SUBJECT TEACHING GUIDE

G2008 - [Pendiente de traducción: Programming]

Degree in Civil Engineering
BILINGUAL UC-CU CIVIL ENGINEERING PROGRAM

Academic year 2022-2023

1. IDENTIFYING DATA				
Degree	Degree in Civil Engineering BILINGUAL UC-CU CIVIL ENGINEERING PROGRAM		Type and Year	Core. Year 1 Compulsory. Year 1
Faculty	School of civil Engineering			
Discipline	BASIC MATHEMATICS FOR ENGINEERING			
Course unit title and code	G2008 - [Pendiente de traducción: Programming]			
Number of ECTS credits allocated	6	Term	Semester based (2)	
Web				
Language of instruction	English		Mode of delivery	Face-to-face

Department	DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION
Name of lecturer	MIGUEL CUARTAS HERNANDEZ
E-mail	miguel.cuartas@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 1. DESPACHO - ASOCIADOS Y VISITANTES (1032)
Other lecturers	

3.1 LEARNING OUTCOMES
- Know the basic fundamentals of computers and operating systems.
- Solve problems by programming computers.
- Know programming environments with application in civil engineering.
- Learn techniques and tools that allow effective data management.

4. OBJECTIVES
Identify the basic components of the computer and the operating system and their impact on its use.
Use the tools, processes and techniques necessary for the development and fine-tuning of computer programs.
Use development environments with application in civil engineering.
Use techniques and tools that allow proper data management.

6. COURSE ORGANIZATION	
CONTENTS	
1	Computer fundamentals and basic computing: Computer structure. Operating systems and application architectures. Basic and office tools. Databases.
2	Introduction to programming and algorithms: Visual Studio programming environment. Elements of the language. Basic data types and conversion types. Expressions and sentences. Input / Output mechanisms. Basic mathematical operations. Control structures. Analysis and design of algorithms. Code debugging.
3	Data structures and code organization: Data structures. Functional decomposition. File management. Object oriented programming. Creation of desktop applications.
4	Programming with Python: Jupyter Notebooks. Markdown. Basic algorithms with data structures. Graphic representation of data.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Descripción Basic programming exam with C#	Written exam	No	Yes	35,00
Descripción Programming exam with functions and data structures	Written exam	No	Yes	35,00
Descripción Basic programming exam with Python	Laboratory evaluation	No	No	20,00
Descripción Final project based on the topics included in the course	Work	No	No	10,00
TOTAL				100,00

Observations

For students under part-time schemes, the need to attend 50% of the internships may be replaced by a practical test in the laboratory or by the delivery of a work.

Given the uncertain situation that the social distancing measures established by the health authorities are not allow the practical tests to be carried out face-to-face in the classroom for all students enrolled with the necessary guarantees, a remote evaluation modality will be adopted using telematic means.

Observations for part-time students

For students under part-time schemes, the need to attend 50% of the practices may be replaced by a practical test in the laboratory or by the delivery of a work.

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Miles, R. (2019). C# Programming: Yellow Book. Rob Miles.
Matthes, E. (2019). Python Crash Course, 2nd Edition: A Hands-On, Project-Based Introduction to Programming. No Starch Press.