

Academic Year: (2023 / 2024)

Review date: 19/05/2022 19:22:48

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: GRANADOS FONTECHA, ANA

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 2

Branch of knowledge: Engineering and Architecture

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Nothing

LEARNING OUTCOMES

LEARNING OUTCOMES:

- Understand the fundamental principles of programming.
- Understand the differences between imperative programming and structured programming.
- Become familiar with the different types of data.
- Understand the syntax of programming languages.
- Know the techniques of development and design of simple algorithms.
- Be able to write programs to solve problems in the field of science.
- Being able to debug and test programs.

DESCRIPTION OF CONTENTS: PROGRAMME

- I. Introduction to programming
- II. Programming paradigms
- III. Elements in a program
- IV. Data and algorithms
- V. Control structures (conditionals, loops, functions, etc.)
- VI. Data structures
- VII. Input and output data
- VIII. Advanced programming techniques
- IX. Debugging methods
- X. Introduction to databases

LEARNING ACTIVITIES AND METHODOLOGY

Throughout the course, different types of training activities will be carried out, based on the practical use of the concepts learned in the theory classes. The primary type of activity will consist of carrying out a series of exercises composed of several parts, and with increasing difficulty. The simple parts will be solved in a guided way to facilitate understanding of the problems. On the other hand, expository work will be carried out in which the students will have to delve into the subject to prepare works related to the concepts learned, and expose them to the rest of their classmates in an appropriate way. The content of these works, once reviewed and corrected, will be shared with the students and evaluated and evaluated in the midterms. Finally, students will be provided with a set of resources on which they can work optionally (eg, Coursera courses), aimed at reinforcing their learning in specific areas. Completing these optional resources properly will be positively evaluated towards your final grade.

Regarding the tutorial sessions, they will be of two types and given by the teacher: individualized assistance (individual tutorials) or in groups (collective tutorials). For subjects of 6 credits, there correspond 4 hours, online tutoring may be requested if particular circumstances do not allow attending in person.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

AS1. CONTINUOUS ASSESSMENT. Exercises, presentations, performance in debates, exhibitions in class, practices and the work in workshops throughout the course will be scored. The attendance and interest shown by the students, the fellowship, and their participation will also be positively valued.

AS2. FINAL EXAM. In which the knowledge, skills, and abilities acquired throughout the course will be assessed globally.

Acronym

AS: Assessment System

Ordinary convocation:

Evaluation activity

Final exam 0%

Continuous evaluation 100%.

Extraordinary call

Evaluation activity

Final exam 60%

Continuous evaluation 40%

BASIC BIBLIOGRAPHY

- Ana Bell Get Programming Learn to code with Python, Manning publications, 2018
- Cuadra D., Castro E., Iglesias A., Martínez P., Calle J., de Pablo C., Al'Jumaily H., Moreno L., García S., Martínez J.L., Rivero J., Segura I. Desarrollo de Bases de Datos: casos prácticos desde el análisis a la implementación. 2ª ed., Ra-Ma, 2013
- Elmasri, R. y Navathe, S. Fundamentals of Database Systems (5ª ed.), The Benjamin/Cummings Publishing Company, 2006
- Folk, M. J., Zoellick, B., y Riccardi, G. File Structures, Addison Wesley, 1998
- John S. Conery Explorations in Computing: An Introduction to Computer Science and Python Programming, CRC Press, 2014
- Michael T. Goodrich and Roberto Tamassia Data Structures and Algorithms in Python, John Wiley & Sons, 2013

ADDITIONAL BIBLIOGRAPHY

- Date, C.J. An introduction to database systems (5ª edición), Addison Wesley, 1994
- Frakes, W. y Baeza-Yates, R., Eds. Information retrieval. Data structures and algorithms , Prentice Hall, 1992
- Lourdes Araujo Serna, Raquel Martínez Unanue y Miguel Rodríguez Artacho Programación y estructuras de datos avanzadas, UNED, 2011

- Ramakrishnan, R. Database management systems, WCB/McGraw Hill, 1998

BASIC ELECTRONIC RESOURCES

- Guido van Rossum, Barry Warsaw, Nick Coghlan (traducido por Raúl González Duque) . PEP 8 - Guía de estilo del código Python: <http://mundogeek.net/traducciones/guia-estilo-python.htm>
- Isabel Segura Bedmar, Lourdes Moreno, Harith AlJumaily, José Luis Martínez . ESTRUCTURA DE DATOS Y ALGORITMOS: <http://ocw.uc3m.es/ingenieria-informatica/estructura-datos-algoritmos>
- Python Software Foundation . Python for Beginners: <https://www.python.org/about/gettingstarted/>