

## MECHANICAL DESIGN ENGINEERING

### OBJECTIVE

To form professionals in Mechanical Design Engineering to manage, design, implement, adapt and evaluate tools, machines, products and mechanical components based on structural criteria and security that allows the transformation and use of energy in a rational, sustainable and efficient way in the fields of Design and Manufacturing respecting the corresponding regulations, from a humanistic perspective and with social responsibility.

### ADMISSION PROFILE:

The applicant for the Mechanical Engineering career must meet the following characteristics:

#### Evaluable traits

In the structure of the EXANI II of Selection, the areas are:

- Mathematical Logical Reasoning.
- Mathematics.
- Verbal reasoning.
- Spanish.
- Information and Communication Technologies.

In the structure of the EXANI II Diagnostic Module G (Engineering and Technology), the areas are:

- Calculus.
- Physics.
- Mathematics.
- Chemistry.
- English.

#### Non-evaluable traits

- Interest in Mechanical Design.
- Ease of Drawing
- Ability for analysis and synthesis.
- Observation ability.
- Entrepreneurial attitude.
- Critical and reflective attitude.

### GRADUATE PROFILE:

#### Abilities.

- Design, implement and reconfigure tooling, machines, products and mechanical components based on structural criteria and industrial safety.
- Evaluate and determine the technical specifications of the machinery to optimize processes of manufacture.
- Evaluate the viability in the implementation of the materials in an ethical and adequate manner.
- Modeling and simulating in two-dimensional and three-dimensional spaces, mechanical components with the use of computer technology.
- Innovate machinery with the use of sustainable technologies to reduce environmental impact.
- Implement predictive, preventive and corrective maintenance in industrial equipment.
- Optimize and automate manufacturing processes with the use of appropriate technology.
- Read and write engineering texts in Spanish.
- Listen, speak, read and write in the English language at the intermediate level.

Knowledge.

- Principles of mathematics, statics, dynamics, fluid mechanics and materials resistance.
- Theory and techniques for mechanical design.
- Theory of electrical, electronic and industrial electrical circuits and design of electronic systems of power.
- Principles and procedures for the prevention of occupational risks.
- Fundamentals of chemistry and properties of engineering materials.
- Legislation and regulations applicable to mechanical design.
- CAD CAM design and simulation software and CNC manufacturing processes.
- Fundamentals of the use of alternative technologies and of low environmental impact.
- Fundamentals of pneumatics and hydraulics and operating principles of machinery and industrial equipment.
- Industrial manufacturing processes.
- Theory of industrial systems and electrical installations.
- Fundamentals of administration to manage mechanical design projects.
- English at intermediate level.

Attitudes:

- Willingness to stay in continuous update.
- Propose creative and innovative solutions to the problems of Engineering in Mechanical Design.
- Willingness to assume responsibilities, working as a team and under pressure.
- Openness to develop in multidisciplinary teams.
- Work under the criteria of respect for the environment.
- Have an entrepreneurial and leadership spirit.
- Commit to quality.
- Human development.

Values:

Autonomy and social responsibility  
Pluralism  
Humanism  
Quality

WORK FIELD:

The contexts in which these professionals work correspond to large organizations, medium and micro size; the employment relationship goes from design to work in the field of manufacturing in normal and / or high risk conditions; the graduate will be able to develop subordinated works, collaboration, management and senior management; in locating organizations, they work predominantly in industrial areas already established at the local, regional, national and international levels.

DURATION:

Nine semesters

**CURRICULUM**

<b>First Semester</b>	<b>CENTER</b>	<b>DEPARTMENT</b>
CHEMISTRY AND ENGINEERING MATERIALS	BASIC SCIENCE	CHEMISTRY

TECHNICAL MECHANICAL DRAWING	ENG. SCIENCE	AUTOMOTIVE
OPERATIVE ADMINISTRATION I	ECO & MNG. SCI	HUM RESOURS
ALGEBRA	BASIC SCIENCE	MATHS & PHY
OPERATIVE GROUPS	SOC & HUMAN SCI	SICOLOGY

**Second semester**

	<b>CENTER</b>	<b>DEPARTMENT</b>
CAD I	ENG. SCIENCE	AUTOMOTIVE
MECHANICAL METROLOGY	ENG. SCIENCE	AUTOMOTIVE
OPERATIVE ADMINISTRATION II	ECO & MNG. SCI	HUM RESOURS
LINEAR ALGEBRA	BASIC SCIENCE	MATHS & PHY
DIFFERENTIAL CALCULUS	BASIC SCIENCE	MATHS & PHY

