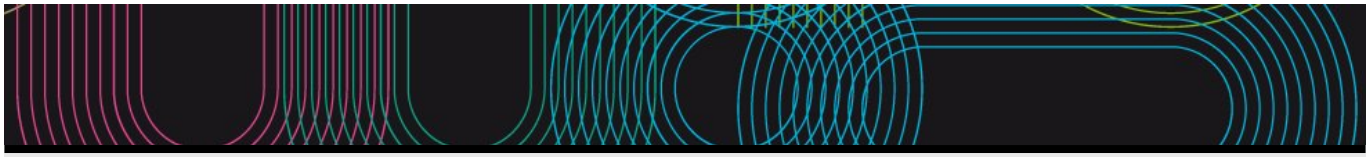
Universidade Vigo

Subject Guide 2020 / 2021



IDENTIFYING DATA				
Computer science: Computing for engineering				
Subject	Computer science: Computing for engineering			
Code	V12G320V01203			
Study programme	Degree in Electrical Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	Spanish Galician English			
Department				
Coordinator	Rodríguez Damian, María Sáez López, Juan			
Lecturers	Ibáñez Paz, Regina Moares Crespo, José María Pérez Cota, Manuel Rodríguez Damian, Amparo Rodríguez Damian, María Rodríguez Diéguez, Amador Sáez López, Juan Sanz Dominguez, Rafael Vázquez Núñez, Fernando Antonio			
E-mail	mrdamian@uvigo.es juansaez@uvigo.es			
Web	http://faitic.uvigo.es			
General description	They treat the following contents: Methods and basic algorithms of programming Programming of computers by means of a language of high level Architecture of computers Operating systems basic Concepts of databases 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	
B3	CG3 Knowledge in basic and technological subjects that will enable students to learn new methods and theories, and provide them the versatility to adapt to new situations.
B4	CG4 Ability to solve problems with initiative, decision making, creativity, critical thinking and the ability to communicate and transmit knowledge and skills in the field of industrial engineering in Electrical specialty.
C3	CE3 Basic knowledge on the use and programming of computers, operating systems, databases and software applications in engineering.
D1	CT1 Analysis and synthesis.
D2	CT2 Problems resolution.
D5	CT5 Information Management.
D6	CT6 Application of computer science in the field of study.
D7	CT7 Ability to organize and plan.
D17	CT17 Working as a team.

Learning outcomes	
Expected results from this subject	Training and Learning Results

Computer and operating system skills.	B3	C3	D5 D6 D7
Basic understanding of how computers work	B3	C3	D1 D5
Skills regarding the use of computer tools for engineering	B3	C3	D5 D6 D7 D17
Database fundamentals	B3	C3	D1 D5 D6 D7
Capability to implement simple algorythims using a programming language	B3 B4	C3	D2 D7 D17
Structured and modular programming fundamentals	B3 B4	C3	D2 D5 D17

Contents

Topic	
Basic computer architecture	Basic components Peripheral devices Communications
Basic programming concepts and techniques applied to engineering	Data structures Control structures Structured programming Information treatment Graphical user interfaces
Operating systems	Basic principles Types
Practical exercises that support and secure the theoretical concepts	Practical exercises that will allow the students to verify the concepts learned in class and see that using them they can solve problems
Computer tools applied to engineering	Types and examples

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	1	2
Laboratory practical	22	30	52
Case studies	12	14	26
Lecturing	8	12	20
Objective questions exam	4	7	11
Laboratory practice	6	8	14
Essay questions exam	10	15	25

*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	Activities related to estashing contact, gathering information from the students, organizing groups, as well as presenting the course.
Laboratory practical	Activities related to applying the knowledge obtained to specific situations and acquiring basic and procedimental skills related with the subject being studied. Developed in specialized spaces with specialized equipment (labs, computer rooms, etc).
Case studies	Analyze a fact, problem or real event with the purpose of knowing it, interpreting it, resolving it, generating hypothesis, contrasting data, thinking about it, gaining new knowledge, diagnosing it and training alternative solutions
Lecturing	Exhibition of the contents that make up the subject being studied on behalf of the profesor, theoretical principles and/or instructions regarding an assignment, exercise or project to be developed by the student.

Personalized assistance

Methodologies	Description

Laboratory practical	Questions will be resolved during the laboratory sessions and the student will be shown the different options to solve a problem. Teachers' tutoring in the stipulated time and format.

