



ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL
Faculty of Electrical and Computer Engineering
COURSE SYLLABUS
Industrial Automation II

1. CODE AND NUMBER OF CREDITS

CODE	FIEC06338	
NUMBER OF CREDITS: 6	Theoretical: 4	Practical: 2

2. COURSE DESCRIPTION

This course trains students in the design of Industrial Communication Networks using today products and technology of recognized brands. The course include lectures and practices in the Laboratory of industrial Automation II aiming at the development of industrial communications networks commonly used in industry. As part of the course approval, students work on a final year project where they have to integrate the knowledge acquired.

3. PRE-REQUISITES AND CO-REQUISITES

PRE-REQUISITES	FIEC 06320 Industrial Automation I
CO-REQUISITES	

4. CORE TEXT AND OTHER REQUIRED REFERENCES FOR THE TEACHING OF THE COURSE

CORE TEXT	1.
REFERENCES	<ol style="list-style-type: none"> 1. "AUTÓMATAS PROGRAMABLES", Author: Albert Mayol and Badía. 2. USER MANUAL FROM GE FANUC Series 90-30-20-MICRO. 3. USER MANUAL FROM GE FANUC Series 90-30-20-MICRO. 4. USER MANUAL FROM GE FANUC Series 90 MICRO. 5. USER MANUAL FROM CIMPLICITY MACHINE EDITION. 6. VERSAMAX MANUAL. 7. IN TOUCH MANUAL. 8. PROGRAMABLE CONTROLLERS OPERATION AND APPLICATION from IAN G. Warnock. 9. AUTOMATIZACION DE PROCESOS INDUSTRIALS from Emilio García moreno. 10. AUTÓMATAS PROGRAMABLES from Joseph Balcells and José Luis Romeral.

5. COURSE LEARNING OUTCOMES

At the end of the course, the student will be able to:

1. Develop Scadas system.
2. Communicate the PLC with InTouch.
3. Connect PLC networking.
4. Communicating a PLC network with InTouch.
5. Using MODBUS, ComNet, SNP and SNPX protocols.
6. Communication networks.

6. COURSE PROGRAM

I. INTRODUCTION TO CONTROL SYSTEMS (5 sessions – 10 hours).

II. PROGRAMMING CONTROL SYSTEMS WITH PLC (5 sessions – 10 hours).

- Control applications using PLC.

III. IN TOUCH PROGRAMMING (5 sessions – 10 hours).



- Introduction.
- Programming instructions.
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- IV. COMMUNICATION BETWEEN INTOUCH AND THE PLC (5 sessions – 10 hours).**
 - Introduction.
 - SNP, SNPX, MODBUS, FIELDBUS PROFIBUS protocols.
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- V. PLC APPLICATIONS (5 sessions – 10 hours).**
- VI. IN TOUCH APPLICATIONS (5 sessions – 10 hours).**
- VII. APPLICATIONS USING PLC AND IN TOUCH (7 sessions – 14 hours).**
- VIII. INDUSTRIAL NETWORKS (5 sessions – 10 hours).**

7. WORKLOAD: THEORY/PRACTICE

Number of class sessions per week: 4 theoretical hours.
 Duration of each class session: 2 hours

8. CONTRIBUTION OF THE COURSE TO THE EDUCATION OF THE STUDENT

In the curriculum is an specialization subject of electronics and industrial automation and contributes to:
 Engineering science: 50%
 Engineering design: 50%
 The course helps to develop skills for engineering education, same as the skill that a professional must have in their reasoning, not their memory.

BASIC TRAINING	PROFESSIONAL TRAINING	SOCIAL SKILLS DEVELOPMENT
	X	

9. THE RELATIONSHIP BETWEEN THE LEARNING OUTCOMES OF THE COURSE AND THE LEARNING OUTCOMES OF THE DEGREE PROGRAM

LEARNING OUTCOMES OF THE DEGREE PROGRAM*	CONTRIBUTIO N (High, Medium, Low)	LEARNING OUTCOMES OF THE COURSE**	THE STUDENT MUST:
a) An ability to apply knowledge of mathematics, science and engineering.	Medium	0	Develop projects.
b) An ability to design and conduct experiments, and to analyze and interpret data	High	1, 2, 3, 4, 5, 6	Analyze and interpret results.
c) An ability to design a system, component or process to satisfy realistic constraints.	Medium	0	Develop projects based on given theory.
d) An ability to function on multidisciplinary teams.	Low	0	Know how to work in teams.
e) An ability to identify, formulate and solve engineering problems.	Medium	0	
f) An understanding of ethical and professional	Low	0	Having an ethical attitude with collage classmates.



	responsibility.			
g)	An ability to communicate effectively.	Medium	0	
h)	A broad education necessary to understand the impact of engineering solutions in a social, environmental, economic and global context.	Medium	0	
i)	A recognition of the need for, and an ability to engage in life-long learning.	Medium	0	Must study frequently and be updated.
j)	A knowledge of contemporary issues.	Medium	0	
k)	An ability to use the techniques, skills, and modern tools necessary for engineering practice.	High	1, 4, 5, 6	Use of modern tools.
l)	Capacity to lead, manage and undertake projects.	---	0	

10. EVALUATION IN THE COURSE

Evaluation activities	
Exams	X
Tests	X
Homework/tasks	X
Projects	X
Laboratory/Experiments	X
Class participation	
Visits	X
Other	

11. PERSON RESPONSIBLE FOR THE CREATION OF THE SYLLABUS AND THE DATE OF ITS CREATION

Created by	ING. ALBERTO MANZUR
Date	FEBRUARY 25 TH 2013

12. APPROVAL

ACADEMIC SECRETARY OF THE ACADEMIC DEPARTMENT	DIRECTOR OF TECHNICAL ACADEMIC SECRETARY
NAME: Mrs. Leonor Caicedo G.	NAME: Ing. Marcos Mendoza
SIGNATURE: 	SIGNATURE:
Date of approval by the Directive Council: 2013-537 2013-10-7	Ing. Marcos Mendoza V. DIRECTOR DE LA SECRETARIA TÉCNICA ACADÉMICA

13. VALIDITY OF THE SYLLABUS

RESOLUTION OF THE POLYTECHNIC BOARD:	13-12-343
DATE:	2013-12-12