

BACHELOR IN “MECHANICAL ENGINEERING”

STUDY PROGRAMME OBJECTIVES

The Bachelor in “Mechanical Engineering” aims to develop core engineering skills, particularly in mechanical systems, materials, thermodynamics, fluid mechanics, and electrotechnics. It also fosters interdisciplinary competence, encouraging integration with fields like automation, economics, programming, and project management. The program also promotes practical and professional readiness through internships, technical drawings, CAD, CNC technologies, and lab work, as well as supports academic growth via training in academic writing, research methods, and preparation for postgraduate education or careers in engineering and industry.

LEARNING OUTCOMES

By the end of the programme, graduates should be able to:

- Apply scientific principles of mathematics, physics and chemistry to analyse and solve mechanical engineering problems.
- Design and analyze mechanical systems and processes using modern tools and techniques, including CAD and CNC, considering functionality, sustainability, manufacturability, and safety.
- Understand and utilize core concepts in materials science, fluid mechanics, thermodynamics, and structural analysis.
- Demonstrate programming and algorithmic thinking relevant to automation and system integration.
- Conduct experiments and interpret data, especially in mechanical measurements and technical physics.
- Evaluate and select the most suitable mechanical materials for each project, based on their performance, cost, and sustainability.
- Oversee the implementation of modern mechanical technologies, including machinery and mechanical systems, to enhance the efficiency and quality of projects.
- Implement safety rules and standards in mechanical plants to ensure the protection of workers and minimize risks during mechanical industrial processes.
- Communicate effectively, both in written and verbal formats, and operate within multidisciplinary teams.
- Manage engineering projects, including planning, execution, and evaluation.
- Engage in lifelong learning, staying updated with technological advances and engineering practices.

JOB OPPORTUNITIES

Graduates of the *Mechanical Engineering* program can be employed as follows:

- Mechanical Design Engineer in design studios and manufacturing companies, where mechanical systems, products, and industrial processes are developed.
- Project Manager in manufacturing, construction companies, or public administration offices, responsible for planning and managing mechanical engineering projects.
- Production Engineer in small, medium, or large industries, focusing on the development and management of production lines and technological processes.

- Maintenance Engineer in companies offering services for the maintenance and servicing of machinery, mechanical equipment, and industrial systems.
- HVAC Engineer for the design and maintenance of heating, ventilation, air conditioning, and refrigeration systems in specialized companies.
- Industrial Safety Engineer in companies offering consultancy and supervision for implementing safety standards in mechanical processes.
- Engineering Consultant in companies providing design and development services for mechanical systems in various industries and sectors.
- Expert in Mechanical Process and Automation Development for companies focusing on technology and automation of industrial processes.
- Energy Systems Engineer specializing in renewable energy, contributing to the design and implementation of mechanical and renewable energy systems.
- Consultant for Industrial Process Optimization in government and private agencies providing support for improving production efficiency and quality.
- Research and Development (R&D) Assistant in academic institutions or private companies, contributing to the development of new technologies and mechanical products.
- Technology Engineer responsible for implementing and monitoring advanced mechanical and automation systems in various industries.
- Freelancer, after acquiring the necessary licenses, in accordance with the legal framework in force.

BACHELOR IN "MECHANICAL ENGINEERING" (180 ECTS)

No.	Year	Sem	Course Name	ECTS
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A - GENERAL COURSES

GENERAL KNOWLEDGE AND METHODOLOGICAL PREPARATION (15 – 20%) - 32 ECTS

1	I	1	Algebra and Geometry	6
2	I	1	Mathematics Analysis 1	6
3	I	2	Mathematics Analysis 2	6
4	I	2	Academic Writing and Research Methods	8
5	II	1	Introduction to Economics	6

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B - CORE COURSES

PREPARATION FOR THE SCIENTIFIC DISCIPLINE (50 – 55%) - 95 ECTS

1	I	1	General and Inorganic Chemistry	6
2	I	1	Technical Drawing and CAD	3
3	I	1	Physics 1	5
4	I	2	Physics 2	6
5	I	2	Materials Science and Technology	5
6	I	2	Descriptive Geometry 1	5
7	II	1	Algorithmics and Introduction to Programming	6
8	II	1	Basics of Electrotechnics	8
9	II	2	Introduction to Probability	6
10	II	2	Structural Mechanics 1	5
11	II	2	Rational Mechanics	6
12	II	2	Environmental and Technical Physics	6
13	II	1	Fluid Mechanics	6
14	III	1	Basics of Applied Mechanics and Machine Elements	8
15	III	1	Introduction to Operations Management	6
16	III	1	Industrial Plants	8

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C - INTERDISCIPLINARY AND INTEGRATIVE COURSES

SUB-DISCIPLINE AND ELECTIVE COURSES (12 – 15%) - 26 ECTS

1	II	2	Basics of Automation	6
2	III	1	Machines and Mechanical Systems	6
3	III	1	Mechanical Measurements	6
4	III	1	Shkenca e konstruksioneve (2)	5
5	III	2	Mechanical Technology of CNC	6
6	III	2	Transport Systems, Infrastructure and Security	8

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D - ADDITIONAL COURSES

1	II	1	English Language	5
2	I	1	Basics of Informatics	4
3	III	1	Project Design and Management	6
4	III	2	Internship and Student Development	5

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E - FINAL OBLIGATIONS

1	III	2	Diploma Thesis/Final Comprehensive Exam	7
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Total

180