Fundamentals of BioInformatics

Academic Year: (2024 / 2025) **Review date: 14-03-2024**

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: MARTÍNEZ OLMOS, PABLO

Type: Electives ECTS Credits : 6.0

Year : 6 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Machine learning
- Programming

DESCRIPTION OF CONTENTS: PROGRAMME

This course aims to serve as an introduction to data science for genomic data. We will introduce basic algorithms for the genome sequencing, comparison
of DNA sequences or proteins and the analysis of databases with the genomic profile of different patients for the extraction of information.
1. Computational methods (algorithms and data structures) for analyzing and performing DNA data sequencing.
2. Advanced statistical methods for the analysis of genomic data.
3. Statistical tests for the extraction of conclusions.
4. Projects with real databases

LEARNING ACTIVITIES AND METHODOLOGY

AF1: THEORETICAL-PRACTICAL CLASSES. In them the knowledge that students must acquire will be presented. They will receive the class notes and will have basic reference texts to facilitate the follow-up of the classes and the development of the subsequent work. Exercises, practical problems will be solved by the student and workshops and an evaluation test will be carried out to acquire the necessary skills.
AF2: Updated to allegation
AF3: STUDENT INDIVIDUAL OR GROUP WORK.
AF8: WORKSHOPS AND LABORATORIES.
AF9: FINAL EXAM. In which the knowledge, skills and abilities acquired throughout the course will be assessed globally.
MD1: THEORY CLASS. Lectures in class by the teacher with the support of computer and audiovisual media, in which the main concepts of the subject are developed and materials and bibliography are provided to complement the students' learning.
MD2: PRACTICES. Resolution of practical cases, problems, etc. raised by the teacher individually or in a group.
MD3: TUTORING. Individualized assistance (individual tutorials) or in groups (collective tutorials) to students by the teacher.
MD6: LABORATORY PRACTICES. Applied / experimental teaching to workshops and laboratories under the supervision of a tutor.

ASSESSMENT SYSTEM

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

CONTINUOUS ASSESSMENT. In it, the works, presentations, debates, class presentations, exercises, practices and works in the workshops throughout the course will be valued.