

## GENERAL INFORMATION

Course information	
Name	Operations Management
Code	DOI-MBA-611
Degree	Máster en Ingeniería Industrial (MII), Máster en Ingeniería de Telecomunicación (MIT), Máster in Business Administration (MBA)
Year	2 <sup>nd</sup>
Semester	2 <sup>nd</sup> (Spring)
ECTS credits	6 ECTS
Type	Basic
Department	Industrial Management
Area	Manufacturing
Coordinator	Cristina Domínguez Soto

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## DETAILED INFORMATION

### Contextualization of the course

#### Contribution to the professional profile of the degree

Operations management designs, operates, and improves productive systems that enable work to be done efficiently. Operations managers work in various settings, including banks, hospitals, factories, and government organizations. They design systems, produce products, ensure their quality, and deliver services. To perform these activities, they work with customers and suppliers. They solve problems, reengineer processes, innovate, and integrate to improve quality, speed to market, customization, and lower costs. To achieve excellence in operations is critical to a firm's success.

More specifically, the contributions of this course to professional profile are the following:

- Gaining an appreciation of the strategic importance of operations and supply chain management in a global business environment and understanding how operations relate to other business functions.
- Being able to describe the impact of operations and supply chain management on other functions within a firm, as well as on the competitive position of the firm. Being aware of the global nature of operations and the complexity of supply chains.
- Developing a working knowledge of the concepts and methods related to designing and managing operations and creating value along the supply chain: The basic steps involved in bringing a product to market from its design through production and delivery.
- Learning a skill set for continuous improvement: The ability to conceptualize how systems are interrelated, to organize activities effectively, to analyze processes critically, to make decisions based on data, and to push for continual process improvement.

#### Prerequisites

There are no prerequisites to attending this course. However, it is recommended to be familiar with the basic issues, capabilities, and limitations of the operations function. For instance, these concepts are introduced in the course "Manufacturing and Production" of the first semester of the Máster en Ingeniería Industrial (MII) and Máster en Ingeniería de Telecomunicación (MIT) programs.

## CONTENTS

<b>Contents</b>
<b>Theory</b>
<b>Chapter 1. Introduction to Operations Management</b>
1.1 Operations Function on Global Context 1.2 Strategy and Operations
<b>Chapter 2. Quality Management</b>
2.1 Definition of Quality 2.2 Quality Tools 2.3 TQM & QMS 2.4 Six Sigma 2.5 The Cost of Quality
<b>Chapter 3. Inventory Management</b>
3.1 Role of Inventory 3.2 Inventory financial impact 3.3 Inventory costs 3.4 Inventory Classification 3.5 Replenishment systems (Continuous and Periodic)
<b>Chapter 4. Supply Chain Management (SCM)</b>
4.1 Supply Chain definition and processes 4.2 Supply Chain drivers: Facilities, Transportation, Inventory, Information, Sources and Price 4.3 Risk management and challenges 4.4 Procurement 4.5 Measuring Supply Chain Performance 4.6 Externalization of operations
<b>Chapter 5. Audit and Compliance</b>
5.1 Lean Six Sigma 5.2 Value Stream Mapping
<b>Chapter 6. Operations Planning</b>
6.1 Hierarchical nature of Planning 6.2 Enterprise Resource Planning (ERP) 6.3 Sales and Operations Planning (S&OP) 6.4 Material Requirement Planning (MRP)

<b>Practices</b>
<b>Practice 1. Quality Analysis</b>
The student gains a real-world experience of how various quality tools are applied in Operations. They will discover the power of different analyses focused on a quality issue.
<b>Practice 2. Logistics Marketing</b>
The students gain knowledge of a good tool for analyzing process flow and eliminating wastes. It helps a lot for designing the lean flow and the future state.
<b>Practice 3. Sales &amp; Operations Planning</b>
The student, through a role-play, can understand the different perspectives and interests each function brings to the monthly S&OP process, where a consensus is required.

<b>Competences and Learning Outcomes</b>
<b>Competences</b>
<b>General Competences</b>
CG 4. Implementation of Concepts and Theories of Companies to find new business opportunities and obtain long-term competitive advantages
CG 6. An ethical commitment to the enforcement of moral values and those of the company applies to ethical and corporate social responsibility dilemmas.
CG 8. Critical thinking and argumentation are consistent with the understanding of knowledge and the know-how of companies, their external context, and their management practices
CG 9. Autonomy to learn how to continue the process of enhancing the cognitive skills and the relevant knowledge applied to professional and business activities.
<b>Learning outcomes:</b>
RA 1. Interconnect concepts in a multilateral and transversal way
RA 2. Identify the right concepts for each situation.
RA 3. Determine the scope and usefulness of theoretical knowledge.
RA 4. Assumption of ethics and values associated with the performance of the professional career.
RA 5. Pursue excellence in professional activities.
RA 6. Assume a responsible attitude towards people, with the means and resources at hand.
RA 7. Bear in mind the consequences that their activities and behaviours may have on everyone else.
RA 8. Identify, set, and contrast hypotheses, variables, and results in a logical and critical way.
RA 9. Review the options and alternatives with critical thinking to allow discussion and argumentation of opposite opinions.
RA 10. Develop their assignments and tasks with initial instructions and a basic follow-up
RA 11. Search and find appropriate resources to justify their activities and reports.
RA 12. Enlarge and deepen at the report development.

