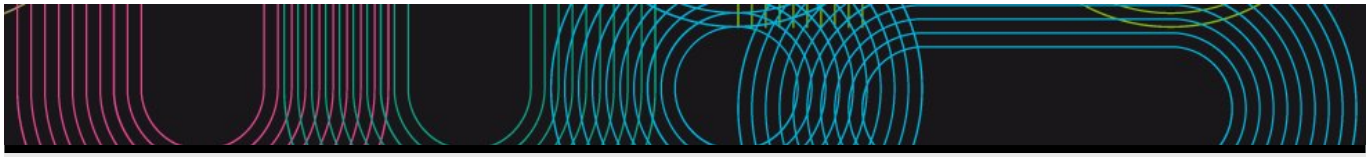

IDENTIFYING DATA				
Fixed-wing and rotary wing aircrafts				
Subject	Fixed-wing and rotary wing aircrafts			
Code	O07G410V01934			
Study programme	(*)Grao en Enxeñaría Aeroespacial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Optional	4th	1st
Teaching language	#EnglishFriendly Spanish			
Department				
Coordinator	Orgeira Crespo, Pedro			
Lecturers	Orgeira Crespo, Pedro			
E-mail	porgeira@uvigo.es			
Web	http://aero.uvigo.es			
General description	Design of fixed and rotary wing aircraft, and their typology, calculation methods, stability, control and systems. 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.
C24	Appropriate knowledge applied to engineering: systems of aircrafts and automatic systems of flight control of the 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.
C26	Applied knowledge of aerodynamics; mechanics and thermodynamics, flight mechanics, aircraft engineering (fixed and rotary wings), theory of structures.
D3	Capability of oral and written communication in native lenguage
D4	Capability of autonomous learning and information management
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

Learning outcomes			
Expected results from this subject	Training and Learning Results		
- Knowledge, understanding, application, analysis and synthesis of the methods of calculation of design and project of aircraft of fixed wing	A2 A3	C24 C25	D3 D4 D6 D8

- Knowledge applied of the systems of the aircraft	A2 A3 A5	C24 C25 C26	D3 D4 D6 D8 D11
- Knowledge, understanding, application, aerodynamics of the rotors, performance and stability and controllability of aircraft of the rotary wing aircraft	A2 A3 A5	C24 C25 C26	D3 D6 D8
- Knowledge of the most stood out appearances of the qualities of flight and the essays in flight of the aircraft of rotatory wings	A2 A3 A5	C24 C25 C26	D3 D4 D6 D8 D11

Contents
Topic
Unit 1. Types of fixed-wing aircraft
Unit 2. Methods of calculation of design and project
Unit 3. Architecture and design of components (fuselages, wings, stabilizing surfaces, landing gear, etc.)
Unit 4. Systems
Unit 5. Aerodynamics of rotors (Vertical Flight and Flight of Advance)
Unit 6. Performances of rotary wing aircraft
Unit 7. Introduction to the stability and controllability of rotary wing aircraft
Unit 8. Introduction to Flight Qualities and Flight Tests of rotary wing aircraft

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	30	68	98
Mentored work	22.5	45	67.5
Laboratory practical	22.5	22.5	45
Seminars	3.5	7	10.5
Essay questions exam	2	0	2
Presentation	0.5	1.5	2
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Lecturing	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.
Mentored work	The student, individually or in groups, prepares a paper on the subject of matter or prepare seminars, research, memoirs, essays, summaries of readings, lectures, etc.. Generally it is an autonomous activity of the student that includes finding and collecting information, reading and literature management, writing ...
Laboratory practical	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. They are developed in specific spaces with specialized equipment (Laboratories, computer rooms, etc ...)
Seminars	Activity focused on the work on a specific topic, which allows to deepen or complement the contents of the subject. They can be used as a complement to the theoretical classes.

Personalized assistance	
Methodologies	**Description**

Lecturing	In the field of tutorial action, academic tutoring actions are distinguished, as well as personalized tutoring. In the first case, the students will have at their disposal hours of tutorials in which they can consult any doubt related to the contents, organization and planning of the subject, with the development of the project, etc. The tutorials can be individualized, but group tutoring will be encouraged to solve problems related to the activities to be carried out in groups, or simply to inform the teacher of the evolution of the collaborative work. In the personalized tutorials, each student, individually, can discuss with the teacher any problem that is preventing him from properly monitoring the subject, in order to find some types of solution between them. By combining both types of tutorial action, it is intended to compensate the different learning rhythms through attention to diversity.
Mentored work	In the field of tutorial action, academic tutoring actions are distinguished, as well as personalized tutoring. In the first case, the students will have at their disposal hours of tutorials in which they can consult any doubt related to the contents, organization and planning of the subject, with the development of the project, etc. The tutorials can be individualized, but group tutoring will be encouraged to solve problems related to the activities to be carried out in groups, or simply to inform the teacher of the evolution of the collaborative work. In the personalized tutorials, each student, individually, can discuss with the teacher any problem that is preventing him from properly monitoring the subject, in order to find some types of solution between them. By combining both types of tutorial action, it is intended to compensate the different learning rhythms through attention to diversity.

Assessment

	Description	Qualification	Training and Learning Results	
Laboratory practical	Laboratory practice memory	25	A2 A3 A5	C24 C25 C26	D3 D4 D8
Essay questions exam	Performing partial tests and a final continuous assessment exam	50	A2 A3 A5	C24 C25 C26	D3 D4
Presentation	Presentation in class of the group work developed.	25	A2 A3 A5	C24 C25 C26	D3 D4 D6 D8 D11

Other comments on the Evaluation

The minimum grade to be reached in the final continuous assessment exam will be 4.0 in order to pass the subject.
The dates of the final exams are published on the website of the EEAE in the web page http://aero.uvigo.es/gl/docencia/exames.
In the case of not reaching said grade, the final grade will be the result of the minimum of the average score of EC and 4.0.
Extraordinary call Students who have not passed the subject in the ordinary call will perform an extraordinary exam that will have the same format and the same requirements as the ordinary exam. In the extraordinary evaluation, an examination in three parts will be carried out that will suppose the complete score of the evaluation: short answer, long answer (development), and problems.
As a student of the University of Vigo, the Statute for University Students, approved by Royal Decree 1791/2010 of December 30, establishes in its article 12, point 2d, that the university student has the duty to "abstain from the use or cooperation in fraudulent procedures in the evaluation tests, in the works that are carried out or in official documents of the university ". Therefore, it is expected that the student has an adequate ethical behavior. If unethical behavior is detected during the course (copying, plagiarism, use of unauthorized electronic devices or others), the student will be penalized with a grade of "0.0" in the written or deliverable test where said fraud was detected.

Sources of information

Basic Bibliography

Lloyd R. Jenkinson, James F. Marchman III, **Aircraft Design Projects**, Butterworth-Heinemann, 2003
David W. Hall, P.E., **Aircraft Conceptual And Preliminary Design**, San Luis Obispo California, 2000
Darrol Stinton, **The Design Of The Airplane**, Granada Publishing,
Alejandro Roger Ull, **Diseño de helicópteros y aeronaves diversas**, Universitat Politècnica de Catalunya,

Complementary Bibliography

Recommendations

Subjects that it is recommended to have taken before

Aerodynamics and aeroelasticity/O07G410V01923