Course Specifications
Valid as from the academic year 2019-2020

Introduction to Bioinformatics (C001479)

Course size
Credits 6.0
Study time 165 h
Contact hrs 40.0 h

Course offerings and teaching methods in academic year 2019-2020
A (semester 2) Dutch lecture 25.0 h
seminar: practical PC room classes 15.0 h

Lecturers in academic year 2019-2020
Marchal, Kathleen WE09 lecturer-in-charge
Verbeke, Lieven WE09 co-lecturer

Offered in the following programmes in 2019-2020
Bachelor of Science in Mathematics 6 A

Teaching languages
Dutch

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

Position of the course
"Introduction to bioinformatics" 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
• Introduction to molecular biology.
• 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 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

(Approved)
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.
Self-reliant study activities: written report on a scientific paper.

Learning materials and price

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

References

Course content-related study coaching

It is possible for the students to contact the lecturer when they have questions about the course.

Evaluation methods

end-of-term evaluation and continuous assessment

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

Assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

Written examination with open questions: theory and exercises.
Assignment: 2 pages based on a questionnaire.

Calculation of the examination mark

The assignment accounts for 3/20, the written examination for 17/20 (50% theory and 50% exercises).