Assessment					
	Description	Qualification	Training and Learning Results		
Objective questions exam	Tests for evaluating aquired competencies that include cuestions from which the student must choose a response from a set of alternatives (true/false, multiple choice,...)	15	B3	C3	D5
Laboratory practice	Tests for evaluating aquired competencies that include activities, problems or practical excercises to be solved.	70	B3 B4	C3	D1 D2 D5 D6 D7 D17
Essay questions exam	Tests for evaluating aquired competencies that include cuestions regarding a subject. The students must develop, relate, organize and present their knowledge regarding the subject.	15	B3 B4	C3	D1 D2 D5 D6 D7

Other comments on the Evaluation

Ethical commitment:

Students are expected to behave ethically. If unethical behaviour is detected (copying,plagiarism, use of unauthorized electronic

devices and others), then it will beconsidered that the student does not meet the minimum requirements to pass thecourse. In this case, the final grade for the current academic year will befailed (0.0).

In additionto the ethical commitment, the following is underlined:
In the first place, a person registered in the course is by default subject to the continuous assessment system; if the student does not want to be in this system, the he/she must expressly renounce to it within the established deadlines.

CONTINUOUSASSESSMENT OPERATION

In the present course, the continuous assessment will collect all the evidence oflearning from the person enrolled and will be grouped into three assessments.The first two will take place preferably in the laboratories: Test 1 and Test2. The third evaluation may be written: Test 3. If the student does notrenounce to the continuous evaluation system, tests that are not attended will be considered as qualified as zero (0.0). A minimum score of 30% out of 10 (3.0points) must be obtained in the last two evaluations: Test 2 and Test 3, inorder to be eligible to have the final average calculated. If this requirementis not met and the final average is equal to or greater than 5, the final gradewill be 4:

Test 1 * 0.3 + (Test 2>=3) * 0. 4 + (Test 3>=3) * 0. 3 >=5

A studentis considered passed if he/she obtains a five or more in compliance with allthe requirements.

First call (May/June):

The following must be met to pass the subject under continuous assessment:
Test 1 * 0.3 + (Test 2>=3) * 0. 4 + (Test 3>=3) * 0.3 >= 5

Once thefirst evaluation: Test 1, has been carried out, the person enrolled may requestto abandon the continuous evaluation system (within the period and by the meansestablished by the teaching staff). In this way, the person enrolled will beable to follow the non-continuous assessment system.

Second call (June/July):

If a person does not reach the passing level in the first exam (May/June) but has passed the minimum mark in the second exam: Test 2, in the second call (June/July) he/she can choose to keep the grades of the first two tests, and take a 4-points exam, or take a 100% exam in the subject (10 points). If the person takes the 4-points test, he/she will be asked for a minimum score of 30% out of 10 (3. 0 points) in order to calculate the final grade. If this requirement is not met and the final average is equal to or greater than 5, the final grade will be 4.

NON-CONTINUOUS EVALUATION OPERATION

An exam that allows students to obtain 100% of the grade. The exam may be divided into sections, minimuns can be required.

First call (May/June):

Registered students who have expressly renounced to the continuous assessment system may take the May/June exam (on the date and at the time proposed by the School) and take an exam that allows them to obtain 100% of the grade. This exam is not open to those who have failed the continuous assessment.

Second call (June/July):

An exam will be proposed to evaluate 100% of the subject, for those who have not achieved the minimum mark in the first call.
The version of the guide was made in Spanish. For any doubt or contradiction, the Spanish guide will be mandatory.

Sources of information

Basic Bibliography

Eric Matthes, **Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming**, 2019
Sébastien Chazallet, **Python 3. Los fundamentos del lenguaje - 2ª edición**, 2016
Dictino Chaos García, **Introducción a la informática básica (GRADO)**, 2017

Complementary Bibliography

Tanenbaum, Andrew S.,, **Sistemas Operativos Modernos**, Pearson Education, 2009
Silberschatz, Abraham ,Korth Henry, Sudarshan, S.,, **Fundamentos de bases de datos**, McGraw-Hill,, 2014

Recommendations

Contingency plan

Description

=== EXCEPTIONAL MEASURES SCHEDULED ===

=== ADAPTATION OF THE METHODOLOGIES ===

* Educational methodologies mantained
The methodologies: lecturing, laboratory practical and the study of cases, will continue on being valid but supported by services, such as: Remote Campus, Faitic, or other that the University of Vigo has available at that moment.

* Educational methodologies modified: it won´t be necessary to modify any educational methodology because all they can be adapted.

* Mechanism to individual tutoring
Each professor involved will put in knowledge of the students the different ways to establish a channel of communication, these methods can be e-mail, theacher virtual office, forums, etc. This information will be always available to students.

* Additional bibliography to facilitate non-attendance education
The bibliography will be made available to students from the beginning of the course. The students can choose the resources that best suit their needs: manuals, solved exercises, videos, etc. Does not apply additional bibliography.

=== ADAPTATION OF THE EVALUATION ===

The evaluation criteria are maintained, adapting the performance of the tests, if necessary and by indication in the rectoral resolution.

* additional Information
The content of the subject will remain the same, and the different means that the University of Vigo makes available to us will be searched for, those that facilitate the transmission of knowledge and evaluation.