ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

53001156 - Cognitive robotics

DEGREE PROGRAMME

05AY - Master Universitario en Automatica y Robotica

ACADEMIC YEAR & SEMESTER

2017/18 - Semester 1

PR/CL/001
COORDINATION PROCESS OF
LEARNING ACTIVITIES

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E.T.S. de Ingenieros
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1. Description

1.1. Subjet details

Name of the subject	53001156 - Cognitive robotics
No of credits	2 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	05AY - Master Universitario en Automatica y Robotica
Centre	Escuela Tecnica Superior de Ingenieros Industriales
Academic year	2017-18

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Ricardo Sanz Bravo (Subject coordinator)	AUtomatica	ricardo.sanz@upm.es	M - 15:30 - 17:30 Contactar por email

* 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 Master Universitario en Automatica y Robotica no tiene definidas asignaturas previas recomendadas para esta asignatura.

3.2. Other recommended learning outcomes

- English

4. Skills and learning outcomes *

4.1. Skills to be learned

CG1 - Tener conocimientos adecuados de los aspectos científicos y tecnológicos de la automática y la robótica

4.2. Learning outcomes

RA45 - 1. El alumno conocerá la historia de la ciencia cognitiva en robótica 2. El alumno conocerá las arquitecturas cognitivas mas relevantes en robótica. 3. El alumno será capaz de valorar arquitecturas cognitivas. 4. El alumno podrá elegir la arquitectura cognitiva mas adecuada para una implementación robótica. 5. El alumno será capaz de determinar los aspectos relevantes de la interacción cognitiva humano-máquina. 6. El alumno conocerá los aspectos sistémicos mas relevantes en una arquitectura cognitiva general.

* 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

The Wikipedia defines Cognitive Robotics as "the branch of robotics that is concerned with endowing the robot with intelligent behavior by providing the robot with a processing architecture that will allow it to learn and reason about how to behave in response to complex goals in complex environments."

This means -basically- that Cognitive Robotics sits at the confluence of Robotics and Cognitive Science, i.e. the study of the mind.

In this very short course we will address some fundamental issues of the theory of mind as well as their mappings into the implementations required for controlling a robot body.

This is a brief course of a daunting topic; don't expect deep and complete coverage of all the issues around but just an overall picture of the more important topics.

5.2. Syllabus

1. A View on Cognition and Intelligence

2. Cognitive Architecture: Perception and Action

3. Reason, Control and Cognition

4. Emotion

5. Consciousness

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	**A View on Cognition and Intelligence** Duration: 02:00 Lecture			**Comment on Norman's 12 issues Task** Individual work Continuous assessment Duration: 02:00
2	**Cognitive Architecture: Perception and Action** Duration: 02:00 Lecture		**Debate Killer robots** Duration: 03:00 Cooperative activities	
3	**Reason, Control and Cognition** Duration: 02:00 Lecture			**Can you do cognitive engineering? Task** Individual work Continuous assessment Duration: 02:00
4	**Emotion** Duration: 02:00 Lecture			
5	**Consciousness** Duration: 02:00 Lecture			**Real-time cognition Task** Individual work Continuous assessment Duration: 03:00
6				**Assigment CR** Individual work Final examination Duration: 10:00
7				
8				
9				
10				
11				
12				
13				
14				
15				
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 theorical planning of the subject plan and might go to 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
1	Comment on Norman's 12 issues Task	Individual work	Face-to-face	02:00	33%	5 / 10	CG1
3	Can you do cognitive engineering? Task	Individual work	Face-to-face	02:00	33%	5 / 10	CG1
5	Real-time cognition Task	Individual work	Face-to-face	03:00	34%	5 / 10	CG1

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
6	Assigment CR	Individual work	No Presential	10:00	100%	5 / 10	CG1

7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

7.2. Assessment criteria

The evauation will be focused in the quantification of the student's knowledge about technologies and uses of cognitive mechanisms in robots.

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8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Readings	Bibliography	Recommended readings from different authors on the topics of the course.