Computing Systems I

Academic Year: (2019 / 2020) **Review date: 16-05-2018**

Department assigned to the subject: Department of Systems Engineering and Automation

Coordinating teacher: ABDERRAHIM FICHOUCHE, MOHAMED

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 2

STUDENTS ARE EXPECTED TO HAVE COMPLETED

Students are expected to have knowledge about basic programming concepts and computer systems such as those covered in the subject Programming of the first year of the engineering program.

COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.

¿ Knowledge of the techniques of structured analysis and design of computer systems, and developing effective techniques of computer projects applied to the industrial world.
¿ Knowledge of the basic features of the real-time computer systems used for industrial process control.
¿ Knowledge of object-oriented programming and the characteristic languages. Both aspects focused on the supervision and control of industrial processes.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to computer systems development

2. Requirements Engineering
2.1 Introduction to Requirements Engineering
2.2 what are Requirements
2.3 Classification of Software Requirements

3. Unified Modeling Language UML and Object Oriented Analysis
3.1 Structural Modeling
3.1.1 General Introduction to all structural diagrams
3.1.2 Classes Diagram (detailed)
3.2 Dynamical modeling
3.2.1 General Introduction to all Dynamic diagrams
3.2.2 Activity Diagrams
3.2.3 Sequence Diagrams
3.2.4 State Machine Diagrams
3.2.5 Use Cases Diagrams

4. Object-Oriented Design
4.1 DOO Concepts
4.2 DOO Methods

5. Introduction to Object Oriented Programming in C + +.
5.1 Syntax of C + +.
5.2 Basic Programming
5.3 Introduction to classes, objects and methods.
5.4 Class hierarchy and inheritance
5.5 Polymorphism.
5.6 C++ Templates
5.7 Input and Output Management (files)
5.8 Exception Handling

LEARNING ACTIVITIES AND METHODOLOGY

The learning activities include:

¿ Lectures, classes for resolution of doubts in small groups, student presentations, tutorials and individual work of students; aimed at the acquisition of knowledge (3 ECTS).

¿ Laboratory practices and sections of problems in small groups, individual tutorials and individual work of students, aimed at the acquisition of practical skills related to the syllabus of the subject (3 ECTS).

ASSESSMENT SYSTEM

The evaluation system includes continuous assessment of student work (papers, reports of laboratory practice, class participation and skills assessment tests of theoretical and practical knowledge) and the final assessment through a written final exam in which the knowledge, skills and abilities acquired throughout the course will be evaluated comprehensively . The percentages allocated is: 60% continuous assessment and 40% final exam.

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

BASIC BIBLIOGRAPHY

- Bjarne Stroustrup The C++ Programming Language, fourth Edition, Addison-Wesley, 2013
- Harvey. M. Deitel and Paul. J. Deitel C++ How to Program ¿ (9th Edition: introducing the new C++11 Standard), Prentice Hall, 2011
- Joseph Schmuller Sams Teach Yourself UML in 24 Hours, Third Edition, Sams Publishing, 2004
- Stanley B. Lippman, Josée Lajoie "C++ Primer",Tercera Edición,, Addison-Wesley,, 1998