Centre	**University College of Engineering of Vitoria-Gasteiz**
Name of subject	**27820 – Chemical Process Control**
Qualification	**Degree in Industrial Chemical Engineering**
Type	**Compulsory**
Credits	**6 ECTS**
Year	**3**
Term(s)	**2nd**
Department	**Chemical and Environmental Engineering**
Language	**Spanish**

Outcomes / Objectives

OUTCOMES.

Ability to design, manage and operate chemical process simulation, control and instrumentation procedures. Related to TEQI4.

Apply the strategies of scientific methodology: analyse the problem situation qualitatively and quantitatively; propose hypotheses and solutions to solve chemical engineering problems in the area of process control. Related to TEQI8.

Use specific vocabulary and terminology and the appropriate means to effectively communicate knowledge, procedures, results, skills and aspects inherent to industrial engineering in regard to chemical process control. Related to TEQI9.

Carry out measurements, calculations, studies, reports and other analogue tasks. Related to TEQI12.

BRIEF DESCRIPTION.

Feedback control in chemical engineering: flow rate, level, temperature and pH control. PID control: study of the effect of control actions. Adjustment of parameters. Control instrumentation: valves, controllers, transducers, sensors.

OBJECTIVES.

Apply the principles of process control to the field of chemical engineering. Have experimental knowledge of the implementation of regulation and control systems for the most common variables in chemical engineering.

Syllabus

UNIT 1.- Experimentation regarding fluid flow rate control.

UNIT 2.- Experimentation regarding level control.

UNIT 3.- Experimentation regarding temperature control.

UNIT 4.- Experimentation regarding regulating valves.

UNIT 5.- Experimentation regarding pH control.

Methodology

Teaching Method

Face-to-Face Teaching Hours								
Lectures	**Seminars**	**Classroom practice**	**Lab. practice**	**Computer sessions**	**Clinical practice**	**Workshops**	**Industrial workshops**	**Field practice**
10			50					
Student Hours of Non Face-To-Face Activities								
Lectures	**Seminars**	**Classroom practice**	**Lab. practice**	**Computer sessions**	**Clinical practice**	**Workshops**	**Industrial workshops**	**Field practice**
15			75					

Assessment System

General criteria

→ Written essay exam
→ Individual assignments
→ Group assignments

Clarification regarding assessment

→ Exam score: 30%
→ Reports: 70%

Bibliography

Basic Bibliography

- Control Automático de Procesos; Smith, C. A. y Corripio, A. B. Ed. Limusa México, 1995.
- Control e Instrumentación de Procesos Químicos; Ollero de Castro, P. y Fernández Camacho, E. Ed. Síntesis, Madrid, 1997.
- Chemical Process Control; Stephanopoulos, G; Ed. Prentice Hall. New Jersey, 1987.

In-depth Bibliography

- Process Modeling, Simulation and Control for Chemical Engineers; Luyben, W.L.. Ed. McGraw-Hill, New York, 1990