

## 220053 - Avionics

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
 Teaching unit: 220 - ETSEIAT - Terrassa School of Industrial and Aeronautical Engineering  
 Academic year: 2019  
 Degree: BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)  
 ECTS credits: 4,5 Teaching languages: Catalan, Spanish

### Teaching staff

Coordinator: Javier Gago Barrio  
 Others: Joan Montaña Puig

### Degree competences to which the subject contributes

Specific:

1. GrETA - An adequate understanding of the following, as applied to engineering: aircraft systems and automatic flight control systems in aerospace vehicles.

### Teaching methodology

The working methodology is divided into three complementary activities:

1. The theoretical lessons displayed by the teachers.
2. Problems resolution and laboratory practices.
3. Additional work proposed to develop by teams. If there is a chance, the PBL methodology will be introduced.

### Learning objectives of the subject

Applying the knowledge learnt by the student about electricity and basic electronics and plane equipment. The student will be capable of designing and selection of electric and electronic circuits inside the airplanes.

### Study load

Total learning time: 112h 30m	Hours large group:	31h	27.56%
	Hours medium group:	14h	12.44%
	Self study:	67h 30m	60.00%

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### Content

Module 1: Electric system of the airplane	Learning time: 38h 30m Theory classes: 10h Practical classes: 6h Self study : 22h 30m
Description: 1- Electrical system structure 2- DC Generators 3- AC Generators	
Module 2: Instrumentation and communication systems in aircrafts	Learning time: 74h Theory classes: 21h Practical classes: 8h Self study : 45h
Description: 1- Analog sensors 2- Digital sensors 3- Communication buses in aircrafts 4- Radiofrequency transmitters and receptors 4-	

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### Planning of activities

ACTIVITY 1: THEORY CLASSES	Hours: 58h 30m Theory classes: 28h Self study: 30h 30m
ACTIVITY 2: LABORATORY AND PROBLEMS CLASSES  Description: In this activity be make laboratory practical classes and problem solving classes	Hours: 36h Practical classes: 14h Self study: 22h
ACTIVITY 4. EXAM MODULE 1	Hours: 6h Theory classes: 1h Self study: 5h
ACTIVITY 4. EXAM MODULE 2	Hours: 12h Theory classes: 2h Self study: 10h

### Qualification system

First module exam (25%)

Second module exam (50%)

Exercises and laboratory (25%)

The students will be able to present to the examination of recovery of the partial all the students with note inferior to 5 or those that they have not been able to realize it. This examination of recovery will be carried out in the schedule set for the final exam in the academic calendar and the mark obtained, if approved, will be a 5

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept.

If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

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### Bibliography

#### Basic:

Tooley, M.H.; Wyatt, D. Aircraft electrical and electronic systems: principles, operation and maintenance [on line]. Oxford: Butterworth-Heinemann, 2009 [Consultation: 06/03/2012]. Available on: <<http://site.ebrary.com/lib/upcatalunya/Doc?id=10305199>>. ISBN 9780750686952.

Moir, I.; Seabridge, A.G. Aircraft systems: mechanical, electrical, and avionics subsystems integration [on line]. 3rd ed. Reston: American Institute of Aeronautics and Astronautics, 2008 [Consultation: 06/03/2012]. Available on: <<http://site.ebrary.com/lib/cbuc/docDetail.action?docID=10301042>>. ISBN 9780470059968.

Pérez García, M.A. Instrumentación electrónica. 2ª ed. Madrid: Thomson, 2004. ISBN 8497321669.

Cardama Aznar, A. [et al.]. Antenas [on line]. 2ª ed. Barcelona: Edicions UPC, 2002 [Consultation: 08/01/2016]. Available on: <<http://hdl.handle.net/2099.3/36797>>. ISBN 8483016257.

Orfanidis, S. J. Electromagnetic waves and antennas [on line]. l'autor, 2010 [Consultation: 06/03/2012]. Available on: <<http://www.ece.rutgers.edu/~orfanidi/ewa/>>.

#### Complementary:

Fraile Mora, J. Máquinas eléctricas. 6ª ed. Madrid: McGraw-Hill, 2008. ISBN 9788448161125.

Martínez Rueda, J. Sistemas eléctricos y electrónicos de las aeronaves. Madrid: Thomson Paraninfo, 2007. ISBN 8428329281.

#### Others resources: