Course guide
2400209 - 240MEI62 - Operations Management in Production and Logistics

Last modified: 09/07/2025

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: **Degree:** MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2025). (Optional subject).

Academic year: 2025 **ECTS Credits:** 5.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Manel Mateo Doll

Others:

TEACHING METHODOLOGY

The course will consist of the following training activities:
* Part of the "theory" sessions corresponds to the flipped classroom format and the rest of the time corresponds to the participatory-directed class format, including a business challenge.
* The "practical" sessions are varied: some correspond to the laboratory class format, where groups of 3 to 4 students apply calculation instruments to understand the practical application of the procedures introduced in the theory class; the resolution of applied work and the business game is also considered.
* This is complemented by individual work to acquire theoretical concepts and practical cases, and work on the applied work, the business challenge and the business game (all of this being non-face-to-face).
* Finally, the evaluation activities (practices and final exam) are considered.

LEARNING OBJECTIVES OF THE SUBJECT

The subject aims to present aspects related to the management of the operation of production and logistics systems (short and medium term management). The conceptual framework, some basic principles and some specific elements in depth are presented: finite capacity programming, stock management, etc. The student who passes the subject will be able to analyze any real production management, establish a diagnosis of dysfunctions and propose improvement actions.

STUDY LOAD

Type	Hours	Percentage
Theory classes	22,5	50.00
Laboratory classes	22,5	50.00

Total learning time: 45 h

CONTENTS

1. Introduction

Description:
Comprehensive logistics system. Reference model in Operations Management. Visions of operations management in production.

Full-or-part-time: 8h
Theory classes: 1h 30m
Practical classes: 1h 30m
Self study : 5h

2. Inventory management

Description:
Random demand management models. From EOQ to management models by reorder point and periodic review. Inventory management within the framework of Lean management.

Full-or-part-time: 30h 30m
Theory classes: 4h 30m
Practical classes: 6h
Self study : 20h

3. Operations Planning

Description:
Basic planning concepts. Aggregation levels of planning. S&OP (Sales and Operation Planning) approach.

Full-or-part-time: 26h
Theory classes: 3h
Practical classes: 3h
Self study : 20h

4. Scheduling in manufacturing

Description:
Scheduling problem framework. Priority rules. Parallel machines. Eligibility, setup, pre-process and post-process times. Hybrid flow-shop.

Full-or-part-time: 36h 30m
Theory classes: 10h 30m
Practical classes: 6h
Self study : 20h

5. Operations in logistics

Description:
Problems in supply and distribution: simultaneous optimization of routes and stocks (Inventory Routing Problem, IRP).

Full-or-part-time: 24h
Theory classes: 3h
Practical classes: 6h
Self study : 15h

GRADING SYSTEM

The assessment is carried out through several procedures:
(1) Business game and applied work (TA), in which the student in a group must demonstrate the application of what they have previously learned theoretically in possible real situations.
(2) Business challenge (RE), a project throughout the course to be carried out in a group on a real situation proposed by a company or entity external to the university, with periodic evaluation of the progress of the project and final presentation of the solution adopted.
(3) A practical test (EP), of a maximum of 1 hour in duration, in which the student must show their ability to apply what they have learned to situations slightly different from those worked on.
(4) Assessment of work in practical classes (TP), in which the student must demonstrate their progressive learning.
(5) A final exam (EF), consisting of theoretical and practical exercises so that the student can demonstrate their ability to apply the knowledge learned and develop extensive resolution procedures.
(6) Theory activities (AT), to apply the flipped teaching to the subject, in which theoretical or practical questions must be resolved. In total, they can add up to 1 additional point to the final exam EF grade.
$EF' = \min \{ EF + AT; 10 \}$ with $AT \leq 1$
$Nfinal = 0{,}2 \cdot EF' + 0{,}2 \cdot \max \{ EP; 0{,}5 \cdot EP + 0{,}5 \cdot TP \} + 0{,}6 \cdot \max \{ 0{,}5 \cdot RE + 0{,}5 \cdot TA ; EF' \}$
In case of attending the Retake exam, this grade REA will replace EF' in the previous formula.