UFV
Teaching guide

IDENTIFICATION DETAILS

Degree:	Computer Engineering

Scope	Computer and Systems Engineering

Faculty/School:	Higher Polytechnic School

Course:	PROJECTS I

Type:	Compulsory	ECTS credits:	3

Year:	2	Code:	5627

Teaching period:	Fourth semester

Subject:	Software Design and Development

Module:	Common to the Computer Science Branch

Teaching type:	Classroom-based

Language:	English

Total number of student study hours:	75

Teaching staff	E-mail
Olga Peñalba Rodríguez	o.penalba@ufv.es
Roberto Rodríguez Galán	roberto.rodriguez@ufv.es
Juan José Escribano Otero	juanjose.escribano@ufv.es

SUBJECT DESCRIPTION

This course aims to develop two fundamental skills for computer engineers: the ability to work and learn independently and synthesize, integrate, and put into practice all the knowledge and skills they have already learned. To do so, the students must work on a team to carry out a software development project.

The project will be carried out following a waterfall methodology, with partial submissions corresponding to each phase of the process, gradually building up to the final deliverable. It will be developed in teams, allowing students to also enhance their collaborative work and communication skills, which are essential for their professional future.

GOAL

With this course, students will acquire the necessary competencies to solve complex problems as a team that involve prior research to find the most ideal solution, a resolution of the same and a professional presentation of the results. Therefore, it is not only a matter of solving a problem, but also of making the solution visible to a critical audience with knowledge of the subject being defended.

The specific aims of the subject are:

Recognize problems and contexts in which IT solutions can deliver value, and conduct thorough analysis and research on them.

Define projects that facilitate addressing the identified problems through appropriate solutions.

Design and build software solutions that meet the requirements.

Document and effectively present the outcomes of the project.

Develop teamwork skills through participation in engineering projects.

Reflect on the societal implications and impact of projects.

PRIOR KNOWLEDGE

To successfully take this course, students must be proficient in Basic Programming and Object-Oriented Programming—skills developed in the first-year courses Introduction to Programming and Object-Oriented Programming , which students are expected to have completed beforehand. Aditionally, the course involves knowledge in the following areas:

- Management of complex data structures
- Analysis and design of information systems
- Data Modeling and Access to Databases
- Software Development Methodologies

These topics are covered in the second-year courses of "Data Structures and Algorithms", "Analysis and Design of Information Systems", "Databases" and "Software Engineering I". It is esential that students are either currently enrolled in these subjects or have already completed them.

COURSE SYLLABUS

This course does not have its own specific content. Instead, students will work on a project that builds on the material covered in prior or concurrent courses within the degree curriculum, specifically in the area of Software Engineering and Development.

EDUCATION ACTIVITIES

The basic working methodology in this subject is project-based learning.
The face-to-face sessions will be mainly devoted to the supervision of the students' work, as well as the partial and final presentation and defense of the results.
The final presentation will be made in front of an examining board.
Autonomous work will focus on the research and development of the project, which will require both individual and group efforts to respond as a team to the challenge posed.
Individual tutoring sessions with the professor are also envisaged, for a more personalised monitoring of work and learning process.

DISTRIBUTION OF WORK TIME

TEACHER-LED TRAINING ACTIVITIES	INDIVIDUAL WORK
30 Hours	45 Hours
- AF1 - Lectures and discussions 4h - AF2 - Problem solving and case studies 12h - AF3 - Collaborative group activities 10h - AFE1 - Academic tutoring and evaluation activities 4h	

LEARNING RESULTS

Ability to design, develop, select and evaluate computer applications and systems, ensuring their reliability, safety and quality, in accordance with ethical principles and current legislation and regulations.

Ability to plan, conceive, deploy and direct projects, services and computer systems in all areas, leading their implementation and continuous improvement and evaluating their economic and social impact.

Knowledge and application of the characteristics, functionalities and structure of databases, which allow their proper use, and the design and analysis and implementation of applications based on them.

Knowledge and application of the tools necessary for the storage, processing and access to Information Systems, including web-based ones.

Knowledge and application of the principles, methodologies and life cycles of software engineering.

Ability to design and evaluate human-computer interfaces that guarantee accessibility and usability to computer systems, services and applications.

Knowledge and application of the basic algorithmic procedures of computer technologies to design solutions to problems, analyzing the suitability and complexity of the proposed algorithms.

Ability to analyze, design, build and maintain applications in a robust, secure and efficient way, choosing the most appropriate paradigm and programming languages.

SPECIFIC LEARNING RESULTS

Identify and analyze problems that can be solved through the design and development of an appropriate Information System, generating acceptable solutions in terms of cost and time.

Define a work plan to address the development of a software project.

Apply the systematic resolution of problems or cases in predictable contexts, using analysis tools.

Design and build a computer solution that complies with current requirements and regulations, using the object-oriented programming paradigm.

