Evolutionary Computation

Academic Year: (2022 / 2023) **Review date: 30-05-2022**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: SAEZ ACHAERANDIO, YAGO

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Average programming skills

OBJECTIVES

Understand the fundamentals of evolutionary computing, be able to identify in which cases it can be effective and acquire the knowledge to choose and design the appropriate technique to a given problem, commonly, search and optimization problems (among others).

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to evolutionary computation
2. General concepts of evolutionary algorithms: initialization, stop, genetic operators, insertion and replacement strategies.
3. Evolutionary computation techniques: genetic algorithms, evolutionary strategies, genetic programming, others.
4. Problem solving through evolutionary techniques. Problems with multiple solutions, with several objectives, with restrictions, coevolution.
5. Mathematical foundations

LEARNING ACTIVITIES AND METHODOLOGY

Lectures
Practice sessions
Tutorship
Team work
Individual student work
Presentations for partial and final assessments

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

BASIC BIBLIOGRAPHY

- D. Floreano, C. Mattiussi Bio-Inspired Artificial Intelligence: Theories, Methods, and Technologies, MIT Press, 2008

- E. Talbi Metaheuristics: From Design to Implementation, Wiley, 2009