

## **MANUFACTURING AND INDUSTRIAL AUTOMATION ENGINEERING**

### **MAIN OBJECTIVE**

To form manufacturing and industrial automation engineers able to design and implement effective forms of industrial, manufacturing, production and automation systems usage to create goods or provide services. This Engineer will acquire skills to design products, equipment, tools and other items for manufacturing. Also, as a graduate, this person will be able to create competitive advantages by means of business management strategies for quality control, systems automation, and manufacturing planning always being socially responsible and keeping an ethical and humanistic perspective.

### **APPLICANT'S PROFILE**

Abilities, attitudes and values required from the major applicants:

#### **Fields of evaluable abilities**

Calculus  
Physics  
Mathematics  
Chemistry  
English  
Logical and mathematical reasoning  
Verbal reasoning  
Spanish  
Information and communication technologies

#### **Non-evaluable (but desired) interests**

Analysis and synthesis of problems  
Industrial manufacturing processes  
Science and technology  
Team working

#### **Graduate profile**

The Manufacturing and industrial automation professional will have abilities on:

Developing and integrating technologies, in production lines, for time reduction in manufacturing processes.

Designing mechanisms and quality control tools to meet quality standard requirements on manufacturing.

Providing and supervising corrective and preventive maintenance to the manufacturing systems.

Promoting and boosting the organization development by means of design and execution of projects and programs on manufacturing process improvement.

Implementing health and safety programs to identify, prevent, evaluate, and control risk factors within the workspaces.

Know, identify and use production parameters and standards for production systems characterization

Analyze and evaluate the global, national and regional environment for an appropriate production of new products, services and business.

Plan, manage and design new production methodologies and services

Operate automatic machinery used in industrial systems

Design and implement manufacturing systems

Manage material and human resources  
Apply methods and logistics for corporations' organization  
Intermediate English language skills

### **Knowledge**

Mathematical and Physics basis  
Electricity, analog and digital electronics  
Science of Materials  
Industrial Security basis  
Project Management and Evaluation of Projects  
Production Process Basis  
Human resources basis  
Process optimization  
Technical, legal, ethical, ecological and quality rules  
Medium level English Language

### **Attitudes**

Awareness to continuous education  
Critical and philosophical  
Innovative  
Ken to work in multidisciplinary teams  
Show respect for Environment  
Entrepreneur  
Ethical

### **Values**

Autonomy  
Social Responsibility  
Pluralism  
Humanism  
Professional performance with quality

Field of Working  
Public and private institutions  
Manufacturing industry  
Transformation industry  
Good and services trade  
Marketing and business  
Counselor services  
Public administration

### **Duration**

Nine semesters

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CENTER OF ENGINEERING SCIENCES

MANUFACTURING AND INDUSTRIAL AUTOMATION ENGINEERING

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CURRICULUM

**PROGRAM 2012  
CAREER 49**

**First semester**

INTRODUCTION TO MANUFACTURE ENGINEERING  
LOGICAL CIRCUITS  
PROGRAMING LOGICS  
ALGEBRA  
DIFERENTIAL CALCULUS  
OPERATING GROUPS

**CENTER**

ENG. SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES.  
SOC & HUMAN SCIENCES

**DEPARTMENT**

ROBOTICS  
ELECTRONICS  
ELECTRONICS  
MATHS  
MATHS  
SICOLOGY

**Second semester**

MATERIALS FOR ENGINEERING  
INDUSTRIAL AUTOMATION I  
ELECTRICAL CIRCUITS  
PROGRAMMING  
LINEAR ALGEBRA  
CHEMISTRY

**CENTER**

ENG SCIENCES  
ENG. SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES

**DEPARTMENT**

ROBOTICS  
ROBOTICS  
ELECTRONICS  
ELECTRONICS  
MATHS  
CHEMISTRY

**Third semester**

INDUSTRIAL AUTOMATION II  
INDUSTRIAL METROLOGY  
RESISTANCE OF MATERIALS  
ELECTRONICS  
PHYSICS I  
INTEGRAL CALCULUS

**CENTER**

ENG SCIENCES  
ENG. SCIENCES.  
ENG. SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES.

