Bioinformatics I (C004092)

Course size   (nominal values; actual values may depend on programme)

Credits 4.0   Study time 120 h   Contact hrs   30.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 2)	English	lecture	18.75 h
		seminar: practical PC room classes	12.5 h

Lecturers in academic year 2018-2019

Marchal, Kathleen	WE09	lecturer-in-charge
Verbeke, Lieven	WE09	co-lecturer

Offered in the following programmes in 2018-2019	crdts	offering
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.

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 Minerva.

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