Robotics

Academic Year: (2022 / 2023) **Review date: 17-05-2022**

Department assigned to the subject: Systems Engineering and Automation Department

Coordinating teacher: MORENO LORENTE, LUIS ENRIQUE

Type: Compulsory ECTS Credits : 3.0

Year : 4 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Students should have basic knowledge in mathematics, mechanics, electronics, electrical engineing, programming and systems engineering.

OBJECTIVES

Students acquire basic knowledge about robotics and biomedical applications deepens.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction
2. Robot morphology
3. Robot control
4. Robot programming
5. Medical robotics I
- Surgical robotics
6. Medical robotics II
- Robotics medical instrumentation
- Body exploratory robotics
7. Biomedical applications
- Hexosqueletons
- Bionics hands
8. Assistive robotics
- Personal assistance
- Therapy robotics

LEARNING ACTIVITIES AND METHODOLOGY

Training activities are divided into 4 parts: theory, practice, laboratories (with real robots and systems) and personal tutorials.

ASSESSMENT SYSTEM

Evaluation criteria (ordinary)

A - continuous evaluation

	%	Minimum thresholds
1st evaluation	50%	3/10
2nd evaluation	50%	3/10
Overall necessary threshold		5/10

Practices assistance is mandatory

B - final exam (for whom not pass A or want to rise the mark)

Final exam	100%	5/10

Practices assistance is mandatory

Evaluation criteria (extraordinary exam)

	Minimum thresholds
Exam	5/10

% end-of-term-examination:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

BASIC BIBLIOGRAPHY

- A. Barrientods, L.F. Peñin, C. Balaguer, R. Aracil Fundamentos de Robótica, McGraw Hill, 2007

- J. P. Desai, S. Agrawal, A. Ferreira, R. V. Patel (Editors) The Encyclopedia of Medical Robotics 4 Volumes, World Scientific, 2019

ADDITIONAL BIBLIOGRAPHY

- J.F. Engelberger Robotics in Service, MIT Press, 1989

- R. P. Paul Robot Manipulators. Mathematics, Programming and Control, MIT Press, 1981