**Third semester**

	<b>CENTER</b>	<b>DEPARTMENT</b>
CAD II	ENG. SCIENCE	AUTOMOTIVE
MECHANICAL DESIGN I (MECHANISMS)	ENG. SCIENCE	AUTOMOTIVE
VECTOR CALCULUS	BASIC SCIENCE	MATHS & PHY
LOGIC CIRCUITS	BASIC SCIENCE	ELECTRONIC SYS
INTEGRAL CALCULUS	BASIC SCIENCE	MATHS & PHY

**Fourth Semester**

	<b>CENTER</b>	<b>DEPARTMENT</b>
THERMODYNAMICS AND THERMAL MACHINES	ENG. SCIENCE	AUTOMOTIVE
PHYSICS I	BASIC SCIENCE	MATHS & PHY
DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS	MATHS & PHY	BASIC SCIENCE
RESISTANCE OF MATERIALS	ENG. SCIENCE	AUTOMOTIVE
ECONOMICS AND FINANCIAL ENGINEERING	ECO & MNG. SCI	FINANCE

**Fifth Semester**

	<b>CENTER</b>	<b>DEPARTMENT</b>
MECHANICAL VIBRATIONS	ENG. SCIENCE	AUTOMOTIVE
MECHANICAL DESIGN II (MACHINE DESIGN)	ENG. SCIENCE	AUTOMOTIVE
MANUFACTURE DESIGN FOR METAL I	ENG. SCIENCE	AUTOMOTIVE
PHYSICS II	BASIC SCIENCE	MATHS & PHY
HEAT TRANSFER	BASIC SCIENCE	BIOCHEMISTRY

**Sixth Semester**

<b>CENTER</b>	<b>DEPARTMENT</b>
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FLUID MECHANICS AND HYDRAULIC MACHINES	AUTOMOTIVE	ENG. SCIENCE
MECHANICAL DESIGN III (TOOL DESIGN)	ENG. SCIENCE	AUTOMOTIVE
MANUFACTURE DESIGN FOR METAL II	ENG. SCIENCE	AUTOMOTIVE
ELECTRIC CIRCUITS	BASIC SCIENCE	ELECTRONIC SYS
ETHICS	SOC & HUMAN SCI	PHILOSOPHY

	<b>CENTER</b>	<b>DEPARTMENT</b>
<b>Seventh Semester</b>		
PNEUMATIC AND HYDRAULIC CIRCUITS	ENG. SCIENCE	AUTOMOTIVE
MANUFACTURE DESIGN FOR METAL MOLDING	ENG. SCIENCE	AUTOMOTIVE
ELECTRONICS	BASIC SCIENCE	ELECTRONIC SYS
PROBABILITY AND STATISTICS	BASIC SCIENCE	STATISTICS
SCIENTIFIC TEXTS DRAFTING	ART & CULTURE	HISP. STUDIES
PROGRAMMING LOGIC	BASIC SCIENCE	ELECTRONIC SYS

	<b>CENTER</b>	<b>DEPARTMENT</b>
<b>Eight Semester</b>		
MANUFACTURE DESIGN FOR POLYMERS	ENG. SCIENCE	AUTOMOTIVE
INDUSTRIAL CONTROL SYSTEMS	ENG. SCIENCE	ROBOTICS
INDUSTRIAL ELECTRIC SYSTEM	ENG. SCIENCE	ROBOTICS
ANALYSIS OF ENVIRONMENTAL AND SOCIAL PROBLEMS	SOCIOLOGY	SOC & HUMAN SCI
ELECTIVE COURSE I	ENG. SCIENCE	AUTOMOTIVE
ELECTIVE COURSE II	ENG. SCIENCE	AUTOMOTIVE

	<b>CENTER</b>	<b>DEPARTMENT</b>
<b>Ninth Semester</b>		
INTERNSHIP PROJECT	ENG. SCIENCE	AUTOMOTIVE

### **INSTITUTIONAL PROGRAMS**

- Professional practices
- Social service
- Tutorials
- Mobility and Academic Exchange
- Promotion of foreign languages
- Humanist Training Program

## **DEGREE REQUIREMENTS**

The graduate must adhere to what is established in Chapter XIV of the degree at the technical, technical level superior and bachelor's degree, article 156 of the General Teaching Regulation that states the following:

“Once you have accredited all the subjects and requirements indicated in the curriculum of the level courses technician, technical superior and bachelor, the graduate can request the issuance of his degree in the Department of School Control, after complying with the following elements:

- I.- Have fulfilled the requirements of Social Service, Humanistic Training, Professional Practices and Foreign Languages, defined in institutional programs;
- II.- Check that there is no debit with the Autonomous University of Aguascalientes;
- III.- Have covered the quota established in the plan of taxation to obtain the title; and
- IV.- Have submitted the exit exam.”