Course guide
220053 - AV - Avionics

Last modified: 19/04/2023

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 220 - ETSEIAT - Terrassa School of Industrial and Aeronautical Engineering.

Degree: BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 4.5 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Javier Gago Barrio

Others: Joan Montañá 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.

Generical:
CG1-GRETA. (ENG) Aplicar un ampli coneixement de la ciència i tecnologies aeroespacials

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

Type	Hours	Percentage
Hours large group	31,0	27.56
Self study	67,5	60.00
Hours medium group	14,0	12.44

Total learning time: 112.5 h

CONTENTS

Module 1: Electric system of the airplane

Description:
1- Electrical system structure
2- DC Generators
3- AC Generators

Full-or-part-time: 38h 30m
Theory classes: 10h
Practical classes: 6h
Self study : 22h 30m

Module 2: Instrumentation and communication systems in aircrafts

Description:
1- Analog sensors
2- Digital sensors
3- Communication buses in aircrafts
4- Radiofrequency transmitters and receptors
4-

Full-or-part-time: 74h
Theory classes: 21h
Practical classes: 8h
Self study : 45h

ACTIVITIES

ACTIVITY 1: THEORY CLASSES

Full-or-part-time: 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

Full-or-part-time: 36h
Practical classes: 14h
Self study: 22h

ACTIVITY 4. EXAM MODULE 1

Full-or-part-time: 6h
Theory classes: 1h
Self study: 5h

ACTIVITY 4. EXAM MODULE 2

Full-or-part-time: 12h
Theory classes: 2h
Self study: 10h

GRADING 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.

BIBLIOGRAPHY

Basic:
- Tooley, M. H.; Wyatt, D. Aircraft electrical and electronic systems: principles, operation and maintenance [on line]. Oxford: Butterworth-Heinemann, 2009 [Consultation: 10/06/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=428582. 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: 10/06/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=470351. 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: 19/05/2020]. Available on: http://hdl.handle.net/2099.3/36797. ISBN 8483016257.
- Orfanidis, Sophocles J. Electromagnetic waves and antennas [on line]. Piscataway: ECE Department, 2008 [Consultation: 12/04/2022]. Available on: https://www.ece.rutgers.edu/~orfanidi/ewa/.

Complementary:
- Fraile Mora, J. Máquinas eléctricas. 8a ed. Madrid: Ibergarceta, 2016. ISBN 9788416228669.
- Martínez Rueda, J. Sistemas eléctricos y electrónicos de las aeronaves. Madrid: Thomson Paraninfo, 2007. ISBN 8428329281.