## TEACHING METHODOLOGY

General methodological aspects	
The best way to gain a full understanding of Operations Management is to have real-life experiences on this topic. Consequently, all the proposed activities are focused on providing students with real cases and practical experiences where the implementation of operations management is essential for the improvement of company activities.	
In-class activities	Competences
<ul style="list-style-type: none"> <li>▪ <b>Lectures and problem-solving sessions (40 hours):</b> The lecturer will introduce the fundamental concepts of each chapter, along with some practical recommendations, and will go through worked examples to support the explanation. Active participation will be encouraged by raising open questions to foster discussion and by proposing short application exercises to be solved in class.</li> </ul>	CG4
<ul style="list-style-type: none"> <li>▪ <b>Case sessions (12 hours):</b> Under the instructor's supervision, students will apply the concepts and techniques covered in the lectures to real cases.</li> </ul>	CG6, CG8, CG9
<ul style="list-style-type: none"> <li>▪ <b>Practice sessions (8 hours):</b> Under the instructor's supervision, students, divided in small groups, will apply the concepts and techniques covered in the lectures to real problems.</li> </ul>	CG9
Out-of-class activities	Competences
<ul style="list-style-type: none"> <li>▪ Personal study of the course material and resolution of the proposed exercises (86 hours).</li> </ul>	CG4, CG9
<ul style="list-style-type: none"> <li>▪ Case session preparation to make the most of in-class time (28 hours).</li> </ul>	CG6, CG8
<ul style="list-style-type: none"> <li>▪ Practice session preparation to make the most of in-class time (6 hours).</li> </ul>	CG9

## ASSESSMENT AND GRADING CRITERIA

Assessment activities	Grading criteria	Weight
Mid-term exam	<ul style="list-style-type: none"> <li>Understanding of the theoretical concepts.</li> <li>Application of these concepts to problem and case solving.</li> <li>Critical analysis of numerical exercises' results.</li> </ul>	15%
Final exam	<ul style="list-style-type: none"> <li>Understanding of the theoretical concepts.</li> <li>Application of these concepts to problem and case solving.</li> <li>Critical analysis of numerical exercises' results.</li> </ul>	40%
Case Resolution	<ul style="list-style-type: none"> <li>Class participation.</li> <li>Test Results (Pre-and post-discussion in class).</li> </ul>	15%
Case Construction	<ul style="list-style-type: none"> <li>Case preparation in teams</li> <li>In-class presentation</li> </ul>	15%
Practice	<ul style="list-style-type: none"> <li>Class participation</li> <li>Test Results (Pre-and post-practice) or report</li> </ul>	15%

## GRADING AND COURSE RULES

Grading
Regular assessment
<ul style="list-style-type: none"> <li><b>Exams</b> will account for 55%, of which: <ul style="list-style-type: none"> <li>Mid-term: 15%</li> <li>Final exam: 40%</li> <li>The <i>Exam global mark</i> is computed, weighing each exam proportionally.</li> </ul> </li> <li><b>Cases and practices</b> will account for the remaining 45%, of which: <ul style="list-style-type: none"> <li>Cases: 30%</li> <li>Practices: 15%</li> </ul> </li> </ul> <p>In case the exam global mark is equal to or lower than 3.5, the final grade will be the <i>exam global mark</i>. Otherwise, the final grade is computed by weighting the different marks according to the previously shown percentages. To pass the course, the final grade should be greater than or equal to 5.0.</p>
Retakes
<p>Cases and practice marks will be preserved. The resulting grade will be computed as follows:</p> <ul style="list-style-type: none"> <li>Final exam: 55%</li> <li>Cases: 30%</li> <li>Practices: 15%</li> </ul> <p>In case that the final exam mark is equal or lower than 3.5, the final grade will be the final exam mark. Otherwise, the final grade is computed weighting the different marks as the previously shown percentages. To pass the course, the final grade should be greater or equal to 5.0.</p>

### Course rules

- Class attendance is mandatory according to Article 93 of the General Regulations (Reglamento General) of Comillas Pontifical University and Article 6 of the Academic Rules (Normas Académicas) of the ICAI School of Engineering. Not complying with this requirement may have the following consequences:
  - Students who fail to attend more than 15% of the lectures may be denied the right to take the final exam during the regular assessment period.

