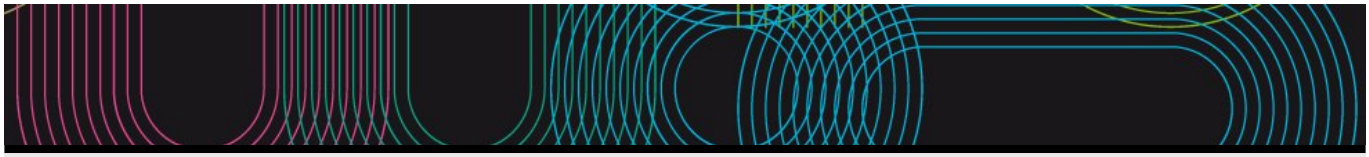

IDENTIFYING DATA				
Computer science				
Subject	Computer science			
Code	O07G410V01104			
Study programme	Grado en Ingeniería Aeroespacial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	#EnglishFriendly Spanish			
Department				
Coordinator	Formella , Arno			
Lecturers	Formella , Arno García Lourenco, Analia María			
E-mail	formella@uvigo.es			
Web	http://formella.webs.uvigo.es/doc/aero20/index.html			
General description	In this subject, the basic computer contents and introduction to the programming for graduates in Aerospace Engineering. 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	
A1	That the students demonstrate to possess and understand knowledge in an area of study that is part of the general education (second level), and often found at a level that, although based on advanced textbooks, also includes some aspects that involve knowledge from the avant-garde of the field of study
C3	Basic knowledge about use and programming of computers, operating systems, databases and software with application in engineering.
D1	Capability of analysis, organization and planification.
D2	Leadership, initiative and entrepreneurship
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
D9	Capability to work in interdisciplinary teams

Learning outcomes			
Expected results from this subject	Training and Learning Results		
Knowledge, comprehension and application of the basic programming techniques and their use in the resolution of numerical problems in engineering.	A1	C3	D4 D5 D9
Knowledge, understanding and application of programming methodologies (data and basic operations, modular programming, input-output operations, etc.).	A1	C3	D1 D2 D4 D5 D6 D8 D9
Basic knowledge about operating systems and programming languages, mainly oriented to the formulation and implementation of specific numerical methods in engineering.	A1	C3	D1 D3 D4 D5 D9

Contents	
Topic	
Introduction to computing	Hardware: basic components Basic concepts of software Operating systems Collaborative tools Computer security Computer networks / big data
Conceptos de programación básicos	Types of programming languages: low and high level Variables Functions Flow control Input / Output
Advanced programming concepts	Advanced data types Exceptions Object-oriented programming
Programming being oriented to numerical models used in engineering	Mathematical libraries Parallel calculation Graphical representation

Planning	Class hours	Hours outside the classroom	Total hours
Introductory activities	0.5	0.5	1
Lecturing	22	33	55
Practices through ICT	22	44	66
Project	4	15	19
Problem and/or exercise solving	2	5	7
Essay questions exam	2	0	2
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	Description
Introductory activities	Presentation of the subject: objectives, competences to be acquired by the student, contents, evaluation system. Building of work groups.
Lecturing	Presentation by the teacher of the contents of the course, theoretical bases and/or guidelines of the works, exercises or projects to be developed by the student.
Practices through ICT	Resolution of exercises formulated in the practical sessions, starting with the knowledge as worked in class.

Personalized assistance	
Methodologies	**Description**
Practices through ICT	The students will have a continuous follow-up and a personalized attention through classes dedicated to the resolution of exercises and the control of the works carried out. They may also attend, if they wish, personalized office hours.
Tests	**Description**
Project	The students will have a continuous follow-up through the personalized office hours.

Assessment	Description	Qualification	Training and Learning Results		
Project	Development of programs and documents in which the students reflect the characteristics of their works carried out. The students should describe the tasks and procedures they developed, show the results and observations they carried out, as well as the analysis and processing of data.	40	A1	C3	D1 D3 D4 D5 D6 D8 D9
Problem and/or exercise solving	Evaluation tests that include theoretical questions or theoretical exercises to solve. The students must respond to the activity formulated and apply the theoretical and practical knowledge of the subject autonomously.	50	A1	C3	D3 D4 D5 D8

Essay questions exam	Evaluation tests that include activities and problems or practical exercises to solve. The students must respond to the activity formulated and apply the theoretical and practical knowledge of the subject autonomously.	10	A1	C3	D3 D4 D5 D8

Other comments on the Evaluation

Additional information for the evaluation:

The evaluation is the same for both editions of records, the grades corresponding to the solutionsof problems and/or exercises are kept.

Non-attending students to classes can take an exam in both the first and second edition of records that covers 100% of the final grade.

Evaluation dates: the exam calendar is published on the web http://aero.uvigo.es/gl/docencia/exames.

Sources of information

Basic Bibliography

Bahit, Eugenia, **Curso Python para Principiantes**, Buenos Aires : Safe Creative, 2012

González Duque, Raúl, **Python para todos**, Creative Commons, 2008

Summerfield, Mark, **Python 3**, Anaya, 2009

Guttag, John V., **Introduction to computation and programming using Python**, MIT Press, 2013

Complementary Bibliography

Recommendations

Other comments

RECOMMENDATIONS

Guidelines for the study:
- Attend classes.
- Do the exercises in the practices.
- Review the bibliography and resources presented in class.

Proposals for improvement and recovery:
- Students who have problems in following the pace of learning of the subject should attend the tutorials with the teachers and extend the time dedicated to independent and autonomous learning.

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===

Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

Scenario 1: Mixed teaching

Due to the exceptional situation, given the impossibility of being able to teach in a fully face-to-face way, both synchronous and asynchronous virtual means (enabled by the University of Vigo) will be used to teach the classes.

The practices will be delivered by the students and evaluated using the resources of the teaching platform available at the time.

The tutorial sessions, both the individual level and the group level, may be carried out by telematic means (email, videoconference, virtual rooms / classrooms / offices provided by the University of Vigo).

Scenario 2: Non-classroom teaching

Due to the exceptional situation, given the impossibility of being able to teach in person, virtual means (enabled by the University of Vigo) will be used to teach the classes.

The practices will be delivered by the students and evaluated using the resources of the teledoaching platform available at the time.

The tutorial sessions may be carried out by telematic means (email, videoconference, rooms / classrooms / virtual offices provided by the University of Vigo).

=== ADAPTATION OF THE METHODOLOGIES ===

The teaching methodologies are kept possibly with some temporal modifications in the planning depending on the actual situation.

There will be no modifications of the contents.

The bibliography might be increased with own material (e.g., guides of work, videos, explanatory texts, resolved problems, etc.) in order to facilitate self-learning.

=== ADAPTATION OF THE EVALUATION ===

The tests are kept with the same weightings.