Object oriented programming

Academic Year: (2019 / 2020) **Review date: 21-04-2020**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: VALLS FERRAN, JOSE MARIA

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Programming, Algorithms and Data Structures

OBJECTIVES

Knowledge and application of the basic algorithmic procedures of IT to design solutions to problems, analizing the suitability and complexity of the proposed algorithms (CECRI6)

Capacity to analize, design, build and maintain applications in a robust, secure and efficient way selecting the most adequate paradigm and programming languages (CECRI8)

DESCRIPTION OF CONTENTS: PROGRAMME

Unit 1. Object Oriented Programming Introduction. Modeling
1.1 Introduction
1.2 Comparing with other programming paradigms
1.3 OO Modeling

Unit 2. Classes and Objetcs in Java. Inheritance and polymorfism
2.1 Composition and inheritance
2.2 Abstract classes
2.3 Multiple inheritance. Interfaces
2.4 Polymorphism

Unit 3. Exceptions , utility classes and packages. Input / Output
3.1 Exceptions
3.2 Utility classes
3.3 Documentation and packages
3.4 I/O. Files in Java

Unit 4. Advanced Algorithms
4.1 Computational complexity
4.2 Recursive algorithms
4.3 Search algorithms
4.4 Advanced sorting algorithms
4.5 Complex algorithms design with OO

Unit 5. Design Patterns. Other OO languages
5.1 Introduction
5.2 Design patterns catalog
5.3 Other OO languages

LEARNING ACTIVITIES AND METHODOLOGY

- Theory. The course will be given through lectures to teach the basic concepts of Object Oriented Programming (OOP). . Active participation of students and discussion will be encouraged.

- Practical exercises and computer sessions. Lectures will be complemented with practical sessions in

computer rooms where practical exercises will be done, allowing to apply the theoretical knowledge.

ASSESSMENT SYSTEM

Continuous Evaluation (40% of the final grade)

Two practical works: 30% of the final grade
A partial exam done during the course : 10% of the final grade

Final exam: 60% of the final grade.

The final exam is compulsory and the student must obtain a minimum of 2.5 points (from 6).

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

BASIC BIBLIOGRAPHY

- Bruce Eckel Thinking in Java, Prentice Hall , 2006

ADDITIONAL BIBLIOGRAPHY

- Brassard, Giles Fundamentals of Algorithmics, Prentice hall international, 1997