

Master of Science in Mechanical Engineering

Production Systems

CM5



Contacts



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Track description

Production systems are the core of the modern industry, including the entire product value chain from product design to services. Different areas characterize these systems: the plant-project area, the design and management of production and logistics systems area, and the manufacturing area.

The mechanical engineer with the study plan in Production Systems is a professional with advanced knowledge and skills in the design, management, and control of industrial production systems.

Learning and hands-on experiencing, in specific laboratory activities, on the impact of digitalization and how to implement digital technologies.



Skills

Students will learn how to:

- create layout designs
- carry out feasibility studies of production systems and plants
- plan and manage complex industrial projects
- design, optimize and manage production systems and industrial plants mastering the most advanced digital technologies to improve performance
- manage logistics and maintenance of industrial technologies and the automation of the industrial systems
- manage, model and monitor data in industrial and business scenarios

CM5: Core Courses

Course Title	YEAR	SEM	ECTS	ECTS GROUP
Energy Conversion Technologies	1	1	5	5
Control of Mechanical Systems	1	2	5	5
Dynamics of Mechanical Systems	1	1	5	5
Machine Design	1	2	5	5
Advanced Manufacturing Processes A	1	1	10	10
Design and Management of Production Systems	1	1	10	10

CM5: Track Specific Courses

Course Title	YEAR	SEM	ECTS	ECTS GROUP
Industrial Plants A	1	2	10	10
Advanced Project Management	1	2	10	
Design and Analysis of Experiments and Response Surface Methodology	1	2	10	10
Manufacturing Systems Engineering A	1	1	10	
Digital Twins of Production Systems A	2	1	10	20
Quality Data Analysis A	2	2	10	
Logistics Management	2	2	10	
Smart Maintenance and Industrial Asset Management	2	1	10	
Elective courses (Energy Efficiency and Decarbonization of Industrial Processes, Design of Robotic Systems, Cyber-Physical Manufacturing Systems, Digital Factory, Digital Manufacturing, Green Logistics, Human-System Interaction in Industrial Operations, Industrial Project Management, Operations Risk Management and Resilience, Smart Maintenance Management, Sustainable Manufacturing, Purchasing and Supply Management, ...)	2	1-2	5	10
Lab course (Data Analytics for Process Improvement, Digital Production Systems, ...)	2	1	5	5

CM5: Master's Thesis

**Fault
detection and
diagnostics of
manufacturing
assets**

**Assembly line
balancing with
cobots**

**Digital twins
for production
control of
manufacturing
systems**

**Big data mining
for zero-defect
manufacturing**

