Advanced Methods in Bioinformatics

Lecturers

Matthieu DEFRANCE (Coordinator) and Wim VRANKEN

Course mnemonic INFO-F439

ECTS credits 5 credits

Language(s) of instruction English

Course period Second term

Campus Plaine

Course content

This course will provide an introduction to computational methods applied to biological questions. After an introduction to the computational biology domain, the notion of sequence aliment, motif discovery, protein structure will be detailed. A particular emphasis will be put on notion related to protein structure prediction and methods related to Next Generation Sequencing data analysis.

Objectives (and/or specific learning outcomes)

This course focusses on computational biology.

The goal of this course is to provide students with the necessary skills i) to understand computational biology research, ii) to grasp the workings of some of the key algorithms that were developed to solve particular problems in molecular biology iii) to understand the role of different computational methods in solving these problems, iv) to know where certain molecular data can be found and how to combine this, v) to be able to develop a project that tries to solve some problem in this domain. In addition, this knowledge will allow you to understand the literature on bioinformatics and computational biology.

Pre-requisits and co-requisits

Co-requisites courses

INFO-F409Learningdynamics5créditsINFO-F422Statistical foundations of machinelearning5crédits,INFO-H410Techniques of artificial intelligence5crédits,INFO-H415Advanceddatabases5crédits,INFO-H417Databasesystemsarchitecture5créditsandINFO-H509Geo-Spatialand web technologies55crédits

Teaching method and learning activities

Oral presentations + Assignments.

References, bibliography and recommended reading Provided in the slides.

Other information

Place(s) of teaching Plaine

Contact(s)

Matthieu Defrance Département d'Informatique Université Libre de Bruxelles Boulevard du Triomphe CP 212 1050 Brussels Belgium Tel: 02/650.58.68 Email: mathieu.defrance@ulb.be

Evaluation method(s)

Other

Evaluation method(s) (additional information)

During the course sessions, students will receive assignments. These assignments will be graded and the points will be used in the calculation of the final course grade.

For the exam, students will present an article, discussing the context, methods. results and conclusions drawn by the authors. The quality of the project and the quality of the presentation (together with the points for the assignments) will determine the final points for this cours

Determination of the mark (including the weighting of partial marks)

50% on the assignments 50% on the oral presentation

Main language(s) of evaluation

Programmes

Programmes proposing this course at the faculty of Sciences

MA-BINF | Master in Bio-informatics and Modelling | finalité Research/unit 2 and MA-INFO | Master in Computer science | finalité Professional/unit 2

Programmes proposing this course at the Brussels School of Engineering

MA-IRIF | Master of science in Computer Science and Engineering | finalité Professional/unit 2