

## Collaborative Robots

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 Cobots
2. Physical human-robot collaboration (space sharing, master-slave architectures, sensors, control systems, etc.)
3. Safety in industrial installation with Cobots (levels, exclusions, calibration, etc.)
4. Robots design for collaborate (features, force/torque control, hybrid control, axis decoupling, etc.)
5. Collaborative robot programming (LBR iiwa)
6. Criteria for the implementation of collaborative robotic systems (lay-outs, design, space separation and shearing, etc.)
7. Examples of success stories and trends

## 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