

**Executive MBA, Columbia Business School**

**Operations Management**

**Prof. Marcelo Olivares**

**Spring 2021**

**Course Summary**

<b>#</b>	<b>Date</b>	<b>Topics</b>	<b>Preparation</b>	<b>Assignment Due</b>
1	27-Feb	Introduction Process analysis	Case: Beleza Natural Case: Happy Family	Happy Family executive summary
2	28-Feb	Littlefield game  Impact of variability on process performance	Instructions to play Littlefield Variability and its Impact on Process Performance (*)	
3	1-Mar	Managing waiting time in service operations Introduction to supply chain management	Case: Saintemarie Hospital  Betting on Uncertain Demand (*)	Littlefield report (group)
4	2-Mar	Demand forecasting and decisions under uncertainty Lean operations and continuous improvement	Case: Club de Vin  NPR “American Life” documentary	NUMMI executive summary
5	12-Mar	Revenue Management	Pricing and revenue optimization, Ch 4. (*)	Overbooking exercise
6	26-Mar	Global sourcing and offshoring decisions. Course wrap-up	Case: Timbuk2	Timbuk2 executive summary
7	17-Apr	Final Exam		

**(\*): Optional readings. All other readings are required before coming to class.**

**Executive MBA  
Operations Management**

**Columbia Business School  
Spring 2021**

Prof. Marcelo Olivares  
Adjunct Professor, Columbia Business School  
email: [mo2338@columbia.edu](mailto:mo2338@columbia.edu)

Teaching Assistant:  
Carlos Bonet  
Boris Epstein

**Course Overview and Objectives**

Operations Management is the design and management of the processes that transform inputs into finished goods or services. Operations is one of the primary functions of a firm. Whereas marketing focuses on the demand for the product, and whereas finance provides the capital for the product, operations actually produces and delivers the product.

This course provides a foundation for understanding the operations of a firm. Our objective by the end of the course is to provide you with the basic skills necessary to critically analyze a firm's operating performance and practices. Such knowledge is important for careers in a variety of areas, including general management, entrepreneurship, investment banking (e.g. business restructurings, mergers and acquisitions), venture capital (e.g. evaluating new business plans) and management consulting (business restructuring improvement).

Unlike many courses in the core, which tend to treat the firm as a "black box", we will be primarily concerned with "opening up" the black box and discovering what makes a firm "tick" - or, for that matter, "stop ticking". In contrast to your management courses, our focus is on the technological rather than human dimension of a firm's internal operations - though there are obvious connections between the two that we will explore. In contrast to the measurement focus of your accounting courses, our concern is to understand what elements of a firm's operations enable it to produce quality outputs at a competitive cost structure. That is, we will focus on how the "physics" of material, work and information flows and the design and management of a firm's processes interact to determine a firm's cost structure and its ability to compete effectively in terms of non-cost measures such as quality, variety and speed.

Because the operations of a firm vary widely from one industry to the next, a course like this cannot cover all topics that are relevant to any given industry. Rather, we have selected a set of topics that are fundamental to understanding operations in a wide range of industries. These concepts are then illustrated using cases from a diverse set of businesses.

**Methods and Materials**

The course uses a variety of teaching methods and materials, including lectures, case discussions, analytical tools and experiential activities (e.g. games). Some of these activities will require working in groups. This syllabus provides a detailed description of the material to be covered on each class.

### ***Text and Readings***

Required readings must be completed before coming to class. The syllabus describes case preparation questions for each case (and also for the lectures); students should come prepared to class to discuss these questions. For every case, the students are required to hand in a one-page executive summary answering the case preparation questions.

### ***Groups Assignments***

Some assignments and class activities will require working in groups. Please work with your pre-assigned group on these.

### ***Class Preparation***

Class participation will be evaluated on each class, but specially during case discussions.

### ***Conduct***

- No electronic devices will be permitted in class, unless otherwise established by the professor. In some sessions we will work with Excel during class.
- All class participants should arrive on time. If you plan on leaving early, please talk to the professor ahead and provide your justification.
- All class participants should be respectful to the professor and classmates.

### **Grading**

Your grade in the course will be based on individual, as well as group efforts and performance. We will use the following weighting scheme:

Class Participation	15%
Group Assignments	20%
Littlefield Labs Game	15%
Final	50%

### ***Class Participation***

We will judge class participation on the extent to which you appear prepared, the relevance and depth of your comments, the degree to which you listen carefully and respond to your peers, and your willingness to take chances in order to further the educational experiences of others. Please bring your name card to class. Please notify your instructor by email in advance if you have to miss a class, or if you will be late or leaving early from class. The executive summary of each case will also count as part of class participation.

### ***Littlefield Labs Game***

During the course, we will play an experiential game, “Littlefield Labs”, to get some hands-on experience on some of the concepts covered in class. The game simulates a laboratory that provides blood testing to customers, and each team will have to manage several aspects of the lab (input materials, capacity at several stages of the process, etc.) in order to maximize the profit of the company. Teams (formed by your working groups) will compete during one week, playing the game online (using a web browser) outside lecture hours. The grade for this activity will be calculated based your ranking in the competition (20%) and a write-up to be handed in at the end of the game (80%). A detailed outline for the write-up will be provided.

### ***Exams***

The final exam is an individual evaluation, with open notes. Students should be prepared to use their laptop in the exam (mainly Excel and calculator).

## Class by Class Summary

### **Class 1**

#### ***Topics:***

The operations function and the process view of operations. Overview of topics.

Process analysis.

#### ***Class Activities:***

Course overview. Introduction to process analysis. Link operational performance metrics to business performance. Discuss Belez Natural case.

