

Program	09TT- Engineering in Telecommunication Technologies and Services
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Course number and name	
Number	95000089
Name	Introduction to Intelligent Robotics Introducción a la Robótica Inteligente
Semester	Y3-S6

Credits and contact hours	
ECTS Credits	4.5
Contact hours	45

Coordinator's name	Álvaro Gutiérrez Martín
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Specific course information		
Description of course content		
This is an introductory course to robotics, with special emphasis on intelligent robotics and specifically in the autonomous robots field. The most important concepts are those of behavior and embodiment, and the information obtained from both when sensorization and control are not independent.		
List of topics to be covered		
1. Distributed process architectures, 2. Behavior-based robotics, 3. Knowledge-based robotics, 4. Evolutionary robotics, 5. Implementation on a robotics simulator.		
Prerequisites or co-requisites		
None		
Course category in the program		
<input type="checkbox"/> R (required)	<input checked="" type="checkbox"/> E (elective)	<input type="checkbox"/> SE (selective elective)

Specific goals for the course
Specific outcomes of instruction
RA219 – Understand and learn basic process-distributed robotic architectures applied to autonomous and located robots.
RA220 – Understand and learn robotic architectures based on artificial neural networks.
RA221 – Understand and learn the tuning of artificial neural network parameters by means of genetic algorithms.
RA222 – Understand and learn how to program behaviour-based robotics.
RA223 – Design and plan intelligent robotics architectures for the resolution of

autonomous robots problems.
 RA224 – Learn how to present experimental results from a scientific point of view

Student outcomes addressed by the course

CG9
 CEB2
 CE-SE6, CE-SE8

Bibliography and supplemental materials

- R. Pfeifer and C. Scheier. Understanding Intelligence. 2001. The MIT Press, Cambridge, MA.
- Ronald C. Arkin. Behavior-Based Robotics. 1998. The MIT Press, Cambridge, MA.
- Maja J. Matarić. The Robotics Primer. 2007. The MIT Press, Cambridge, MA.
- V. Braitenberg. Vehicles: Experiments in Synthetic Psychology. 1984. The MIT Press, Cambridge, MA.
- D. E. Goldberg. Genetic Algorithms. 1989. Addison Wesley Longman, Crawfodsville, IN.
- S. Nolfi and D. Floreano. Evolutionary Robotics. 2000. The MIT Press, Cambridge, MA.
- www.robolabo.etsit.upm.es: specific teacher’s material for the course.

Teaching methodology

X lectures	X problem solving sessions	X collaborative actions	X laboratory sessions
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Other: