

## 30259 - Agile Methodologies and Quality

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 30259 - Agile Methodologies and Quality

**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

In this subject the students will learn to face the development of software projects applying agile methodologies and model-driven techniques for software quality assessment, being quality a basic principle to be guaranteed.

It is recommended that students have previously acquired basic training in software engineering principles and techniques and project management.

### 2. Learning results

The student, in order to pass this subject, must show the following learning results:

- Know the concepts related to the quality of software processes and their metrics.
- Know how to use the CMMI, PSP/TSP and ITIL quality models and how to develop a software project based on them.
- Get to know a map of the most current standards and methodologies in the field of software quality.
- Learn the basics of agile methodologies and a map of the most current standards and approaches in this field.

### 3. Syllabus

In this day and age, every good computer engineer must have the knowledge and skills necessary to face the management and execution of a software project. Agile methodologies are becoming a key approach to the development of software projects for their success. The most relevant technology companies worldwide such as Google, Microsoft, Facebook, Amazon, Spotify or Salesforce recognize that part of their success lies in their agile model of planning, organizing and addressing the short, medium and long term of their projects. The number of companies in the world using agile methodologies has increased exponentially in the last decade, as has proven that an agile approach to projects increases the likelihood of project success. In the same way, there is an increasing demand for professionals with experience in agile environments who are able to integrate into teams and successfully carry out each of the phases in which the agile development of a software project is divided. Agile methodologies go hand in hand with the quality of the process and the result, so it becomes essential to have specific training in the methods to analyze and achieve the quality of the developed product.

Block: Agile methodologies

- Fundamentals, values and principles of Agile project design
- Agile project management: Scrum, Extreme Programming (XP) and Kanban
- Agile software engineering
- Transitions to Agile

Block: Software quality

- Fundamentals of software quality
- Software quality metrics
- Introduction to model-driven software engineering paradigm

- Evaluation of software performance and reliability
- Software security risk analysis and threat modeling

#### **4. Academic activities**

Learning will be obtained from three inputs: the teacher's explanatory sessions, the work developed in the practical sessions and the student's work (individual or group). In addition, experts from the company will give talks on the latest advances in the subject areas of the subject. Important dates (delivery papers, lectures, etc.) will be announced well in advance.

The student's dedication to achieve the learning results in this subject is estimated in 150 hours, distributed as follows:

- 60 hours of interactive activities (theory and problem sessions and practical sessions)
- 84 hours of work and effective individual study (study of notes and texts, problem solving, preparation of lectures and practicals, program development, etc.).
- 6 hours of evaluation tests

#### **5. Assessment system**

##### Continuous assessment

Given the eminently practical nature of this subject, this is the most advisable evaluation option. In this case, the assessment will consist of:

- 1) Practical tests and completion of periodic deliverables (60%). The objective is to evaluate the knowledge and skills that students have acquired in the theoretical and practical sessions.
- 2) Group project realization and/or defense (40%). During this activity, students will be asked to manage and develop a software project in a team, where they will put into practice the knowledge they will acquire during the subject.

##### Global assessment

For those students who do not opt for continuous assessment, a global assessment test is foreseen in which questions and/or problems related to the program taught in the subject will be presented. Its typology and complexity will be similar to that presented in the lectures and practical sessions. In general, the quality and clarity of the answers will be evaluated, as well as the solution strategies proposed by the students. In this case, the assessment will consist of:

- 1) Completion of deliverables (20%). It is mandatory to submit the tasks indicated by the teachers by the date of the exam.
- 2) Completion of a global test (80%)

#### **6. Sustainable Development Goals**

- 4 - Quality Education
- 9 - Industry, Innovation and Infrastructure
- 16 - Peace, Justice and Strong Institutions