

## Course guide

### 220353 - 220353 - Architecture and Aircraft Systems

**Last modified:** 26/09/2024

**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:** 2024    **ECTS Credits:** 5.0    **Languages:** English

#### LECTURER

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**Coordinating lecturer:** Carlos Esbri

**Others:**

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**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

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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

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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:**

- Introduction 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.