



## 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	Pérez Pérez, Martín			
Lecturers	A0570-Ax2tc-4 A0570-Ax2tc-4, A0570-Ax2tc-4 Pérez Pérez, Martín			
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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.			

## Training and Learning Results

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 language		
D4	Capability of autonomous learning and information management		
D5	Capability to solve problems and draw decisions		
D6	Capabiliity for interpersonal communication		
D8	Capability for critical and self-critical reasoning		
D9	Capability to work in interdisciplinary teams		

## Expected results from this subject

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

<b>Contents</b>	
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

<b>Planning</b>			
	Class hours	Hours outside the classroom	Total hours
Introductory activities	0.5	0	0.5
Lecturing	23	46	69
Practices through ICT	20	40	60
Laboratory practical	4.5	5.5	10
Problem solving	2	6	8
Essay questions exam	2.5	0	2.5

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

<b>Methodologies</b>	
	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.
Laboratory practical	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.
Problem 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.

<b>Personalized assistance</b>	
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.

<b>Assessment</b>					
	Description	Qualification	Training and Learning Results		
Practices through ICT	Attendance and active participation	5	A1	C3	D3 D4 D5 D8

Laboratory practical	Development of programs and documents in which the students reflect the characteristics of their works carried out (none exceeds 40%). 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.	65	A1	C3	D1 D3 D4 D5 D6 D8 D9
Problem 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.	20	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

General remarks:

The student will be able to choose the evaluation system that will be applied to the subject. For this, you must choose, in the first 15 days of the semester, between continuous assessment or exam-only assessment (a single exam at the end of the semester). If you do not specify the type of evaluation desired, it is understood that you opt for continuous evaluation.

The dates and times of the evaluation tests of the different calls are those specified in the evaluation tests calendar approved by the Faculty Board for the 2023-24 academic year.

Continuous assessment tests will be conducted within school hours.

General evaluation criteria:

To pass the subject, the student must obtain, as a final grade, a grade equal to or greater than 5. If in any of the blocks the student obtains a grade lower than 4, even if the average grade is equal to or greater than 5, the subject will be suspended and the final grade that will appear in the minutes will be Suspense (4).

Evaluation criteria for attendees 1st call:

All students who choose the continuous assessment modality will be evaluated continuously by taking tests and activities, developed throughout the semester, applying the general evaluation criteria described in the previous section.

Evaluation criteria for non-attendees 1st call:

All students who opt for the non-attendance mode will be evaluated with a single final exam (100% of the grade) that will encompass everything seen throughout the semester, applying the general evaluation criteria described above. The student has the right to opt for the global assessment according to the procedure and the deadline established by the centre for each call.

Evaluation criteria for 2nd call and end of degree:

In the second opportunity (July) and in the end-of-degree call, students will be evaluated with a single final exam (100% of the grade) that will encompass all the seen throughout the semester, applying the general evaluation criteria described above. maintaining, if applicable, the qualifications obtained for problem solving, case studies, and / or exercises and attendance and participation.

Evaluated competences: the same as in the evaluation system for assistants. Evaluated learning outcomes: the same as in the evaluation system for assistants.

### 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**

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## 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.
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