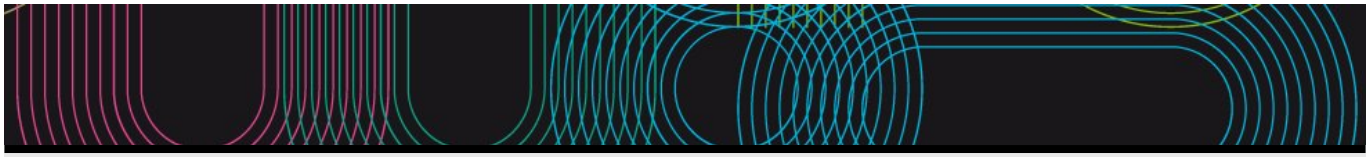

IDENTIFYING DATA				
IT: Computing for Engineering				
Subject	IT: Computing for Engineering			
Code	V09G311V01110			
Study programme	Degree in Mining and Energy Resources Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	#EnglishFriendly Spanish Galician English			
Department				
Coordinator	Pérez Cota, Manuel			
Lecturers	Pérez Cota, Manuel Rodríguez Liñares, Leandro			
E-mail	mpcota@uvigo.es			
Web	http://faitic.uvigo.es			
General description	In this subject will be stablished the basic contents of computing and of introduction to the programming, as well as the basic computer tools for the Engineering.			

Competencies	
Code	
A1	
A2	
A3	(*) Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética.
A4	(*)Que os estudantes desenvolvesen aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores cun alto grao de autonomía.
A5	(*)Que os estudantes desenvolvesen aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores cun alto grao de autonomía.
C3	(*)Coñecementos básicos sobre o uso e programación dos computadores, sistemas operativos, bases de datos e programas informáticos con aplicación en enxeñería.
D3	(*)Propoñer e desenvolver solucións prácticas, utilizando os coñecementos teóricos, a fenómenos e situacións-problema da realidade cotiá propios da enxeñería, desenvolvendo as estratexias adecuadas.
D5	(*)Coñecer as fontes necesarias para dispoñer dunha actualización permanente e continua de toda a información precisa para desenvolver o seu labor, accedendo a todas as ferramentas, actuais e futuras, de procura de información e adaptándose aos cambios tecnolóxicos e sociais
D7	(*)Capacidade para organizar, interpretar, asimilar, elaborar e xestionar toda a información necesaria para desenvolver o seu labor, manexando as ferramentas informáticas, matemáticas, físicas, etc., necesarias para iso.

Learning outcomes			
Expected results from this subject	Training and Learning Results		
Skills in handling of computers and operating systems	A1 A2 A3 A4 A5	C3	D3 D5 D7
Understanding of basic operation of the computers	A1 A2 A3 A4 A5	C3	D3 D5 D7

Skills in handling of computer tools for engineering	A1 A2 A3 A4 A5	C3	D3 D5 D7
Knowledges on the databases foundations	A1 A2 A3 A4 A5	C3	D3 D5 D7
Capacity to implement simple algorithms in some programming language	A1 A2 A3 A4 A5	C3	D3 D5 D7
Knowledge of the structured and modular programming foundations	A1 A2 A3 A4 A5	C3	D3 D5 D7

Contents	
Topic	
Computing Foundations	The computing in the Engineering Evolution of the systems Numbering Systems and coding
Computers Architecture	Basic components Communications Systems Architecture
Tools for the Engineering	Office Packages Spreadsheets Presentation Systems Databases
Programming Methods	Structured and modular Programming Programming Logic Programming languages Structures of a program and development of a program
Programming - basic concepts	Data types and variables Input / Output Flow control
Programming - advanced concepts	Functions Complex data types Files and data persistence systems Object Oriented Programming and other paradigms
The computing in the engineering	Security Systems Electronic signature Usability Libraries Complex Calculus Graphic Representation

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	25	20	45
Laboratory practical	25	42.5	67.5
Case studies	0	35	35
Essay questions exam	0.5	0	0.5
Problem and/or exercise solving	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
Lecturing	In main lectures (physical or virtual) it will be explained concepts that, already had been indicated to students, so that the participation should be rich and the concepts should be adquired easily.

Laboratory practical	It will be developed practical exercises (physical or virtual) that allow to develop, by means of the computer concepts explained in main lectures. It will be pretended that the students can create their own systems in base to a solid logic.
Case studies	It will be analized and solved real professinal problems

Personalized assistance

Methodologies	Description
Laboratory practical	It will be pretended that the students can explain their doubts about developing the problems and in the practical part help them to solve those and clarify them.

