

Microeconomics

Module 2, 2021-2022

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Course description

In this course, we will focus on a particular kind of microeconomic decisions: the *operational* decisions—the ones directly related to the manufacturing of products and provision of services. We will see how such decisions should be made optimally, how they affect the financial performance, and how they align with the strategic goals of the firm. The objective of this course is to provide you with both qualitative insights and quantitative modeling tools that are helpful in analyzing operational decisions.

Among the way, we will take a closer look at how companies such as Zara, Dell, and Barilla used the ideas from operations management to their advantage. We will start by exploring how a company should allocate its resources to ensure productive efficiency. Next, we will consider uncertainty: how it can be estimated and how it affects optimal decision-making. Finally, we will consider the issues of decision sequencing and supply chain coordination.

Course requirements, grading, and attendance policies

This course requires knowledge of basic concepts from probability, statistics, and calculus. The grade will be based on:

- A case assignment (10%)
- A simulation exercise (10%)
- Two problem sets (20%)
- A final exam (60%)

Lecture attendance is required.

Course contents

We will have seven meetings and the tentative plan follows below:

1. Introduction. Basic notions of operations. Fundamentals of process analysis.
2. Process analysis. Variability. Queueing.
3. Batching and EOQ model. The link between finance and operations. ROIC Trees.
4. Forecasting. Time series. Expert polls. Prediction markets.
5. Inventory decisions under uncertainty. Newsvendor model. Basic revenue management.
6. Reactive capacity. Quick response. Make-to-order vs. make-to-stock.
7. Supply chains: bullwhip effect, coordination with contracts, disruption risks.

Course materials

Required textbooks and materials

The lectures aggregate multiple sources and because of that we do not have a required textbook.

Additional materials

The following books might be helpful to augment the lectures (but not required):

1. Terwiesch, C., Cachon, G. (2013). Matching Supply with Demand: An Introduction to Operations Management. United Kingdom: McGraw-Hill Education.
2. Goldratt, E. M., Cox, J. (2016). The Goal: A Process of Ongoing Improvement. United Kingdom: Taylor & Francis.
3. Anupindi, R. (2012). Managing Business Process Flows: Principles of Operations Management. United Kingdom: Prentice Hall.
4. Lai, R. (2013). Operations Forensics: Business Performance Analysis Using Operations Measures and Tools. (n.p.): MIT Press.

Academic integrity policy

Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.