COURSE DATA

DATA SUBJECT

Code: 44834
Name: Software Production Methods
Cycle: Master's Degree
ECTS Credits: 4
Academic year: 2026-27

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. Int this subjects 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 basics tasks that compose the testing step in the circle 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.

/>

>

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

Recommendatins:

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

2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications

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 tehcnique
Optimization of time/cost
Limitations of the Exchange time/cost

3. Projects evaluation

Function points
Cosmic
Expert judgemenet

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

/ul>

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:

Final mark=SE1*0,1+SE2*0,3+SE6*0,4+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:

Final mark= Minimum(4,SE2, 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

- Cuadernos de Ingeniería de Proyectos III: Dirección, Gestión y Organización de Proyectos. Salvador Capuz, Eliseo Gómez, Álvaro Torrealba et al. Servicio de la publicaciones de la Universidad Politécnica de Valencia, 2000.

- El Arte de Dirigir Proyectos. Ángel Díaz, 3ª Edición. Editorial RA-MA, 2010
- Gestión Integral de Proyectos. Luis Guerra, Adriano Coronel, Luis Martínez de Irujo, et al. Editorial FC, 2002
- COSMIC Function Points: Theory and Advanced Practices, Reiner Dumke, Alain Abran, 2011.
- Dirección y Gestión de Proyectos. Alberto Domingo. RA-MA. 2000
- Desarrollo y Gestión de proyectos Informáticos. Steve McConnell, Editorial McGraw-Hill, 1997.
- Microsoft Project 2000. Paso a Paso, Carl S. Chatfield, Timothy D. Johnson, Editorial McGraw-Hill, 2000
- Microsoft Project para Dummies, Nancy Stevenson, Editorial WILEY, 2004
- Professional Java tools for extreme programming: Ant, Xdoclet, JUnit, Cactus, and Maven. Richard Hightower et al. Indianapolis, IN : Wiley, 2004
- Sams teach yourself extreme programming in 24 hours. Stewart Baird, Indianapolis, IN : Sams, 2003
- Java Unit Testing with JUnit 5 : Test Driven Development with JUnit 5. Shekhar Gulati, Rahul Sharma, CA Berkeley, Apress, 2017.
- Agile Project Management with Scrum. Ken Schwaber, Microsoft Press, 2009
- The Agile edge : managing projects effectively using Agile Scrum. Brian Vanderjack, Business Expert Press, 2015.
- Test-driven development by example. Kent Beck, Addison-Wesley, 2003
- Extreme programming explained: embrace change. Kent Beck with Cynthia Andres, Boston, MA : Addison-Wesley, 2005
- Pruebas de Software y JUnit. Daniel Bolaños, Almudena Sierra, Miren Alarcón, Editorial Pearson Prentice-Hall, 2007