
Academic Year: (2023 / 2024)

Review date: 14-02-2022

Department assigned to the subject: Systems Engineering and Automation Department

Coordinating teacher:

Type: Compulsory ECTS Credits : 3.0

Year : 4 Semester : 2

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction:
 - a. What is a mobile manipulator?
 - b. Service robots: mobile manipulators, humanoid robots.
2. Kinematic and dynamic: mobile base -manipulator coordination. Control architectures.
3. Mobility.
 - a. Perception: vision, telemetry.
 - b. Environment modeling. The three-dimensional problem.
 - c. Planning, navigation and location of mobile manipulators.
4. Manipulation and interaction control
 - a. Perception: vision, force sensors.
 - b. Force control
 - c. Grasping
 - d. Perception and modeling of the objects to be manipulated
 - e. Perception-action integration
5. Human-robot interaction in navigation and manipulation
6. Real applications. Projects related to mobile manipulators

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.

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

