

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 alignment, 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-requisites and co-requisites

Co-requisites courses

INFO-F409 | Learning dynamics | 5 crédits, INFO-F422 | Statistical foundations of machine learning | 5 crédits, INFO-H410 | Techniques of artificial intelligence | 5 crédits, INFO-H415 | Advanced databases | 5 crédits, INFO-H417 | Database systems architecture | 5 crédits and INFO-H509 | Geo-Spatial and web technologies | 5 crédits

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)

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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 course.

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

50% on the assignments

50% on the oral presentation

Main language(s) of evaluation

English

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

