

## Digital control

Number of ECTS credits: 6

Coefficient:

### Description:

Today's systems are becoming more autonomous thanks to the introduction of digital technology (cruise control or automatic car parking, automatic flight control, robots, automated production systems, etc.). This course deals with the modeling of physical systems and their numerical control using microcontrollers, DSPs or microprocessors (computers).

### Pedagogical objectives:

At the end of this course, the student must be able to control systems to follow set values (position, speed, level, etc.) while respecting performance criteria (accuracy, robustness, etc.). To do this, students will learn to: identify the main characteristics of the physical system to be controlled; model it mathematically; discretize it; sampling and processing the signals acquired by its sensors; identify model parameters; synthesizing numerical control laws; implementing these commands to be executed by processors or microcontrollers; test the system and evaluate its performance.

### Bibliography

### Prerequisite:

Analysis (mathematics); Have notions in ordinary differential equations and in Fourier and Laplace transforms.

Lectures Hours: 21

Tutorials Hours: 16

Labs Hours: 20

Knowledge monitoring modalities: 100% continuous assessment

Assesment: Exams, reports of labs

**Leader: Redwan DAMOUCHE**

**Participants:**