



POLITÉCNICA

INTERNATIONAL
CAMPUS OF
EXCELLENCE

COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001



E.T.S. de Ingenieros
Informáticos

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000881 - Adaptive Systems

DEGREE PROGRAMME

10AZ - Master Universitario en Innovación Digital

ACADEMIC YEAR & SEMESTER

2019/20 - 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.....	7
8. Teaching resources.....	9
9. Other information.....	10

1. Description

1.1. Subject details

Name of the subject	103000881 - Adaptive Systems
No of credits	4.5 ECTS
Type	Optional
Academic year of the programme	Second year
Semester of tuition	Semester 3
Tuition period	September-January
Tuition languages	English
Degree programme	10AZ - Master Universitario en Innovación Digital
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 *
Angelica De Antonio Jimenez	3354	angelica.deantonio@upm.es	Th - 12:00 - 14:30 F - 10:30 - 14:00
Jaime Ramirez Rodriguez (Subject coordinator)	5112	jaime.ramirez@upm.es	Tu - 11:00 - 14:00 F - 11:00 - 14:00

* 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

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

3.2. Other recommended learning outcomes

- Computer programming

4. Skills and learning outcomes *

4.1. Skills to be learned

CB06 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación

CB07 - 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

CE-DIPO01 - Capacidad para conceptualizar, diseñar y desarrollar la interacción persona-ordenador de productos y servicios innovadores

CG02 - Que los estudiantes desarrollen la autonomía suficiente para participar en proyectos de investigación y colaboraciones científicas o tecnológicas dentro su ámbito temático explorando y generando nuevas ideas sistemáticamente, en contextos interdisciplinares y, en su caso, con una alta componente de transferencia del conocimiento.

CG03 - La capacidad de usar la lengua inglesa de manera competente, es decir, con capacitación para tareas complejas de trabajo y estudio.

CG06 - Capacidad para gestionar la información.

4.2. Learning outcomes

RA51 - Knowledge of Methods for student modelling and individualized and adapted interaction with learning systems

RA12 - Model the user and to design adaptive user interfaces based on the user

* 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

Design approaches focusing on the delivery of single interaction elements to be used by everybody offer limited possibilities of addressing the diverse requirements reflected in all users. Therefore, a critical property of interactive elements becomes their capability for some form of automatic adaptation and personalization. The main focus of this course is achieving an understanding of the necessary models, techniques and architectures that allow a computer application to adapt itself dynamically, in order to fit the specific needs and requirements of different types of users at every time.

Adaptive Web explore alternatives to the traditional "one-size-fits-all" approach in the development of Web. Adaptive Web systems build a model of the interests, preferences and knowledge of each individual user, and use this model in order to adapt the behavior of Web systems to the needs of that user.

Recommender systems have become essential tools in many application areas as they help alleviate information overload by tailoring their recommendations to users' personal preferences. They assist users in decision making by providing personalized services and help information providers and companies to more effectively serve customers.

By designing and testing improved forms of support for interactive collaboration between human decision makers and artificial advice givers, we can enable decision making processes that better leverage the strengths of both collaborators. To make the interaction between computers and people smarter, we can leverage solutions from natural language processing.

Learning is a traditional domain for applying personalization and adaptation technologies. A major aim is to improve effectiveness and efficiency of learning experiences.

5.2. Syllabus

1. User Modeling for Adaptive Systems and Adaptive Web
2. Recommender Systems
3. Dialog Systems
4. Technology-enhanced adaptive learning

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	Presentation of the subject Duration: 02:00			
2	User modeling for Adaptive Systems and Adaptive Web Duration: 02:00			
3	Recommender Systems Duration: 02:00			
4	Recommender Systems Duration: 02:00			
5	Recommender Systems Duration: 02:00			
6	Recommender Systems Duration: 02:00			Research work Continuous assessment and final examination Duration: 07:00
7	Dialog Systems Duration: 02:00			Research work Continuous assessment and final examination Duration: 07:00
8	Presentation of the research work Duration: 02:00			Research work Continuous assessment and final examination Duration: 10:00
9	Project supervision Duration: 02:00			Project work Continuous assessment and final examination Duration: 20:00
10	Project supervision Duration: 02:00			Project work Continuous assessment and final examination Duration: 20:00

