

[GIH204] INFORMATION AND COMMUNICATION TECHNOLOGIES LABORATORY

GENERAL INFORMATION

Studies	DEGREE IN COMPUTER ENGINEERING		Subject	SOFTWARE ENGINEERING, INFORMATION SYSTEMS AND SMART SYSTEMS
Semester	1	Course	3	Mention / Field of specialisation
Character	OPTIONAL		Language	ENGLISH
Plan	2017	Modality	Adapted Face-to-face	Total hours
Credits	4,5	Hours/week	3.75	67.5 class hours + 45 non-class hours = 112.5 total hours

PROFESSORS

MUXIKA OLASAGASTI, EÑAUT
 BELLIDO SANJULIAN, GAIZKA

REQUIRED PREVIOUS KNOWLEDGE

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

SKILLS

VERIFICA SKILLS

SPECIFIC

GIE101 - To solve integration problems following strategies, standards and technologies available.

GIE202 - To be able to develop built-in systems and specific processors and to develop and optimise the software for these systems

GIE203 - To be able to analyse and assess computer architecture, including parallel and distributed platforms and to develop and optimise the software for these systems

GIE204 - To be able to design and implement systems and communications software

GENERAL

GIGC03 - To be able to design, develop, evaluate and ensure the accessibility, ergonomics, usability and security of computer services, applications and systems and the information they manage.

GIGC05 - To be able to conceive, develop and maintain computer systems, services and applications, using the software engineering methods in order to ensure quality

GIGC06 - To be able to devise and develop centralised or distributed computer architectures or systems, integrating hardware, software and networks

GIGC08 - To build on basic concepts and technologies to expand knowledge and development of new methods and technologies, and to acquire flexibility to adapt to new situations.

GIGC10 - To know how to perform measurements, calculations, valuations, estimates, inspections, studies, reports, task planning schemes and other analogous related activities

GIGC11 - To be able to analyse and assess the social and environmental impact of technical solutions, understanding the ethical and professional responsibility of the Computer Engineering Technician.

GIGC12 - To understand and apply the fundamentals of economics and human resource management, project planning and organisation, legal and regulatory frameworks and standardisation in computer technology projects

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_CB4 - To be able to communicate information, ideas, problems and solutions to both expert and lay audiences

G_CB5 - To have developed learning abilities required to embark on subsequent studies with a high level of autonomy.

LEARNING RESULTS

RG1323 Is able to develop distributed systems using problem domain-specific communication protocols and standards

LEARNING ACTIVITIES

	CH	NCH	TH
Practices of problem solving and real or simulated context projects	18,5 h.	13 h.	31,5 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	15 h.	8 h.	23 h.
Classroom presentations of relevant concepts and procedures in participatory environments	2 h.		2 h.

EVALUATION SYSTEM

	W
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	60%
Team oral tests for the evaluation of technical skills of the subject	40%

MAKE-UP MECHANISMS

Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices

Comments: Minimum grade: 5. It may be asked to redo the work project.

CH - Class hours: 35,5 h.
NCH - Non-class hours: 21 h.
TH - Total hours: 56,5 h.

RG1324 Is able to develop embedded systems using targeted processors in an Internet of Things context

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Practices of problem solving and real or simulated context projects	18 h.	13 h.	31 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.	11 h.	23 h.
Classroom presentations of relevant concepts and procedures in participatory environments	2 h.		2 h.

EVALUATION SYSTEM

W

Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	60%
Team oral tests for the evaluation of technical skills of the subject	40%

MAKE-UP MECHANISMS

Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices

Comments: Minimum grade: 5. It may be asked to redo the work project.

CH - Class hours: 32 h.
NCH - Non-class hours: 24 h.
TH - Total hours: 56 h.

CONTENTS

- Industrial Communications Protocols
 - Industrial environment related problem analysis
 - Industrial communication standards (EtherCAT, ModBUS, CAN, ...)
- Internet of Things (IoT) Protocols
 - A summary of main features of IoT communication systems
 - IoT communication standards (Lora, Zigbee, 6LowPan, SigFox, ...)
- Implementation and Analysis of IoT and Industrial communication systems
 - OPC / UA
 - Zigbee
 - Bluetooth

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Video projections
 Subject notes
 Technical articles
 Moodle Platform

Bibliography

http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_Ink.pl?grupo=INFORMATICA31&ejecuta=25&