

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

| First Semester | CENTER | DEPARTMENT |
|-------------------------------------|---------------|-------------------|
| CHEMISTRY AND ENGINEERING MATERIALS | BASIC SCIENCE | CHEMISTRY |

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|------------------------------|-----------------|-------------|
| 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

| | CENTER | DEPARTMENT |
|-----------------------------|----------------|-------------------|
| 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

| | CENTER | DEPARTMENT |
|----------------------------------|---------------|-------------------|
| 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

| | CENTER | DEPARTMENT |
|---|----------------|-------------------|
| 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

| | CENTER | DEPARTMENT |
|---------------------------------------|---------------|-------------------|
| 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

| CENTER | DEPARTMENT |
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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 |

| | CENTER | DEPARTMENT |
|--------------------------------------|---------------|-------------------|
| Seventh Semester | | |
| 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 |

| | CENTER | DEPARTMENT |
|---|---------------|-------------------|
| Eight Semester | | |
| 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 |

| | CENTER | DEPARTMENT |
|-----------------------|---------------|-------------------|
| Ninth Semester | | |
| 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.”