**DEPARTMENT**

ROBOTICS  
ROBOTICS  
AUTOMOTIVE  
ELECTRONICS  
MATHS  
MATHS

**Fourth semester**

INDUSTRIAL INSTRUMENTATION  
PARTS MANUFACTURING I  
MECHANICS  
CAD FOR ENGINEERING  
PHYSICS II  
VECTOR CALCULUS

**CENTER**

ENG. SCIENCES  
ENG. SCIENCES  
ENG. SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES

**DEPARTMENT**

ROBOTICS  
ROBOTICS  
AUTOMOTIVE  
AUTOMOTIVE  
MATHS  
MATHS

**Fifth semester**

CAD FOR ENGINEERING  
PARTS MANUFACTURING II  
TERMODINAMICS AND THERMAL MACHINES  
PROBABILITY AND STATISTICS  
DIFFERENTIAL EQUATIONS  
AND LAPLACE TRANSFORMS  
PROFESSIONAL ETHICS

**CENTER**

BASIC SCIENCES  
ENG. SCIENCES  
ENG. SCIENCES  
BASIC SCIENCES

**DEPARTMENT**

ROBOTICS  
AUTOMOTIVE  
AUTOMOTIVE  
STATISTICS

BASIC SCIENCES  
SOC & HUMAN SCIENCES

MATHS  
PHILOSOPHY

**Sixth semester**

MODELLING & DYNAMIC SIMULATION  
INDUSTRIAL MACHINES  
OPERATIONS MANAGEMENT I  
STATISTICAL INFERENCE  
RESEARCH OF OPERATIONS  
HEATH TRANSFERENCE

**CENTER**

ENG SCIENCES  
ENG. SCIENCES  
ECO & MNG. SCS  
BASIC SCIENCES  
BASIC SCIENCES  
BASIC SCIENCES

**DEPARTMENT**

ROBOTICS  
ROBOTICS  
HUM RESOURS  
STATISTICS  
MATHS  
BIOCHEMISTRY

**Seventh semester**

CONTROL SYSTEMS  
INDUSTRIAL AUTOMATION III  
OPERATIONS MANAGEMENT II  
FLUIDS MECHANICS & HYDRAULIC MACHINES  
STATISTICS CONTROL OF QUALITY  
INDUSTRIAL ROBOTICS  
LOGISTICS

**CENTER**

ENG. SCIENCES  
ENG SCIENCES  
EC & MANAG SCS  
ENG. SCIENCES  
BASIC. SCIENCES  
ENG. SCIENCES  
ENTERPRISES SCS

**DEPARTMENT**

ROBOTICS  
ROBOTICS  
HUMAN RESOUR  
AUTOMOTIVE  
STATISTICS  
ROBOTICS  
AGROBUSINESS

**Eighth semester**

INDUSTRIAL MAINTENANCE  
 HUMAN RESOURCES MANAGEMENT  
 LOCATION, DISTRIB AND HANDLING OF MATERIAS  
 BUSINESS  
 LABOUR LAWS  
 OPTIONAL PROFESSIONAL I  
 OPTIONAL PROFESSIONAL II

**CENTER**

ENG. SCIENCES  
 EC & MANAG SCS  
 EC & MANAG SCS  
 ENTERPRISES SCS  
 SOC & HUMAN SCIENCES

**DEPARTMENT**

ROBOTICS  
 HUMAN RESOURCES  
 HUMAN RESOURCES  
 AGROBUSINESS  
 LAWS

**Ninth semester**

INTEGRAL PROJECT (INTERNSHIP)

**CENTER DEPARTMENT**

ENG. SCIENCES ROBOTICS

**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."