Course Specifications
Valid as from the academic year 2019-2020

Course

Course offerings and teaching methods in academic year 2019-2020
A (semester 2)          English          seminar: practical PC room classes lecture
12.5 h               18.75 h

Lecturers in academic year 2019-2020
Marchal, Kathleen WE09 lecturer-in-charge
N., N. co-lecturer

Offered in the following programmes in 2019-2020
Bachelor of Science in Biochemistry and Biotechnology 4 A
Linking Course Master of Science in Biochemistry and Biotechnology 4 A
Linking Course Master of Science in Bioinformatics 4 A
Preparatory Course Master of Science in Bioinformatics (main subject Systems Biology) 4 A
Preparatory Course Master of Science in Biochemistry and Biotechnology 4 A

Teaching languages
English

Keywords
Biological databases, sequence alignment, homology, motif detection, gene prediction and annotation

Position of the course
Bioinformatics I aims to teach students the basic computational methodologies for processing molecular biological data, in particular nucleic acid and protein sequences. Students learn the importance of bioinformatics in biological sciences.

Contents
• What is bioinformatics?
• Biological databases.
• Pairwise sequence alignment. Homology.
• Database similarity searching. BLAST, FASTA.
• Multiple sequence alignment.
• Motif representation and detection.
• Gene prediction and annotation. Genome analysis.
Theoretical concepts are supplemented with exercises on paper and on PC, mostly using online bioinformatic tools.

Initial competences
Basic knowledge of molecular biology (structure and function of DNA, RNA and protein) and mathematics.

Final competences
1 Value bioinformatics in molecular biology.
2 Gain insight in the complexity of biological data in online biological databases.
3 See through computational methods for biological sequence data.
4 Independently apply computational methods for biological analysis of sequence data.
5 Critically assess computational results.

(Approved)
6. Put computational results in their biological context.

Conditions for credit contract
Access to this course unit via a credit contract is determined after successful competences assessment.

Conditions for exam contract
This course unit cannot be taken via an exam contract.

Teaching methods
Lecture, seminar: practical PC room classes.

Extra information on the teaching methods
Seminar: exercises on PC and on paper.

Learning materials and price
Course syllabus and slides (in English) available through Ufora.

References
Course content-related study coaching

Evaluation methods
end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period
Written examination with open questions.

Examination methods in case of periodic evaluation during the second examination period
Written examination with open questions.

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation
not applicable

Extra information on the examination methods
Written examination with open questions: theory and exercises.

Calculation of the examination mark
50% theory and 50% exercises.