

# Operations Management

Alberto Santini

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## 1. General Information

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Course name:	Operations Management
Academic year:	2018–2019
Trimester:	Second
ECTS Credits:	5
Pass mark:	5 / 10
Faculty:	Alberto Santini

## 2. Teaching Language

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All the teaching material, the seminar exercises, and the final exam are in **English** 🇬🇧. No knowledge of any other language is required to attend this course. It is not allowed to use any other language when answering exams questions. Excerpt from the faculty regulation:

“ Una vegada escollit l'anglès com a llengua de la docència de l'assignatura grup, per tal de no contradir el concepte de seguretat lingüística, s'ha de respectar que a les classes, a la bibliografia i als exàmens es faci ús d'aquesta llengua. Sobre la llengua anglesa en la realització dels exàmens, s'estableix que:

- Al grau en International Business Economics serà imprescindible que l'enunciat de l'examen i la resposta de l'estudiant sigui íntegrament en anglès.
- Als graus en Economia, Administració i Direcció d'Empreses, Ciències Empresarials-Management i en el doble grau en Dret i Administració i Direcció d'Empreses o Economia (assignatures de la nostra Facultat), per a les assignatures impartides en anglès es procedirà de la manera següent:
  - Els estudiants de 1r. i 2n. curs rebran l'enunciat de l'examen en anglès, però se'ls permetrà respondre fent ús del català o del castellà.
  - Els estudiants de 3r. i 4t. curs faran l'examen (enunciat i resposta) exclusivament en anglès.

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## 3. Seminar Groups

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Seminar groups are handled by the secretariat. Any seminar group change needs to be requested to the secretariat, within the corresponding deadline. With the new online system we have in place, **no seminar group change can be handled by the professor**. So, please 🙏, do not ask me to change your seminar group. This would be my face if you made such a request: 🤖. Excerpt from the Faculty regulation:

“ Abans de l'inici de les classes, la secretaria obre un període per tal que els estudiants puguin sol·licitar un canvi de seminari per permuta o per motiu justificat (situació mèdica, pràctiques en empresa, coincidència amb altres estudis oficials, etc.). ELS PROFESSORS NO HEU DE GESTIONAR NI AUTORITZAR DIRECTAMENT ELS CANVIS. D'AQUEST TRÀMIT S'ENCARREGA LA SECRETARIA. ”

The good news is that the secretaries are usually very understanding of the problems and conflicts of schedule you might have. You just have to ask politely and make sure you raise your concerns in due time. I promise you can go and ask them, and leave their office alive. Maybe. 🚗

## 4. How to get in touch with your teacher

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The preferred method to get in touch with me is in person. 🙋 I will be happy to meet you after class or during office hours. 🕒 Even outside office hours, I maintain an open-door policy: if you see my office door is open (I am in 20.1E52), it means that I am available to receive you. If the door is closed, I am busy. 🚪

Given the large number of students attending the class, it is impossible for me to provide support via email. Believe me, you have no idea how many emails professors and researchers receive every day. I could not grasp it myself until it happened to me, and now here I am, staring at my inbox flooded by messages at any time of the day and the night. If you get in touch via mail, there are high chances that your message will be lost in the myriad of messages from the department, the rectorat, the faculty, other colleagues here and abroad, research collaborators, journal editors, seminar organisers, reviewers, thesis tribunals, conference committees, scientific societies, event reminders, “are we having lunch later?”, etc.

The good news is that you have two clear advantages over all these other people flooding our inbox. First, we normally care about you (our students) more than we care about most of these random people who have nothing better to do than send us messages only slightly above spam quality. Second, we meet in person three times per week and we are in the same buildings basically five days out of seven. Make advantage of this! Come by the office, use office hours. We are literally there to help you, even individually if need be.