Use the main data structures to model the data of a software system.

Use development and debugging tools that allow students to advance their learning by identifying and correcting errors.

Knowing how to work in a team, having gained real experience in doing so.

Document and present orally the results of an IT project.

LEARNING APPRAISAL SYSTEM

The assessment of the learning outcomes will be carried out through: the quality of the team project (70%), which will be developed and delivered continuously throughout the course, the involvement in the team and the quality of the individual work of each student (20%) and the participation in the follow-up classes and supervising sessions (10%).
ORDINARY CALL

- **Team Project** (SE3, 70%): The quality of the project carried out as a team, which will be developed and delivered continuously throughout the course. Each part of the project will be evaluated, including the work plan, design decisions and reports, development and operation of the application or test documentation, among others. Continuous improvement, based on the feedback from the professors and the students' own learning, will also be considered. This item also includes the quality of the final presentation before an examining board.
- **Individual Work** (SE3, 20%): The involvement in the team and quality of each student's individual work, based on documentation and evidence of continuous integration, as well as an individual final report. Students will be able to organize the roles and tasks in the team as they see fit, but everyone must participate in the development and everyone must contribute to the analysis and design of the solution in order to pass the course. Additionally, all students are required to take turns presenting partial results in class.
- **Participation** (SE2,10%): Participation in follow-up classes and supervising sessions. To receive a score, the student must have attended at least 80% of these sessions.

To pass the subject in the ordinary call, ALL of the following conditions must be fulfilled:

- The Team Project score must be 5 or higher.
- The Individual Work score must be 5 or higher.
- The weighted average of Team Project and Individual Work must be 5 or higher.

If any of these criteria are not met, the student will need to retake the assessment in the extraordinary call.
RECOVERY IN EXTRAORDINARY CALL (IMPORTANT)
Recovery is only possible for those projects that have not achieved the required minimum grade. It is not possible for a student who has not completed the work during the course to create a project from scratch for this call. A student who abandones the project during the course will not be elegible for the extraordinary call, appearing as NOT SUBMITTED in the academic recors.
The same assessment scheme as in the ordinary call is followed, with the following exceptions:

- The participation section (SE2) is not recoverable. The same grade obtained in the ordinary call will be used.
- Those parts that have been scored 5 or higher in ordinary call could be maintained for the extraordinary call.

STUDENTS WITH ACADEMIC DISPENSATION: Due to the methodology of this course, academic dispensation is not permitted. Students must attend classes regularly to allow teachers to properly monitor their progress.
TOTAL NUMBER OF CALLS: The student has 6 calls to pass this subject, two per academic year. The UFV Evaluation Regulations include everything related to the evaluation and consumption processes of calls.
ACADEMIC INTEGRITY: Any type of fraud or plagiarism on the part of the student in an evaluable activity will be sanctioned as set out in the UFV Coexistence Regulations. For these purposes, any attempt to defraud the evaluation system, such as copying exercises, exams, practices, works or any other type of delivery, either from another colleague, or from unauthorized materials or devices, in order to make the teacher believe that they are his own, will be considered "plagiarism".

ETHICAL AND RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE

1.- The use of any Artificial Intelligence (AI) system or service shall be determined by the lecturer, and may only be used in the manner and under the conditions indicated by them. In all cases, its use must comply with the following principles:
a) The use of AI systems or services must be accompanied by critical reflection on the part of the student regarding their impact and/or limitations in the development of the assigned task or project.
b) The selection of AI systems or services must be justified, explaining their advantages over other tools or methods of obtaining information. The chosen model and the version of AI used must be described in as much detail as possible.
c) The student must appropriately cite the use of AI systems or services, specifying the parts of the work where they were used and describing the creative process followed. The use of citation formats and usage examples may be consulted on the Library website(https://www.ufv.es/gestion-de-la-informacion_biblioteca/).
d) The results obtained through AI systems or services must always be verified. As the author, the student is responsible for their work and for the legitimacy of the sources used.
2.- In all cases, the use of AI systems or services must always respect the principles of responsible and ethical use upheld by the university, as outlined in the Guide for the Responsible Use of Artificial Intelligence in Studies at UFV. Additionally, the lecturer may request other types of individual commitments from the student when deemed necessary.
3.- Without prejudice to the above, in cases of doubt regarding the ethical and responsible use of any AI system or service, the lecturer may require an oral presentation of any assignment or partial submission. This oral evaluation shall take precedence over any other form of assessment outlined in the Teaching Guide. In this oral defense, the student must demonstrate knowledge of the subject, justify their decisions, and explain the development of their work.

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

MANTEL, Samuel J. Jr., MEREDITH, Jack R., SHAFER, Scott M., SUTTON Margaret M. Project Management in Practice 4th Edition

Several authors Texts and teaching materials of all the courses that preceded or took place simultaneously in the field of software development.