



IDENTIFYING DATA

Electronic technology

Subject	Electronic technology			
Code	V09G290V01708			
Study programme	(*)Grao en Enxeñaría da Enerxía			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish			
Department				
Coordinator	Verdugo Mates, Rafael Marcos Acevedo, Jorge			
Lecturers	Marcos Acevedo, Jorge Verdugo Mates, Rafael Vidal González, Ana			
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General description	(*)Tecnoloxía electrónica			

Competencies

Code	
C50	(*)Op13 Coñecer os sensores para medida de variables físicas.
C51	(*)Op14 Capacidade para seleccionar e utilizar sistemas de adquisición de datos e instrumentación electrónica.
D1	
D2	
D6	
D7	
D8	
D9	
D10	

Learning outcomes

Expected results from this subject	Training and Learning Results	
Comprise the basic appearances of the distinct types of sensors and his applications.	C50	D1 D2 D6 D9 D10
Know the structures of the systems of acquisition of data.	C51	D1 D2
Select and use computer tools for the analysis, visualisation and storage of the value of the variables.		D2 D7 D8
Know the basic principles of the programmable instrumentation and his utilization.	C51	
Know the distinct buses of field and his fields of application.	C51	

Contents

Topic	
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Item 1: General electronics	Electronic devices: Diode, transistor and thyristor. Typical applications: rectification, filtered, switching and amplification. Digital electronics: combinational circuits and sequential. Programmable systems.
Item 2: Sensors and electronic instrumentation	Physical principles of the sensors. General characteristics. Proximity sensors. Sensors of electrical and magnetic variables. Sensors of temperature. Sensors of discharge. Criteria of selection.
Item 3: Acquisition data systems and communications	Structure of a acquisition data system. Technical characteristics. Criteria of selection. Fieldbus.
Item 4: Power electronic converters	Introduction to the conversion of energy. Structures of converters: AC/DC, DC/AC, AC/AC, DC/DC. Technical characteristics. Criteria of selection.

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	10	10	20
Case studies / analysis of situations	4	5	9
Tutored works	0	47	47
Classroom work	2	4	6
Master Session	32	32	64
Short answer tests	4	0	4

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Laboratory practises	It will show to the student some practical settings or simulations on the matter treated that they put of self-evident the technical characteristics of the settings realised, as well as the form to realise measures in the same by means of sensors and the instrumentation of the laboratory.
Case studies / analysis of situations	It will realise the study and analysis of a concrete case related with each one of the subjects of the subject. These analyses will be oriented to the energetic efficiency.
Tutored works	This time devotes to the realisation of individual works, that are related with the content of the subject.
Classroom work	The works will be concrete by the professor so that the student analyse the technical characteristics of commercial systems related with each one of the items of the subject.
Master Session	It will develop in the schedules fixed by the direction of the Engineering School. It is an exhibition, by part of the professor, of the contents of the matter. Also it will proceed to show examples and technical solutions that illustrate properly the problematic to treat. The student will be able to expose all the doubts and questions that consider timely, during the session. Professor encourage the active participation of the student.

Personalized attention

Methodologies	Description
Master Session	The teachers will attend personally doubts and queries of the students, on the study of theoretical concepts, practices of laboratory or projects. The students can attend the personalized tutoring or in groups in the office of the professor in the schedule that establish for this effect to the start of the course and that will publish in the webpage of the subject.
Laboratory practises	The teachers will attend personally doubts and queries of the students, on the study of theoretical concepts, practices of laboratory or projects. The students can attend the personalized tutoring or in groups in the office of the professor in the schedule that establish for this effect to the start of the course and that will publish in the webpage of the subject.
Case studies / analysis of situations	The teachers will attend personally doubts and queries of the students, on the study of theoretical concepts, practices of laboratory or projects. The students can attend the personalized tutoring or in groups in the office of the professor in the schedule that establish for this effect to the start of the course and that will publish in the webpage of the subject.
Tutored works	The teachers will attend personally doubts and queries of the students, on the study of theoretical concepts, practices of laboratory or projects. The students can attend the personalized tutoring or in groups in the office of the professor in the schedule that establish for this effect to the start of the course and that will publish in the webpage of the subject.
Classroom work	The teachers will attend personally doubts and queries of the students, on the study of theoretical concepts, practices of laboratory or projects. The students can attend the personalized tutoring or in groups in the office of the professor in the schedule that establish for this effect to the start of the course and that will publish in the webpage of the subject.

Assessment

Description		Qualification	Training and Learning Results	
Tutored works	The students will realise a tutoring work by the teacher of the subject, the qualification obtained in said work will designate NT. It will try that the tutoring works are cases of practical application that realise in collaboration with companies of the energetic or similar topic. It evaluate all the results of learning of the matter.	50	C50 C51	D1 D2 D6 D7 D8 D9 D10
Short answer tests	They will realise several proofs of minima on the four topics of the subject, along the course, the average of the notes of these partial will designate NP. It evaluate all the results of learning of the matter.	50	C50 C51	D1 D2 D6 D7 D8 D9 D10

Other comments on the Evaluation

The qualification of continuous evaluation (CC), will calculate like this: $CC=0,5 \times NP + 0,5 \times NT$ The students will be able to decide to that are his qualification in records (CA), without need to present to any additional proof, as long as they fulfil the following requirements:

a) That the average of the partial notes (NP) is greater or the same to 5 points. b) Obtain in all the partial proofs a minimum of 3 points. c) That the qualification of the tutoring work is greater or the same to 5 points. In the announcements of June and July will realise a final examination (EF). The qualification in records (CA) for those students that do not want to or can not opt to the note of continuous qualification will do with arrangement to the following formula: $CA=0,7 \times EF + 0,3 \times NT$ So much in the sessions of classroom as of laboratory will realise a follow-up of the level of assistance. Those students that do not reach a level of minimum assistance of 80%, will not be able to opt to pass the subject by continuous evaluation.

Additional information can verify /consult of up to date form in the web page:

<http://webs.uvigo.es/etseminas/cms/index.php?id=181,0,0,1,0,0>

Sources of information

M. A. Pérez García, J. C. Álvarez Antón, J. C. Campo Rodríguez, F. J. Ferrero Martín y G. J. Grillo, **Instrumentación Electrónica**,

S. Martínez, J.A. Gualda Gil, **Electrónica de potencia : componentes, topologías y equipos**,

Enrique Mandado Pérez, Jorge Marcos Acevedo, Celso Fernández Silva y José I. Armesto Quiroga, **Autómatas programables y sistemas de automatización**, Segunda,

Malvino, A; Bates, **Principios de Electrónica**, 7ª Edición,

Recommendations

Subjects that are recommended to be taken simultaneously

Systems and control engineering/V09G290V01705

Subjects that it is recommended to have taken before

Mathematics: Calculus I/V09G290V01104

Electrotechnology/V09G290V01301

Electrical technology II/V09G290V01602