Here is a simple table for your reference:

Need	After classes	Via Email	Office Hours
Quick question about theory or seminar	👍	🚫	👍
Longer question or request for explanation	😞	🚫	👍
Exam revision	—	🚫	👍
“I want to change seminar group”	🚫	🚫	🚫

One more thing: I have office hours from the first up to the last week of the course. This means ten weeks, from Jan 7<sup>th</sup>, to March 15<sup>th</sup>. I guarantee you that there is no written or unwritten rule of the universe that demands that students come to office hours only in the last week of the trimester. Not using office hours during the rest of the course, besides being an extremely inefficient use of resources, also means that you might come asking for help when it is too late. A misconception built in the beginning of the course can impair your understanding of all the subsequent material. It’s better to clarify as soon as possible any points that remain unclear after classes. In other words: if you come to office hours during the first half of the semester, you get cookies. 🍪

I have extended office hours to make sure they are as compatible as possible with your busy schedules. I will be available three days per week: **Monday, Tuesday, and Thursday, from 16:00 to 17:00.**

	Mon	Tue	Wed	Thu	Fri
09:00 – 09:30					
09:30 – 10:00					Seminar
10:00 – 10:30					
10:30 – 11:00					
11:00 – 11:30					
11:30 – 12:00				Other teaching	Seminar
12:00 – 12:30					
12:30 – 13:00					
13:00 – 13:30			Out of UPF		
13:30 – 14:00	Theory	Theory			Seminar
14:00 – 14:30					
14:30 – 15:00					
15:00 – 15:30					
15:30 – 16:00					
16:00 – 16:30	Office hours	Office hours		Office hours	
16:30 – 17:00					
17:00 – 17:30					

## 5. Examination

There is just one final exam, at the end of the course. It will contain both questions about the theory and exercises to solve. It is carried out during the last week of the trimester (the exam week).

You cannot use any type of material when sitting this exam, but for stationery (pen, pencil, etc.) and a non-programmable calculator. In particular, no books, notes, computers, or smartphones are allowed. No form of collaboration is allowed.

Failure to comply with these regulations, or any other attempt at cheating will start all actions demanded by the university regulations (see the document: Régimen disciplinario de los estudiantes de la Universitat Pompeu Fabra). In particular, Faculty regulations demand that:

“ En cas d'observar algun estudiant transmetent o rebent informació, s'ha de retenir tot el material incriminant i prendre nota del nom dels estudiants implicats. L'estudiant ha d'acabar de fer l'examen, però s'ha de denunciar el cas davant del degà que iniciarà un procediment disciplinari. La nota de l'examen queda retinguda cautelarment. Si es tracta de l'examen final, l'estudiant té l'opció de presentar-se a la recuperació, la nota del qual també queda retinguda fins que es resolgui l'expedient o fins que s'aixequi la mesura cautelar. S'ha d'explicar als ajudants aquests procediments perquè ho posin en pràctica i comuniquin al professor responsable la incidència. També s'ha de comunicar als estudiants les conseqüències del comportament indegut. En cas d'observar comportament sospitosos, s'ha de prendre el nom dels estudiants implicats i transmetre aquesta informació a l'equip del deganat, que mantindrà una base de dades per si hi ha comportaments sospitosos repetits. ”

A formula cheat-sheet will be provided to you, so you don't have to memorise the formulas. The exam is marked on a scale from 0 to 10.

### 5.1. Make-up exam

Justifications for absence are accepted for the final exam; in that case, the student can give up on that examination and will, therefore, take the make-up exam:

“ Si l'assignatura preveu la realització d'una prova de caràcter global en el període d'avaluació trimestral i una causa de força major imprevisible impedeix a l'estudiant efectuar-la, es pot renunciar a l'avaluació fins als set dies posteriors a la data de la prova. La sol·licitud es formularà mitjançant un escrit raonat adreçat al degà o degana o director o directora del centre, amb la justificació documental de les causes que van impedir realitzar la prova de caràcter global. ”

Students enrolled in a **mobility programme** recognised by the Faculty, who cannot take the final exam, are admitted to the make-up exam. The make-up exam usually takes place in July.

