

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 human-robot interaction (HRI)
  - a. Physical and mental interaction
  - b. Humanoid robots (arms, legs, torso, head)
2. Technical and human factors
  - a. Physical space sharing among humans and robots
  - b. Typology of the users of HMI
3. HRI of teleoperated robots
  - a. Haptic devices
  - b. Safe teleoperation of robots, collision control. master-slave model
  - c. Teleoperation architectures (bidirectional, with exclusions, with delays)
4. HRI of autonomous robots
  - a. User oriented design
  - b. Safe interaction with autonomous robots (users, environments, multirobots)
  - c. Autonomous robots interaction architectures (planning, deliberating)
5. Multimodal physical human-robot interaction
  - a. Body and verbal interaction (gesture, voice, corporal expression, etc.)
  - b. Robot corporal and verbal replication of robots (robotic empathy)
6. HRI applications (healthcare, rehabilitation, personal robots)

**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