Foundations of Programming

Academic Year: (2022 / 2023) **Review date: 17-01-2023**

Department assigned to the subject:

Coordinating teacher: DELGADO KLOOS, CARLOS

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 2

OBJECTIVES

- Understand how to code in an imperative way using assignment, conditional, and repetition statements, being able to follow mentally the state transformations coded
- Understand functional abstraction of code snippets into methods, including recursive methods and their termination
- Understand the concepts in Java for modelling systems in an object-oriented way
- Know how to design a simple algorithm given a specification
- Have limited ability to correct buggy programs
- Have some intuition about the efficiency of programs
- Know how to use a development environment
- Know how to look for additional information needed to code

DESCRIPTION OF CONTENTS: PROGRAMME

Block 1: From the calculator to the computer (JavaMOOC1, Week 1):
Expressions, statements, programs, data types, identifiers, decisions.
Block 2: State transformation (JavaMOOC1, Week 2):
Repetition, arrays, data representation and programs.
Block 3: Functional abstraction (JavaMOOC1, Week 3):
Methods, scopes, recursive methods.
Block 4: Sorting (JavaMOOC3, Week 5):
Simple algorithms, efficient algorithms, intuition about algorithm efficiency.
Block 5: Errors (JavaMOOC2, Week 1):
Error correction, testing, reasoning.
Block 6: Object encapsulation (JavaMOOC1, Week 4):
Objects and classes, information hiding,

LEARNING ACTIVITIES AND METHODOLOGY

Project-based learning
Flipped classroom
Use of SPOC (Small Private Online Courses) with videos and exercises
Visits from company professionals

ASSESSMENT SYSTEM

The schedule of activities for the continuous evaluation is as follows:
Week 1: Practical exercise (4%)
Week 2: Practical exercise (4%)
Week 3: Practical exercise (4%)
Week 4: Practical exercise (4%)
Week 5: Practical exercise (4%)
Weeks 6-10: Project (60%)
Week 11: Theory test and project presentation (20%)

Continuous evaluation composed of:
deliveries related to practical exercises seen in class (20%).
transversal project (60%)
questionnaire with the theoretical concepts (20%)

BASIC BIBLIOGRAPHY

- C. Delgado Kloos et al. Introduction to Java Programming, https://www.edx.org/es/professional-certificate/uc3mx-introduction-java-programming (JavaMOOC).