

**Sabancı PhD Program
Fall 2021****OPIM 613 Operations and Decision Analytics**

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Office Hours: By appointment. Please send me an e-mail letting me know the purpose of the meeting and alternative meeting times. I will respond to you by mail and send you the link for the meeting. Do not hesitate to email me when you have questions about the course.

Type	Time	Days	Where
Class	10:40 am - 13:30 am	Wednesday	G042

Course Objective:

This course aims to provide the students with an overview of various research topics in operations management, such as inventory management, pricing and revenue management, service and retail operations, environmental issues and sustainability, healthcare operations and behavioural operations management. The students are expected to acquire an understanding of seminal and contemporary topics in operations management, and to build on this understanding to conceptualize valid research questions, which can be developed into academic papers.

Learning Outcomes:

By the end of this course, you will be able to:

- (1) Develop an understanding of the seminal and contemporary topics in operations management
- (2) Conceptualize and develop research questions related to operations management
- (3) Write and present academic papers

Course Material:

There is no textbook for this course; it will be based on analysis and discussion of academic papers. The list of these papers and the corresponding topics are provided under the section “Course Schedule and Readings” of the syllabus. I will post the readings on this list on SUCourse.

Course Web:

I will post the reading material, lecture slides, videos, deadlines, assignments, cancellations, postponements, links for the sessions, session recordings, in short, everything on SUCourse throughout the term. **Please check it frequently to see if new material has been placed.**

Note that Sabanci University uses a very powerful web-based tool called Turnitin. Turnitin is the worldwide standard in online plagiarism prevention. It allows instructors to compare student papers against a database composed of millions of articles. Every paper you submit will be scanned by Turnitin, and results will be reflected in your grades.

Instructional Design:

The instruction of this course is mainly based on discussion of the papers assigned to that session. In particular, students are expected to have read the assigned papers before coming to class. During the class meeting, we will have one paper (marked with an asterisk (*) in the reading list provided under “Course Schedule and Readings” section of the syllabus), where one of the students will lead the discussion for this paper, alongside the other discussion papers, where the discussion will be led by the instructor. Students are expected to take an active role in class discussions.

Grading:

Deliverable	Due date	Grade percentage
Participation	Throughout the term	25%
Reflection papers	Throughout the term	10%
Assignments + Discussion	Throughout the term	10%
Questions		
Midterm I	27 October	15%
Midterm II	15 December	15%
Research paper:		
Proposal	24 November	5%
Proposal presentation	24 November	5%
Final presentation	22 December	5%
Final report	10 January	10%
<i>TOTAL</i>		100%

Requirements:

Participation: As the course is based on the analysis and discussion of academic papers, students are expected to have read the assigned papers before coming to class and take an active role in class discussions. The students are also expected to come up with **five** discussion questions (in total) on the assigned readings before class and submit these questions via SUCourse (those will be graded separately; see “Assignments & Discussion Questions” below). The discussion questions can be about the research question, how the paper compares to the literature, the methodology, the insights, possible extensions etc. Feel free to come up with any question that you think is interesting, are curious about and would like to discuss with the others in class.

In addition to this, each class, we will have one paper (marked with an asterisk * in the reading list provided under “Course Schedule and Readings” section of the syllabus), where the discussion of this paper will be led by one of the students. The discussant should first provide a brief summary of the paper, which focuses on the following questions:

- (1) What are the main research questions of the paper? How does it relate and contribute to the existing literature?
- (2) Briefly describe the problem setting, and the methodology. What are the novel features of the setting and methodology? (note that some of the papers we read will use analytical models, some empirical analysis, and yet others methodologies such as laboratory experiments; hence, you should fit this part of the presentation to the particular methodology used.)
- (3) What are the key insights from the paper? What are the key lessons that we learn from the paper? Which are surprising? Which contradict previous theories/models?
- (4) What directions are there for future research? How should this paper lead to additional work?
- (5) How can practitioners benefit from the insights provided in this paper? What are the managerial implications?

Then the student should open the discussion for this paper with a number of discussion questions (these may include the discussion questions that the student has submitted for that paper and should not be fewer than five).

Reflection papers: After each class, I will provide you with a number of questions that will hopefully help you to reflect on the topics covered in class, and develop insights and potential research questions, and ask you to write a short reflection paper (1000-1500 words) on one of these questions. All reflection papers will be submitted via SUCourse at the beginning of the class hour in the week following the discussion of the topic.

Assignments & Discussion Questions: We are going to have 2 assignments throughout the term that will require you to write one referee report and one long reflection essay. Furthermore, as indicated above, students are expected to come up with **five** discussion questions (in total) on the assigned readings before class (@10.30 on the Tuesday preceding the corresponding class). All assignments and discussion questions will be submitted via SUCourse.