### 5.2. Exam revision

A date for the exam revision will be communicated roughly on the day of the final exam. Students who cannot make it for the exam revision can use regular office hours to review their mark. Please note that the point of the revision session is *not* to try and see if some drama 🤔 can change your mark. This strategy does not work in the real world.

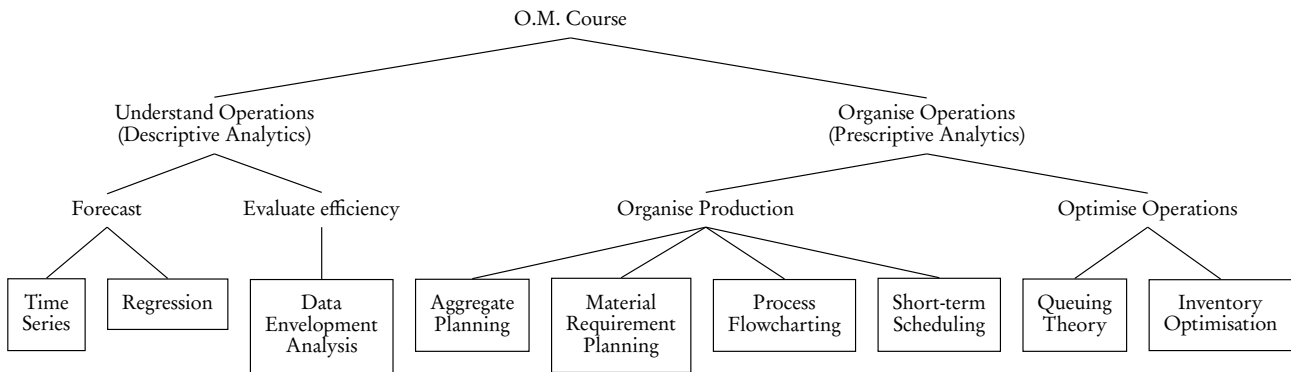
## 6. Course Synopsis

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Operations Management (OM) is one of the key functional areas in any organisation dealing with the production of goods and services. OM is concerned with managing the processes that transform inputs (materials, labor, energy, customers) into outputs (goods and services). Everything we wear, eat, use, read or play with, which has been produced industrially, involves an operations manager who organised the production.

This course is concerned with the tasks, issues and decisions of those operations managers who make the services and products on which we all depend. We are going to study the main concepts, tools and quantitative models that organisations use to manage their operations. We are going to do so from a very practical standpoint, studying cases and solving exercises.

## Schematic Course Content



My rough plan is as follows, but notice that it can be adjusted during the course of the trimester:

- During the first theory class of the week: introduce the new topic. 💡
- During the second theory class of the week: see applications, especially with the use of advanced I.T. tools. 💻
- During the seminar classes: show simpler applications which can be solved by hand, because these will end up in the exam. 📝

In principle we can have lectures about all the topics in the diagram above (they are enclosed in rectangles). In practice this will depend on how fast I can go, which in turn depends on how your actual skills and knowledge of the prerequisite match what you *are supposed* to know and remember from previous classes you took during your bachelor (see Section 9).

## 7. Competence

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The objective of this course is to introduce students to the different production and operations activities that take place in productive organisations, and to examine how strategic and tactical decisions are made.

### 7.1. General competence


- Master the computer tools and their main applications for ordinary academic activity.
- Have a proactive attitude and a desire to know learn, essential throughout the entire training process and all professional activities.
- Ability to apply learned knowledge with flexibility and creativity and adapt them to new situations and contexts.
- Demonstrate a level of knowledge sufficient for professional performance.
- Use the appropriate information in formulating proposals and troubleshooting.
- Ability to communicate effectively in a professional setting, both orally and in writing.
- Identify the key factors of a problem.
- Apply relevant knowledge and procedures to a range of complex situations.

## 7.2. Specific (Operations Management) competence

- Be able to identify the main functions of the area of Operations Management.
- Ability to relate the area of Operations Management with other functional areas of an organisation.
- Ability to identify and plan production and operations activities of an organisation.
- Ability to use basic analytical tools and methods for the planning and management of production and operations.

