

Centre	University College of Engineering of Vitoria-Gasteiz
Name of subject	25982 – Automation Systems and Control
Qualification	Degree in Mechanical Engineering
Type	Compulsory
Credits	6 ECTS
Year	2
Term(s)	2nd
Department	Systems and Automation Engineering
Language	Spanish and Basque

Outcomes / Objectives

Fundamentals of automation systems and control methods.

Syllabus

Introduction to Control of Industrial Processes.

Local control loops.

Modelling of industrial processes.

Description and modelling of industrial processes.

Control system design.

Basic control strategies (P, PI).

Introduction to automation for application in the digital control of industrial processes. Introduces the need to control industrial production plants to achieve optimum operation of industrial facilities. The most important concepts are: the automation pyramid, programmable automatons, and control loops.

Architecture of programmable automatons. Describes the basic elements of programmable automatons.

Combinatorial automation systems. Need for and design of combinatorial automatons. The most important concepts are basic logic functions, logic equations and truth tables.

Sequential automation systems.

Need for and design of sequential automatons. The most important concepts are the state machines.

Automaton programming elements. Programming of industrial automatons.

Implementation of digital control loops through automatons.

Implementation of loops through automaton programming.

Methodology

Teaching Method

Face-to-Face Teaching Hours

Lecture s	Seminar s	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshop s	Industrial workshop s	Field practice
36		6	18					

Student Hours of Non Face-To-Face Activities

Lecture s	Seminar s	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshop s	Industrial workshop s	Field practice
30			60					

Assessment System

General criteria

Clarification regarding assessment

Bibliography

Basic Bibliography

- 1.-Autómatas programables, Entorno y aplicaciones, Enrique Mandado Pérez y otros (Thomson)
- 2.-Ordenagailu bidezko sistemen kontrola, Ekaitz Zulueta (Elhuyar)
- 3.-Sistemas digitales de Control, Oscar Barambones (EHU-UPV)
- 4.-Erregulazio Automatikoa, Tapia A. y Florez, J. (Elhuyar)

In-depth Bibliography

- 1.-Programmable Logic Controllers, Fourth edition, W. Bolton (Elsevier)
- 2.-Ingeniería De La Automatización Industrial. 2nd edition. Ramón Piedrafita Moreno (Ra-ma)
- 3.-Automatización. Problemas Resueltos con Autómatas Programables, Juan Pedro y otros (Paraninfo)

Websites

- <http://moodle.ehu.es/moodle/> (on this address you will enter Moodle, where you will find class notes, presentations, summaries, practice guidelines and relevant dates for the subject)
- <http://w1.siemens.com/entry/es/es/çwww.amazon.com> (very good for purchasing in-depth publications)
- <http://www.diazdesantos.es/> (for purchasing basic bibliography)
- www.elhuyar.com (for purchasing publications in Basque)
- <http://industrial.omron.es/>