Midterms: We will have two midterms (midterm I – **October 27** & midterm II - **December 15**). The exams will be take-home (open book, open notes), and will cover the topics we have discussed in class up to that point.

Research paper: Each student will come up with an original research topic for a course paper which should relate to one of the topics we discuss in class.

The basic idea for the paper (**the proposal**) is due on **November 24**. The proposal should be about 5-7 pages long, and needs to outline (1) your research question, (2) the motivation for this question (i.e., why is it a question worth exploring?), (3) a brief summary of literature that you will derive upon in your paper, (4) the method by which you propose to explore this topic. On the due date of the proposal, you should come to class prepared to discuss your idea, and how you plan to expand upon it, as we will discuss your ideas and provide feedback & suggestions.

The second instalment of the research paper is **the presentation (December 22)**. The presentation should include (1) an overview of your research problem and why this topic is relevant, (2) a summary of related literature and how your research relates to the previous literature, (3) a description of your methodology (if you are developing an analytical model, you should outline the decision variables, the model, the assumptions etc., with empirical research, you should introduce your data set and the statistical methods you propose to use, and with experimental research, you should provide the experimental design), (4) a description of the initial results, and a discussion of insights. The presentations should be about 10-15 minutes.

The **final report**, which should provide the material in the presentation, plus the complete results, with a discussion of managerial insights, limitations and future research questions, is due on **January 10**. The slides for the presentations, and the proposal and final reports will be submitted through SUCourse.

Note that all deliverables are to be completed individually. However, academic research is based on collaboration and always improves when discussed with others. Hence, I encourage you to discuss whatever you are working on with others in the class and me.

Make up policy:

Because of the instructional design of the course, there can be no make up for missed participation and presentations. If you cannot join a class, please let me know in advance, so we can work out a solution. All written assignments (research papers, reflection papers, discussion questions, assignments) should be submitted via SUCourse at the specified hour on the scheduled due date. Late submissions will not be accepted.

If you cannot take one of the midterms due to a health problem, please let me know in advance. In this case, your grade from the other midterm will count towards 30% of your final grade.

Academic Honesty:

Learning is enhanced through cooperation and as such you are encouraged to work in groups, ask for and give help freely in all appropriate settings. At the same time, as a matter of personal integrity, you should only represent your own work as yours. Any work that is submitted to be evaluated in this class should be an original piece of writing, presenting your ideas in your own words. Everything you borrow from books, articles, or web sites (including those in the syllabus) should be properly cited. Although you are encouraged to discuss your ideas with others (including your friends in the class), it is important that you do not share your writing (slides, MS Excel files, reports, etc.) with anyone. Using ideas, text and other intellectual property developed by someone else while claiming it is your original work is *plagiarism*. Copying from others or providing answers or information, written or oral, to others is *cheating*. Unauthorized help from another person or having someone else write one's paper or assignment is *collusion*. Cheating, plagiarism and collusion are serious offenses that could result in an F grade and disciplinary action. Please pay utmost attention to avoid such accusations.

Classroom Policies and Conduct:

Sabancı Business School PhD program values participatory learning. Establishing the necessary social order for a participatory learning environment requires that we all:

- Join the class prepared to make helpful comments and ask questions that facilitate our own understanding and that of our fellow participants. This requires that you complete the assigned readings for each session before class starts.
- Listen to the person who has the floor.
- Join the class on time.
- Laptops should only be used for class activities such as taking notes or referring to a paper.

You are expected to attend all class lectures, join on time, and stay for the entire session. If you have an excuse to miss an entire or a portion of a session, you should inform the instructor in advance. You are expected to participate in class discussions, answer and ask questions. Please note the importance of coming to classes prepared. Please refrain from

activities that will distract other fellow students and the instructor. Cell phones should be shut off/muted before joining to class.

Course Schedule and Readings:

The course topics and the papers for each class are given below. Note that papers marked with an asterisk (*) are the papers which will be presented by a student in that class. You are expected to read all the assigned papers and come up with discussion questions before coming to class.

Week 1 **Dates:** **September 29**

Topic: Introduction

Week 2 **Dates:** **October 6**

Topic: **Inventory Models**

Chen, H., Frank, M. Z., & Wu, O. Q. (2005). What actually happened to the inventories of American companies between 1981 and 2000?. *Management Science*, 51(7), 1015-1031.

Schweitzer, M. E., & Cachon, G. P. (2000). Decision bias in the newsvendor problem with a known demand distribution: Experimental evidence. *Management Science*, 46(3), 404-420.

Rumyantsev, S., & Netessine, S. (2007). What can be learned from classical inventory models? A cross-industry exploratory investigation. *Manufacturing & Service Operations Management*, 9(4), 409-429.

