**COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001**

E.T.S. de Ingenieros
Informaticos

INTERNATIONAL
CAMPUS OF
EXCELLENCE

POLITÉCNICA

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000592 - Advanced topics on computer security

DEGREE PROGRAMME

10AK - Master Universitario en Software y Sistemas

ACADEMIC YEAR & SEMESTER

2017/18 - Semester 2

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

ANX-PR/CL/001-01
LEARNING GUIDE

E.T.S. de Ingenieros
Informaticos

Index

Learning guide

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

ANX-PR/CL/001-01
LEARNING GUIDE

E.T.S. de Ingenieros
Informaticos

1. Description

1.1. Subjet details

Name of the subject	103000592 - Advanced topics on computer security
No of credits	4 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 2
Tuition period	February-June
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 *
Manuel Carro Li?ares (Subject coordinator)	2304	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.

* 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
Boris Koepf	Boris.koepf@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

3.1. Recommended (passed) subjects

- Computer security

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 neessary.

- Students who wish to take this course must write first to the coordinator to ensure that there are free slots available.

4. Skills and learning outcomes *

4.1. Skills to be learned

CEM2 - Analizar y sintetizar soluciones a problemas que requieran aproximaciones novedosas para la definición de la infraestructura computacional que permita el procesamiento y el análisis de datos de diversa naturaleza

CEM7 - Evaluar y aplicar las diversas teorías matemáticas y estadísticas, y los procesos, métodos y técnicas disponibles para la extracción y descubrimiento de conocimiento a partir de grandes volúmenes de datos

CEM8 - Aplicar los fundamentos teóricos y matemáticos adecuados al procesamiento y análisis de funciones y datos de diversa naturaleza, y evaluar y diseñar los métodos relacionados para su aplicación en dominios prácticos

CG1 - Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

ANX-PR/CL/001-01
LEARNING GUIDE

E.T.S. de Ingenieros
Informaticos

en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio.

CG12 - Comprensión amplia de las técnicas y métodos aplicables en una especialización concreta, así como de sus límites

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

CG17 - Habilidades de gestión y capacidad de liderar un equipo que puede estar integrado por disciplinas y niveles distintos.

CG19 - Aproximación sistemática a la gestión de riesgos.

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.

CG4 - Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

CG7 - 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

CGI20 - Adquirir conocimientos científicos avanzados del campo de la informática que le permitan generar nuevas ideas dentro de una línea de investigación.

CGI23 - Capacidad de leer y comprender publicaciones dentro de su ámbito de estudio/investigación, así como su catalogación y valor científico

4.2. Learning outcomes

RA12 - Be familiar with examples of real applications and research trends and lines

RA13 - Select and apply optimization methods to specific problems

* 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

This course will focus on reading and presentation of research papers in the area of computer security. The research paper will encompass both foundational papers, i.e., those that laid the basis for current security techniques and defenses, as well as research papers on contemporary computer security research topics. The papers will encompass the sub-areas of applied cryptography, systems security, and software security.

Students taking this course will:

1. Be exposed to research literature.

2. Gain experience in critical reading, including identifying the contributions and limitations of proposed approaches.

3. Develop skills for delivering effective technical presentations.

4. Gain a background on key past research results that have laid the foundations of the area, as well as current topics of research interest.

5.2. Syllabus

1. Selection of research papers according to the topics agreed upon with the students.

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	**Introduction and selection of topics and papers** Duration: 04:00 Cooperative activities			
2	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
3	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
4	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
5	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
6	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
7	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
8	**Discussion on papers being presented and the topics raised in it.** Duration: 03:30 Cooperative activities			**Presentation of a research paper** Individual presentation Continuous assessment Duration: 01:00
9				
10				
11				
12				
13				
14				
15				
16				

17				Final report on a topic to be selected by the student
				Individual work
				Final examination
				Duration: 02:00

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.

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

ANX-PR/CL/001-01
LEARNING GUIDE

E.T.S. de Ingenieros
Informaticos

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
2	Presentation of a research paper	Individual presentation	Face-to-face	01:00	14.28%	0 / 10	CG4 CG8 CG9 CEM2 CG19 CG1 CG3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM8 CGI23 CEM7
3	Presentation of a research paper	Individual presentation	Face-to-face	01:00	14.28%	0 / 10	CG4 CG8 CG9 CEM2 CG19 CG1 CG3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM8 CGI23 CEM7
		Individual					CG4 CG8 CG9 CEM2 CG19 CG1 CG3 CG7

4	Presentation of a research paper	presentation	Face-to-face	01:00	14.28%	0 / 10	CG12 CG13 CG14 CG17 CGI20 CEM8 CGI23 CEM7
5	Presentation of a research paper	Individual presentation	Face-to-face	01:00	14.28%	0 / 10	CG4 CG8 CG9 CEM2 CG19 CG1 CG3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM8 CGI23 CEM7
6	Presentation of a research paper	Individual presentation	Face-to-face	01:00	14.28%	0 / 10	CG4 CG8 CG9 CEM2 CG19 CG1 CG3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM8 CGI23 CEM7
7	Presentation of a research paper	Individual presentation	Face-to-face	01:00	14.28%	0 / 10	CG4 CG8 CG9 CEM2 CG19 CG1 CG3 CG7 CG12 CG13 CG14 CG17 CGI20 CEM8

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

ANX-PR/CL/001-01
LEARNING GUIDE

E.T.S. de Ingenieros
Informaticos

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
							CGI23
							CEM7
8	Presentation of a research paper	Individual presentation	Face-to-face	01:00	14.28%	0 / 10	CG4
							CG8
							CG9
							CEM2
							CG19
							CG1
							CG3
							CG7
							CG12
							CG13
							CG14
							CG17
							CGI20
							CEM8
							CGI23
							CEM7

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final report on a topic to be selected by the student	Individual work	No Presential	02:00	100%	0 / 10	CG4
							CG8
							CG9
							CEM2
							CG19
							CG1
							CG3
							CG7
							CG12
							CG13
							CG14
							CG17
							CGI20
							CEM8
							CGI23
							CEM7

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

ANX-PR/CL/001-01
LEARNING GUIDE

E.T.S. de Ingenieros
Informaticos

7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

7.2. Assessment criteria

Evaluation will be based on the student's ability to perform critical reading, the paper presentations, and the student's overall involvement in the course.

8. Teaching resources

8.1. Teaching resources for the subject

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

9. Other information

9.1. Other information about the subject

All students wishing to take this course are required to get in touch with the coordinator of the course prior to enrollment in order to verify whether the requirements for the course are met and to ensure that there are available slots for this course. **Please consult** http://software.imdea.org/graduateschool .