11	Project supervision Duration: 02:00			Project work Continuous assessment and final examination Duration: 10:00
12	Technology-enhanced adaptive learning Duration: 02:00			
13	Technology-enhanced adaptive learning Duration: 02:00			Sample topic analysis Continuous assessment and final examination Duration: 06:00
14	Technology-enhanced adaptive learning Duration: 02:00			
15	Technology-enhanced adaptive learning Duration: 02:00			Research topic analysis Continuous assessment and final examination Duration: 08:00
16				
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 theoretical planning of the subject plan and might go 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
6	Research work		No Presential	07:00	5%	5 / 10	CB06 CG03 CG06 CE-DIPO01
7	Research work		No Presential	07:00	10%	5 / 10	CB06 CG03 CG06 CE-DIPO01
8	Research work		No Presential	10:00	10%	5 / 10	CB06 CG03 CG06 CE-DIPO01
9	Project work		No Presential	20:00	20%	5 / 10	CB06 CG02 CG03 CG06 CB07 CE-DIPO01
10	Project work		No Presential	20:00	20%	5 / 10	CG02 CG03 CG06 CB07 CE-DIPO01 CB06
11	Project work		No Presential	10:00	10%	5 / 10	CB06 CG02 CG03 CG06 CB07 CE-DIPO01
13	Sample topic analysis		No Presential	06:00	10%	5 / 10	CB06 CG03 CG06 CE-DIPO01

15	Research topic analysis		No Presential	08:00	15%	5 / 10	CB06 CG03 CG06 CE-DIPO01
----	-------------------------	--	---------------	-------	-----	--------	-----------------------------------

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
6	Research work		No Presential	07:00	5%	5 / 10	CB06 CG03 CG06 CE-DIPO01
7	Research work		No Presential	07:00	10%	5 / 10	CB06 CG03 CG06 CE-DIPO01
8	Research work		No Presential	10:00	10%	5 / 10	CB06 CG03 CG06 CE-DIPO01
9	Project work		No Presential	20:00	20%	5 / 10	CB06 CG02 CG03 CG06 CB07 CE-DIPO01
10	Project work		No Presential	20:00	20%	5 / 10	CG02 CG03 CG06 CB07 CE-DIPO01 CB06
11	Project work		No Presential	10:00	10%	5 / 10	CB06 CG02 CG03 CG06 CB07 CE-DIPO01
13	Sample topic analysis		No Presential	06:00	10%	5 / 10	CB06 CG03 CG06 CE-DIPO01
15	Research topic analysis		No Presential	08:00	15%	5 / 10	CB06 CG03 CG06 CE-DIPO01

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Research work		Face-to-face	20:00	75%	5 / 10	CB06 CG02 CG03 CG06 CB07 CE-DIPO01
Exam Technology-enhanced learning		Face-to-face	02:00	25%	5 / 10	CB06 CG03 CG06 CE-DIPO01

7.2. Assessment criteria

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Article	Bibliography	Brusilovsky, Peter, and Eva Millán. 2007. "User Models for Adaptive Hypermedia and Adaptive Educational Systems". The Adaptive Web, 3-53. doi:10.1007/978-3-540-72079-9_1.
book	Bibliography	Ricci, Francesco, Lior Rokach, and Bracha Shapira. 2015. Recommender Systems Handbook. Springer-Verlag. Vol. 54. doi:10.1007/978-0-387-85820-3.
book 2	Bibliography	Brusilovsky, Peter, Alfred Kobsa, and Wolfgang Nejdl. 2007. The Adaptive Web: Methods and Strategies of Web Personalization. The Adaptive Web. Vol. 4321. doi:10.1007/978-3-540-72079-9.

Article 2	Bibliography	O'Donnell, E., Lawless, S., Sharp, M., Wade, V. (2015) A Review of Personalised E-Learning: Towards Supporting Learner Diversity. International Journal of Distance Education Technologies, 13(1), 22-47, January-March 2015
-----------	--------------	--

9. Other information

9.1. Other information about the subject

All the evaluation activities will allow student to develop also the following skills:

CE-DIPO02: Ability to evaluate the human computer interaction and design of innovative products and services.

CE-DIPO03: Ability to make connections between the wishes and needs of the consumer or client and what technology can offer.