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## → Master Degree Course in **Robotics and Automation Engineering**

– Department of **Computer Science, Modeling, Electronics and Systems Engineering (DIMES)**



### Context

The Master Degree in **Robotics and Automation Engineering** is delivered in English. It provides multidisciplinary expertise at the intersection of Automation, Autonomous Systems, Robotics, Mechatronics and Mechanical Engineering by training students on Control and Systems Theory, Optimization, Machine Learning, Mechanics, Computer Vision, Real-time Software and Artificial Intelligence. Lab and experimental activities complete the theoretical skills. Due to its interdisciplinary nature and methodological approach, this master degree fits for students with technical/scientific background in the areas of information engineering, industrial engineering, computer science, mathematics, or physics.

### Learning objectives and outcomes

Robotics and Automation MS graduates are able to:

- Design and monitor industrial plants: process control, component flows, machine safety and personal safety;
- Design industrial robot systems: robotic tooling, actuators, mechanics and sensors;
- Develop computer-aided production tools and data communication within industrial robotics networks;

- Understand key concepts of machine learning, including supervised learning, reinforcement learning, and deep reinforcement learning;
- Understand key concepts of the perception-planning-control pipeline for autonomous driving.

### Main topics

Robotics and Automation graduates acquire advanced skills on industrial automation and process control; robotic systems; modelling and simulation of dynamical systems; data analysis; information systems; systems including artificial intelligence; design of hardware/software integrated systems; man-machine interfaces; human-robot interfaces.

### Employability and careers

The job opportunities of a **Robotics and Automation Engineer** fall within industries, public companies, financial institutions and research facilities, whose R&D divisions carry out activities in the fields of information systems, industrial automation and robotics. Furthermore, they can access PhD programs in the areas of Information Engineering. The training flexibility is a relevant asset of the **Robotics and Automation Engineer**, in view of the large variety of possible applications, of the continuous and rapid evolution of the technologies, as well of the job market.

### Keywords

**Cognitive robotics, Industrial automation, Autonomous driving, Automotive, Networked systems, Resilience in cyber-physical systems**

### Duration: 2 years

**Total amount of hours (number of ECTS credits): 3000 hours (120 ECTS credits)**

**Admission requirements:** Bachelor Degree in Automation Engineering, Computer Engineering, Electrical/Electronic Engineering, Industrial Engineering, Mechanical Engineering.

**Language skills in English:** B2 and / or higher levels.

**Scholarships:** A number of scholarships covering all tuition fees will be assigned according to a degree and courses scores of the applicants.

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