CENTER OF BASICS SCIENCE
ELECTRONIC ENGINEER (Curriculum 2012)

OBJECTIVE

To form professionals in the electronics engineer field in order to design, implement and keep digital and computer systems, automation systems and mechatronics and communications systems, supporting them with electronics designs techniques, considering the social impact, health and environment in a global context with a humanist vision.

APPLICANT PROFILE:

This section describes the desirable features from the student applicant formation to achieve an academic performance; these elements also guide the vocational decision for the student, are listed below:

a) Knowledge

It is desirable they have knowledge in:

- Physic-mathematical areas.
- Basic electricity.
- Basic computation.

b) Skills

It is desirable they have skills in:

- Abstract reasoning capability.
- Perseverance and dedication in the study, as well as availability to dedicate additional time to school activities.
- Manual dexterity.
- Capability to analyze and solve real problems.
- Be able of create, criticize and work in a team.

c) Attitudes

It is desirable they have attitude in:

- Interest, affinity or inclination to electronics.
- Capability and interest in scientific and technological information.
- Social and personal growth.
- Interest for social and environmental solidarity, that sustain their future work and look for develop technological products that do not damage to humanity or their habitat.

GRADUATE PROFILE:

Skills:

1. Apply physics, mathematics and computation knowledge's in solution from engineering problems.
2. Design and implement physical and electrical tests in the electric systems performance, and analyze their results.
3. Design, implement, adapt and maintain integral solutions for engineering problems in the computing and digital systems areas, automation, robotics, communications and electronic design.
4. Design, implement, adapt and maintain control systems and automation for industrial processes and services plants.
5. Design, implement, adapt and maintain analog and digital communication systems.
6. To handle techniques and tools design in the electronics engineering area.
7. Evaluate the technical and economical feasibility from proposed solutions.
8. Design, implement, adapt and maintain systems under real conditions, taking account economical, and environmental, social, health and sustainability aspects.
9. To recognize and apply ethical and social responsibility aspects, as well as personal knowledge.
10. Communicate and write texts in the electronics engineering field.
11. Listen, talk, write and read, with emphasis in academic purposes a second language, according to the different disciplines.

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Knowledge:

1. Principles and applications from digital logic, computer numerical systems and computer architecture.
2. Application in high and low level programming languages, and hardware description languages, multiuser operational systems principles and application from computer networks.
3. Theories and applications from classical and digital modern control, nonlinear control principles and programming of industrial devices.
4. Principles, applications and processing from signals and systems, electrical communication theory, communication protocols and telephony principles.
5. Electrical and electronic circuit theory and semiconductors, electrical machines theory and efficient sources and power electronic systems design.
6. Digital and analog integrated circuits design theory.
7. Software Design for Electronics.
8. Contemporary themes from relationship between technology and society, ethics and personal development.
9. Advanced-Basic English language level.

Attitudes

1. Disposition to be constantly updated.
2. Propose creative and innovative solutions to engineering problems.
3. Disposition to teamwork.
4. Disposition to work and grow up in multidisciplinary teams.
5. Work with criteria for environmental respect.
6. Have entrepreneurial spirit.
7. Human development.

Values

1. Autonomy and Social Responsibility.
2. Pluralism.
3. Humanism.
4. Quality.

JOB FIELD:

The contexts in which these professionals work correspond to:

- Government offices, research and development institutes, companies of any size of manufacturing and services.
- Can collaborate with like-minded professionals in multidisciplinary teams.
- Can join in established companies or provide independently services.

DURATION:

Ten semesters.

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CURRICULUM

PLAN 2012
MAJOR 65

	T	P	C	CENTER	DEPARMENT
FIRST SEMESTER					
LOGIC PROGRAMMING	3	2	8	BASIC SC.	ELECT. SYST.
ALGEBRA	3	2	8	BASIC SC.	MATH. & PHYS.
OPERATIVE GROUPS	2	2	6	SOCIAL SC. & H.	PSYCHOLOGY
INTRODUCTION TO ELECTRONIC ENGINEER	2	2	6	BASIC SC.	ELECT. SYST.
CHEMISTRY OF MATERIALS	3	2	8	BASIC SC.	CHEMISTRY

	T	C	P	CENTER	DEPARMENT
SECOND SEMESTER					
PROGRAMMING I	3	2	8	BASIC SC.	ELECT. SYST.
LINEAR ALGEBRA	3	1	7	BASIC SC.	MATH. & PHYS.
DIFFERENTIAL CALCULUS	3	1	7	BASIC SC.	MATH. & PHYS.
PERSONAL FINANCIALS	3	1	7	EC. & ADM. SC.	FINANCE
DIGITAL SYSTEMS I	4	2	10	BASIC SC.	ELECT. SYST.
ORAL AND WRITTEN EXPRESSION	2	2	6	ART. & CULT. SC.	HISPANIC LIT.

	T	P	C	CENTER	DEPARMENT
THIRD SEMESTER					
PROGRAMMING II	3	2	8	BASIC SC.	ELECT. SYST.
DIGITAL SYSTEMS II	4	2	10	BASIC SC.	ELECT. SYST.
PROFESSIONAL ETHIC	2	2	6	SOCIAL SC. & H.	PHILOSOPHY
INTEGRAL CALCULUS	3	2	8	BASIC SC.	MATH. & PHYS.
PHYSICS I	3	1	7	BASIC SC.	MATH. & PHYS.

