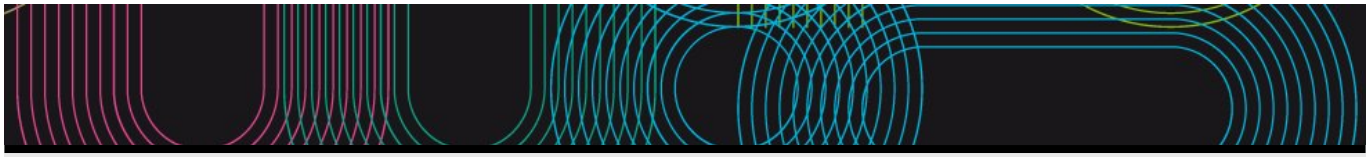

IDENTIFYING DATA				
Maintenance and certification of aerospace vehicles				
Subject	Maintenance and certification of aerospace vehicles			
Code	O07G410V01935			
Study programme	(*)Grao en Enxeñaría Aeroespacial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Optional	4th	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Ulloa Sande, Carlos			
Lecturers	Ulloa Sande, Carlos			
E-mail	carlos.ulloa@uvigo.es			
Web	http://aero.uvigo.es			
General description	Airworthiness is the ability of aircraft to fly. This quality is ensured through certification, which is made up of a set of tasks that guarantee that the aircraft is in safe conditions for the flight. To ensure that these conditions are maintained over time, we must speak of continuing airworthiness, that is, all the revisions, modifications and maintenance tasks necessary to maintain airworthiness over time. This subject deals with the procedures that affect airworthiness, basically analyzing the EASA and FAA regulations. English Friendly subject: International students may request from the teachers: a) materials and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.			

Competencies	
Code	
A2	That the students know how to apply their knowledge to their work or vocation in a professional way and that they possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study
A3	That the students have the capability to gather and interpret relevant data (usually within their area of study) to issue judgments that include a reflection on relevant social, scientific or ethical issues
A5	That the students develop those learning capabilities necessary to undertake further studies with a high degree of autonomy.
B3	Installation, operation and maintenance in the field of aeronautical engineering (in accordance with what is established in section 5 of order CIN / 308/2009), aerospace vehicles, aerospace propulsion systems, aerospace materials, infrastructures and airports, air navigation infrastructures and space management, air traffic and transport management systems.
B4	Verification and certification in the field of aeronautical engineering that aim, in accordance with the knowledge acquired (in accordance with what is established in section 5 of order CIN / 308/2009), aerospace vehicles, aerospace propulsion systems, aerospace materials, airport infrastructures, air navigation infrastructures and space management, air traffic and transport management systems.
C21	Appropriate knowledge applied to engineering: foundations of sustainability, maintenance and operation of aerospace vehicles.
C25	Appropriate knowledge applied to engineering: methods of design calculations and aeronautical projects; use of aerodynamic experimentation and the most significant parameters in the theoretical application; management of experimental techniques, equipment and measuring instruments; simulation, design, analysis and interpretation of experimentation and operations in flight; systems of maintenance and certification of aircrafts.
D3	Capability of oral and written communication in native lenguage
D4	Capability of autonomous learning and information management
D5	Capability to solve problems and draw decisions
D6	Capabiliity for interpersonal communication
D8	Capabiliity for critical and self-critical reasoning
D11	Show motivation for quality with sensitivity towards subjects within the scope of the studies

D13 Sustainability and environmental commitment. Equitable, responsible and efficient use of resources

Learning outcomes				
Expected results from this subject	Training and Learning Results			
- Knowledge, understanding, application, analysis and synthesis of aircraft certification and maintenance methods. - Applied knowledge of simulation, design, analysis and synthesis of experimentation and flight operations.	A2 A3 A5	B3 B4	C21 C25	D3 D4 D5 D6 D8 D11 D13

Contents
Topic
- Organizations competent in matters of airworthiness - Airworthiness requirements. Types of certificates - Design and maintenance criteria - Aircraft certification codes and operations - Specification and modification of aircraft - Testing during certification and test flights.
- Fundamentals of aeronautical maintenance - Regulatory framework in relation to maintenance - Types of maintenance and tasks - Guarantee of quality and human factors in maintenance

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	33	0	33
Laboratory practical	20	0	20
Seminars	3.5	0	3.5
Previous studies	0	126	126
Objective questions exam	2.5	0	2.5
Practices report	0	10	10
Essay	20	10	30
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Lecturing	Classroom lectures
Laboratory practical	Labs using different testing techniques Conducting certification practices Case studies of accident investigation
Seminars	Tutoring in small groups
Previous studies	Autonomous work

Personalized assistance	
Methodologies	**Description**
Seminars	Tutoring in small groups

Assessment			
	Description	Qualification	Training and Learning Results

Objective questions exam	Partial eliminatory exam Certification of short questions and problems (40%) Final exam Maintenance of short questions and problems (40%) * * In case of having a grade lower than 4 in the first eliminatory exam, the exam must be done again on the date of the final exam.	80	A2 A3 A5	B3 B4	C21 C25	D3 D4 D5 D8 D11 D13
Practices report	Labs report	10	A2 A3 A5	B3 B4	C21 C25	D3 D4 D5 D6 D8 D11 D13
Essay	Reports and presentations of essays proposed throughout the course during the internship sessions	10		B3 B4	C21 C25	D3 D4

Other comments on the Evaluation

To pass the subject in in the first and second exam calls it is necessary to obtain an average grade of 5 points over 10 in the required evaluation of ongoing assessment during the year and official exam (scheduled by school). The final grade is computed using the percentages indicated. The calendar of evaluation tests is approved officially by the Board of the EEAE School and it is uploaded to the webiste: http://aero.uvigo.es/gl/docencia/exames

It will be mandatory to take the extraordinary exam of all the contents of the subject, which will be 100% of the grade, in the following cases:

- The non-execution or delivery of any of the previous points.

- Obtain a grade below 4 points out of 10 in each part of the subject exams.

The maximum length of the tests is 3 hours if there is not interruption or 5 hours if there is an intermediate pause (with 3 hours as maximum time for each part).

Students that resign officially to the ongoing assessment: the grade obtained in a corresponding test which is represents 100% of assessment. This test could have a part to be made in computer classroom and/or laboratory representing 10% of the final grade.

Sources of information

Basic Bibliography

C. Cuerno Rejado, **Aeronavegabilidad y certificación de aeronaves**, 1, Paraninfo, 2008

F. de Florio, **Airworthiness. An introduction to aircraft certification and operations**, 3, Elsevier, 2016

H.A. Kinnison, **Aviation maintenance management**, 2, McGraw-Hill, 2013

EASA, **Especificaciones de Certificación europeas de EASA**,

FAA, **Regulaciones Federales de Aviación de la FAA (EE.UU.)**,

Complementary Bibliography

Recommendations

Subjects that it is recommended to have taken before

Aerospace technology/O07G410V01205
Air transport and airborne systems/O07G410V01404
Aerodynamics and aeroelasticity/O07G410V01923