

Handling

Academic Year: (2021 / 2022)

Review date: 17-12-2019

Department assigned to the subject: Systems Engineering and Automation Department

Coordinating teacher: ABDERRAHIM FICHOUCHE, MOHAMED

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

Robots are designed to perform difficult and repetitive tasks to replace the human operator, and in doing that they have to come into contact with their environment and manipulate objects through specially developed grippers or complex robotics hands. A substantial amount of work in robotics have been devoted to compute optimal grasps based on the geometry of the objects, but other aspects can also be taken into account. Nowadays, robots are expected to form more tasks like assisting and collaborating directly with people. Therefore, the movements have to be planned adequately and controlled to account for or compensate the unforeseen reaction forces. This subject is to cover aspects of robotics related to the manipulation of objects and interaction with the environment from the motion and control point of views.

LEARNING ACTIVITIES AND METHODOLOGY

- Lectures covering the contents detailed in the program and 2 practice sessions of simulation in the laboratory.
- Individual tutorials and personal work of the student in subjects of robotic manipulation and interaction

ASSESSMENT SYSTEM

An assignment will be carried out, treating a relevant application of robotic manipulation. It will be presented in class and delivered in the form of a report. The mark of this part represents 70% of the final grade.

There will also be an exam to evaluate the acquired theoretical knowledge, with a weight of 30% of the final grade.

% end-of-term-examination:	30
% of continuous assessment (assignments, laboratory, practicals...):	70

BASIC BIBLIOGRAPHY

- A. Barrientos, L. F. Peñín, C. Balaguer, R. Aracil Fundamentos de robótica, McGraw Hill, 1977
- A. Koubaa, (et al.) Robot Path Planning and Cooperation: Foundations, Algorithms and Experimentations , Springer , 2018
- Giuseppe (Ed.) Grasping in Robotics (ISBN 978-1-4471-4664-3), Springer, 2013
- M. R. Cutkosky Robotic Grasping and Fine Manipulation, Springer , 1984
- R.M. Murray, Li.S. Zexiang, Shankar Sastry A Mathematical Introduction to Robotic Manipulation, CRC Press, 1994