



## IDENTIFYING DATA

### Meteorology

Subject	Meteorology			
Code	O07G410V01905			
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	Algarra Cajide, Iago de la Torre Ramos, Laura Ferriz Mas, Antonio			
E-mail	ltr@uvigo.es			
Web	<a href="http://aero.uvigo.es">http://aero.uvigo.es</a>			
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.			

### 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.
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

### Learning outcomes

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

### 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 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	25	15	40
Autonomous problem solving	15	20	35
Practices through ICT	10	0	10
Objective questions exam	2	30	32
Presentation	1	32	33

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

## Methodologies

	Description
Lecturing	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.

<b>Personalized assistance</b>	
<b>Methodologies</b>	<b>Description</b>
Lecturing	Assistance during class and tutorials
Practices through ICT	Assistance during class and tutorials
Autonomous problem solving	Assistance during class and tutorials
<b>Tests</b>	<b>Description</b>
Presentation	Assistance during class and tutorials

<b>Assessment</b>					
	Description	Qualification	Training and Learning Results		
Autonomous problem solving	Evaluation of the student's involvement in classes. Evaluation of the student's performance in the proposed tasks or problem resolution.	20	A2 A3 A5	C10	D11
Practices through ICT	Evaluation of the student's involvement in classes	5	A2 A3 A5	C10	D11
Objective questions exam	Answering of short answers questions plus resolution of two or three problems	55	A2 A3 A5	C10	D11
Presentation	Oral presentation oriented to teach his/her classmates about how the meteorology can affect the aerial or space operations.	20	A2 A3 A5		D11

### **Other comments on the Evaluation**

#### **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.

#### **In the event that a student cannot apply to continuous evaluation (for justified reasons):**

The oral presentation and the delivery of the exercises proposed in seminars are compulsory, in addition to taking the written test. In addition, the student will have to achieve at least half of the total grade in each of one.

In this case the qualification percentages will be:

20% exercises proposed in seminars

10% Presentation

70% Written test

#### **Second opportunity:**

100% exam.

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 degree call**

The student who chooses to take the exam at the end of the degree 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.meted.ucar.edu/index.php](http://www.meted.ucar.edu/index.php),

### 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](http://www.zamg.ac.at/docu/Manual/SatManu/main.htm),

---

## Recommendations

---

---

## Contingency plan

---

### Description

1. MIXED MODALITY: part of the classes will be face-to-face and, if the number of students makes it necessary, another part will be through the Remote Campus

1.1. ADAPTATION OF THE METHODOLOGIES:

1.1.1.MASTER SESSION: part of the classes will be face-to-face and, if the number of students makes it necessary, another part will be through the Remote Campus

1.1.2.SEMINARS: part of the classes will be face-to-face and, if the number of students makes it necessary, another part will be through the Remote Campus

1.2. EVALUATION:

1.2.1.END OF CAREER: the test will represent 100% of the grade.

1.2.2.FIRST OPPORTUNITY: the percentage of involvement in face-to-face classes will be changed for involvement in face-to-face or virtual classes.

1.2.3.SECOND OPPORTUNITY: the test will represent 100% of the grade.

1.3. TUTORIALS: The tutorials will be in the professor's virtual office, by appointment

2. DISTANCE MODALITY: all the classes will be through the Remote Campus

2.1. ADAPTATION OF THE METHODOLOGIES:

2.1.1.MASTER SESSION: all the classes will be through the Remote Campus

2.1.2.SEMINARS: all the classes will be through the Remote Campus

2.2. EVALUATION:

2.2.1.END OF CAREER: the examination will suppose 100% of the note.

2.2.2.FIRST OPPORTUNITY: the percentage of involvement in face-to-face classes will be changed for involvement in virtual classes. The "Autonomous problem solving" will represent 10% of the grade whereas the "Objective questions exam " will represent 65% of the grade

2.2.3.SECOND OPPORTUNITY: the examination will represent 100% of the grade.

2.3. TUTORIALS: TUTORIALS: The tutorials will be in the professor's virtual office, by appointment

---