30226 - Software Project

Syllabus Information

Academic Year:	2018/19
Subject:	30226 - Software Project
Faculty / School:	110 - 326 -
Degree:	443 - Bachelor's Degree in Informatics Engineering 439 - Bachelor's Degree in Informatics Engineering
ECTS:	6.0
Year:	443 - Bachelor's Degree in Informatics Engineering: 3 439 - Bachelor's Degree in Informatics Engineering: 3
Semester:	Half-yearly
Subject Type:	Compulsory
Module:	---

General information

Aims of the course

The subject and its expected results respond to the following approaches and objectives:

At the end of the course the student will have completed a complete software project, from the requirements determination phase to the delivery to the client, evaluating and making technical decisions that will condition his work, and preparing the accompanying documentation from both the product and process point of view.

Context and importance of this course in the degree

Within the framework of the subjects taken in the first two years of the degree, students acquire skills and knowledge that will enable them to develop small and medium-sized computer applications. The Software Engineering course provides students with the engineering fundamentals required for the professional development of medium to large, maintainable and scalable software systems. The subject of Proyecto Software provides the integrating and supporting element that allows the process of building a software system to be carried out in an effective and efficient manner. To this end, the systematization of activities and processes is highlighted as a key element for the development of quality systems, based on continuous improvement.

Recommendations to take this course

Given the configuration of the curriculum of the degree, in the first two years of the degree the student acquires skills and knowledge that will enable him/her to develop small and medium sized computer applications. Since the acquisition of

knowledge and skills in this subject is carried out around the development of a small software application, it is considered necessary to have passed these two courses to study the subject.

Additionally, the subject is a natural continuation of the Software Engineering subject presented in the previous quarter. It is therefore recommended that you take the course once you have passed this course.

Learning goals

Competences

Upon passing the course, the student will be more competent to....

Successfully address the following cross-cutting issues:

1. To conceive, design and develop engineering projects.
2. To plan, budget, organize, direct and control tasks, people and resources.
3. To combine general and specialized engineering knowledge to generate innovative and competitive proposals in professional activity.
4. To solve problems and make decisions with initiative, creativity and critical thinking.
5. To communicate and transmit knowledge, skills and abilities in Spanish and English.
6. To ue the techniques, skills and tools of engineering necessary for the practice of engineering.
7. To analyze and evaluate the social and environmental impact of technical solutions acting with ethics, professional responsibility and social commitment.
8. To work in a multidisciplinary group and in a multilingual environment.
9. To learn continuously and develop autonomous learning strategies.

Successfully address the following Software Engineering related performance issues:

1. To plan, conceive, deploy and manage projects, services and IT systems in all areas, leading their implementation and continuous improvement and assessing their economic and social impact.
2. To understand the importance of negotiation, effective work habits, leadership and communication skills in all software development environments.
3. To be familiar with the national, European and international IT regulations and standards.

Learning goals

In order to pass this course, the student must demonstrate the following results...

- Knows how to design, develop, select and evaluate computer applications and systems, ensuring their reliability, security and quality, in accordance with ethical principles and current legislation and regulations.
- It is capable of planning, designing, deploying and managing projects, services and IT systems in all areas, leading their implementation and continuous improvement and assessing their economic and social impact.
- Understands the importance of negotiation, effective work habits, leadership and communication skills in all software development environments.
- Knows how to prepare the technical specifications of a computer installation that complies with current standards and regulations.
- Knows how to carry out the maintenance of systems, services and computer applications.
- Knows the basic basics of computer law and regulation at national, European and international levels.
- Appreciates the need for permanent and collaborative dialogue

Importance of learning goals

The reality of the industry shows that the development of software systems is almost always carried out within a budgetary framework, according to a schedule, and meeting a series of requirements negotiated with a client. This cannot be done without the necessary capacity to organize and structure the work, optimize the use of the resources available, systematize the tasks that can be repetitive (in order to devote more time to creative ones), and pursue a continuous improvement that results in a higher level of quality.

Assessment (1st and 2nd call)

Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that he/she has achieved the expected learning outcomes through the following assessment activities

At the School of Engineering and Architecture of Zaragoza:

The evaluation will consist of a exam with two exercises:

1. Carrying out and defending practical work/projects in groups (80%): During this activity, students will be asked to carry out work in groups. The project will include the construction of a small computer application in which they will have to tackle all the tasks of software engineering, with special attention to those linked to the management and support of the different development activities. The team of teachers will assess the management work carried out on the basis of deliverables provided by the group that reflect this work, and on the advocacy of each group for their work (learning outcomes 1, 2, 3, 7).
2. Written questions about concepts learned in theory and problems (20%) (learning outcomes 1, 4, 5, 6)

In order to pass the course, the weighted sum of both exercises must be at least 5 out of 10.

At the Polytechnic University School of Teruel:
Carrying out and defending a practical group work/project. During this activity, students will be asked to develop a group work plan. The project will include the construction of a small computer application in which they will have to tackle all the tasks of software engineering, with special attention to those linked to the management and support of the different development activities. The teacher will evaluate the work carried out by each student on the basis of deliverables provided by the group and reflecting their activity, and on the defence that each group makes of their work (learning outcomes 1, 2, 3, 7).

