



POLITÉCNICA

INTERNATIONAL
CAMPUS OF
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COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001



E.T.S. de Ingenieros
Informáticos

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000934 - Software Verification And Validation

DEGREE PROGRAMME

10BB - Eit Digital Master Programme On Fintech

ACADEMIC YEAR & SEMESTER

2020/21 - Semester 1

Index

Learning guide

1. Description.....	1
2. Faculty.....	1
3. Prior knowledge recommended to take the subject.....	2
4. Skills and learning outcomes	2
5. Brief description of the subject and syllabus.....	3
6. Schedule.....	5
7. Activities and assessment criteria.....	8
8. Teaching resources.....	10

1. Description

1.1. Subject details

Name of the subject	103000934 - Software Verification And Validation
No of credits	6 ECTS
Type	Compulsory
Academic year of the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10BB - Eit Digital Master Programme On Fintech
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2020-21

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 - 12:00 - 15:00 Th - 14:00 - 17:00
Natalia Juristo Juzgado	5104	natalia.juristo@upm.es	Sin horario.

* 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

The subject - recommended (passed), are not defined.

3.2. Other recommended learning outcomes

- Programación
- JAVA and C programming languages

4. Skills and learning outcomes *

4.1. Skills to be learned

CB06 - Que los estudiantes adquieran conocimientos avanzados y demostrado, en un contexto de investigación científica y tecnológica o altamente especializado, una comprensión detallada y fundamentada de los aspectos teóricos y prácticos y de la metodología de trabajo en uno o más campos de estudio que le aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas

CB08 - Que los estudiantes sepan evaluar y seleccionar la teoría científica adecuada y la metodología precisa de sus campos de estudio, y sean capaces de integrar conocimientos, para identificar las consecuencias y formular juicios a partir de información incompleta o limitada incluyendo, cuando sea preciso y pertinente, una reflexión sobre la responsabilidad social, ética e intergeneracional ligada a la solución que se proponga en cada caso aplicando sus conocimientos y juicios

CB09 - Que los estudiantes sepan transmitir de un modo claro y sin ambigüedades a un público especializado o no, resultados y conclusiones procedentes de la investigación científica y tecnológica o del ámbito de la innovación más avanzada, así como los fundamentos más relevantes y razones últimas que las sustentan

4.2. Learning outcomes

RA4 - Understand the relevance of continuing education

RA9 - - In depth understanding of product/services design processes, methods and tools

RA2 - Apply the acquired knowledge in real context

RA5 - - In depth understanding the basics of technology watch and transfer

RA3 - Acquire specialized knowledge from innovative fields of studiesowledge in real context

RA13 - - Use knowledge, ideas and technology to create new or significantly improved products, services, processes, policies, new business models or jobs in a real environment.

* 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. Static evaluation

2.1. Introduction to static evaluation

2.2. Static evaluation techniques

2.3. Reading techniques

3. Dynamic evaluation: Software testing

3.1. Introduction to software testing

3.2. Testing levels

3.3. The testing process

3.4. Software verification and validation plan

3.5. Testing tools

6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Distant / On-line	Assessment activities
1	Course introduction Duration: 01:00 Introduction to software testing Duration: 02:00		Course introduction Duration: 01:00 Introduction to software testing Duration: 02:00	
2	Static evaluation Duration: 01:00 Dynamic evaluation Duration: 02:00		Static evaluation Duration: 01:00 Dynamic evaluation Duration: 02:00	
3	Static evaluation Duration: 01:00 Dynamic evaluation Duration: 02:00		Static evaluation Duration: 01:00 Dynamic evaluation Duration: 02:00	
4	Static evaluation Duration: 01:00 Dynamic evaluation Duration: 02:00		Static evaluation Duration: 01:00 Dynamic evaluation Duration: 02:00	
5	Static evaluation Duration: 01:00		Static evaluation Duration: 01:00	White box exercise Continuous assessment Presential Duration: 02:00
6	Dynamic evaluation Duration: 02:00		Dynamic evaluation Duration: 02:00	Static techniques exercise Continuous assessment Presential Duration: 01:00
7	Dynamic evaluation Duration: 02:00		Dynamic evaluation Duration: 02:00	Static techniques exercise Continuous assessment Presential Duration: 01:00