	T	P	C	CENTER	DEPARMENT
FOURTH SEMESTER					
COMPUTATIONAL ORGANIZATION	3	2	8	BASIC SC.	ELECT. SYST.
VECTOR CALCULUS	3	1	7	BASIC SC.	MATH. & PHYS.
ELECTRIC CIRCUITS I	4	2	10	BASIC SC.	ELECT. SYST.
PHYSICS II	4	2	10	BASIC SC.	MATH. & PHYS.
CRITICAL THINKING	2	2	6	SOCIAL SC. & H.	PHILOSOPHY
DIFFERENTIAL EQUATIONS	4	2	10	BASIC SC.	MATH. & PHYS.

	T	P	C	CENTER	DEPARMENT
FIFTH SEMESTER					
ENGINEERING AND SOCIETY	2	2	6	SOCIAL SC. & H.	PHILOSOPHY
ASSEMBLER LANGUAGE	2	2	6	BASIC SC.	ELECT. SYST.
ELECTRIC CIRCUITS II	4	2	10	BASIC SC.	ELECT. SYST.
ELECTRONICS I	4	2	10	BASIC SC.	ELECT. SYST.
SOFTWARE DESIGN FOR ELECTRONICS	1	3	5	BASIC SC.	ELECT. SYST.

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SIXTH SEMESTER					
SIGNALS AND SYSTEMS	3	1	7	BASIC SC.	ELECT. SYST.
ELECTRONICS II	4	2	10	BASIC SC.	ELECT. SYST.
COMPUTING FOR ENGINEERING	2	2	6	BASIC SC.	ELECT. SYST.
MICROCONTROLLERS	2	2	6	BASIC SC.	ELECT. SYST.
ELECTROMAGNETIC THEORY	4	1	9	BASIC SC.	MATH. & PHYS.
PROBABILITY AND STATISTICS	3	2	8	BASIC SC.	STATISTICS

	T	P	C	CENTER	DEPARMENT
SEVENTH SEMESTER					
UNIX	2	2	6	BASIC SC.	ELECT. SYST.
ELECTRONIC DEVICES	4	2	10	BASIC SC.	ELECT. SYST.
CONTROL THEORY	3	1	7	BASIC SC.	ELECT. SYST.
HARDWARE DESCRIPTION LANGUAGES	2	2	6	BASIC SC.	ELECT. SYST.
ELECTRIC COMMUNICATION THEORY	4	2	10	BASIC SC.	ELECT. SYST.
PHYSICS III	4	2	10	BASIC SC.	MATH. & PHYS.

	T	P	C	CENTER	DEPARMENT
EIGTH SEMESTER					
PROF. ELECTIVE COURSE (AREA 1 OR 2)	2	2	6	BASIC SC.	ELECT. SYST.
PROF. ELECTIVE COURSE (AREA 1 OR 2)	2	2	6	BASIC SC.	ELECT. SYST.
INTEGRATED CIRCUITS DESIGN	3	2	8	BASIC SC.	ELECT. SYST.
PROJECT ECONOMICAL EVALUATION	3	1	7	EC. & ADM. SC.	FINANCE
ELECTRONICS INSTRUMENTATION	4	2	10	BASIC SC.	ELECT. SYST.
ELECTRICAL MACHINES CONTROLLERS	4	2	10	BASIC SC.	ELECT. SYST.

	T	P	C	CENTER	DEPARMENT
NINTH SEMESTER					
PROF. ELECTIVE COURSE (AREA 1 OR 2)	2	2	6	BASIC SC.	ELECT. SYST.
PROF. ELECTIVE COURSE (AREA 1 OR 2)	2	2	6	BASIC SC.	ELECT. SYST.
ENTREPRENEURS WORKSHOP	2	2	6	EC. & ADM. SC.	ADMINISTRATION
INDUSTRIAL CONTROL SYSTEMS	2	2	6	BASIC SC.	ELECT. SYST.

	T	P	C	CENTER	DEPARMENT
TENTH SEMESTER					
INTEGRAL PROJECT	0	10	10	BASIC SC.	ELECT. SYST.

INSTITUTIONAL PROGRAMS

- Professional practices.
- Social service.
- Tutorials.
- Mobility and academic exchange.
- Foreign languages promotion.
- Humanist Formation Program.

QUALIFICATION REQUIREMENTS

The graduate must conform to the provisions in Chapter XIV from the degree in technical, technical higher, and bachelor's degree, article 156 from the General Rules of Teaching, which states:

"Once accredited all subjects and requirements outlined in the course syllabi from technical, technical higher, and bachelor's degree, the graduate may request the issuance of his title in the School Control Department, after complying with the following:

I. Accomplish with the requirements of Social Service, Humanist Formation, Professional practices and Foreign Languages, defined in institutional programs;
II. Verify that do not have any debt with the Autonomous University of Aguascalientes;
III. Have covered the established quota in the excise plan to obtain the title; and
IV. Have taken the exit examination."

Approved by the Honorable University Council at its regular meeting on 15 December 2011.

OUTCOMES

a) Ability to apply knowledge of mathematics, science and engineering.

b) Ability to design and conduct experiments, as well as to analyze and interpret data.

c) Ability do design systems component or process to meet desired needs within realistic constrains such as economic, environmental, social, political, ethical, health and sustainability.

d) Ability to function on multidisciplinary teams.

e) Ability to identify, formulate and solve engineering problems.

f) Understanding of professional and ethical responsibility.

g) Ability to communicate effectively.

h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and social context.

i) Recognition of the need for, and an ability to engage in life-long learning.

j) Knowledge of contemporary issues.

k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

PROGRAM EDUCATIONAL OBJECTIVES

1. The graduate is a professional of electronics engineering, that designs, implements, adapts and maintains systems in any of digital, computation, automation, communications, and mechatronics areas.

2. The graduate develops his profession with commitment, ethics and social responsibility in a global context and with a humanistic vision.