

Robotics



SCHOOL

Polytech Graduate School of Engineering



CAMPUS

Belle-Beille



LEVEL

3rd year Bachelor's degree



OPEN TO EXCHANGE STUDENTS

Yes



SEMESTER

Spring (S2)

- > **Degree course:** Graduate School of Engineering - Automation and Computer Engineering
- > **Teaching unit:** UE 6.3 Automatique and Automatisation
- > **Course language:** English
- > **Duration (hours):** 28
- > **ECTS:** 2
- > **Teacher(s):** Jean-Louis Boimond

> Assessment:

- Continuous assessment
- Final exam

> Teaching methods:

- | | | | |
|---|----|-------|-------------------------------------|
| <input checked="" type="checkbox"/> Lecture course | 3 | hours | <input type="checkbox"/> Case study |
| <input checked="" type="checkbox"/> Tutorial course | 9 | hours | <input type="checkbox"/> Project |
| <input checked="" type="checkbox"/> Practical work | 16 | hours | |

COURSE DESCRIPTION

General definitions:

- Definitions
- Components of a robot
- Classification of robots
- Characteristics of robots
- Generations of robots
- Robot programming
- Degrees of freedom

Architecture:

- Positioning of a solid in space
- Link
- Mechanisms
- Morphology of manipulator robots
- Geometric model of a simple chain robot:
- Need for a model - Operational coordinates
- Translation and rotation
- Homogeneous transformation matrix

OBJECTIVES

Introduction to robotics

PREREQUISITES

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SELECTIVE BIBLIOGRAPHY

1) Introduction to Robotics Mechanics and Control, 2th edition, J. J. Craig, Addison-Wesley Publishing Company, 1989, 450 pages - 2) Modeling, Identification and Control of Robots, W. Khalil, E. Dombre, Hermes Penton Science 2002, 480 pages - 3) Robotics Modelling, Planning and Control, B. Siciliano, L. Sciavicco, L. Villani, G. Oriolo, Springer-Verlag 2009, 632 pages