

Course Syllabus

Aerospace Vehicle Maintenance and Certification

Year: 2018/2019

Code: 9966001309

Coordinating professor: Rafael Pax Dolz del Castellar

Degree program: Degree in Aerospace Engineering of aircraft

School: Arquitectura, Ingeniería y Diseño

Languages: English

The mission of Universidad Europea de Madrid is to offer its students a holistic education, helping them become leaders and professionals capable of responding effectively to the needs of today's global world, adding value within their career fields, and contributing to social advancement through their entrepreneurial spirit and ethical integrity. We also strive to create and transfer knowledge through applied research, thus making our own contribution to progress and putting ourselves at the forefront of intellectual, scientific, and technological development.

Contents

1. Basic information on the course/module.....	4
2. Presentation of the course/module	4
3. Competencies and learning outcomes	5
4. Monitoring and assessment	8
4.1. First exam period	8
4.2. Second exam period	8
5. Bibliography	8
6. How to communicate with your professor	11
7. Study recommendations	11

1. Basic information on the course/module

ECTS	6
Credit type	Degree requirements
Language	English
Delivery mode	Face to face
Trimester/Semester	First semester

2. Presentation of the course/module

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)

In the Aerospace Vehicle Maintenance and Certification subject the following topics are covered: Organization of the Civil Aviation Authorities, process of design, manufacturing, operation and maintenance of aerospace vehicles, structural design and construction certification. Aeronautical projects development and maintenance organizations.

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.

Notes: UNIQUE LEVEL: Competence developed at one level. Level 1 (N1): awareness about the importance of competences and basic application of it to several situations. Level 2(N2):

interiorization and skillful handling of competences. Level 3 (N3): Full interiorization and handling of competences at any needed situation.

Learning outcomes:

- LO20. To conduct studies by integrating the technologies and engineering procedures which are developed in the competencies of this modules
- LO29: To establish maintenance plans
- LO30: To establish certification protocols

The table below shows the relation between the competencies developed during the course and the envisaged learning outcomes:

Competencies	Learning outcomes
CT3, CT5, CT7, CE21	LO29
CT4, CT6, CT8	LO30
CB4, CE21, CE25	LO20

The following table shows how the different types of activities are distributed and how many hours are assigned to each type:

Type of educational activity	Number of hours
Lecture-based class	20 h
Integration of team work	60 h
Self-study	50 h
Mentoring, academic monitoring and assessment	20 h
TOTAL	150 h

To develop the competencies and achieve the learning outcomes, you will have to complete the activities indicated in the table below:

Learning outcomes (columna H)	Learning activity (tus actividades)	Type of activity (columna M)	Content (tus contenidos)
LO29 LO30	Activity 1	Self-study	Airworthiness Certification; codes
LO20 LO29 LO30	Activities 2, 3, and 4	Mentoring, academic monitoring and assessment Lecture-based class Self-study	-Aeronautical Authorities Organization and certification of aerospace products. - Entry into service of aerospace vehicles.
	Activity 5	Mentoring, academic monitoring and assessment	-Maintenance of aerospace vehicles. -Airworthiness Certification; codes -Certification of software of vehicle systems -Certification of composite structures

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

4. Monitoring and assessment

The following table shows the assessable activities, their respective assessment criteria, and the weight each activity carries towards the final course grade.

Assessable activity	Assessment criteria	Weight (%)
Activity 1	<ul style="list-style-type: none"> • Appropriate hypothesis has been considered. • Reasonable Product structure • Certification compliance plan well defined. • Good summary and presentation 	30%
Activity 2	<ul style="list-style-type: none"> • Student attends the class • Student attitude is proactive 	5%
Activity 3	<ul style="list-style-type: none"> • Interiorization of the subject concepts and able to express in few words • Interrelation of the different concepts 	40%
Activity 4	<ul style="list-style-type: none"> • Attendance 	10%
Activity 5	<ul style="list-style-type: none"> • Participation • Student attitude is proactive • Student attends the class • Transversal Competences 	15%

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

4.1. 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:
 1. Exam, (each of 2 partial exams)
 2. Project,
- A class attendance of 50% is required.

4.2. Second exam period

To pass the course in the second exam period you should

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

- 1. Exam,
- 2. Project,

5. 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

6. How to communicate with your professor

Whenever you have a question about the content or activities, don't forget to post it to your course forum so that your classmates can read it.

You might not be the only one with the same question!

If you have a question that you only want to ask your professor, you can send him/her a private message from the *Campus Virtual*. And if you need to discuss something in more detail, you can arrange an advisory session with your professor.

It's a good idea to check the course forum on a regular basis and read the messages posted by your classmates and professors, as this can be another way to learn.

7. Study recommendations

When you study at university, you need to plan and be consistent from the first week. It's very useful to exchange experiences and opinions with professors and other students, as this will help you develop core competencies such as flexibility, negotiating skills, teamwork, and, of course, critical thinking.

To help you, we recommend using a general method of study based on the following points:

- Study systematically and at a steady pace.
- Attend class and regularly check the course forum on the *Campus Virtual* so that you keep up to date with what's happening.
- Participate actively in the course by sharing your opinions, doubts and experiences relating to the topics covered and/or suggesting new topics of interest for discussion.
- Read the messages posted by your classmates and/or professors.

Active participation in physical and virtual classroom activities is of special interest and academic value. You can participate in many different ways: asking questions, giving your opinion, doing all the activities your professor suggests, taking part in collaborative activities, helping your classmates, etc. This way of working requires effort, but it will help you get better results as you develop your competencies.