## 8. Course Material and Recommended Reading

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- The material used in class is posted on Aula Global, **after** the lecture during which it is used. Most of the time, I will use the whiteboard, and there won't be so much material to share. It is, therefore, very important that you attend classes.
- The exercises you need to solve at home (so, *before* the seminar) are posted one week in advance. They are solved during the seminar classes. Should any doubt arise, before or after the exercise is solved in class, do not hesitate to make use of my office hours.
- People coming to class regularly, reading the notes I share, and solving the proposed exercises, will find that they don't need any additional material to get a top mark. If you absolutely want to read a book , the topics developed in this course are also discussed in the following books:

Book Title	Authors	Lib
Operations Management for Competitive Advantage	Chase, Jacobs	2
Operations and Supply Management	Chase, Jacobs, Aquilano	1
Operations and Supply Management: the core	Chase, Jacobs	1
Operations and Supply Chain Management	Chase, Jacobs, Lummus	4
Operations Management	Heizer, Render	1
Operations Management: Sustainability and SCM	Heizer, Render, Munson	1
Production and Operations Management: strategies and tactics	Heizer, Render	2
The Logic of Logistics (3 <sup>rd</sup> ed.)	Simchi-Levi	1
The Logic of Logistics (2 <sup>nd</sup> ed.)	Bramel	2
The Logic of Logistics (1 <sup>st</sup> ed.)	Bramel	1

Column "Lib" refers to the number of English copies available at UPF library. Any or a combination of the above books can provide a good, if sometimes incomplete, reference.

## 9. Prerequisites

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I am going to assume that you have familiarity with the following topics. If you feel you are not confident with one or more of these topics, please brush up before the beginning of the course.

Topic / Competence	UPF Course
Basic calculus <ul style="list-style-type: none"> <li>• Study of univariate functions;</li> <li>• Limits of sequences of real numbers.</li> </ul>	Mathematics I
Optimisation <ul style="list-style-type: none"> <li>• Study of multivariate functions;</li> <li>• Unconstrained optimisation of differential functions;</li> <li>• Mathematical models;</li> <li>• Linear and integer programming.</li> </ul>	Mathematics II and III
Basic probability and statistics <ul style="list-style-type: none"> <li>• Expectation and variance of a random variable;</li> <li>• Random distributions, probability distribution function, cumulative distribution function;</li> <li>• Simple linear regression models.</li> </ul>	Probability and statistics
Basic data analysis <ul style="list-style-type: none"> <li>• Centre and dispersion of univariate data;</li> <li>• Basic time series analysis;</li> <li>• Relation between numerical variables (regression line).</li> </ul>	Data Analysis

Students who have taken the courses “Econometrics II”, “Multivariate analysis”, “Forecasting techniques”, “Introduction to mathematical economics”, “Business Logistics”, “Operations Research”, and “Supply Chain Management” might find some topics with which they are already familiar, which we will study from the point of view of Operations Management. Students who have taken the courses “Modern statistical computing in R”, “Programming Fundamentals”, “Programming I”, “Programming II”, and “Operations Research” will probably realise that many of the problems an Operations Manager has to face can be solved with a little knowledge of Operational Research and simple computer implementations.

## 10. Frequently Asked Questions

- *Can I change seminar group?*

I think you can, if you ask within the specified deadline. However, I am unable to manage any request related to seminar groups. They need to be directed to the secretariat.

- *What are the real class start and end times?*

You can expect classes to start five minutes after their scheduled start time, and end five minutes earlier than their scheduled end time, to allow enough time for students moving to and from distant classrooms.

- *I have taken this class about Operational Research and/or Linear Programming, and I think many of your exercises have a (more or less hidden) optimisation component in them. Can I solve them with Operational Research tools?*

By all means, yes! And if you are further interested in these topics, don't hesitate to get in touch with me to discuss about them. If you are very interested, you might even considering writing your thesis about it.