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Bioinformatics applications (3BL2308)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en biologie	Cours: 28 pg	Voir ci-dessous	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Prof. Daniel Croll

Contenu

This course provides a practical-driven introduction to advanced topics of biological data analysis. The main focus is on the following areas:

- Reproducible code production
- Programming tools and high-performance servers
- Data access from biological sequence databases (e.g. NCBI)
- Genome sequence analyses for e.g. population/conservation genomics, genome assembly and annotation, phylogenetic/biodiversity analyses, microbiome investigations, etc.

After the introductory elements including key literature, students will be able to concentrate on areas of their interest within the scope of bioinformatics analyses.

The format of the course is driven by tutorials both produced by the teacher and the students (with guidance). Each student is also given the opportunity to work on a mini-project to advance their skillset.

Forme de l'évaluation

The evaluation is based on the following continuous assessment elements:

- Creation of a tutorial (30 %)
- Literature review and discussion (20%)
- Elaboration of a bioinformatics analysis project (50%)

Modalités de rattrapage

If the final mark is insufficient and results in a failure, the student will have to prepare one critical essay (3000 words) on one of the topics discussed during the course. The topic will be fixed by the lecturer. The essay should be handed in two weeks before the exam session for which a second attempt is made. In addition, the student will pass an oral exam of 15' scheduled during the exam session. A failure to hand in the critical essay or an unjustified absence from the oral exam constitutes a second and definite failure from the course.

Documentation

Slides, articles and practical documentation will be made available through Moodle and other sources.

Pré-requis

Introduction to programming (e.g. Bioinformatics Tools course). Contact Daniel Croll if you have questions.

Forme de l'enseignement

Lectures, practical work, tutorial creation and individual work.

Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Interpret recent advances in the field
- Summarize a methodological approach as a tutorial

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- Demonstrate key analytical steps in a class
- Discuss key methods in bioinformatics
- Develop reproducible programming skills

Compétences transférables

- Explain complex findings
- Write scientific code
- Translate theoretical knowledge into practice
- Present to peers (oral and written forms)