



POLITÉCNICA

INTERNATIONAL  
CAMPUS OF  
EXCELLENCE

COORDINATION PROCESS OF  
LEARNING ACTIVITIES  
PR/CL/001



E.T.S. de Ingenieros  
Informaticos

# ANX-PR/CL/001-01

## LEARNING GUIDE

**SUBJECT**

**103000738 - Computer Security**

**DEGREE PROGRAMME**

10AM - Master Universitario En Ingenieria Del Software

**ACADEMIC YEAR & SEMESTER**

2021/22 - Semester 1

## Index

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### Learning guide

1. Description.....	1
2. Faculty.....	1
3. Prior knowledge recommended to take the subject.....	2
4. Skills and learning outcomes .....	3
5. Brief description of the subject and syllabus.....	4
6. Schedule.....	5
7. Activities and assessment criteria.....	7
8. Teaching resources.....	9
9. Other information.....	9

## 1. Description

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### 1.1. Subject details

<b>Name of the subject</b>	103000738 - Computer Security
<b>No of credits</b>	4 ECTS
<b>Type</b>	Optional
<b>Academic year of the programme</b>	First year
<b>Semester of tuition</b>	Semester 1
<b>Tuition period</b>	September-January
<b>Tuition languages</b>	English
<b>Degree programme</b>	10AM - Master Universitario en Ingeniería del Software
<b>Centre</b>	10 - Escuela Técnica Superior De Ingenieros Informaticos
<b>Academic year</b>	2021-22

## 2. Faculty

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### 2.1. Faculty members with subject teaching role

<b>Name and surname</b>	<b>Office/Room</b>	<b>Email</b>	<b>Tutoring hours *</b>
Julio Mariño Carballo	D-2308	julio.marino@upm.es	Tu - 15:00 - 17:00 W - 12:30 - 13:30 Th - 15:00 - 17:00 F - 12:30 - 13:30 Please get in touch with the instructor to get an appointment in order to check his availability.

Manuel Carro Liñares (Subject coordinator)	2303	manuel.carro@upm.es	F - 15:00 - 19:00 Please send an e-mail to set up an appointment before going to the instructor's office.
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\* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

### 2.3. External faculty

Name and surname	Email	Institution
Juan Caballero	Juan.caballero@imdea.org	IMDEA Software Institute
Pedro Moreno	pedro.moreno@imdea.org	IMDEA Software Institute
Marco Guarnieri	marco.guarnieri@imdea.org	IMDEA Software Institute
Dario Fiore	Dario.Fiore@imdea.org	IMDEA Software Institute
Alessandra Gorla	alessandra.gorla@imdea.org	IMDEA Software Institute

## 3. Prior knowledge recommended to take the subject

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### 3.1. Recommended (passed) subjects

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

### 3.2. Other recommended learning outcomes

- An undergraduate level course on computer security is desired but not required. Some demonstrable knowledge on the basic principles of computer security is necessary.

## 4. Skills and learning outcomes \*

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### 4.1. Skills to be learned

CE13 - Tener una visión de los distintos aspectos específicos y emergentes de la ingeniería del software, y profundizar en algunos de ellos

CE14 - Comprender lo que pueden y no pueden conseguir las prácticas actuales de ingeniería del software, y sus limitaciones y su posible futura evolución.

CG1 - Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio (RD)

CG13 - Apreciación de los límites del conocimiento actual y de la aplicación práctica de la tecnología más reciente

CG14 - Conocimiento y comprensión de la informática necesaria para la creación de modelos de información, y de los sistemas y procesos complejos

CG3 - Que los estudiantes sepan comunicar sus conclusiones y los conocimientos y razones últimas que las sustentan a públicos especializados y no especializados de un modo claro y sin ambigüedades (RD)

CG7 E - Especificación y realización de tareas informáticas complejas, poco definidas o no familiares

CG8 - Planteamiento y resolución de problemas también en áreas nuevas y emergentes de su disciplina

CG9 - Aplicación de los métodos de resolución de problemas más recientes o innovadores y que puedan implicar el uso de otras disciplinas

## 4.2. Learning outcomes

RA80 - Identify computer security threats and decide the best proactive and reactive measures against them

\* 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

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### 5.1. Brief description of the subject

This course gives students a general view of Computer Security. Lectures are divided in independent blocks which provide basic concepts in Computer Security, such as cryptography, software security, information access control, communication network security, or privacy. Each block includes a theory part to give students the basic concepts and a practical exercise to demonstrate and fix the presented concepts. The particular order and length of the topics in the blocks will depend on the schedule of the instructors.

