

Academic Year: ( 2017 / 2018 )

Review date: 01-09-2017

Department assigned to the subject: Department of Computer Science and Engineering

Coordinating teacher: ALVAREZ RODRIGUEZ, JOSE MARIA

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 1

**STUDENTS ARE EXPECTED TO HAVE COMPLETED**

Writing and Communication Skills  
Principles of Software Development

**COMPETENCES AND SKILLS THAT WILL BE ACQUIRED AND LEARNING RESULTS.**

General competences:

- Analysis (PO a)
- Abstraction (PO a)
- Problem solving (PO c)
- Capacity to apply theoretical concepts (PO c)

Specific competences

- Cognitive (PO a)
  1. Object oriented analysis techniques
  2. Object oriented design techniques
  3. Object oriented development methods
- Procedimental/Instrumental (PO a, g, k)
  1. Practical exercises to consolidate analysis and design techniques
  2. Use of object oriented CASE tools
  3. A practical case where all theoretical concepts are put into practice
- Attitudinal (PO c, d, f)
  1. Creativity
  2. Capacity to assess possible jobs
  3. Abstraction
  4. Interest for investigating and finding solutions to new problems

**DESCRIPTION OF CONTENTS: PROGRAMME**

Object oriented systems analysis, object oriented systems design, object oriented software development methods, object oriented modeling techniques, object oriented modeling tools.

**LEARNING ACTIVITIES AND METHODOLOGY**

Theoretical lectures: 1 ECTS. To achieve the specific cognitive competences of the course (PO a).

Practical lectures: 1,4 ECTS. To develop the specific instrumental competences and most of the general competences, such as analysis, abstraction, problem solving and capacity to apply theoretical concepts. Besides, to develop the specific attitudinal competences. During the practical lectures a practical case is developed that incorporates all studied techniques and methods (PO a, c, d, f, g).

Guided academic activities (present teacher): 1 ECTS. The student proposes a project according to the teachers guidance to go deeply into some aspect of the course, followed by public presentation (PO a, c, d, g, k).

Guided academic activities (absent teacher): 2 ECTS. Exercises and complementary readings (PO a, c, f, k).

Exercises and examination: 0,6 ECTS. To complete the development of specific cognitive and procedimental capacities (PO a, c).

## ASSESSMENT SYSTEM

Exercises and examinations are both learning and evaluation activities. The evaluation system includes the assessment of guided academic activities and practical cases, with the following weights:

Exercises and examination: 40% (PO a, c)

Practical case: 40% (PO a, c, d, f, g)

Guided academic activities

- Present teacher: 10% (PO a, c, d, g, k)

- Absent teacher: 10% (PO a, c, f, k)

A minimum grade of 5,0 is required to pass the course.

**% end-of-term-examination:** 40

**% of continuous assessment (assignments, laboratory, practicals...):** 60

## BASIC BIBLIOGRAPHY

- Alexander, I. and Stevens, R. Writing Better Requirements, Addison-Wesley, 2002
- Arlow, J. and Neustadt, I. UML and the Unified Process. Practical Object-Oriented Analysis & Design, Addison-Wesley, 2002
- Braude, E. Software Engineering. An Object-Oriented Perspective., John Wiley & Sons, 2001..
- ESA Board for Software Standardisation and Control (BSSC). ESA Software Engineering Standards., European Space Agency, February 1991..
- Fowler, M. and Scott, K. UML Distilled. A Brief Guide to the Standard Object Modeling Language, Addison-Wesley, 2004
- Larman, C. Applying UML and Patterns. An Introduction to Object-Oriented Analysis and Design and the Unified Process, Prentice Hall, 1998
- Pressman, Roger S. Ingeniería del software: un enfoque práctico, 6ª ed., McGraw-Hill, 2006..
- Sommerville, I. Ingeniería del Software., Pearson-Addison Wesley, 2005..
- Sommerville, I. and Sawyer, P. Requirements Engineering: A Good Practice Guide, John Wiley & Sons, 1997
- Stevens, P. and Pooley, R. Using UML, Software Engineering with Objects and Components, Addison-Wesley, 2000

## BASIC ELECTRONIC RESOURCES

- UC3M . The Software Architect Code: Building the Digital World: <https://www.edx.org/course/software-architect-code-building-digital-uc3mx-inf-1x>
- edX Platform . List of courses on Software Engineering:  
[https://www.edx.org/course?search\\_query=SOFTWARE+ENGINEERING](https://www.edx.org/course?search_query=SOFTWARE+ENGINEERING)