

[GCZ102] BASIC INDUSTRIAL AUTOMATION

GENERAL INFORMATION

Studies	DEGREE IN ENGINEERING IN ECO-TECHNOLOGY IN INDUSTRIAL PROCESS		Subject	ELECTRIC AND ELECTRONIC TECHNOLOGY
Semester	1	Course	3	Mention / Field of specialisation
Character	COMPULSORY		Language	ENGLISH
Plan	2017	Modality	Adapted Face-to-face	Total hours
Credits	3	Hours/week	1.78	32 class hours + 43 non-class hours = 75 total hours

PROFESSORS

MITXELENA MARTIARENA, EKHI

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	(No previous knowledge required)

SKILLS

VERIFICA SKILLS

SPECIFIC

GCIN06 - To know the fundamentals of automatisms and control methods.

GENERAL

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;

GCCG2 - To have knowledge of basic subjects and technologies for the learning of new methods and technologies specific to Ecotechnology Engineering in Industrial Processes, and for an enhanced capacity to adapt to new situations.

GCCG4 - To know how to perform measurements, calculations, valuations, studies, reports, task planning, and other activities pertaining to the field of Ecotechnology Engineering in Industrial Processes

CROSS

GCCTR2 - To be able to do their job in cooperative, participatory environments, with awareness of social responsibility.

BASIC

G_CB2 - To be able to apply knowledge to occupational or professional tasks; have the necessary skills to pose and defend arguments, and to solve problems within their field of study

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

G_CB4 - To be able to communicate information, ideas, problems and solutions to both expert and lay audiences

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 and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

CH

NCH

TH

2 h.

2 h.

EVALUATION SYSTEM

Self-assessment

W

50%

Co-assessment

50%

MAKE-UP MECHANISMS

(No mechanisms)

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 and oral communication

Comments: Continuous assessment. 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: 2 h.

TH - Total hours: 2 h.

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

LEARNING ACTIVITIES	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams		3 h.	3 h.
EVALUATION SYSTEM	<i>W</i>	MAKE-UP MECHANISMS	
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%	<i>(No mechanisms)</i>	
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 and oral communication			
CH - Class hours: 0 h. NCH - Non-class hours: 3 h. TH - Total hours: 3 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	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams		3 h.	3 h.
EVALUATION SYSTEM	<i>W</i>	MAKE-UP MECHANISMS	
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%	<i>(No mechanisms)</i>	
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 and oral communication			
CH - Class hours: 0 h. NCH - Non-class hours: 3 h. TH - Total hours: 3 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	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams		3 h.	3 h.
EVALUATION SYSTEM	<i>W</i>	MAKE-UP MECHANISMS	
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	100%	<i>(No mechanisms)</i>	
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 and oral communication			
CH - Class hours: 0 h. NCH - Non-class hours: 3 h.			

TH - Total hours: 3 h.

RGC303 [!] *Diseña , implementa y monitoriza un sistema automatizado*

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams		6,5 h.	6,5 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	6 h.	8 h.
Computer simulation exercises, individually and/or in teams	20 h.	7 h.	27 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.		10 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

75%

Individual written and/or oral tests or individual coding/programming tests

Comments: For the realization of the average, a 3.5 must be equalled or surpassed in all concepts. A lower grade will block the final qualification.

MAKE-UP MECHANISMS

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

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

Comments: Classroom activities: the recovery will have a weight of 75%. POPBL: continuous evaluation.

CH - Class hours: 32 h.

NCH - Non-class hours: 19,5 h.

TH - Total hours: 51,5 h.

RGC304 [!] *Valida un sistema automatizado en base a los requerimientos necesarios.*

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams		12,5 h.	12,5 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment

CH - Class hours: 0 h.

NCH - Non-class hours: 12,5 h.

TH - Total hours: 12,5 h.

CONTENTS

Control and protection switchgear:

- Protective devices.

- Control devices or pre-actuators.

- Development of electrical diagrams.

Programmable logic controllers (PLC):

- PLC basic concepts.

- TIA Portal programming environment.

- Software development and simulation.

- Connection to a digital twin: virtual commissioning.

- Implementation of practical activities.

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Slides of the subject
Specific Master Software
Moodle Platform
Lab practical training

Bibliography

[http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in
k.pl?grupo=EKOTEKNOLOGIA31&ejecuta=35](http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in
k.pl?grupo=EKOTEKNOLOGIA31&ejecuta=35)