Methods and optimization techniques

Academic Year: (2023 / 2024) **Review date: 29-03-2023**

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: MUÑOZ ABELLA, MARIA BELEN

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is recommended to be engineer in industrial field

OBJECTIVES

Upon successful completion of this subject, students will be able to:
1. identify and pose an optimization problem.
2. Apply local optimisation methods to solve an optimization problem.
3. Apply genetic algorithms to solve an optimization problem.
4. Apply neural networks to solve an optimization problem.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to optimization in mechanical engineering
2. Local optimization methods
3. Global optimization methods. Genetic Algorithms
4. Other optimization techniques. Neural Networks

LEARNING ACTIVITIES AND METHODOLOGY

Training activities include:
- Master classes
- Question-answering classes
- Student presentations
- Individual tutorials
- Personal work of the student

ASSESSMENT SYSTEM

The evaluation system is based on continuous evaluation which includes exercises throughout the term and a report and its presentation at the end of the term.
The percentage weight of the continuous evaluation is 100%, with 65% of the weight for the exercises and 35% for the report.

The extraordinary evaluation will be carried out by means of the delivery of all the reports and exercises of the subject, with a weight of 100% of the final grade.

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

BASIC BIBLIOGRAPHY

- Arora Introduction to optimum design, Elsevier.
- Goldberg, D. Genetic algorithms in search, optimization and machine learning, Addison-Wesley.
- Haykin,S. Neural Networks. A comprehensive foundation, Prentice Hall.