Course Specifications
Valid as from the academic year 2019-2020

<table>
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<tr>
<th>Course</th>
<th>Bioinformatics I (C003723)</th>
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Lecturers in academic year 2019-2020
- Marchal, Kathleen (WE09) lecturer-in-charge
- Verbeke, Lieven (WE09) co-lecturer

Course offerings and teaching methods in academic year 2019-2020
- A (semester 2) level
- English
- Seminar: practical PC room classes 15.0 h
- Lecture 25.0 h

Offered in the following programmes in 2019-2020
- Bachelor of Science in Biochemistry and Biotechnology: 4 crdts, offering 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
- Value bioinformatics in molecular biology.
- Gain insight in the complexity of biological data in online biological databases.
- See through computational methods for biological sequence data.
- Independently apply computational methods for biological analysis of sequence data.
- Critically assess computational results.
- 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.

Course size (nominal values; actual values may depend on programme)
- Credits: 4.0
- Study time: 120 h
- Contact hrs: 40.0 h

Teaching languages
- English

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(Approved)
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

(Approved)