Week 3 **Dates:** **October 13**

Topic: **Inventory Models**

Ban, G. Y., & Rudin, C. (2019). The big data newsvendor: Practical insights from machine learning. *Operations Research*, 67(1), 90-108.

*Ramachandran, K., Tereyağoğlu, N., & Xia, Y. (2018). Multidimensional decision making in operations: An experimental investigation of joint pricing and quantity decisions. *Management Science*, 64(12), 5544-5558.

Ren, Y., & Croson, R. (2013). Overconfidence in newsvendor orders: An experimental study. *Management Science*, 59(11), 2502-2517.

Week 4 **Dates:** **October 20**

Topic: **Supply Chain Management**

*Katok, E., & Wu, D. Y. (2009). Contracting in supply chains: A laboratory investigation. *Management Science*, 55(12), 1953-

1968.

Lariviere, M. A., & Porteus, E. L. (2001). Selling to the newsvendor: An analysis of price-only contracts. *Manufacturing & Service Operations Management*, 3(4), 293-305.

Lee, H. L., Padmanabhan, V., & Whang, S. (1997). Information distortion in a supply chain: The bullwhip effect. *Management Science*, 43(4), 546-558.

Lee, H. L., Padmanabhan, V., & Whang, S. (1997). The bullwhip effect in supply chains. *Sloan Management Review*, 38, 93-102.

Week 5 **Dates:** **October 27**

Topic: Midterm I

Week 6 **Dates:** **November 3**

Topic: **Revenue Management**

Kocabiyikoglu, A., Gogus, C. I., & Gonul, M. S. (2015). Revenue management vs. newsvendor decisions: Does behavioral response mirror normative equivalence?. *Production and Operations Management*, 24(5), 750-761.

Kocabiyikoğlu, A., Popescu, I., & Stefanescu, C. (2014). Pricing and revenue management: The value of coordination. *Management Science*, 60(3), 730-752.

*Ferreira, K. J., Lee, B. H. A., & Simchi-Levi, D. (2016). Analytics for an online retailer: Demand forecasting and price optimization. *Manufacturing & Service Operations Management*, 18(1), 69-88.

Week 7 **Dates:** **November 10**

Topic: **Retail Operations**

*Caro, F., & Gallien, J. (2012). Clearance pricing optimization for a fast-fashion retailer. *Operations Research*, 60(6), 1404-1422.

Bernstein, F., Kök, A. G., & Xie, L. (2015). Dynamic assortment customization with limited inventories. *Manufacturing & Service Operations Management*, 17(4), 538-553.

Bernstein, F., & Martínez-de-Albéniz, V. (2017). Dynamic product rotation in the presence of strategic customers. *Management Science*, 63(7), 2092-2107.

Week 8 **Dates:** **November 17**

Service Operations Management

*Tan, T. F., & Netessine, S. (2014). When does the devil make work? An empirical study of the impact of workload on worker productivity. *Management Science*, 60(6), 1574-1593.

Ülkü, S., Hydock, C., & Cui, S. (2019). Making the wait worthwhile: Experiments on the effect of queueing on consumption. *Management Science*.

Shunko, M., Niederhoff, J., & Rosokha, Y. (2018). Humans are not machines: The behavioral impact of queueing design on service time. *Management Science*, 64(1), 453-473.

Week 9 **Dates:** **November 24**
Topic: **Research paper proposals**

Week 10 **Dates:** **December 1**
Topic: **Healthcare Operations**

*Batt, R. J., & Terwiesch, C. (2017). Early task initiation and other load-adaptive mechanisms in the emergency department. *Management Science*, 63(11), 3531-3551.

Deo, S., & Sohoni, M. (2015). Optimal decentralization of early infant diagnosis of HIV in resource-limited settings. *Manufacturing & Service Operations Management*, 17(2), 191-207.

Green, L. V., Savin, S., & Savva, N. (2013). “Nursevendor problem”: Personnel staffing in the presence of endogenous absenteeism. *Management Science*, 59(10), 2237-2256.

Week 11 **Dates:** **December 8**
Topic: **Sustainable Operations**

Drake, D. F., & Spinler, S. (2013). OM forum—sustainable operations management: an enduring stream or a passing fancy?. *Manufacturing & Service Operations Management*, 15(4), 689-700.

*Kabra, A., Belavina, E., & Girotra, K. (2019). Bike-share systems: Accessibility and availability. *Management Science*.
Akkas, A., & Gaur, V. (2021). OM Forum—Reducing Food Waste: An Operations Management Research Agenda. Available at SSRN 3833026.

Week 12 **Dates:** **December 15**
Midterm II

Week 13 **Dates:** **December 22**
Final presentations

Week 14 **Dates:** **December 29**
Topic: **Review and wrap up**

Cachon, G. P. (2012). What is interesting in operations management?. *Manufacturing & Service Operations Management*, 14(2), 166-169.