

Academic Year: ( 2022 / 2023 )

Review date: 14-02-2022

Department assigned to the subject: Department of Systems Engineering and Automation

Coordinating teacher:

Type: Compulsory ECTS Credits : 3.0

Year : 4 Semester : 1

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to soft robotics
  - a. Introduction
  - b. Examples of soft robots
  - c. Soft robotics vs hard robotics
2. Mathematical model of soft robotics links
  - a. Control requirements
  - b. Nonlinear models
  - c. Lineal models
3. Control of soft robots
  - a. Control requirements
  - b. Model-based control
  - c. Robust and adaptive control of soft robots
4. Software tools for soft robots analysis
  - a. Modeling tools
  - b. Control tools
  - c. Programming tools
5. Use cases of control of soft robots
  - a. Control of a soft robotic neck
  - b. Control of a soft robotic arm

## LEARNING ACTIVITIES AND METHODOLOGY

### THEORETICAL PRACTICAL CLASSES.

Knowledge and concepts students must acquire. Receive course notes and will have basic reference texts. Students partake in exercises to resolve practical problems.

### TUTORING SESSIONS.

Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher. Subjects with 6 credits have 4 hours of tutoring/ 100% on- site attendance.

### STUDENT INDIVIDUAL WORK OR GROUP WORK.

Subjects with 6 credits have 98 hours/0% on-site.

### WORKSHOPS AND LABORATORY SESSIONS.

Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

## ASSESSMENT SYSTEM

### FINAL EXAM.

Global assessment of knowledge, skills and capacities acquired throughout the course. The percentage of the evaluation varies for each subject between 60% and 0%.

### CONTINUOUS EVALUATION.

Assesses papers, projects, class presentations, debates, exercises, internships and workshops throughout the course. The percentage of the evaluation varies for each subject between 40% and 100% of the final grade.

<b>% end-of-term-examination:</b>	60
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	40