



IDENTIFYING DATA

Meteorology

Subject	Meteorology			
Code	007G410V01905			
Study programme	Grado en Ingeniería Aeroespacial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	de la Torre Ramos, Laura			
Lecturers	de la Torre Ramos, Laura Nieto Muñiz, Raquel Olalla			
E-mail	ltr@uvigo.es			
Web	http://aero.uvigo.es			
General description	Introduction to meteorology, the measurement of parameters, the instrumentation and its influence on the flight. 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.			

Training and Learning Results

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.
C10	Understand how the aerodynamic forces determine the dynamics of the flight and the role of the different variables therein.
D11	Show motivation for quality with sensitivity towards subjects within the scope of the studies

Expected results from this subject

Expected results from this subject	Training and Learning Results		
Knowledge of the meteorological effects and its causes	A2 A3 A5		D11
Understanding of the usage and impact of meteorology on aircraft operations.	A2 A3 A5	C10	D11
Understanding of the theoretical foundations of meteorological systems and instrumentation	A2 A3 A5		D11

Contents

Topic	
Atmosphere and meteorology	The atmosphere Composition and structure Meteors

Instrumentation and meteorological information	Meteorological observations in airfields Meteorological observations from aircraft The meteorological radar Satellites Aeronautical meteorological Information
Thermodynamics	Sounding data Isobaric and adiabatic condensation Aerological diagrams Temperature and humidity parameters and stability levels Stability assessment Effects on the flight
Wind	Introduction Equation of movement Horizontal flow Isobaric coordinates Thermal wind Wind structure in the PBL Mountains and wind Effects on the flight
Clouds microphysics	Aerosols Previous concepts Warm clouds Cold clouds Effects on the flight
Convection	Previous concepts Convective storms Dynamics of supercells Electricity Downburst Mesoscale convective systems (MCS) Effects on the flight
Visibility	Introduction Factors affecting visibility Fogs and strata Duststorms Effects on the flight
Depressions	Introduction Tropical cyclones Extratropical cyclones Thermal lows Effects on the flight
Meteorological prediction	Prediction Numerical weather prediction
Meteorology and space operations	Fundamental characteristics Launching conditions Reentry conditions Influence in orbit

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	24	15	39
Autonomous problem solving	15	20	35
Practices through ICT	10	0	10
Presentation	1	5	6
Objective questions exam	2.5	30.5	33
Essay	0	27	27

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Lecturing	Description Theoretical classes in the classroom for all the group. The students will have to complete assignments that will help to fix or expand their knowledge.
Autonomous problem solving	Student will be asked to perform tasks or exercises autonomously. Part of these exercises will have to be completed out of the classroom. The professor will supervise the tasks

Practices through ICT	Seminars using computers. Personalized follow-up of the student during the class. Students will be asked to solve different exercises.
Presentation	Presentation in class to demonstrate what was learned during the completion of the essay oriented to teaching classmates

Personalized assistance

Methodologies	Description
Lecturing	Assistance during class and tutorials
Practices through ICT	Assistance during class and tutorials
Autonomous problem solving	Assistance during class and tutorials
Presentation	Assistance during class and tutorials
Tests	Description
Essay	Assistance during class and tutorials

Assessment

	Description	Qualification	Training and Learning Results		
Lecturing	Active participation in classes and in the proposed activities will be evaluated	10	A2 A3 A5	C10	D11
Autonomous problem solving	Evaluation of the student's performance in the proposed tasks or problem resolution.	25	A2 A3 A5	C10	D11
Practices through ICT	Evaluation of the student's involvement in classes	5	A2 A3 A5	C10	D11
Presentation	Students will have to make a presentation on a topic prepared outside of class hours, aimed at helping their classmates learn how meteorology can affect aeronautical or space operations.	10	A2		D11
Objective questions exam	Answering of short answers questions.	40	A2 A3 A5	C10	D11
Essay	Students will have to do an essay focused on how meteorology can affect aeronautic or space operations	10	A2 A3 A5		D11

Other comments on the Evaluation

The default assessment option will be continuous assessment. The student has the right to opt for the exam-only assessment according to the procedure and the deadline established by the centre for each call.

Continuous assessment:

To pass the subject through continuous assessment, it will be compulsory to attend at least 21 hours out of the 25 face-to-face sessions corresponding to the practices in computer rooms (seminars) and deliver all the tasks proposed to be done outside the classroom (both for the theoretical and the practical part).

It will also be mandatory: i) to take the written test, ii) to make the presentation

In addition, the student will have to achieve at least half of the total grade in each of the assignments that are graded.

Exam-only assessment:

The exam consists of a theoretical part and another of seminars, as well as a 10-minute presentation on a topic to be agreed with the professor.

Second call:

100% exam (minimum grade required to pass: 5 out of 10)

In case of not attending the test, or not passing it, the student will be evaluated in the same way as the rest of the students for the following calls.

End-of-program call

The student who chooses to take the exam at the end of the program will be evaluated only with the exam (which will be worth 100% of the grade). In case of not attending this exam, or not passing it, it will be evaluated in the same way as the rest of the students for the following calls.

Exam dates:

The exam dates are published on the website <http://aero.uvigo.es/gl/docencia/exames>

Sources of information

Basic Bibliography

J. V. Iribarne, W. L. Godson, **Termodinámica de la atmósfera**, Ministerio de Medioambiente, 1996

Wallace, J.M. Y Hobbs, P, **Atmospheric Science**, Elsevier, 2006

<http://www.aemet.es/es/portada>,

www.met.ed.ucar.edu/index.php,

González López, Blanca, **Meteorología aeronáutica**, 3, 2014

Complementary Bibliography

Bohren, C. y Albrecht, B., **Atmospheric Thermodynamics**, Oxford University Press, 1998

Houze, R.A, **Cloud Dynamics**, Academic Press, 1993

www.zamg.ac.at/docu/Manual/SatManu/main.htm,

Recommendations