Students who commit an irregularity in any graded activity will receive a mark of zero in the activity and disciplinary procedure will follow (cf. Article 168 of the General Regulations (Reglamento General) of Comillas Pontifical University).

## WORK PLAN AND SCHEDULE<sup>1</sup>

In and out-of-class activities	Date/Periodicity
Mid-term exam	Week 8
Final exam	April 27 <sup>th</sup> to May 20 <sup>th</sup>
Practice sessions	Weeks 4, 11, and 14
Review and self-study of the concepts covered in the lectures	After each chapter
Case construction preparation in working teams	After each chapter
Problem-solving	After each chapter that contains problems
Practice output analysis (Test or report)	Just right after every practice

STUDENT WORK-TIME SUMMARY			
IN-CLASS HOURS			
Lectures	Problem-solving	Case sessions	Practices
30	4	20	6
OUT-OF-CLASS HOURS			
Self-study	Problem preparation	Case preparation and evaluation	Practice
80	4	30	6
ECTS credits:			6 (180 hours)

## BIBLIOGRAPHY

<sup>1</sup> A detailed work plan of the subject can be found in the course summary sheet (see following page). Nevertheless, this schedule is tentative and may vary to accommodate the rhythm of the class.

### **Basic bibliography**

- Notes and slides prepared by lecturers (available in Moodle).
- R.S. Russell y B. W. Taylor. Operations Management. Creating Value Along the Supply Chain. (7ª ed.). John Wiley & Sons, Inc.. Estados Unidos (2011) .

### **Complementary bibliography**

- F. R. Jacobs and R.B. Chase, Operations and Supply Chain Management, 13th Edition. New York, McGraw Hill, 2011
- J. Heizer y B. Render. Dirección de la Producción y de Operaciones. Tomo I: Decisiones estratégicas Tomo II: Decisiones tácticas. (11ªed.). Pearson. España (2015).
- L. J. Krajewski, L.P. Ritzman y M. K. Malhotra. Administración de operaciones. Procesos y cadena de suministro. (10ªed.). Pearson. Mexico (2013).
- J. Mangan, C. Lalwani y T. Butcher. Global Logistics and Supply Chain Management (1ªed.). John Wiley & Sons. Great Britain (2008).
- P.P. Dornier, R. Ernst, M. Fender y P. Kouvelis. Global Operations and Logistics. Text and Cases (1ªed.). John Wiley & Sons. Estados Unidos (1998).



Week	IN-CLASS ACTIVITIES				OUT-OF-CLASS ACTIVITIES			
	h/w	LECTURE & PROBLEM SOLVING	PRACTICE	ASSESSMENT	h/w	SELF-STUDY	LAB PREPARATION AND REPORTING	OTHER ACTIVITIES
1	4	Chapter 1. Introduction to Operations Management.		Tesla Case Study	6	Review and self-study		Team work: Case construction Ch 1
2	4	Chapter 1. Introduction to Operations Management. Chapter 2. Quality Management	Cooling System Case	Samsung case Case Construction Chapter 1	8	Review and self-study		Case preparation
3	4	Chapter 2. Quality Management		Pinto Case TAT	8	Review and self-study		Team work: Case construction Ch 2
4	4	Chapter 2. Quality Management.	Practice 1: GATI Case	Case Construction Chapter 2	8	Review and self-study	Practice preparation	
5	4	Chapter 3. Inventory Management		DELL/HP Case	8	Review and self-study		Case preparation
6	4	Chapter 3. Inventory Management	Inventory exercises		8	Review and self-study		Team work: Case construction Ch 3
7	4	Chapter 3. Inventory Management	Canay Island Case	BMW Case	12	Review and self-study		Mid-term exam preparation
8	4	Mid Term Exam.	Mid Term exam (2h)	Case construction Chapter 3	8	Review and self-study		
9	4	Chapter 4. Supply Chain Management	Bruynzeel case	Decision Matrix	6	Review and self-study		
10	4	Chapter 4. Supply Chain Management	SHOP CLUES Case	BASF Force Majeure	8	Review and self-study		
11	4	Chapter 4. Supply Chain Management.	SHOP CLUES Case (cont.) Practice 2- Logistic Marketing	Nissan Case	8	Review and self-study	Practice preparation	Team work: Case construction Ch 4 Case preparation
12	2	Chapter 5. Lean System-VSM		Case construction chapter 4	10	Review and self-study		Case preparation
13	4	Chapter 6. Operations Planning		EOLUM case	10	Review and self-study		
14	4	Chapter 6. Operations planning. External speaker (2h)	Practice 3: Sales & Operational Planning		10	Review and self-study	Practice preparation	