ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000385 - Software verification and validation

DEGREE PROGRAMME

10AK - Master Universitario en Software y Sistemas

ACADEMIC YEAR & SEMESTER

2017/18 - Semester 1

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1. Description

1.1. Subjet details

Name of the subject	103000385 - Software verification and validation
No of credits	4 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AK - Master Universitario en Software y Sistemas
Centre	Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2017-18

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Sira Vegas Hernandez (Subject coordinator)	5105	sira.vegas@upm.es	M - 13:00 - 16:00 Th - 14:00 - 17:00

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Prior knowledge recommended to take the subject

3.1. Recommended (passed) subjects

El plan de estudios Master Universitario en Software y Sistemas no tiene definidas asignaturas previas recomendadas para esta asignatura.

3.2. Other recommended learning outcomes

- Programación

- Lenguajes de programación C y JAVA

4. Skills and learning outcomes *

4.1. Skills to be learned

CEM1 - Identificar, a partir del estado de la cuestión, la presencia de problemas de investigación relacionados con la concepción, la construcción, el uso y la evaluación de sistemas sociotécnicos complejos que hagan un uso intensivo de software

CEM4 - Analizar y evaluar los diferentes paradigmas y enfoques de ingeniería de construcción y gestión de sistemas basados en software.

CEM5 - Aportar soluciones a aquellos problemas abiertos relacionados con el ámbito de aplicación y los métodos, técnicas y herramientas de Verificación y Validación de Software

4.2. Learning outcomes

RA42 - Seleccionar la técnica de verificación/validación de software más adecuada para un proyecto determinado

RA41 - Aplicar efectivamente las técnicas de verificación y validación de software

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

5. Brief description of the subject and syllabus

5.1. Brief description of the subject

No hay descripción de la asignatura.

5.2. Syllabus

1. Introduction
   1.1. Introduction to V&V
   1.2. V&V and the software development process
   1.3. V&V and the software development products
2. Dynamic evaluation: Software testing
   2.1. Introduction to software testing
   2.2. Testing levels
   2.3. The testing process
   2.4. Software verification and validation plan
   2.5. Testing tools

6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1	**Introducción** Duration: 02:00 Lecture			
2	**Introducción** Duration: 02:00 Lecture			
3	**Introducción** Duration: 02:00 Lecture			
4	**Evaluación dinámica** Duration: 02:00 Lecture			
5	**Evaluación dinámica** Duration: 02:00 Lecture			
6	**Evaluación dinámica** Duration: 02:00 Lecture			
7	**Evaluación dinámica** Duration: 02:00 Problem-solving class			**White box exercise** Individual work Continuous assessment Duration: 02:00
8	**Evaluación dinámica** Duration: 02:00 Lecture			
9	**Evaluación dinámica** Duration: 02:00 Lecture			
10	**Evaluación dinámica** Duration: 02:00 Lecture			**Black box exercise** Individual work Continuous assessment Duration: 02:00
11	**Evaluación dinámica** Duration: 02:00 Problem-solving class			
12	**Seguimiento de la práctica** Duration: 02:00 Cooperative activities			
13	**Seguimiento de la práctica** Duration: 02:00 Cooperative activities			

14	**Seguimiento de la práctica** Duration: 02:00 Cooperative activities			**Assignment: testing a software system** Individual work Continuous assessment Duration: 02:00
15	**Recopilación de la asignatura** Duration: 02:00 Lecture			**Student's attitude regarding lectures and course in general** Other assessment Continuous assessment Duration: 02:00
16				**Final exam** Written test Final examination Duration: 02:00
17				

The independent study hours are training activities during which students should spend time on individual study or individual assignments.

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The subject schedule is based on a previous theorical planning of the subject plan and might go to through experience some unexpected changes along throughout the academic year.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
7	White box exercise	Individual work	No Presential	02:00	15%	5 / 10	CEM1 CEM5 CEM4
10	Black box exercise	Individual work	No Presential	02:00	15%	5 / 10	CEM5 CEM1 CEM4
14	Assignment: testing a software system	Individual work	No Presential	02:00	60%	5 / 10	CEM1 CEM5 CEM4
15	Student's attitude regarding lectures and course in general	Other assessment	Face-to-face	02:00	10%	0 / 10	

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
16	Final exam	Written test	Face-to-face	02:00	100%	5 / 10	CEM1 CEM5 CEM4

7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

7.2. Assessment criteria

The score of the course is calculated regarding the performance of the student in the different tasks that (s)he has been assigned:

- Exercise applying white box techniques to a program (15% of the score).
- Exercise applying black box techniques to a program (15% of the score).
- Assignment performing testing on a software system (60% of the score).

It will also be taken into consideration for the score of the course the participation and attitude of the student during the lectures and regarding the course in general (10%).

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
B. Beizer. "Software Testing Techniques" 2ª Edición. 1990	Bibliography	
G. J. Myers. "The Art of Software Testing" 2ª Edición. Wiley. 2004.	Bibliography	
P.C. Jorgensen. Software Testing. A Craftsman?s Approach. CRC Press, 1995.	Bibliography	
C. Kaner, J. Falk, H.Q. Nguyen. Testing Computer Software. Wiley, 1999.	Bibliography	
W.E. Perry. Effective methods for software testing. Tercera edición. Wiley. 2006	Bibliography	

S.L. Pfleeger. Ingeniería de software: teoría y práctica. Segunda edición. Prentice Hall. 2002	Bibliography	
IEEE V&V standards	Bibliography	
Sitio Moodle de la asignatura	Web resource	