

Course Syllabi

CODE 301

NAME Analysis and Design of Applications

Credits 6 ECTS

Period Fall Semester

Course Specifications

Lectures and laboratory work.

Objectives and contents

This course focuses on the early stages of the software development process, addressing requirements analysis, structural, functional, and architectural system modeling, as well as the detailed design of user interfaces and test planning. It provides students with an integral view of the software lifecycle from its inception, serving as a bridge between the specification of needs and the effective implementation of software solutions. To undertake this course successfully, students should have already assimilated the concepts taught in "Introduction to Software Engineering" (108) and "Databases" (202). During the course, an active learning methodology will be used through case studies, group projects, and professional modeling and design tools. Principles and design patterns will be emphasized to foster the construction of high-quality applications and continuous integration.

Contents

1. **Analysis and modeling in the context of Software Engineering.** Review of the software engineering process stages. Identification, specification, and types of requirements. Use case modeling.
2. **Structural and Architectural Modeling.** Class diagrams. Physical data models. Architectural diagrams.
3. **Behavioral Modeling.** Sequence diagrams.
4. **User and System Interface Modeling.** Mockup and wireframing tools.
5. **Software Design.** Design principles. Design patterns. Refactoring and code smells.
6. **Software Testing in the Application Lifecycle.** Verification and validation concepts. Requirements and testing traceability. Test-Driven Development (TDD). Test plan development (unit testing design, integration testing, test environments, and Continuous Integration).

Assessment

- **First Ordinary Call:** Theory exam (30%, minimum score of 4 out of 10 required) and group project development carried out during the teaching period (70%, minimum score of 4 out of 10 required).
- **Second Ordinary Call:** Theory exam (50%) and the project grade obtained during the semester (50%).
- **Extraordinary Calls:** A single final exam comprising 100% of the grade (minimum score of 5 out of 10 required in both theory and practical sections)

Lecturers

Dr. José Miguel Horcas Aguilera, horcas@uma.es

Course Syllabi

Room 3.3.2.I E.T.S.I. Informática

Dr. Francisco Javier Servant Cortes, fservant@uma.es

Room 3.3.2.IV E.T.S.I. Informática