### 5.2. Syllabus

1. Cryptography
2. Software Security
3. Information Access Control
4. Network security
5. Privacy

## 6. Schedule

### 6.1. Subject schedule\*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Distant / On-line	Assessment activities
1	<b>Introduction to Computer Security</b> Duration: 02:00 Lecture		<b>Introduction to Computer Security</b> Duration: 02:00 Lecture	
2	<b>Cryptography</b> Duration: 02:00 Lecture		<b>Cryptography</b> Duration: 02:00 Lecture	
3	<b>Cryptography</b> Duration: 02:00 Lecture		<b>Cryptography</b> Duration: 02:00 Lecture	
4	<b>Cryptography</b> Duration: 02:00 Lecture		<b>Cryptography</b> Duration: 02:00 Lecture	
5	<b>Cryptography</b> Duration: 02:00 Lecture		<b>Cryptography</b> Duration: 02:00 Lecture	<b>Practical problem / exercise</b> Individual work Continuous assessment Not Presential Duration: 02:00
6	<b>Network security</b> Duration: 02:00 Lecture		<b>Network security</b> Duration: 02:00 Lecture	
7	<b>Network security</b> Duration: 02:00 Lecture		<b>Network security</b> Duration: 02:00 Lecture	
8	<b>Network security</b> Duration: 02:00 Lecture		<b>Network security</b> Duration: 02:00 Lecture	<b>Practical problem / exercise</b> Individual work Continuous assessment Not Presential Duration: 02:00
9	<b>Software security</b> Duration: 02:00 Lecture		<b>Software security</b> Duration: 02:00 Lecture	
10	<b>Software security</b> Duration: 02:00 Lecture		<b>Software security</b> Duration: 02:00 Lecture	
11	<b>Software security</b> Duration: 02:00 Lecture		<b>Software security</b> Duration: 02:00 Lecture	<b>Practical problem / exercise</b> Individual work Continuous assessment Not Presential Duration: 02:00
12	<b>Physical security</b> Duration: 02:00 Lecture		<b>Physical security</b> Duration: 02:00 Lecture	

13	<b>Physical security</b> Duration: 02:00 Lecture		<b>Physical security</b> Duration: 02:00 Lecture	
14	<b>Physical security</b> Duration: 02:00 Lecture		<b>Physical security</b> Duration: 02:00 Lecture	<b>Practical problem / exercise</b> Individual work Continuous assessment Not Presential Duration: 02:00
15	<b>Seminar / TBD</b> Duration: 02:00 Lecture		<b>Seminar / TBD</b> Duration: 02:00 Lecture	
16				
17				<b>Final exam</b> Written test Continuous assessment Presential Duration: 02:00  <b>Comprehensive exam</b> Written test Final examination Presential Duration: 02:00

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	Practical problem / exercise	Individual work	No Presential	02:00	15%	0 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13
8	Practical problem / exercise	Individual work	No Presential	02:00	15%	0 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13
11	Practical problem / exercise	Individual work	No Presential	02:00	15%	0 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13
14	Practical problem / exercise	Individual work	No Presential	02:00	15%	0 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13

17	Final exam	Written test	Face-to-face	02:00	40%	0 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13
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### 7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Comprehensive exam	Written test	Face-to-face	02:00	100%	5 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13

### 7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Exam for the students who did not pass the course using continuous assesment.	Written test	Face-to-face	02:00	100%	5 / 10	CG9 CG7 E CG13 CG14 CE14 CG3 CG1 CG8 CE13

## 7.2. Assessment criteria

## 8. Teaching resources

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### 8.1. Teaching resources for the subject

Name	Type	Notes
Various	Others	Will be decided based on the selected topics.

## 9. Other information

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### 9.1. Other information about the subject

The health situation caused by the COVID-19 may require restricting the occupation of the classroom and have a mixed model (face-to-face + online) for teaching. There may be turns for students inside each group, so that every week one of the turns may have to attend lectures in person while the rest of the turns will tune in remotely. Turns will rotate in attending the classroom.

If the health conditions are good enough, all students will attend lectures physically,.

If the health conditions worsen, lectures will shift to a remote-teaching mode. Face-to-face evaluation tests will be performed online.