

## 1. BASIC INFORMATION

<b>Course</b>	Aerospace Vehicle Maintenance and Certification
<b>Degree program</b>	Degree in Aerospace Engineering of Aircraft
<b>School</b>	Architecture, Engineering and Design
<b>Year</b>	3
<b>ECTS</b>	6 ECTS
<b>Credit type</b>	Mandatory
<b>Language(s)</b>	English
<b>Delivery mode</b>	Face to face
<b>Semester</b>	First semester
<b>Academic year</b>	2023/2024
<b>Coordinating professor</b>	Rafael Pax

## 2. PRESENTATION

This course belongs to the “Aerospace vehicles II” module:

- Aeronautical Structures and Vibration 6 ECTS (third year)
- Aerodynamics and Aeroelasticity 6 ECTS (third year)
- Space Vehicles and Missiles 6 ECTS (third year)
- Flight Mechanics 6 ECTS (third year)
- Aerospace Vehicle Maintenance and Certification 6 ECTS (third year)
- Aircraft design 6 ECTS (fourth year)

## 3. COMPETENCIES AND LEARNING OUTCOMES

### Core competencies:

- CB4: To allow students to communicate information, ideas, problems and solutions both to a specialized and non-specialized audience.

### Cross-curricular competencies:

- CT3. Installation, operation and maintenance in the ambit of the aeronautical engineering focusing on, in accordance with the acquiring knowledge as published in paragraph 5 of the Ministerial order CIN/308/2009, aerospace vehicles.
- CT4. Validation and certification in the ambit of the aeronautical engineering focusing on, in accordance with the acquiring knowledge as published in paragraph 5 of the Ministerial order CIN/308/2009, aerospace vehicles.
- CT5 Capacity to conduct activities of projecting, technical management, expertise, writing reports, inspections, opinions, and technical suggestions on tasks related to the technical

aeronautical engineering, in assignments of the responsibilities and technical positions genuinely aerospace.

- CT6: Ability to participate in test flights to take measurements of take-off distance, lift velocity, stall velocity, manoeuvrability, and landing performances.
- CT7: Ability to analyze and assess the social and environmental impact of the technical solutions.

#### **Specific competencies:**

- CE21: Adequate and applied knowledge to engineering field: Fundamentals of sustainability, maintainability, and operability of aerospace vehicles.
- CE25: Adequate knowledge and applied to Engineering of: Calculation methods Design and Program Management of aircraft; the use of experimental aerodynamics and the most significant parameters in the theoretical application; the management of experimental techniques, equipment and measuring instruments discipline; the simulation, design, analysis and interpretation of experimental and flight operations; the maintenance systems and certifications of aircraft.

#### **Learning outcomes:**

- LO29: To establish maintenance plans
- LO30: To establish certification protocols

The following table shows the relationship between the competencies developed during the course and the learning outcomes pursued:

Competencies	Learning outcomes
CB4, CT3, CT4, CT5, CT6, CT7, CE21, CE25	LO29, LO30

## **4. CONTENT**

The course is divided in the following units:

- Commissioning of aircraft
- Certification of airworthiness
- Software certification of vehicle systems
- Maintenance of aerospace vehicles
- Fatigue and tolerance to failure

## **5. TEACHING-LEARNING METHODOLOGIES**

The types of teaching-learning methodologies used are indicated below:

- Survey of goals and interests of the students
- Master classes
- Laboratory practices
- Research and problem solving as teamwork
- Designs
- Simulation
- Practical cases study

- Field experiences, conferences, visits to companies and institutions

## 6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the time the student will spend on each one:

Learning activity	Number of hours
Lectures / masterclasses	20 hours
Integration of team work	60 hours
Self-study	50 hours
Mentoring, academic monitoring and assessment	20 hours
<b>TOTAL</b>	<b>150 hours</b>

## 7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Assessment system	Weight
Exam, test and other type of assessment.	30%-35%
Reports, articles and informs.	15%-30%
Alternative system of assessment	15%-30%
Conferences, company-tour visit and experiences in situ	10%-10%
Transversal skills (rubric)	10%-15%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

### 7.1. First exam period

To pass the course in the first exam period you should:

Obtain a minimum mark of 5 over 10 in every evaluation method:

- Exam, (each of 2 partial exams)
- Project

A class attendance of 50% is required.

### 7.2. Second exam period

To pass the course in the first exam period you should:

Obtain a minimum mark of 5 over 10 in every evaluation method:

- Exam, (each of 2 partial exams)
- Project

## 8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline
Exam, test and other type of assessment.	Check canvas
Reports, articles and informs.	Check canvas

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

## 9. BIBLIOGRAPHY

Here is the recommended bibliography:

- Normativa EASA part 21, y CS25 y AMC 25
- AMC 20-29 y Do 728
- Aircraft Structural Design, Niu
- Airworthiness: An Introduction to Aircraft Certification. Filippo De Florio

## 10. DIVERSITY MANAGEMENT UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:

[orientacioneducativa@universidadeuropea.es](mailto:orientacioneducativa@universidadeuropea.es)

## 11. ONLINE SURVEYS

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.