8	<p>Static evaluation Duration: 01:00</p>		<p>Static evaluation Duration: 01:00</p>	<p>Black box exercise Continuous assessment Presential Duration: 02:00</p>
9	<p>Static evaluation Duration: 01:00</p> <p>Dynamic evaluation Duration: 02:00</p>		<p>Static evaluation Duration: 01:00</p> <p>Dynamic evaluation Duration: 02:00</p>	
10	<p>Static evaluation Duration: 01:00</p> <p>Dynamic evaluation Duration: 02:00</p>		<p>Static evaluation Duration: 01:00</p> <p>Dynamic evaluation Duration: 02:00</p>	
11				<p>Static techniques presentation Continuous assessment Presential Duration: 01:00</p> <p>Assignment: testing a software system Continuous assessment Presential Duration: 02:00</p>
12	<p>Assignment follow-up Duration: 02:00</p>		<p>Assignment follow-up Duration: 02:00</p>	<p>Static techniques presentation Continuous assessment Presential Duration: 01:00</p>
13	<p>Assignment follow-up Duration: 02:00</p>		<p>Assignment follow-up Duration: 02:00</p>	<p>Static techniques presentation Continuous assessment Presential Duration: 01:00</p>
14				<p>Static techniques presentation Continuous assessment Presential Duration: 01:00</p> <p>Assignment: testing a software system Continuous assessment Presential Duration: 02:00</p>
15	<p>Static evaluation Duration: 01:00</p>		<p>Static evaluation Duration: 01:00</p>	<p>Student's attitude regarding lectures and course in general Continuous assessment Presential Duration: 02:00</p>

16				Final exam Final examination Presential Duration: 02:00
17				

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 schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
5	White box exercise		Face-to-face	02:00	10%	/ 10	CB06
6	Static techniques exercise		Face-to-face	01:00	5%	/ 10	CB06
7	Static techniques exercise		Face-to-face	01:00	5%	/ 10	CB06
8	Black box exercise		Face-to-face	02:00	10%	/ 10	CB06
11	Static techniques presentation		Face-to-face	01:00	5%	/ 10	CB09 CB08
11	Assignment: testing a software system		Face-to-face	02:00	20%	/ 10	CB09 CB08
12	Static techniques presentation		Face-to-face	01:00	5%	/ 10	CB09 CB08
13	Static techniques presentation		Face-to-face	01:00	5%	/ 10	CB09 CB08
14	Static techniques presentation		Face-to-face	01:00	5%	/ 10	CB09 CB08
14	Assignment: testing a software system		Face-to-face	02:00	20%	/ 10	CB09 CB08
15	Student's attitude regarding lectures and course in general		Face-to-face	02:00	10%	/ 10	CB08 CB09 CB06

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
16	Final exam		Face-to-face	02:00	100%	5 / 10	CB09 CB06 CB08

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Students who have followed the continuous evaluation mode will have to re-submit all evaluation tasks that do not reach the minimum score required.		Face-to-face	02:00	90%	5 / 10	CB09 CB06 CB08
Students who have followed the final exam evaluation mode will have to repeat the final exam.		Face-to-face	02:00	100%	5 / 10	CB09 CB06 CB08

7.2. Assessment criteria

Continuous evaluation mode:

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%).

Students who fail to submit any of the evaluation tasks (exercises or assignment) will automatically fail the course.

Final exam evaluation mode:

The score of the course is calculated based on the score of the final exam.

Extraordinary evaluation:

Students who have followed the continuous evaluation mode will have to re-submit all evaluation tasks that do not reach the minimum score required. Students who have followed the final exam evaluation mode will have to repeat the final exam.

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	