Assessment

	Description	Qualification	Training and Learning Results		
Essay questions exam	They will make a series of questions that allow to know the competitions obtained by the students (can be physical or virtual) All the learning outcomes are evaluated	50	A1 A2 A3 A4 A5	C3	D3 D5 D7
Problem and/or exercise solving	Development of an or several exercises or problems that allow to know the competitions obtained by the students (can be physical or virtual) All the learning outcomes are evaluated	50	A1 A2 A3 A4 A5	C3	D3 D5 D7

Other comments on the Evaluation

In order to the continuous evaluation, the students will be able to do (depending on the circumstances of the course) a maximum of 3 evaluations that will have part of questions and part of resolution of problems with which will be able to achieve the global of the qualification. In case of renunciation to the continuous evaluation the final examination will be of the global of the subject, with part of examination of questions and part of resolution of problems.

Exam Timetable: Exam dates and rooms must be verified in the official webpage of the school:

http://minaseenerxia.uvigo.es/es/docencia/examenes

Sources of information

Basic Bibliography

Python.org, **Python**, https://www.python.org, 2020

Microsoft Corporation, **Cursos Office**, https://www.microsoft.com, 2020

The Document Foundation, **Libre Office**, https://es.libreoffice.org, 2020

Complementary Bibliography

Tanenbaum, Andrew S.; Wetherall, David J., **Sistemas Operativos modernos**, 9786074424614, Pearson Education, 2009

Camps Paré, Rafael; Casillas Santillán, Luis Alberto; Costal Costa, Dolors; Gibert Ginestà, Marc; Ma, **Bases de Datos**, 84-9788-269-5, Fundació per a la UOC, 2005

Pérez Cota, Manuel, **Historia de la Informática**, 84-932887-1-3, Reprogalicia, 2019

Pérez Cota, Manuel, **Fundamentos de Informática**, 84-932887-0-5,, Reprogalicia, 2019

Apple Corporation, **Recursos educativos Apple**, https://www.apple.com/es/, 2020

IBM Corporation, **Recursos informáticos de IBM**, https://www.ibm.com, 2020

Recommendations

Other comments

The form in which the ICTs are used in the development of works for other subjects shall constitute a work for this subject. Doing, in this way, can be achieved better exploitation of the time for the student and it contributes to the best use of the resources.

Contingency plan

Description

Considering the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University establishes an extraordinary planning that will be activated when the administrations and the institution determine it. It is based on safety,

health and responsibility, and it guarantees teaching in an online or semi-presential modalities. These already planned measures will guarantee, at the required time, the development of teaching in a more agile and effective way, because they will be known in advance by students and teachers through the standardized tool for teaching guides DOCNET.

1. Semi-presential modality
Once the semi-presential teaching is required, it would mean a reduction of the capacity of the teaching spaces used in the face-to-face modality. Therefore, as the first measure of the centre, the capacity of the teaching spaces would be reformulated and informed to the teachers, in order to proceed to reorganize the formative activities for the rest of the semester. It should be noted that the reorganization will depend on the moment throughout the semester in which this semi-presential modality is activated. For the reorganization of the teaching activities, the following guidelines would be followed:

Through the FaiTIC platform, all the students will be informed about the new conditions under which the formative activities and assessment tests will be carried out at the end of the semester.

The tutorial sessions will be carried out by telematic means (email, videoconference, FAITIC forums, ...) with prior agreement.

Once some of the students have carried out experimental or computer laboratory practices in the face-to-face modality, if it is possible, the rest of the students will have the possibility to perform the same or equivalent activities in the same modality.

For the rest of the activities until the end of the semester, it should be done a proper identification of those formative activities which can be done under face-to-face modality and those which will be carried out remotely.

Regarding the potential tools to be applied for the formative activities during the online mode, CampusRemoto and the FaiTIC platform will be used.

2. Online modality
In the event that the non-face-to-face teaching modality is required (suspension of all face-to-face formative and assessment activities), the tools currently available at the University of Vigo, CampusRemoto and the FaiTIC platform will be used. The reorganization will depend on the moment throughout the semester in which this online modality is activated. In the reorganization of the teaching activities, the following guidelines would be followed:

2.1. Communication
Through the FaiTIC platform, all the students will be informed about the new conditions under which the formative activities and assessment tests will be carried out at the end of the semester.

2.2. Adaptation and / or modification of teaching methodologies
As the teaching methodologies have been conceived for the face-to-face teaching modality, the teaching methodologies that would be kept and those which would be modified or replaced in the online modality are indicated below.

The teaching methodologies that would be kept, since they can be used in face-to-face and online teaching mode
No changes needed

The teaching methodologies that would be modified are the following
No changes needed

2.3. Adaptation of tutorial sessions and personalized attention
The tutorial sessions may be carried out by telematic means (email, videoconference, FAITIC forums, ...) with prior agreement.

2.4. Evaluation
No changes needed

2.5. Bibliography or additional material to facilitate self-learning
No changes needed