Methodology, learning tasks, syllabus and resources

Methodological overview

The learning process that is designed for this subject is based on the following:

- The study and work continued since the first day of class.
- Learning concepts related to the different activities that integrates a software project management and the regulatory framework for this work, through lectures, in which student participation is encouraged.
- The application of such knowledge to practical cases in the classes of problems. In these classes students will play an active role in the discussion and resolution of problems. Some of these problems will be found linked to specific project activities to be developed as teamwork that needs to be addressed throughout the semester.
- Practical classes in laboratory where students will learn to use tools that support the developed theoretical knowledge in lectures. In some of the practical sessions they will use of these tools to the specific context of teamwork that has to face throughout the semester.
- Teamwork addressing the development of a project that will include the construction of a computer application of small dimensions which must address all the tasks of software engineering, with special attention to those related to the management and support of different development activities. This work will jointly apply all theoretical aspects developed in the master class and emphasize the development of all skills related to collaborative teamwork.
- Eventually, the involvement of external professionals to show students the reality of the industry, and how the concepts raised in class are applied in this reality.

Learning tasks

The program offered to the student includes the following activities ...
In the School of Engineering and Architecture of Zaragoza:In the classroom the syllabus of the course will be developed.

- In the classroom problems applying the concepts and techniques presented in the course syllabus will be resolved.
- The practice sessions will be developed in seminars and computer labs. In these sessions each student must do, individually or in teams, work directly related to the topics studied in the course and teamwork.
- Additionally, a project developed in groups under the guidance of teachers will be done. This project will address a small size software system.

At the Polytechnic University School of Teruel:

- In the classroom the syllabus of the course will be developed.
- In the classroom problems applying the concepts and techniques presented in the course syllabus will be resolved.
- The practice sessions will take place in a computer lab. In these sessions a project developed in groups under the guidance of teachers will be done. This project will address a small size software system.

Syllabus

The programme of the course consists of two blocks:

1. Software Project Design. Architecture, documentation and automatic construction.
2. Software Project Management. Overview, configuration management, metrics and estimates, planning, risks, human resources, quality and environment.

Course planning and calendar

Calendar of sessions and presentation of works
School of Engineering and Architecture of Zaragoza. Schedule sessions and presentation of works.
The educational organization of the sessions scheduled as follows:

- Lectures, Troubleshooting and cases (2 hours per week)
- Laboratory practice (1 session of 2 hours scheduled on schedule offered by the Centre)

The schedules of all classes and dates of the practice sessions will be announced in advance through the websites of the center.
The proposed projects will be delivered at the end of the term, at such times as may be indicated.

The dedication of the student to achieve the learning outcomes in this subject is estimated in 150 hours distributed as follows:

- 32 hours, approximately, of classroom activities (sessions in the theoretical and problems in the laboratory and classroom sessions)
- 103 hours of group work
- 10 effective working hours and individual study (study notes and texts, problem solving, class preparation and practices, program development, etc.)
- 5 hours devoted to various evaluation tests

Polytechnic School of Teruel. Schedule sessions and presentation of works.
The educational organization of the sessions scheduled on the campus of Teruel is as follows:
Lectures (2 hours per week)
Troubleshooting and cases (1 hour per week)
Laboratory practice (1 hour per week)
Tutorials directed works (1 hour per week, students should make an appointment with the teacher)
The schedules of all classes will be set by the center.
The work done by teams of students must be delivered (and defended) on the date that the center established in the calendar of examinations of the degree.
The dedication of the student to achieve the learning outcomes in this subject is estimated in 150 hours distributed as follows:

- 60 hours, approximately, of classroom activities (sessions in the theoretical and problems in the laboratory and classroom sessions)
- 42 hours of group work
- 43 effective working hours and individual study (study notes and texts, problem solving, class preparation and practices, program development, etc.)

- 5 hours devoted to various evaluation tests

Bibliography and recommended resources

[BB: Bibliografía básica / BC: Bibliografía complementaria]

- Zaragoza:
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- [BB] Pressman, Roger S.. Ingeniería del Software : un enfoque práctico / Roger S. Pressman . - 7ª ed. México D. F. : McGraw-Hill Interamericana, cop. 2010
- [BB] Sommerville, Ian. Software engineering / Ian Sommerville . 10th ed. Boston [etc.] : Pearson, cop. 2016
- [BC] Brooks, Frederick Phillips, Jr.. The mythical man-month : essays on software engineering / Frederick P. Brooks, Jr. . - Anniversary ed., [repr. with corr.] Reading, Massachusetts : Addison-Wesley, cop. 1995
- Teruel:
- [BB] Brooks, Frederick Phillips, Jr.. The mythical man-month : essays on software engineering / Frederick P. Brooks, Jr. . - Anniversary ed., [repr. with corr.] Reading, Massachusetts : Addison-Wesley, cop. 1995
- [BB] Chrissis, Mary Beth. CMMI for development : guidelines for process integration and product improvement / Mary Beth Chrissis, Mike Konrad, Sandy Shrum . 3rd ed. Upper Saddle River, New Jersey : Addison-Wesley, cop. 2011
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- [BB] Software engineering guides / [C. Mazza...(et al.)] ; edited by Jon Fairclough . - [1st. ed.] London [etc.] : Prentice Hall, 1996