

220023 - Electronic Circuits

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering	
Teaching unit:	710 - EEL - Department of Electronic Engineering	
Academic year:	2019	
Degree:	BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)	
ECTS credits:	6	Teaching languages: Catalan, Spanish

Teaching staff

Coordinator:	David González Díez,
Others:	Antonio Miguel López Martínez Suñe Socías, Víctor Manuel Juan Antonio Gallardo

Opening hours

Timetable:	By previous appointment on demand
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Degree competences to which the subject contributes

Specific:

1. GrETA/GrEVA - An adequate understanding of the following, as applied to engineering: fundamental elements of the various types of aircraft; functional elements of air navigation systems and related electrical and electronic installations; the basics of the design and construction of airports and their various elements

Teaching methodology

The teaching methodology combines three activities:

- Theoretical lessons
- Laboratory practices
- Development of a project.

Learning objectives of the subject

Introduce the basic electronic components, and lay down the fundamentals of analog and digital systems. This knowledge is necessary in order to face the study of sensors and communication equipment of the airplane in posterior subjects.



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Study load

Total learning time: 150h	Hours large group:	46h	30.67%
	Hours medium group:	0h	0.00%
	Hours small group:	14h	9.33%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

<p>MODULE 1: Basic electronic devices</p>	<p>Learning time: 17h Theory classes: 6h Laboratory classes: 1h Self study : 10h</p>
<p>Description:</p>	
<p>MODULE 2: Operational amplifier: linear and non-linear applications.</p>	<p>Learning time: 27h Theory classes: 10h Practical classes: 2h Self study : 15h</p>
<p>Description:</p> <p>Related activities:</p> <p>Specific objectives:</p>	
<p>MODULE 3: Digital electronic</p>	<p>Learning time: 28h Theory classes: 10h Laboratory classes: 3h Self study : 15h</p>
<p>Description:</p> <p>Related activities:</p> <p>Specific objectives:</p>	



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MODULE 4: Introduction to microprocessor	Learning time: 46h Theory classes: 12h Laboratory classes: 4h Self study : 30h
Description: Related activities: Specific objectives:	
MODULE 5: Power electronic	Learning time: 32h Theory classes: 8h Laboratory classes: 4h Self study : 20h
Description: Related activities: Specific objectives:	

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Planning of activities

ACTIVITY 1: THEORY AND PROBLEMS	Hours: 52h Theory classes: 42h Self study: 10h
ACTIVITY 2: LABORATORY	Hours: 16h Laboratory classes: 6h Self study: 10h
ACTIVITY 3: MIDTERM EXAM	Hours: 22h Theory classes: 2h Self study: 20h
ACTIVITY 4: PROJECT	Hours: 33h Laboratory classes: 8h Self study: 25h
ACTIVITY 5: FINAL EXAM	Hours: 27h Theory classes: 2h Self study: 25h
<p>Description:</p> <p>Support materials:</p> <p>Descriptions of the assignments due and their relation to the assessment:</p> <p>Specific objectives:</p>	

Qualification system

Laboratory practices: 15%

First exam: 35%

Second exam: 30%

Proposed project: 20%

In order to recover an unsatisfactory mark of the first exam, the following procedure will be used. There will be a voluntary exam of 2 points that will be scheduled with the final exam. The mark obtained in this exam will be added to that obtained in the first exam. This additional exam is open to all students in the subject. The highest mark of the subject is 10.

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Bibliography

Basic:

Mancini, R.; Carter, B. Op amps for everyone [on line]. 3rd ed. Newnes/Elsevier, 2009 [Consultation: 15/01/2019]. Available on: <https://discovery.upc.edu/iii/encore/record/C__Rb1425447;jsessionid=F31E02FF9BD100374CC9CC048F31056D?lang=cat>. ISBN 9781856175050.

Margolis, Michael. Arduino cookbook. Farnham: O'Reilly, 2011. ISBN 9781449313876.

Coughlin, R. F.; Driscoll, F. F. Amplificadores operacionales y circuitos integrados lineales. 5ª ed. México: Prentice Hall, 1999. ISBN 9701702670.

Floyd, T. L. Fundamentos de sistemas digitales [on line]. 9ª ed. Madrid: Prentice Hall, 2006 [Consultation: 04/10/2018]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6120>. ISBN 9788483220856.

Wakerly, J. F. Digital design: principles and practices. 4th ed. Upper Saddle River: Prentice Hall, 2006. ISBN 0131863894.

Complementary:

Rashid, M. H. Electrónica de potencia: circuitos, dispositivos y aplicaciones [on line]. 3ª ed. México: Prentice Hall, 2004 [Consultation: 17/07/2019]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6191>. ISBN 9702605326.

Franco, S. Diseño con amplificadores operacionales y circuitos integrados analógicos. México: McGraw-Hill, 2005. ISBN 9701045955.

Brown, S. D.; Vranesic, Z. Fundamentos de lógica digital con diseño VHDL. 2ª ed. México: McGraw-Hill, 2006. ISBN 9701056094.