#### ***Prepare:***

Read the CBS case “Belez Natural” and think about the following questions for class discussion:

1. What are the key elements of Belez Natural business strategy? In what way does the organization of the institutes support this strategy?
2. Discuss the efficiency of the process. What improvements measures do you suggest? How would you prioritize among those measures?

Read the CBS case “Happy Family” and think about the following questions:

1. Draw the process, beginning with mixing the product and ending with loading of cartons on trucks. Notice that the process has two production lines which share common resources (mixer and loading docks).
2. Which operation is the bottleneck (if there is more than one, indicate all of them).
3. Describe options to improve the operation and which of them you recommend to prioritize? (if possible, provide quantitative analysis to support your recommendation).

**Write a one-page executive summary with your analysis for the Happy Family case, to be handled after class.**

## Class 2

### *Topics:*

Dealing with variability and response times in a make-to-order operation.

### *Prepare:*

Read the instructions for the Littlefield game. Create your group following the instructions provided by the instructor.

*For the second half of the class:*

Recommended optional reading: “Variability and its Impact on Process Performance”.

### *Class Activities:*

Play Littlefield game.

Discuss the insights learned during the game, in particular, the impact of variability and utilization on response times. Introduce queuing models and insights for the design of service operations.

## Class 3

### *Topics:*

Waiting time in service operations.

Introduction to supply chain management and decisions under uncertainty.

### *Prepare:*

Read “Saintmarie University Hospital”.

1. What operational problems is the Saintmarie Emergency Department facing? What is your assessment of the current performance and what are potential drivers of these problems?
2. There has been a recurring debate at the management level of the hospital regarding the possible solution of dividing the ED into two separate units: inpatient (acute cases) and outpatient (non-acute cases). Evaluate the pros and cons of this solution.
3. What alternative measures would you recommend for improving Saintmarie’s ED performance?

Make a forecast for the iPhone world-wide sales (in units) during the fourth calendar quarter (Oct-Dec) of 2021 (this is the first fiscal quarter of Apple for 2022). **Please provide your forecast in the following web survey before coming to class:** <http://www.surveymonkey.com/s/ZKKQHNZ>

Recommended optional reading: “Betting on Uncertain Demand: The Newsvendor Model”.

### *Class Activities:*

In the first half: discuss the Saintmarie hospital case

In the second half: We will introduce the unit of supply chain management through the Newsvendor model.

### *Due:*

Littlefield write-up (Group assignment)

Forecast of iPhone sales

## Class 4

### **Topics:**

Dealing with forecast uncertainty in a make-to-stock operation.  
Lean Operations and the Toyota Production System.

### **Prepare:**

Read “Club de Vin” case. We will discuss the following in class:

- What are the costs of having one bottle too few in inventory? What are the costs of having one bottle too many in inventory? List these costs qualitatively and then attempt to attach numbers to them for, say, a 10 Euro bottle of white wine.
- Based on the historical forecasting data provided with the case: what is your assessment of the forecasting performance of Le Club?
- Assume the cost of having one bottle too few is 3 Euro and one bottle too many is 1 Euro. Based on Le Club’s past forecasting performance (Exhibit 1), how many bottles would you order of a wine that is forecasted to sell 2000 bottles?

You can use the spreadsheet Le Club.xls to answer the questions, which have Exhibit 1 and 2 from the case.

Listen to the first 30 minutes of the NPR American Life documentary about NUMMI.

<http://www.thisamericanlife.org/radio-archives/episode/403/nummi>

(the episode is also available on iTunes)

Think about the following:

- What are the main differences between General Motors (GM) and Toyota in how they view production efficiency in their plants?
- Why did Toyota choose to hire the same employees that worked in the GM Fremont plant?
- What is an “andon chord”? What are the benefits and costs of “pulling the chord”?

**Discuss these questions with your group and write a one-page executive summary.**

### **Class Activities:**

We will apply the concepts learned through the Newsvendor model to understand the implications of production pre-commitment, forecasting and risk in supply chain management.

Discuss the principle of lean operations, just-in-time production, and continuous improvement.

### **Due:**

NUMMI executive summary (group assignment)

## Class 5

### *Topics:*

Revenue Management and Price optimization

### *Prepare:*

Optional Reading: “Pricing and revenue management”, Ch 4.

### *Class Activities:*

During the first part of the class, we will play a simulation game to learn hands-on about pricing strategies. During the second half, we will study several revenue management tools to increase revenue in the presence of fixed capacity and variable demand.

### *Due:*

Overbooking analysis (group assignment). TBD.

## Class 6

### *Topics:*

Analyze the implications of sourcing decisions on operational efficiency, and how they should be align with business strategy.

Course summary.

### *Prepare:*

Related to the Timbuk2 case, discuss the following questions with your group and **provide a one-page summary of your conclusions:**

1. What channels does Timbuk2 sell through and which one is the most profitable?
2. How should Timbuk2 go about deciding which options to offer customers through mass-customization? In other words, what general principles or analysis could be used to deepen their understanding of the appropriate choices? You may want to consider several of the options mentioned (an added handle, different color logos, different size panels, etc.)
3. What are the costs and benefits of moving production to China? If so, what challenges are they likely to face and what changes will they need to make? In particular, think about utilization of San Francisco factory before and after outsourcing as well as about inventory needs.

### *Class Activities:*

Mass customization offers an infinite variety of goods that are customized to a consumer’s exact specifications. This session explores the pros and cons of this strategy and also discusses issues involved in outsourcing of manufacturing operations to low-cost countries.

The second half of the session will review some of the main concepts covered in class.

### *Due:*

Timbuk2 executive summary (group assignment)