Course guide
220353 - 220353 - Architecture and Aircraft Systems

Last modified: 11/04/2025

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

Degree:	MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Optional subject). MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Optional subject).

Academic year: 2025   **ECTS Credits:** 5.0   **Languages:** English

LECTURER

Coordinating lecturer: Carlos Esbri

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEEVEHI1. MUEA/MAS: Sufficient applied knowledge of advanced, experimental and computational aerodynamics (specific competency for the specialisation in Aerospace Vehicles).
CEEVEHI2. MUEA/MAS: Sufficient applied knowledge of the aeroelasticity and structural dynamics of aircraft (specific competency for the specialisation in Aerospace Vehicles).
CEEVEHI3. MUEA/MASE: Applied knowledge of composite materials technology and a capacity for designing the basic elements of these materials (specific competency for the specialisation in Aerospace Vehicles).

TEACHING METHODOLOGY

The course is divided into parts:
Theory classes
Practical classes
Self-study for doing exercises and activities.
In the theory classes, teachers will introduce the theoretical basis of the concepts, methods and results and illustrate them with examples appropriate to facilitate their understanding.
In the practical classes (in the classroom), teachers guide students in applying theoretical concepts to solve problems, always using critical reasoning. We propose that students solve exercises in and outside the classroom, to promote contact and use the basic tools needed to solve problems.
Students, independently, need to work on the materials provided by teachers and the outcomes of the sessions of exercises/problems, in order to fix and assimilate the concepts.
The teachers provide the syllabus and monitoring of activities (by ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

To know the different systems that integrate an aeroplane, his architecture and operation.
To understand the structural design of an aeroplane.

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	24.00
Self study	80,0	64.00
Hours small group	15,0	12.00

Total learning time: 125 h

CONTENTS

Module 1: Power Systems

Description:
- Hydraulic
- Pneumatic
- Electrical

Related activities:
- Activity 1: Classes of theory
- Activity 2: Partial examination

Full-or-part-time: 37h
Theory classes: 12h
Self study : 25h

Module 2: Representative Systems

Description:
- Flight control
- Air conditioning
- Fuel

Related activities:
- Activity 1: Classes of theory
- Activity 3: final examination

Full-or-part-time: 38h
Theory classes: 13h
Self study : 25h

Module 3: Structure

Description:
- Introdution to aircraft structure:
- Fuselage
- Wings
- Pylons
- Doors

Related activities:
- Activity 1: Classes of theory
- Activity 3: Final examination

Full-or-part-time: 20h
Theory classes: 5h
Self study : 15h

Module 4: Development work

Description:
- Work to develop a system to be exposed

Related activities:
- Activity 4: Oral exposition

Full-or-part-time: 30h
Practical classes: 15h
Self study : 15h

GRADING SYSTEM

NF = 0,40 EP + 0,40 EF + 0,20 TD
NF : Final score
EP : Partial examination
EF : Final examination
TD : Development work

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.