

SUBJECT TEACHING GUIDE

G670 - Software Engineering Processes

Degree in Computer Systems Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Computer Systems Engineering			Type and Year	Optional. Year 4
Faculty	Faculty of Sciences				
Discipline	Subject Area: Software Engineering Mention in Software Engineering				
Course unit title and code	G670 - Software Engineering Processes				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web	http://moodle.unican.es				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. INGENIERÍA INFORMÁTICA Y ELECTRÓNICA				
Name of lecturer	PATRICIA LOPEZ MARTINEZ				
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Office	Facultad de Ciencias. Planta: + 3. DESPACHO PROFESOR (3051)				
Other lecturers	JUAN MARIA RIVAS CONCEPCION				

3.1 LEARNING OUTCOMES
- Knowing and applying any of the main software development paradigms: model-based, component-based, aspect-based, etc.
- Applying techniques, methods and tools for software systems testing, verification and validation.
- Developing web applications with a persistence layer using a database.
- Using advanced automated tools for managing software building.

4. OBJECTIVES

To review and go deep into concepts related to software testing, focusing in integration, system and acceptance testing.

To design and implement a complete test plan on a real software project of medium complexity.

To address the basic principles of component-based development and apply them in the implementation of enterprise applications.

To learn how to automate the software systems building process.

6. COURSE ORGANIZATION

CONTENTS

1	<p>TESTING METHODS:</p> <ul style="list-style-type: none"> - Review of Software Verification and Validation. - Unit Testing and usage of Mock objects. - Integration Testing. - System Testing. - Acceptance Testing. - Design of testing plans.
2	<p>AUTOMATIC BUILDING OF SOFTWARE SYSTEMS:</p> <ul style="list-style-type: none"> - Advanced concepts and tools for automatic building of software systems. - Continuous Integration.
3	<p>COMPONENTS TECHNOLOGIES AND ENTERPRISE APPLICATIONS:</p> <ul style="list-style-type: none"> - Characteristics of enterprise applications. Application servers. - Component-based software development. - Components and containers.
4	<p>JAVA SUPPORT FOR COMPONENT-BASED ENTERPRISE APPLICATIONS</p> <ul style="list-style-type: none"> - Introduction to Java EE. - Business layer in Java EE. - Persistence layer in Java EE. - Presentation layer in Java EE. - Management of security and other non functional aspects in Java EE applications.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
The final exam consists on a set of short questions and exercises. The students can bring notes, books or any other type of written material but they cannot bring any kind of electronic device.	Written exam	Yes	Yes	30,00
This activity consists in the development of a real software project in collaboration with other students. The project is unified with another two subjects: Calidad y Auditoría and Métodos de desarrollo, so the three of them should be taken together.	Work	No	Yes	35,00
The students will have a number of lab assignments, which they can address individually or in couples. All the assignments must be delivered to pass the subject, although the final qualification will be obtained as the weighted average of a subset of them	Work	No	Yes	35,00

TOTAL 100,00

Observations

To pass the subject it is compulsory to score a minimum mark of 4.0 in the final exam and 4.5 in the lab assignments and in the coordinated project.

The qualification of those students that pass only one of the parts in the ordinary examination session will be calculated as the minimum of 4.9 and the obtained average qualification. In the extraordinary session those students can address only the reassessment of the previously failed part.

In the case of the practice part, reassessment in the extraordinary session will consist in a detailed presentation of the lab assignments qualified with a mark less than 5 in the ordinary session.

One of the more important practical experiences of the subject is performed in the framework of a development project coordinated with other subjects of the specialization. For this reason it is highly recommended to take the subjects Métodos de Desarrollo (G668), Procesos de la ingeniería Software (G670) and Calidad y Auditoría (G671) in the same semester.

All the evaluation activities are easily adaptable to an online scenario. In that case, the students will receive indications about how the evaluation would be addressed (platforms, tools, etc.)

Observations for part-time students

Part-time students are to follow the same rules than regular students, since, except for written examinations, attendance to class is not mandatory. The written examinations are not supposed to be a problem for part-time students since they are scheduled at quite well in advanced designated dates. Nevertheless, participation at least in the practical sessions is highly recommended.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Glenford J. Myers, Corey Sandler and Tom Badgett, "The Art of Software Testing", 3ª Edición, Wiley, 2011.

Antonio Goncalves, "Beggining Java EE 7", APress, 2013.

