



## 2<sup>ND</sup> AND 3<sup>RD</sup> YEAR SPECIALISATION ROBOTICS

The robotics specialisation trains multidisciplinary engineers (modelling, design, programming) capable of understanding robotic systems (manipulator, parallel, walking, flying, submarine, etc.) and how they work. The course is focused on innovation and high technology.

This is innovative training for the high-tech sectors of industrial robotics and / or production, transport (autonomous vehicles), and health (medical robots).

Students are trained in the design and development of complex mechanical systems. These future engineers who are oriented towards R&D and may or may not become integration engineers, can lead teams of specialists in robotics, mechatronics or real-time simulation.

Courses are strongly linked to the undertaking of projects, supported by the research teams at Centrale Nantes.



### COURSE CONTENT

- > Non-linear control and observation
- > Manipulator robot modelling
- > Advanced programming
- > Vision for robotics
- > Middleware
- > Robot design
- > Modelling and control of unmanned systems (aerial/ submarine)
- > Intelligent vehicles and transport
- > Project 1
- > Robot control
- > Integration
- > Planification
- > Non conventional robots
- > Project 2
- > Internship



## INDUSTRY SECTORS

- > Transport (automotive, aerospace, aeronautics, shipping)
- > Food processing, agriculture
- > Healthcare
- > Arts and culture

In addition to the sectors traditionally open to robotics engineers, this specialisation offers opportunities in the growing sectors of autonomous driving, aeronautics and medical robotics

## CAREER PROSPECTS

- > R&D engineer
- > Production engineer
- > Operations engineer

## TEACHING STAFF

### HEAD OF SPECIALISATION:

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### CENTRALE NANTES LECTURERS:

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## EXAMPLES OF PREVIOUS PROJECTS

- > Dynamic simulation and control of submarines equipped with steerable thrusters
- > Multi-robot locating system
- > "Barman" Robot: Use the Baxter robot to serve drinks, as a demo
- > Pioneer P3-AT Robot: Follow a predefined path
- > ROS: piloting laws for parrot drones

## EXAMPLES OF PREVIOUS INTERNSHIPS

- > Development, optimization and security of robotic applications at the Nantes plant (Airbus SAS Operations)
- > Vision-guided navigation in dynamic environments (LAAS-Toulouse)
- > Definition and development of a library for innovative industrial robots (Sitia)
- > Strategies for moving a mobile robot in a constrained space (Stanley Robotics)
- > Correlation studies between flight trajectories and sensor errors of an inertial sensor unit (French Ministry of Defence)

