# Control theory

**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):** 40
- **ECTS:** 2
- **Teacher(s):** Sébastien Lahaye

**Assessment:**

- [x] Continuous assessment
- [ ] Final exam

**Teaching methods:**

| | | | |
|---|---|---|---|
| [ ] Lecture course | | hours | [ ] Case study |
| [x] Tutorial course | 28 | hours | [ ] Project |
| [x] Practical work | 12 | hours | |

## COURSE DESCRİPTİON

This course will provide students with a basic understanding of and an overview about
- the principles of identification of linear systems. The focus is in particular on
- procedures allowing to estimate the order of systems - parameter estimation (ordinary and recursive least squares regression).

It will also provide students with a basic understanding of and an overview about the principles of state-space representation for linear systems:
- Analysis (stabilty, controllability, observability)
- Control techniques (state feedback, pole placement, state observer).

## OBJECTİVES

To provide students with a basic understanding of and an overview about - the principles of identification of linear systems. - To provide students with a basic understanding of and an overview about the principles of state-space representation for linear systems.

## PREREQUİSİTES

Introduction to control theory.

## SELECTİVE BİBLİOGRAPHY

Identification of Dynamic systems, R. Isermann, M. Munchoff, Springer, 2011 - - Cours d'automatique: Tome 3, M. Rivoire, J.-L. Ferrier, édition Eyrolles - - Automatique : commande des systèmes linéaires, Ph. De Larminat, édition Hermès - - Représentation d'état pour la modélisation et la commande des systèmes, L. Jaulin, Hermès science, éditions Lavoisier, 2005 - - Control System Design: An Introduction to State-Space Methods, B. Friedland, 1986 -