

Course Unit	Industrial Management	Field of study	Management
Master in	Chemical Engineering	School	School of Technology and Management
Academic Year	2025/2026	Year of study	2
Type	Semestral	Semester	1
Level	2-2	ECTS credits	6.0
Code	6362-756-2103-00-25		
Workload (hours)	162	Contact hours	T 30 TP - PL 30 TC - S - E - OT - O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Maria Clara Rodrigues Bento Vaz Fernandes

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Identify the different types of production systems and associated layouts.
2. Define and distinguish the concepts of supply chain management and logistics.
3. Identify best practices in supply chain management to reduce costs and add value.
4. Determine replenishment parameters in deterministic and stochastic models of stock management within a company and a supply chain channel.
5. Know and manipulate tools for planning and monitoring of projects.
6. Understand the role of Quality and Quality Management Systems, integrating methodologies for continuous improvement and waste reduction.
7. Manipulate the statistical process control tools.
8. Define productive equipment maintenance policies.

Prerequisites

Before the course unit the learner is expected to be able to:

1. Manipulate basic statistical concepts.
2. Use a spreadsheet.

Course contents

Introduction to Operations Management. Supply Chain and Inventory Management. Project planning. Quality Management. Continuous improvement and waste reduction. Maintenance Management.

Course contents (extended version)

1. Introduction to Operations Management.
 - Types of processes.
 - Industrial layouts.
2. Supply Chain and Inventory Management.
 - Concepts.
 - Inventory review policies.
 - Inventory costs.
 - Economic order quantity.
 - Stochastics and deterministic models.
 - Distribution-requirements planning (DRP) in the supply chain.
 - Production Planning.
3. Project planning.
 - Critical Path Method.
 - Programme Evaluation and Review Technique).
4. Quality Management.
 - Quality management systems and ISO 9000 standards.
 - Statistical Process Control.
 - Control charts by variables and attributes.
5. Continuous improvement and waste reduction.
 - Waste types.
 - Lean Management Tools.
6. Maintenance Management.
 - Maintenance efficiency (costs and ratios).
 - Replacement policies.
 - Backup equipment.

Recommended reading

1. Ballou, R. (2004). Business Logistics/Supply Chain Management (5th Edition). New Jersey: Pearson Prentice-Hall.
2. Courtois, A. , Pillet, M. , & Martin-Bonnefous, C. (2007). Gestão da Produção (5ª edição). Paris: Lidel.
3. Heizer, J. , Render, B. & Munson, C. (2017). Operations Management: Sustainability and Supply Chain Management (12th edition). USA: Pearson Education, Inc.
4. IPQ. (2015). NP EN ISO 9001: 2015 - Sistemas de Gestão da Qualidade - Requisitos. Caparica: IPQ -- Instituto Português da Qualidade.
5. Montgomery, D. C. (2013). Statistical Quality Control (7th Edition). USA: Wiley.

Teaching and learning methods

The contents presented will be addressed during contact hours, in a theoretical-practical regime, accompanied by the resolution of exercises using Excel and developing activities on the topics. Equity, diversity, and inclusion of all students will be considered throughout every stage of the subject, ensuring that its content and methodology are accessible and supportive of everyone's needs

Assessment methods

1. Option I - (Regular, Student Worker) (Special)
 - Final Written Exam - 100%
2. Option II - (Regular, Student Worker) (Final, Supplementary)
 - Intermediate Written Test - 25%
 - Final Written Exam - 25%
 - Practical Work - 40%
 - Portfolio - 10%

Language of instruction

English

Electronic validation

Maria Clara Rodrigues Bento Vaz Fernandes	Carla Alexandra Soares Geraldes	Simão Pedro de Almeida Pinho	José Carlos Rufino Amaro
10-10-2025	12-10-2025	15-10-2025	01-11-2025