

# Course guide

## 220054 - EAP - Airport Engineering

**Last modified:** 04/12/2025

**Unit in charge:** Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
**Teaching unit:** 758 - EPC - Department of Project and Construction Engineering.

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

**Academic year:** 2025    **ECTS Credits:** 7.5    **Languages:** Catalan, Spanish

### LECTURER

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**Coordinating lecturer:** XAVIER ROCA RAMON

**Others:** AITOR MARTIN SIERRA  
RUBEN MARTINEZ SEVILLANO  
JOSEP BRUGUERA ARNES

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

CE29-GRETA. Adequate and applied knowledge in the engineering of: specific building regulations; procedures for control and execution of works; operation and management of the airport and air transport. (Specific technology module)

2. Development of airport infrastructure and its environmental impact; buildings necessary for airport operation and functioning. (Specific technology module)

**Transversal:**

3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

### TEACHING METHODOLOGY

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- Face to face sessions for content exposition.
- Autonomous work together with guidance during practical sessions.
- Group work to carry out a project.

During face to face sessions, the lecturer will expose the theoretical basis, concepts, methods and results together with examples to facilitate its comprehension.

During practical sessions, the lecturer will provide guidance in the practical exercises promoting and encouraging on critical thinking, scientific reasoning and problem solving skills. Case studies to be solved during practical sessions will be proposed.

Students will be required to carry out a preliminary project of an aerodrome related to those contents learnt during face to face sessions and during practical sessions. This preliminary project will be exposed by each group of students and will be evaluated by the subject lecturers.

Students should learn autonomously the theoretical and conceptual contents and solve the proposed exercises.

The sources to be used in this subject are face to face expositions using power point presentations and the active intervention of students.

### LEARNING OBJECTIVES OF THE SUBJECT

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This subjects aims to give an overview of the conception, design and operation of the airport systems and other related systems.



## STUDY LOAD

Type	Hours	Percentage
Hours large group	45,0	24.00
Hours small group	30,0	16.00
Self study	112,5	60.00

**Total learning time:** 187.5 h

## CONTENTS

### Module 1. Introduction and general concepts

**Description:**

Lesson 1 Airport infrastructure system  
Lesson 2 Types of airports / Aircraft characteristics  
Lesson 3 Airport Master Plan  
Lesson 4 Environmental assessment  
Lesson 5 Traffic forecast

**Related activities:**

Theoretical sessions  
Activity: traffic forecast  
Final exam  
Project

**Full-or-part-time:** 50h

Theory classes: 12h  
Laboratory classes: 8h  
Self study : 30h

### Module 2. Planning and design of the "air side"

**Description:**

Lesson 6 Meteorology and runway orientation  
Lesson 7 Movement area capacity  
Lesson 8 Runways dimensioning  
Lesson 9 Design of the "airside"

**Related activities:**

Theoretical sessions  
Activity: Runways dimensioning  
Final exam  
Project

**Full-or-part-time:** 102h 30m

Theory classes: 25h  
Laboratory classes: 16h  
Self study : 61h 30m



### Module 3. Terminal building planning and design

**Description:**

Lesson 10 Terminal buildings characteristics and types  
Lesson 11 Study of passenger flows  
Lesson 12 Heliports  
Lesson 13 Other airport facilities

**Related activities:**

Theoretical sessions  
Activity: Study of passenger flows  
Final exam  
Project

**Full-or-part-time:** 35h

Theory classes: 8h  
Laboratory classes: 6h  
Self study : 21h

### GRADING SYSTEM

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$$N_f = 0,50 \cdot N_{ef} + 0,35 \cdot N_{tp1} + 0,15 \cdot N_{tp2}$$

$N_f$  : Final mark

$N_{ef}$  : Final exam mark

$N_{tp1}$  : Practical work 1 mark - Preliminary Project (group)

$N_{tp2}$  : Practical work 2 mark - Preliminary Project presentation

### EXAMINATION RULES.

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To elaborate the aerodrome preliminary project students will have to join in groups of 4/5. The lecturer will assign a type of aerodrome (commercial, cargo airport, heliport, etc.) to each group.

The preliminary project will be handed over the last week of class and will consist on a PowerPoint presentation to be presented by all the members of the group. After the presentation, the rest of students and the evaluators will be able to ask questions. All members of the group should be able to answer whatever question.

The content and the presentation will be evaluated separately.

The generic competence assigned to this subject (Self-directed learning) will be evaluated during all practical sessions when developing the preliminary project.

The final exam is individual.