

30249 - Software Engineering Laboratory

Syllabus Information

Academic year: 2023/24

Subject: 30249 - Software Engineering Laboratory

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 439 - Bachelor's Degree in Informatics Engineering

ECTS: 6.0

Year: 4

Semester: Second semester

Subject type:

Module:

1. General information

The purpose of this subject is for students to acquire advanced knowledge of the design and architecture of software, and to apply it to a "smart campus" type application. In addition to learning and practicing the technique of domain-driven design, SOLID principles, hexagonal architecture and event-driven architecture, they will have a first contact with the domain of geographic information systems.

These approaches and goals are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>), such that the acquisition of the subject learning results provides training and competence to contribute to some extent to their achievement: Goal 9: Industry, innovation and infrastructure.

2. Learning results

- Be able to propose different solutions to digitally preserve data and complete systems.
- Know the activities involved in the process of building a component-based system.
- Be able to apply domain engineering to identify, build, catalog, and disseminate a set of software components that are applicable for existing and future software in a particular application domain.
- Know the characteristics and implications of an application domain when proposing a solution with software engineering methods.
- Know an infrastructure of processes and tools needed to develop a software project, based on the good software engineering practices available in a software factory business environment.
- Put into practice the knowledge acquired in the subjects of the Software Engineering intensification in a concrete project developed in a team: requirements, analysis, design, testing (verification and validation), project management.

3. Syllabus

1. Brief introduction to geographic information systems.
2. Domain-driven design: basic patterns and object life cycle.
3. Messaging systems.
4. Domain-driven design: flexible design.
5. OO design principles, dependency inversion and hexagonal architecture.
6. Strategic design and microservices.
7. Domain-driven design: large-scale structures.

4. Academic activities

Lectures. 27 hours.

Development of the contents of the subject.

Problems. 18 hours.

Application of the contents of the theory both in small cases and in the software project of the subject.

Laboratory practices. 12 hours.

Geographic information systems and applications.

Subject work. 30 hours.

Study. 60 hours.

The hours of subject work and study will be applied, fundamentally, to the software project to be developed.

Assessment tests. 3 hours.

5. Assessment system

The subject will be assessed by the global assessment system by means of the following activities:

1. **Practical team project (80% of the grade):** delivery of results (technical report, source code and others) that reflect the work of the students in a "smart campus" type software development project. It is especially evaluated the complexity of the work done, the application of the concepts learned in the theory classes of the subject to the management of the project, and the correct application of good software engineering practices acquired in other subjects.

2. **Individual written test (20% of the grade):** this exercise, with multiple-choice questions, evaluates the fundamental knowledge to be acquired by each student in theory and problem sessions.

In order to pass the subject it will be necessary that the total sum of both exercises is at least 5 out of 10 points (not being necessary to obtain a minimum grade in any of the separate activities).