Module 2: Ambidextrous Organization	
Denomination of the SUBJECT: • **M2.3 Production and Operations Management**	**Credits ECTS** 9 ECTS (225 hours)

Duration, mode of delivery, and timing within the curriculum:

This course will be taught throughout the second year

Language

Inglés

Core Competences

CC1 That students have demonstrated knowledge and understanding in a field of study that builds on general secondary education, and is typically at a level that, while supported by advanced textbooks, also includes aspects involving knowledge from the forefront of their field of study.

CC3 That students have the ability to gather and interpret relevant data (normally within their field of study) to make judgments that include reflection on relevant social, scientific, or ethical issues.

Transversal competences

TC3 CRITICAL AND ANALYTICAL Ability to identify, analyze, and evaluate situations, ideas, and information in order to formulate responses to problems, using logic and reasoning to identify the strengths and weaknesses of possible solutions or approaches.

TC5 GLOBAL PERSPECTIVE Knowing one's roots and being curious to understand and respect the culture and history of other countries. Believing that multilingualism and all cultures have something to teach, and not being satisfied with doing things the way they have always been done, but wanting to try new and different ways of doing things. Taking responsibility for the existing problems in their world and being aware of, and working for, the environment and social justice for all living beings.

General / Personal Competences:

GC2 Analyzes complex challenges logically and from different perspectives and disciplines, suggesting suitable solutions.

GC7 Understands and values cultural, social, economic, and political diversity at local and global levels, with an open and broad perspective toward different cultures, traditions, values, and ways of thinking.

Specífic Competences / Profesional:

SC7 Knows and applies tools and processes for making data-driven decisions.

SC11 Knows and applies tools, processes, and methodologies for organizing and managing operations, aimed at optimization and opportunity utilization.

SC12 Knows and applies sustainability principles, practices, and tools in the management and leadership of companies and organizations, contributing to economic, social, and environmental development in a balanced and ethical manner.

Learning outcomes:

LO2_2 Analyzes challenges from different perspectives and disciplines, applying more advanced logical reasoning and suggesting solutions that address the key aspects of the challenge.

LO7_2 Understands global diversity and its implications in work and social contexts, analyzing situations from both local and global perspectives, identifying opportunities and challenges in international contexts, and collaborating and managing diversity constructively.

LO21_1 Master the tools and processes to leverage data.

LO28_2 Understands tools, processes, and methodologies for organizing operations management.

LO30_2 Understands circular business management strategies.

Alignment with the Sustainable Development Goals

- Goal 8: Decent work and economic growth
  - Improving efficient and respectful production and consumption

Prerequisites:

No prerequisites have been established

Brief summary of contents:

Introduction to operations management

- Definition of operations management
- Brief historical overview of operations management
- What does an operations manager do?
- Current challenges in operations management

Strategic decisions

- Introduction to strategic decisions
- Location strategies
  - Introduction to location strategies
  - Definition and factors
  - Evaluation methods
  - Case study
  - CAGE Framework - Location choice model
- Layout strategies
  - Introduction to layout strategies
  - Layout models
- Product and process design strategies
  - Introduction to product and process design strategies
  - Process and production strategies
    - Process strategies (Process approach, repetitive approach, product approach, mass customization)
    - Production strategies (Customer order decoupling point, push and pull, MTS, ATO, MTO, ETO)
    - Production Methodologies (Lean, Agile, and Leagile)
    - Manufacturing Processes
  - Process Analysis and Design
  - Fundamental Concepts (Cycle Time and Takt Time, Capacity and Bottlenecks, Lead Time, Work in Progress, and Productivity)
- Purchasing strategy
  - Introduction to purchasing strategy
  - Main objectives and functions

- The value of purchasing
- Purchasing strategies (Kraljic Matrix)
- Purchasing process
- Supplier management
- Outsourcing
- Organization of the purchasing department

- Quality strategy
  - Introduction to strategic quality management
  - Continuous improvement methodologies (Lean, Kaizen, Six Sigma, PDCA, 5S)
  - The role of inspection
  - Trends in strategic quality management
- Supply chain management strategies
  - Introduction to supply chain management strategies
  - Characteristics of the supply chain
  - Phases of the supply chain
  - Trends in strategic supply chain management
  - Reverse logistics
  - Sustainability in the supply chain
  - Bullwhip effect
  - Different supply chain models

<u>Cost management</u>

- Introduction to cost management
- Cost management objectives
- Basic concepts
- Cost classification
- Full costing
- Direct costing
- Decision making
- Case studies

<u>Tactical decisions</u>

- Introduction to tactical decisions
- Demand forecasting
  - Definition of demand forecasting
  - The importance of demand forecasting
  - Forecasting methods (Qualitative/Quantitative)
  - Quantitative demand forecasting with R studio
    - Time series analysis
    - Time series decomposition

        - Elasticity - price – demand
        - Methods (Moving averages, multiple linear regression, ARIMA model)
- Inventory management
    - Introduction to inventory management
    - Types of inventory
    - Inventory management
        - ABC analysis
        - Inventory accuracy
        - Inventory models (Fixed quantity and fixed period)
        - EOQ model
        - Manufacturing order quantity model
        - Quantity discount model
        - Reorder point
        - Safety stock
- Production planning
    - Introduction to production planning
    - PAP - Production Aggregate Plan: Hunting strategy and leveled strategy
    - MPS - Master Production Schedule
    - MRP - Material Requirements Planning
    - Introduction to short-term planning

<u>Operations research</u>

- Introduction to operations research
- Linear programming
    - General aspects
    - Modeling procedure
    - Methods for resolution
        - Graphical method
        - Simplex method
        - Solver (En Excel)
    - Network models
        - General aspects
        - Transportation model
        - Allocations models
    - Sensitivity analysis

Training activities:

The training activities planned for this module are as follows:

- Challenge-based learning (1 ECTS, 25 hours)
- Cooperative work: Development, writing, and presentation of group activities (1 ECTS, 25 hours)

- Development, writing, and presentation of individual assignments (1 ECTS, 25 hours)
- Workshops aimed at acquiring specific skills (1 ECTS, 25 hours)
- Online learning resources (1 ECTS, 25 hours)
- Individual and group reflection activities and dynamics (0.5 ECTS, 12.5 hours)
- Community service learning activities (0.5 ECTS, 12.5 hours)
- Individual support, mentoring, and monitoring (0.5 ECTS, 12.5 hours)
- Formative feedback (0.5 ECTS, 12.5 hours)
- Portfolio of projects and case studies (1 ECTS, 25 hours)
- Business simulation (1 ECTS, 25 hours)

Evaluation system:

All subjects will be assessed using a continuous evaluation system, which provides both teachers and students with constant feedback on the learning process throughout the academic period. As a guide, the criteria governing the degree evaluation system are as follows:

- Educational activities aimed at acquiring knowledge and in which individual study predominates may be assessed by means of oral and/or written tests, which will account for a maximum of 40% of the final mark.
- On the other hand, those educational activities aimed at acquiring the practical skills of the subjects will be assessed through the completion of different activities (assignments, case studies, problem solving, etc.), which together will account for at least 60% of the final grade.

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