

[GAH104] PROCESS CONTROL

GENERAL INFORMATION

Studies	DEGREE IN ENERGY ENGINEERING		Subject	INSTRUMENTATION, AUTOMATION AND CONTROL	
Semester	1	Course	3	Mention / Field of specialisation	
Character	COMPULSORY		Modality	Adapted Face-to-face	
Plan	2017		Language	ENGLISH	
Credits	6	Hours/week	2.78	Total hours	50 class hours + 100 non-class hours = 150 total hours

PROFESSORS

DEL OLMO LARRAÑAGA, JON

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	Differential equations Fourier transform Bode diagrams Laplace transform Matlab and Simulink

SKILLS

VERIFICA SKILLS

SPECIFIC

GAES04 - Ability to design control systems and industrial automation

GENERAL

GACG1 - To have the knowledge, understanding and ability to apply the law pertaining to energy engineering; to be able to comply with the specifications, standards and regulations in force.

GACG3 - To take the initiative in problem solving, decision making and creativity, and to communicate and share knowledge and skills, understanding the ethical and professional responsibilities of the business activity in the field of Energy Engineering.

GACG4 - To know how to perform measurements, calculations, valuations, studies, reports, task planning schemes, and other activities pertaining to the field of Energy.

G_CB6 - To be able to respond adequately in complex situations or situations that call for innovative solutions in both the academic field and work environments within their field of study;

CROSS

GACTR2 - To be able to do their job in cooperative, participatory environments, with awareness of social responsibility.

BASIC

GAES03 - To understand the automatic adjustment and control techniques and their application to industrial automation.

G_CB3 - To be capable of gathering and interpreting relevant data (normally within their field of study) in order to make judgements, reflecting on relevant matters of a social, scientific or ethical nature

LEARNING RESULTS

RG301 Assumes responsibilities in the work team, organizing and planning the tasks to be developed, facing the contingencies and encouraging the participation of its members.

LEARNING ACTIVITIES

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams

CH

NCH

TH

6 h.

6 h.

EVALUATION SYSTEM

W

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

Comments: Assessment of the acquired transversal skills:

Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: Definition of objectives, planning,... Written communication Oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assesment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.

NCH - Non-class hours: 6 h.

TH - Total hours: 6 h.

RG302 Analyze the intervening variables in the problem and propose actions for a stable situation.

LEARNING ACTIVITIES

CH

NCH

TH

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams

5 h.

5 h.

EVALUATION SYSTEM

W

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

Comments: Assesment of the acquired transversal skills:
 Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: Definition of objectives, planning,... Written communication Oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assesment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.
NCH - Non-class hours: 5 h.
TH - Total hours: 5 h.

RG304 Define the problem, develop the solution and present the conclusions in a efficient manner, arguing and justifying each one of them in writing.

LEARNING ACTIVITIES

CH

NCH

TH

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams

6 h.

6 h.

EVALUATION SYSTEM

W

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

Comments: Assesment of the acquired transversal skills:
 Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: Definition of objectives, planning,... Written communication Oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assesment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.
NCH - Non-class hours: 6 h.
TH - Total hours: 6 h.

RG305 Define the problem, develop the solution and present the conclusions in a efficient manner, arguing and justifying each one of them in spoken form.

LEARNING ACTIVITIES

CH

NCH

TH

Development, writing and presentation of memorandums, reports, audiovisual material, etc.
 Relating to projects/POPBLs carried out individually or in teams

6 h.

6 h.

EVALUATION SYSTEM

W

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

100%

Comments: Assesment of the acquired transversal skills:
 Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: Definition of objectives, planning,... Written communication Oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assesment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

communication

CH - Class hours: 0 h.

NCH - Non-class hours: 6 h.

TH - Total hours: 6 h.

RGA305 Defines the appropriate control technique by technically arguing the solution adopted.

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development, writing and presentation of memorandums, reports, audiovisual material, etc.		40 h.	40 h.
Relating to projects/POPBLs carried out individually or in teams			
Individual study and work, tests and evaluations and check points	4 h.	15 h.	19 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	30 h.		30 h.
Individual and team exercises	6 h.	10 h.	16 h.
Individual and/or team computer simulation practice	10 h.	12 h.	22 h.

EVALUATION SYSTEM

W

Individual written and oral tests to assess technical skills of the subject	50%
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	18,5%
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	31,5%

Comments: Continuous assesment of the projects. For that the following will be taken into account: (a) Continuous assesment about the fulfillment of the tasks during the development of the project, both individual and teamwork; (b) In the end of the project, the solution proposed by the students team, as well as the corresponding report; (c) Finally, the oral defense of the project, addressing the acquired knowledge, the quality of the presentation as well as the reasoned justification of the principles and causes of proposing the selected solution.

MAKE-UP MECHANISMS

Individual written and oral tests to assess technical skills of the subject

Comments: Written exam

CH - Class hours: 50 h.

NCH - Non-class hours: 77 h.

TH - Total hours: 127 h.

CONTENTS

1. Introduction
2. System modelling
3. System analysis
4. Controller design
5. Controller implementation

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

(No resources)

Bibliography

http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in k.pl?grupo=ENERGIA31&ejecuta=5