

**COURSE DATA****DATA SUBJECT**

Code: 44834
Name: Software Production Methods
Cycle: Master's Degree
ECTS Credits: 4
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications	Escola Tècnica Superior d'Enginyeria	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications	Production of software, security and profession	COMPULSORY

COORDINATION

PANACH NAVARRETE JOSE IGNACIO

SUMMARY

The software development involves the use of different methodologies throughout the whole development circle. In this subject we will tackle the most used methods in each step of the software development process. First, we will see methods to manage projects. The project management is composed of several items: the customer that needs a software product, the workers who participate in a project, the delivery dates, the requirements to satisfy, the resources, etc. Some of these items involve limitations and restrictions for the project, for example, legal rules, budget restrictions, staff restrictions, etc. The subject is oriented to teach the knowledge to combine all these items successfully. Moreover, the subject aims to show how to prevent risks in order to avoid them.

In second term we will tackle method to test the software to assess the quality of the system. The subject includes concepts and basic tasks that compose the testing step in the development process. The goal of the tests is to define a test case suite with high probabilities to find mistakes in the code. We will see testing techniques related both with functional requirements and with non-functional requirements.

In third term we will tackle methods to analyze and design software. Web Engineering is the part of the Software Engineering that gathers and proposes development models specific for the area: incremental implementation, continuous and frequent changes, development stages very short. The subject will also



tackle with agile methods such as SCRUM and Test-Driven Development (TDD)

The work for the students in this subject aims to be as practical as possible. Theoretical concepts will be applied to solve practical problems. To solve these problems, the students will use tools for project management widely used in the industry.

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PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

Recommendations:

Knowledge of the tasks that compose a software development cycle
Knowledge of techniques to capture requirements
Basic knowledge of management
Basic knowledge of Java
Knowledge of UML
Basic knowledge to prepare budgets

COMPETENCES / LEARNING OUTCOMES

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Ability to apply acquired knowledge and solve problems in new or little-known environments within broader and multidisciplinary contexts, being able to integrate this knowledge.

Ability to apply Software Engineering methodologies in the development and management of a project.

Ability to understand and apply ethical responsibility, legislation and professional ethics in the professional practice.



Capacity for the elaboration, planning, direction, coordination, technical and economic management and the implantation of Web projects.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

Students should demonstrate self-directed learning skills for continued academic growth.

Students should possess and understand foundational knowledge that enables original thinking and research in the field.

To foster, in academic and professional contexts, technological, social or cultural advancement within a society based on In knowledge and respect for: a) fundamental rights and equal opportunities between men and women; b) principles of equal opportunities and universal accessibility of persons with disabilities; and, c) the values of a culture of peace and democratic values.

DESCRIPTION OF CONTENTS

1. Project planning and risk management

- Range of a project
- Structure and task diagram
- Evaluation of task length
- Establish dependency among tasks
- Assign resources to tasks
- ISO 9000
- Identification of risks
- Evaluation of risks
- Management skills
- Types of contracts

2. Time management and tasks

- Identification of the critical path and the critical string
- PERT technique
- Optimization of time/cost
- Limitations of the Exchange time/cost



3. Projects evaluation

Function points
Cosmic
Expert judgement

4. Cost management

Measurement of the progress and curve S
Measurement of the Project activities

5. Tools of testing, collaborative and continuous integration

Unitary testing: JUnit
Unitary tasks in isolation: JMock
Data base testing: DBUnit
Test Driven Development
Continuous integration
GIT
Jenkins

6. SCRUM

- Planning with SCRUM
- Project report
- Teamwork
- Rules

7. Quality

- Sonarqube
- Selenium

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theoretical and practical classes	28,90
Laboratory	11,10
Total hours	40,00

**NON PRESENCIAL ACTIVITIES**

Activity	Hours
Attendance at other activities	0,00
Individual or group project	6,00
Independent study and work	35,00
Preparation of lessons	16,00
Preparation for assessment activities	3,00
Resolution of case studies	0,00
Total hours	60,00

TEACHING METHODOLOGY

- Theory class
- Problem resolution
- Project-oriented learning

EVALUATION

The learning results are evaluated through the following criteria:

SE1: Continuous evaluation of the student based on the participation and the degree of implication in the process of teaching-learning, taking into account the class assistance and the resolution of the proposed problems. This mark can only be obtained in the first call, being constant for the second one.

SE2: Evaluation of the problems proposed in class hours. The students can submit these problems in both calls. The submission in the first call will be done continuously through all the lessons. The teacher will establish the submission periods. The submission in the second call will be including all the problems all together. The teacher will also establish the period for this submission.

SE6: Evaluation of the project to develop incrementally throughout the lessons. The project can be submitted in both calls in a unique period established by the teacher

SE4: Public exhibition of the project. The exhibition can be done in both calls only if the project has been submitted in the period established by the teacher.



The final mark is calculated as follows:

$$\text{Final mark} = \text{SE1} * 0,1 + \text{SE2} * 0,3 + \text{SE6} * 0,4 + \text{SE4} * 0,2$$

If SE2, SE6 or SE4 get the mark of "Non-Presented", the final mark of the subject will be "Non-Presented".

If SE2 and SE6 is different to "Non-Presented" and the mark of SE2 or SE6 is less than 5, the final mark will be calculated as:

$$\text{Final mark} = \text{Minimum}(4, \text{SE2}, \text{SE6})$$

The system of qualifications is explained in the next URL :

<http://www.uv.es/uvweb/universidad/es/estudios-postgrado/informacion-administrativa-postgrado/permanencia-calificaciones/calificaciones-1285897761928.html>

Rules can be found in the nest URL:

<http://www.uv.es/uvweb/universidad/es/estudios-grado/informacion-academica-administrativa/normativas/normativas-universidad-valencia-1285850677111.html>

REFERENCES

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- Gestión Integral de Proyectos. Luis Guerra, Adriano Coronel, Luis Martínez de Irujo, et al. Editorial FC, 2002
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Course Guide
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