

Academic Year: (2021 / 2022)

Review date: 09-09-2021

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: GONZALEZ CARRASCO, ISRAEL

Type: Electives ECTS Credits : 6.0

Year : Semester :

OBJECTIVES

CB1. That students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.

CB2. That students know how to apply their knowledge to their work or vocation in a professional manner and possess the competencies that are usually demonstrated through the development and defense of arguments and problem solving within their area of study.

CB3. That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

CG3. Be able to manage, identify, gather and interpret relevant information on business-related issues in the digital age.

GC5. Know how to design, plan and align the evolution of technology (information and communication systems and technologies) with respect to the organization of the company and its evolution.

CT3. Be able to evaluate the reliability and quality of information and its sources using such information in an ethical manner, avoiding plagiarism, and in accordance with the academic and professional conventions of the area of study.

CT5. Know and be able to handle interpersonal skills on initiative and responsibility, negotiation, emotional intelligence, etc. as well as calculation tools that allow consolidating the basic technical skills required in any professional field.

CE14. To know the principles of software development, its production and implementation in the different organizational areas of the companies.

CE17. To know the main programming languages, and to be able to use these languages to solve problems in different development environments.

RA1. Have acquired advanced knowledge and demonstrated an understanding of the theoretical and practical aspects and working methodology in the field of business administration and digital technology with a depth that reaches the cutting edge of knowledge.

RA3. Have the ability to collect and interpret data and information on which to base their conclusions including, where necessary and relevant, reflection on social, scientific or ethical issues in the field of business in the digital age.

DESCRIPTION OF CONTENTS: PROGRAMME

I Programming foundations and techniques

1. Programming fundamentals

1.1. Computer architecture

1.2. Information representation in a computer

1.3. Programming languages

1.4. Program compilation and execution

2. Programming techniques

2.1. Program elements: data and algorithms

2.2. Basic programming tools: algorithms, flow diagrams and pseudocode.

2.3. Programming paradigms

2.4. Object-oriented programming

2.5 Programming techniques for my business

II Data type definition and operations

3. Data types

3.1. Basic data types

3.2. Arrays

- 3.3. Enumerated
- 3.4. Objects
- 3.5. Basic Input/Output
- 3.6. Comments
- 3.7. Operators
- 3.8. Conversions
- III Flow control and subprograms
- 4. Control structures
- 5. Methods: functions and procedures
- IV Implementation of programs
- 6.1 The Java programming language
- 7. Debugging and tracing programs
- 7.1. Common programming errors
- 7.2. Debugging techniques
- 7.3 Source code Quality as a driver for successful businesses

LEARNING ACTIVITIES AND METHODOLOGY

AF1. THEORETICAL-PRACTICAL CLASSES. In these classes the knowledge to be acquired by the students will be presented. They will receive the class notes and will have basic reference texts to facilitate the follow-up of the classes and the development of the subsequent work. Exercises and practical problems will be solved by the students and workshops and evaluation tests will be carried out in order to acquire the necessary skills.

AF2. TUTORIALS. Individualized assistance (individual tutorials) or in group (collective tutorials) to the students by the professor.

AF3. INDIVIDUAL OR GROUP WORK OF THE STUDENT.

MD1. THEORY CLASS. Class lectures by the professor with the support of computer and audiovisual media, in which the main concepts of the subject are developed and materials and bibliography are provided to complement the students' learning.

MD2. PRACTICES. Resolution of practical cases, problems, etc. posed by the teacher individually or in groups.

MD3. TUTORIALS. Individualized assistance (individual tutorials) or group (group tutorials) to students by the professor. For subjects of 6 credits, 4 hours will be dedicated with 100% attendance.

ASSESSMENT SYSTEM

SE1. FINAL EXAM. In which the knowledge, skills and abilities acquired throughout the course will be globally assessed.

SE2. CONTINUOUS EVALUATION. This will assess the work, presentations, performance in debates, presentations in class, exercises, practices and work in the workshops throughout the course.

% end-of-term-examination:	40
% of continuous assessment (assignments, laboratory, practicals...):	60

BASIC BIBLIOGRAPHY

- Ceder, N. The quick Python book, Simon and Schuster, 2018
- González Duque, Raúl . Python para todos, Distribuido con licencia Creative Commons. Disponible en <http://mundogeek.net/tutorial-python/>.
- Peña, Rosalía Resolución de problemas para ingenieros con Python® estructurado, ibergaceta, 2016
- Severance, C. R Python for Everybody: Exploring Data in Python 3, CreateSpace Independent Publishing Platform, 2016