

Mechanical Engineering

Institutional Mission Statement:

Provide quality higher technological education, developing well-rounded proficient professionals, with high sense of social responsibility, solid education in science, technology and innovation, who contribute to the sustainable development of the country.

Department Mission Statement:

Train professionals of excellence in the areas of mechanical engineering and mechatronics engineering, able to develop and apply scientific and technological knowledge in order to respond effectively and with the highest quality to the requirements of the different sectors of society.

Program Educational Mission:

To educate professionals that possess the attitude and ability to develop, research and apply scientific and technological knowledge in the areas of Mechanical Engineering such as: Energy, fluids, design, manufacturing, automation, control, materials, installation and maintenance of equipment, among others; capable to assign and manage human and material resources in a safe, rational, efficient and sustainable manner; being creative and entrepreneurial; with ethical principles and committed at all times to contribute to the welfare of society.

Program Educational Objectives (PEO's):

After few years of graduation the alumni are able to:

- **PEO1.** Start new businesses with entrepreneurial spirit and leadership, being creative and socially responsible.
- **PEO2.** Use creative and critical thinking in analyzing situations related to mechanical engineering, for decision-making.
- **PEO3.** Work in multidisciplinary teams in comprehensive projects, with an attitude that strengthen teamwork exercising different roles, contributing with his professional capacity to achieve goals. Moreover, the graduate effectively manages people, materials and financial resources.
- **PEO4.** Understand the historical, geographical and socioeconomic context of their region, to propose solutions consistent with the country's needs in a globalized environment.
- **PEO5.** Apply their knowledge, skills and abilities to successfully pursue graduate studies.

Student Outcomes:

- (a) An ability to apply knowledge of mathematics, science, and engineering.
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data.
- (c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- (d) An ability to function on multidisciplinary teams.
- (e) An ability to identify, formulate, and solve engineering problems.
- (f) An understanding of professional and ethical responsibility.
- (g) An ability to communicate effectively.
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

- (i) A recognition of the need for, and an ability to engage in life-long learning.
- (j) A knowledge of contemporary issues.
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

COURSES OF THE STUDY PLAN

Year 1 – Semester 1	
Differential Calculus	Chemistry
Ethics Seminar	Metrology and Standardization
Fundamentals of Research	Mechanical Drawing
Year 1 – Semester 2	
Integral Calculus	Algorithms and Programming
Linear Algebra	Management Process
Probability and Statistics	Complementary Activities
Engineering of Metallic Materials	
Year 2 – Semester 1	
Vectorial Calculus	Engineering of Non-Metallic Materials
Statics	Electromagnetism
Quality	Cost Accounting
Year 2 – Semester 2	
Differential Equations	Manufacturing Processes
Mechanics of Materials I	Electronic Systems
Dynamics	Numerical Methods
Year 3 – Semester 1	
Mechanics of Materials II	Circuits and Electrical Machines
Mechanisms	Sustainable Development
Thermodynamics	Community Service
Fluid Mechanics	
Year 3 – Semester 2	
Mechanical Design I	Instrumentation and Controls
Mechanical Vibrations	Hydraulic and Pneumatic Circuits
Heat Transfer	Research Seminar I
Hydraulic Systems	
Year 4 – Semester 1	
Mechanical Design II	Industrial Automation
Hygiene and Industrial Safety	Computer-Aided Design
Compressible Fluid Machines	Research Seminar II
Incompressible Fluid Machines	
Year 4 – Semester 2	
Maintenance	Management of Projects
Power Generation Systems	Automation of Manufacturing Processes
Refrigeration and Air Conditioning	
Year 5 – Semester 1	
Internship	Design of Manufacturing Systems
Computer-Aided Manufacturing	Internship

STATISTICS OF THE PROGRAM:

Year	Freshman enrollment	Program Enrollment	Awarded
2010	154	565	37
2011	150	571	43
2012	134	584	57
2013	142	607	66
2014	106	582	77
2015	120	566	65
2016	145	600	42

Note: the awarded in 2016 corresponds only to January-June semester