zoom lectures, recitations, and real-time online exams with your SU email account.

Grading Policy:

$AvgGrade = 1/3 \text{ Midterm 1} + 1/3 \text{ Midterm 2} + 1/3 \text{ Midterm 3}$

All grades are out of 100. In order to receive a passing letter grade you are required to get at least an AvgGrade of "40".

There will be three midterm exams given online via SUCourse+. A single comprehensive make-up exam will be offered at the end of the semester during the finals. The make-up can be taken by those who have official excuses, i.e., a medical report given or approved by the SU Health Center.

Your webcam and microphone should be on during the exam. In the case of non-compliance with this and other declared exam procedures, your exam will be void. Make sure to check that your webcam and microphone function properly before the exam. You are expected to work during the exams individually. You may be randomly requested to take an oral exam online following the written exam.

Tentative Course Outline

Week 1	Introduction	Askin-Ch1
Week 2-3	Assembly Lines	Askin-Ch2
Week 4-5	Single Machine Scheduling	Askin-Ch4
Week 5	Midterm Exam 1	
Week 6-8	Flow Shop and Job Shop Scheduling	Askin-Ch4
Week 8-9	Flexible Manufacturing Systems	Askin-Ch5
Week 10	Midterm Exam 2	
Week 11-12	Group Technology and Cellular Manufacturing	Askin-Ch6, Heragu-Ch8
Week 13-14	Facility Layout	Askin-Ch7, Heragu-Ch1-4
Week 14	Midterm Exam 3	

Disclaimer:

The instructor reserves the right, when necessary, to alter the grading policy, change exam dates, and modify the syllabus and course content. Modifications will be announced in class and at the SUCourse+. Students are responsible for the announced changes.

Academic Integrity:

Students in this course are expected to honor the academic integrity principles according to the SU rules and procedures. Non-compliance to [academic integrity](#) principles through plagiarism, using or accomplishing another person's work, and/or submitting previously used work will be penalized.