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E.T.S. de Ingenieros
Informaticos

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000708 - Adaptive systems

DEGREE PROGRAMME

10AQ - Eit Digital Master's Programme In Human Computer Interaction And Design

ACADEMIC YEAR & SEMESTER

2018/19 - Semester 1

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1. Description

1.1. Subject details

Name of the subject	103000708 - Adaptive systems
No of credits	4.5 ECTS
Type	Compulsory
Academic year of the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AQ - Eit digital master's programme in human computer interaction and design
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2018-19

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Jaime Ramirez Rodriguez (Subject coordinator)	5112	jaime.ramirez@upm.es	Tu - 11:00 - 14:00 Th - 11:00 - 14:00
Angelica De Antonio Jimenez	3354	angelica.deantonio@upm.es	M - 12:00 - 14:00 W - 11:00 - 12:00 F - 10:30 - 13:30

* 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

El plan de estudios Eit Digital Master's Programme In Human Computer Interaction And Design no tiene definidas asignaturas previas recomendadas para esta asignatura.

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

CB08 - Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios

CB10 - 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.

CE01 - Capacidad para la integración de tecnologías, aplicaciones, servicios y sistemas propios de la Ingeniería Informática, con carácter generalista, y en contextos más amplios y multidisciplinares.

CE04 - Capacidad para modelar, diseñar, definir la arquitectura, implantar, gestionar, operar, administrar y mantener aplicaciones, redes, sistemas, servicios y contenidos informáticos.

CE14 - Capacidad para conceptualizar, diseñar, desarrollar y evaluar la interacción personaordenador de productos, sistemas, aplicaciones y servicios informáticos

CE16 - Habilidad para hacer conexiones entre los deseos y necesidades del consumidor o cliente y lo que la tecnología puede ofrecer

4.2. Learning outcomes

RA30 - RA30 - Knowledge of Methods for student modelling and individualized and adapted interaction with learning systems

RA11 - 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's 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, which may 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
2. Adaptive Web
3. Recommender Systems
4. Dialog Systems
5. Context aware adaptive systems
6. 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 Lecture			
2	User modeling for Adaptive Systems and Adaptive Web Duration: 02:00 Lecture			
3	Recommender Systems Duration: 02:00 Lecture		Visit to a Geriatric centre Duration: 02:00 Additional activities	Project/Research work Group presentation Continuous assessment Duration: 07:00 Project/Research work Individual work Final examination Duration: 05:00
4	Dialog Systems Duration: 02:00 Lecture			Project/Research work Group presentation Continuous assessment Duration: 07:00 Project/Research work Individual work Final examination Duration: 05:00
5	Context aware adaptive systems Duration: 02:00 Lecture			Project/Research work Group presentation Continuous assessment Duration: 07:00 Project/Research work Individual work Final examination Duration: 05:00
6	Project supervision Duration: 02:00 Additional activities		Visit to CEAPAT Duration: 02:00 Additional activities	Project/Research work Group presentation Continuous assessment Duration: 07:00 Project/Research work Individual work Final examination Duration: 02:00

7	<p>Project supervision Duration: 02:00 Additional activities</p>			<p>Project/Research work Group presentation Continuous assessment Duration: 07:00</p> <p>Project/Research work Individual work Final examination Duration: 02:00</p>
8	<p>Project supervision Duration: 02:00 Additional activities</p>			<p>Project/Research work Group presentation Continuous assessment Duration: 10:00</p> <p>Project/Research work Individual work Final examination Duration: 02:00</p>
9	<p>Project supervision Duration: 02:00 Additional activities</p>			<p>Project/Research work Group presentation Continuous assessment Duration: 10:00</p> <p>Project/Research work Individual work Final examination Duration: 02:00</p> <p>Visit to Madrid HCI Lab Other assessment Continuous assessment and final examination Duration: 02:00</p>
10	<p>Project supervision Duration: 02:00 Additional activities</p>			<p>Project/Research work Group presentation Continuous assessment Duration: 10:00</p> <p>Project/Research work Individual work Final examination Duration: 02:00</p>
11	<p>Project supervision Duration: 02:00 Additional activities</p>			<p>Project/Research work Group presentation Continuous assessment Duration: 10:00</p> <p>Project/Research work Individual work Final examination Duration: 02:00</p>
12	<p>Technology-enhanced adaptive learning Duration: 02:00 Lecture</p>			

