

SYLLABUS OF THE SUBJECT

Information about the subject	
Name	Operations Management
Master	Master in International Industrial Project Management
Semester	1º
Credits ECTS	5
Kind	Mandatory
Director	Cristina Dominguez (cdominguez@icai.comillas.edu)
Coordinador	Yolanda García (ygarcia@comillas.edu)

Information – Faculty members	
Professor	
Name	Pedro Sánchez Martín
Department/Company	Dpto. Organización Industrial/ Esc. Superior de Ingeniería-ICAI, Universidad Pontificia Comillas
e-mail	psanchez @ comillas.edu
Professor	
Name	Cristina Dominguez
Department/Company	Dpto. Organización Industrial/ Esc. Superior de Ingeniería-ICAI, Universidad Pontificia Comillas
e-mail	cdominguez@icai.comillas.edu

SPECIFIC INFORMATION ABOUT THE SUBJECT

Context
<p>Contribution to the professional profile of the student</p> <p>Operations management designs, operates, and improves productive systems—systems for getting work done. Operations managers are found in banks, hospitals, factories, and government. They design systems, ensure quality, produce products, 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, or low cost. To get excellence in operations is critical to a firm's success.</p> <p>More specifically, the contributions of this course to the professional profile are the following:</p> <ul style="list-style-type: none"> • Gaining an appreciation of the strategic importance of operations and supply chain management in a global business environment and to understand how operations relates 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 to create 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 attend this course. However, it is recommended to be familiar with the basic issues, capabilities and limitations of the operations function in a Company.

TOPICS AND CONTENT

Content – Topics

GROUP 1: Strategy and Management of Manufacturing Processes

Topic 1: Operations Strategy

- 1.1 Operations Management (OM) as a Company's Function
- 1.2 Main decisions of OM
- 1.3 Heritage of OM
- 1.4 Trends of OM
- 1.5 Priorities of OM
- 1.6 Operations Strategies
- 1.7 Cases: Operations Strategies in companies

Topic 2: Process Strategies and Analysis

- 2.1 Types of Processes
- 2.2 Resource Flexibility
- 2.3 Strategical Adequacy
- 2.4 Strategies for process changing
- 2.5 Tools for Process Analysis and Design
- 2.6 Equipment and Technology Selection
- 2.7 Cases: Process Strategies in companies

Topic 3: Process Layout and Constraint Management

- 3.1 Types of Layout
- 3.2 Manufacturing and Storage Layouts
- 3.3 Job Design and Methods Time Measurements
- 3.3 Steps for Capacity Constraints Management
- 3.4 Bottleneck Analysis and Theory of Constraints
- 3.5 Break Even Analysis
- 3.6 Exercises on balanced layout and job design
- 3.7 Cases: Process Layouts in companies

GROUP 2: Master Planning and Inventory Management

Topic 4: Demand Forecasting

- 4.1 Introduction to Supply Chain Management
- 4.2 Demand and Supply Planning Taxonomy
- 4.3 Demand Forecast Concepts
- 4.4 Forecasting Techniques
- 4.5 Forecast Error
- 4.6 Exercise: Optimum forecast method using ex-post forecast error
- 4.7 Test Forecasting

Topic 5: Inventory Management

- 5.1 Basics
- 5.2 Basic Replenishment Systems

5.3 Order Quantity
5.4 Safety Stock
5.5 Target inventory levels calculation
5.6 Exercise: Simulate different types of Reorder Points

Topic 6: Warehouse Management

6.1 Inventory Measurements & Strategies
6.2 Aggregate Inventory Considerations
6.3 Obsolescence & Waste
6.4 ABC Inventory Control
6.5 Counting & Accuracy
6.6 Warehouse management
6.7 Exercise: Designing target inventory levels and warehouse size
6.8 Test: Inventory Management

Topic 7: Supply Chain Planning

7.1 Introduction to Distribution
7.2 Supply Chain Operational Models
7.3 Integrated Supply Chain Concept
7.4 Transportation
7.5 Distribution Resource Planning
7.6 Distribution trends
7.7 KPIs
7.8 Exercise: Multiple steps Supply Chain Planning

Topic 8: Production Planning and Master Production Scheduling

8.1 Introduction to Product lifecycle
8.2 Marketing
8.3 Sales
8.4 Customer Order Management
8.5 Production Planning
8.6 Resource Planning
8.7 Sales & Operation Planning
8.8 Master Production Schedule
8.9 Rough Cut Capacity Planning
8.10 Exercise: Evaluating different Production Planning Strategies
8.11 Test Master Planning

GROUP 3: MRP

Topic 9: Materials Requirement Planning

9.1. Introduction to the problem to be solved
9.2. Basics: planning, processes, environment
9.3. MRP II framework
9.4. MRP inputs and algorithm
9.5. MRP parameters: Lot Sizes, Safety Stock...
9.7. Exercise: Calculating MRP tables

Topic 10: Capacity Resource planning

10.1 CRP Introduction
10.2 Work Center capacity and load
10.3 Backward and Forward scheduling
10.4 Advantages and limitations of CRP
10.5 CRP calculations
10.6 Exercise: Simulating a CRP example
10.7 Test MRP & CRP

TEACHING METHODOLOGY

General methodological aspects of the subject
In-classroom Methodology: Activities
Presentations Solving Exercises Cases discussions
Out-of-classroom Methodology: Activities
Readings of cases Study of theoretical concepts Solving exercises and problems

EVALUATION AND GRADING CRITERIA

ITEMS OF EVALUATION	CRITERIA	WEIGHT
Class participation	Attendance, answering questions in class, making interesting questions	20 %
Exercises and/or Cases of study	Numerical and/or conceptual exercises on the contents solved individually or in groups	40 %
Test or Exam	Case or numerical problems solved individually	40 %

BIBLIOGRAPHY AND READING RESOURCES

Bibliography
Basic reference
Textbooks
<ul style="list-style-type: none"> ▪ Notes and slides prepared by lecturers (available in Moodle). ▪ R.S. Russell y B. W. Taylor. Operations Management. Creating Value Along the Supply Chain. (7th ed.). John Wiley & Sons, Inc.. Estados Unidos (2011) ▪ S. Chopra and P. Meindl. Supply Chain Management. (6th ed.) Global Edition. Pearson.2016
Additional material
<ul style="list-style-type: none"> ▪ 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. (11^{ed.}). Pearson. España (2015). ▪ L. J. Krajewski, L.P. Ritzman y M. K. Malhotra. Administración de operaciones. Procesos y cadena de suministro. (10^{ed.}). Pearson. Mexico (2013). ▪ J. Mangan, C. Lalwani y T. Butcher. Global Logistics and Supply Chain Management (1^{ed.}). John Wiley & Sons. Great Britain (2008). ▪ P.P. Dornier, R. Ernst, M. Fender y P. Kouvelis. Global Operations and Logistics. Text and Cases (1^{ed.}). John Wiley & Sons. Estados Unidos (1998).
Additional bibliography and reading resources
<ul style="list-style-type: none"> • PRODUCTION & INVENTORY MANAGEMENT. Fogarty, Blackstone & Hoffman. 2D Edition 1991, South-Western Publishing Co. ISBN 0-538-07461-2 • ORLICKY'S MATERIAL REQUIREMENTS PLANNING. Orlicky & Plossl, G.W. Second Edition 1994, McGraw Hill. ISBN 0-07-050459-8. • BASICS OF SUPPLY CHAIN, MASTER PLANNING OF RESOURCES, DETAILED SCHEDULING AND PLANNING, participant workbooks, CPIM (Certified in Production and Inventory Management). APICS (American Production and Inventory Control Society)

