

SUBJECT TEACHING GUIDE

G1962 - PROGRAMMING

Degree in Civil Engineering

First Degree in Civil Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering First Degree in Civil Engineering			Type and Year	Core. Year 1 Core. Year 1
Faculty	School of civil Engineering				
Discipline	BASIC MATHEMATICS FOR ENGINEERING				
Course unit title and code	G1962 - PROGRAMMING				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Knowledge Field					
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION				
Name of lecturer	JAVIER GONZALEZ VILLA				
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Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 1. DESPACHO PROFESORES (1026)				
Other lecturers	AKEMI GALVEZ TOMIDA				

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. SUBJECT PROGRAM	
CONTENTS	
1	<p>Block I: Fundamentals</p> <ol style="list-style-type: none"> 1. Computer fundamentals. 2. Operating Systems. 3. Programming languages. 4. Office automation tools. 5. Anaconda framework (Python) - JupyterLab.
2	<p>Block II: Basic Programming.</p> <ol style="list-style-type: none"> 1. Basic types. 2. Strings, lists, tuples and dictionaries. 3. Branching and iteration. 4. Decomposition, abstraction and functions.
3	<p>Block III: Advanced Programming.</p> <ol style="list-style-type: none"> 1. Recursion. 2. Files and Data Bases. 3. Exceptions, Validation and Debugging. 4. Object Oriented Programming. 5. Standard library and libraries.
4	<p>Block IV: Algorithmics and Complexity.</p> <ol style="list-style-type: none"> 1. Efficiency. 2. Complexity classes.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Theoretical-practical test Blocks I and II.	Written exam	No	Yes	35,00
Theoretical-practical test Blocks III and IV.	Written exam	No	Yes	35,00
Group work: programming techniques in Civil Engineering.	Work	No	No	30,00
TOTAL				100,00
Observations				
<p>Those students who do not pass the evaluation criteria or whose overall ordinary evaluation of the course does not exceed the minimum grade may, during the extraordinary exam period, take a single theoretical-practical evaluation test that includes Blocks I, II, III and IV. The final grade of the course in the extraordinary exam period, for those students who present themselves for the recovery, will be calculated according to the percentages referred to in the different evaluation methods described in the teaching guide carried out during the course.</p>				
Observations for part-time students				
<p>For part-time students, the need to attend 50% of the practicals may be replaced by a practical test in the laboratory or by the delivery of a paper, and the group work may be replaced by a paper on the same subject but done individually.</p>				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

González Duque, R. (2011). Python para todos.

Martelli, A., Ravenscroft, A. M., Holden, S., & McGuire, P. (2023). Python in a Nutshell. O'Reilly Media, Inc.