



POLITÉCNICA

INTERNATIONAL
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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

103000903 - Graph Analysis And Social Networks

DEGREE PROGRAMME

10BA - Master Universitario en Ciencia de Datos

ACADEMIC YEAR & SEMESTER

2019/20 - Semester 2

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1. Description

1.1. Subject details

Name of the subject	103000903 - Graph Analysis And Social Networks
No of credits	3 ECTS
Type	Optional
Academic year of the programme	First year
Semester of tuition	Semester 2
Tuition period	February-June
Tuition languages	English
Degree programme	10BA - Master Universitario en Ciencia de Datos
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2019-20

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Javier Bajo Perez (Subject coordinator)		javier.bajo@upm.es	--
Emilio Serrano Fernandez		emilio.serrano@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. Skills and learning outcomes *

3.1. Skills to be learned

CECD04 - Capacidad para aplicar técnicas para la generación de visualizaciones adecuadas a cada problema para el análisis y la exploración de datos, y para la correcta comunicación de los resultados del análisis.

CG07 - Aplicación de los últimos o más novedosos métodos para resolver problemas que, posiblemente, involucren a otras disciplinas

CG11 - Conocimiento y comprensión de la informática para crear modelos, así como sistemas y procesos de información complejos

3.2. Learning outcomes

RA21 - Conocer cómo se aplican las técnicas de computación científica en algún campo específico de ciencia o ingeniería

RA10 - Ser capaz de establecer un debate fundamentado sobre el conocimiento científico y las bases de la investigación

RA17 - Conocer los fundamentos de las técnicas de visualización analítica

RA34 - Apply AI techniques in real world data scenarios

* 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.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

Social computing is a general term for an area of computer science that is concerned with the intersection of social behavior and computational systems. During recent years the Internet introduced a social element where users could network, share interests, publish personal insights and use their computers for more than just doing a job faster, and this has led to the development of social machines where both humans and machines collaborate to solve social problems. This course presents the principals of social computing and focuses on graph and network analysis.

4.2. Syllabus

1. Introduction. Principals of Social Computing.
2. Graph Analysis
3. Study of network-based systems
4. Connectivity analysis in networks
5. Influence in social networks
6. Communities Detection in Social Networks
7. Simulation, contagious and oppinions in social networks

5. Schedule

5.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1	Introduction to social computing. Graph Analysis. Duration: 03:00			
2	Graph Analysis Duration: 03:00			
3	Study of network-based systems Duration: 03:00			
4	Connectivity analysis in networks Duration: 03:00			
5	Influence in social networks Duration: 03:00			
6	Communities detection in Social Networks Duration: 03:00			
7	Simulation, contagious and opinions in social networks Duration: 03:00			Evaluation Continuous assessment Duration: 03:00
8	Exercises Duration: 03:00			Exam Continuous assessment Duration: 02:00
9				
10				
11				
12				
13				
14				
15				
16				
17				Final Exam Final examination Duration: 02:00 Final project Final examination Duration: 03:00

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 theoretical planning of the subject plan and might go through experience some unexpected changes along throughout the academic year.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
7	Evaluation		Face-to-face	03:00	60%	5 / 10	CECD04 CG07
8	Exam		Face-to-face	02:00	40%	5 / 10	CECD04 CG11

6.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final Exam		No Presential	02:00	40%	5 / 10	CECD04 CG11
17	Final project		No Presential	03:00	60%	5 / 10	CECD04 CG07

6.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

6.2. Assessment criteria

The evaluation will consist of a practical project and a written exam. The practical project is evaluated as 60% of the final grade, while the written exam corresponds to 40% of the final grade.

This criteria is applied both in the Continuous evaluation and in the Final evaluation.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Slides	Web resource	