

IE 401

Production and Service Systems Operations

Course Syllabus

Fall 2024-2025

Version 2, updated September 18th, 2024

Instructor

Dr. Murat Kaya FENS G020, (216) 483 9622, mkaya@sabanciuniv.edu

Office Hours: Thursdays 15:40-16:30

TAs, LAs and Recitation Sections

Teaching Assistant: Deniz Tuncer (deniz.tuncer@sabanciuniv.edu)

Learning Assistants and Recitation Sections			
Recitation Section	Time	Learning Assistant	email
A1	Thursdays 17:40-18:30	Hande Pamuksuz	pamuksuz@
A2	Thursdays 17:40-18:30	Sude Kanbay	sude.kanbay@
B1	Fridays 18:40-19:30	Zeynep Büşra Banaz	bbanaz@
B2	Fridays 18:40-19:30	Begüm Kösoğlu	begum.kosoglu@

Learning Outcomes

On completion of the course, students should be able to

- Describe the major steps in the manufacturing planning and control (MPC) hierarchy (including APP, MPS, and MRP), and their relationships.
- Develop demand forecasting models using time series methods.
- Apply the fundamental inventory management models (including the EOQ, newsvendor, (Q,R) and (s,S) models) to relevant problems.
- Relate industrial engineering and operations research methods obtained in previous courses to the production planning and control domain.
- Formulate and solve production planning problems.
- Implement forecasting and inventory management models and heuristics using optimization solvers and programming languages.

Textbooks

- 1) One of the following two versions of the same book:
 - Nahmias S. and Lennon Olsen, T., Production and Operations Analytics, 7th or 8th edition, Waveland Press.
 - Nahmias, S., Production and Operations Analysis, 5th or 6th edition, McGraw-Hill.
- 2) For some topics: Vollmann, T. E., Berry, W. L., Whybark, D. C., Jacobs, F. R., Manufacturing Planning and Control for Supply Chain Management, 5th or 6th edition, McGraw-Hill.

Useful References

- Silver, E. A., Pyke, D. F., Peterson, R., Inventory Management and Production Planning and Scheduling, 3rd edition, Wiley, 1998.
- Hopp, W. J., M. L. Spearman, Factory Physics, McGraw-Hill. 3rd edition. 2011.
- Ptak, C. A., C. J. Smith. Orlicky's Material Requirements Planning. 3rd edition. 2011.

Grading

Top Hat Responses	20%
Midterm Exam	35%
Final Exam (comprehensive)	45%

- Grading-related objections should be discussed with the TAs before bringing the issue to the instructor.
- The letter grade achieved in this course will be determined according to the weights outlined above; not according to the letter grade the student might need.
- Students are not given any extra opportunity (such as an extra project etc.) to increase their letter grade as this would be unfair to others.

Course Policies

- Students must follow the recitation section in which they are enrolled.
- All exams will be closed notes. Mobile phones should be kept in a closed bag or pocket during the exam. Smartwatches cannot be used.
- Attendance records will be taken in most lectures. These have no direct course grade value. Attendance is NOT mandatory but is highly recommended.
- Students cannot share course-related material (documents, recordings, etc.) with third parties.
- The instructor may have to modify the syllabus due to unforeseen reasons. Students are responsible for such modifications that will be announced in lectures and/or in SUCourse.

Make-up Exam Policy

- There will be a single make-up exam to replace either the midterm exam or the final exam.
- The make-up exam will be conducted after the final exam.
- A student who wants to enter a make-up exam must document the reason for missing the exam (such as sickness or an official appointment) and inform the instructor immediately before/after missing the exam.
- The make-up exam will be comprehensive (includes all topics)
- The make-up exam cannot be taken to replace an already-taken exam.

Course Subjects

	Nahmias	VBWJ (6 th edition)
Production & Operations Management Overview	1	

Forecasting	2	
Inventory Control Subject to Known Demand	4	
Inventory Control Subject to Uncertain Demand	5	
Sales and Operations Planning (S&OP)	3	
Master Production Scheduling (MPS)		5
Material Requirements Planning (MRP)		6
Lot Sizing		6a (related)
Just-in-Time (JIT) Approach		

Top Hat Software

- During lectures, the instructor will ask quick questions (true/false, multiple choice, etc.) using the Top Hat software. Students will need to respond to these questions within 30 seconds.
- Students shall familiarize themselves with the Top Hat software (www.tophat.com) if they have not used it previously. The Top Hat app should be installed on student smartphones/ tablets or accessed via a laptop web browser.
- The lowest 10% of the Top Hat scores for each student will be dropped from consideration. No other make-up opportunity exists for Top Hat questions.
- To enroll in the Top Hat page of IE 401, please follow the instructions below

Enrolling in the TopHat page of the course

To enroll correctly in your course, you must click the Top Hat Link on the SuCourse page of IE 401.

You will be directed to Top Hat automatically (turn off any pop-up blockers). You will have the option to either create a student account or log in to an existing Top Hat account. If you are signing up for Top Hat the first time, please use your official school email address and use a web browser to complete the process. Please note you cannot create a Top Hat account or make the required course purchases through the mobile applications.

Once you have successfully linked your SuCourse and Top Hat account, you may log-in and access Top Hat directly using the mobile application.

If you're removed from the Top Hat course, please review the above steps again.

<https://support.tophat.com/s/article/Student-SuCourse-Top-Hat-Course-Enrollment-Instructions>