13	Technology-enhanced adaptive learning Duration: 02:00 Lecture			Reading test 1 - Technology-enhanced Adaptive Learning Online test Continuous assessment and final examination Duration: 04:00
14	Technology-enhanced adaptive learning Duration: 02:00 Lecture			
15	Technology-enhanced adaptive learning Duration: 02:00 Lecture			Reading test 2 - Technology-enhanced adaptive learning Online test Continuous assessment and final examination Duration: 04:00
16				Exam - Technology-enhanced learning Written test Continuous assessment and 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 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
3	Project/Research work	Group presentation	No Presential	07:00	7.5%	5 / 10	
4	Project/Research work	Group presentation	No Presential	07:00	7.5%	5 / 10	
5	Project/Research work	Group presentation	No Presential	07:00	7.5%	5 / 10	
6	Project/Research work	Group presentation	No Presential	07:00	7.5%	5 / 10	
7	Project/Research work	Group presentation	No Presential	07:00	7.5%	5 / 10	
8	Project/Research work	Group presentation	No Presential	10:00	7.5%	5 / 10	
9	Project/Research work	Group presentation	No Presential	10:00	7.5%	5 / 10	
9	Visit to Madrid HCI Lab	Other assessment	Face-to-face	02:00	10%	5 / 10	CE01 CB06
10	Project/Research work	Group presentation	No Presential	10:00	7.5%	5 / 10	
11	Project/Research work	Group presentation	No Presential	10:00	5%	5 / 10	CE14 CE01 CE16 CE04 CB07 CB08 CB10 CB06
13	Reading test 1 - Technology-enhanced Adaptive Learning	Online test	No Presential	04:00	5%	/ 10	CB08 CB10
15	Reading test 2 - Technology-enhanced adaptive learning	Online test	No Presential	04:00	5%	/ 10	CB08 CB10

16	Exam - Technology-enhanced learning	Written test	Face-to-face	02:00	15%	5 / 10	CB08 CB10
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7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
3	Project/Research work	Individual work	No Presential	05:00	7.5%	5 / 10	
4	Project/Research work	Individual work	No Presential	05:00	7.5%	5 / 10	
5	Project/Research work	Individual work	No Presential	05:00	7.5%	5 / 10	
6	Project/Research work	Individual work	No Presential	02:00	7.5%	5 / 10	
7	Project/Research work	Individual work	No Presential	02:00	7.5%	5 / 10	
8	Project/Research work	Individual work	No Presential	02:00	7.5%	5 / 10	
9	Project/Research work	Individual work	No Presential	02:00	7.5%	5 / 10	
9	Visit to Madrid HCI Lab	Other assessment	Face-to-face	02:00	10%	5 / 10	CE01 CB06
10	Project/Research work	Individual work	No Presential	02:00	7.5%	5 / 10	
11	Project/Research work	Individual work	No Presential	02:00	5%	5 / 10	CE14 CE01 CE16 CE04 CB07 CB08 CB10 CB06
13	Reading test 1 - Technology-enhanced Adaptive Learning	Online test	No Presential	04:00	5%	/ 10	CB08 CB10
15	Reading test 2 - Technology-enhanced adaptive learning	Online test	No Presential	04:00	5%	/ 10	CB08 CB10
16	Exam - Technology-enhanced learning	Written test	Face-to-face	02:00	15%	5 / 10	CB08 CB10

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
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Project/Research work	Individual work	Face-to-face	20:00	75%	5 / 10	CE14 CE01 CE16 CE04 CB07 CB08 CB10 CB06
Exam Technology-enhanced learning	Written test	Face-to-face	02:00	25%	5 / 10	CB08 CB10

7.2. Assessment criteria

Attendance to the visits is mandatory.

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
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