Course Specifications
Valid as from the academic year 2019-2020

Introduction to Bioinformatics (C003713)

Course

Lecturers in academic year 2019-2020
Marchal, Kathleen
Verbeke, Lieven

Course offerings and teaching methods in academic year 2019-2020
A (semester 2)  English  lecture 20.0 h
  seminar: practical PC room classes 10.0 h

Offered in the following programmes in 2019-2020
<table>
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<tr>
<th>Programme</th>
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<tbody>
<tr>
<td>Brugprogramma Master of Science in Bioinformatics (main subject Engineering)</td>
<td>3</td>
<td>A</td>
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<tr>
<td>Master of Science in Bioinformatics (main subject Engineering)</td>
<td>3</td>
<td>A</td>
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<tr>
<td>Exchange Programme in Bioinformatics (master's level)</td>
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Teaching languages
English

Keywords
bioinformatics, sequence analysis, BLAST, databases

Position of the course
This is an introductory course that aims at introducing the basic concepts of bioinformatics to students with a mathematical background. It aims at giving a broad overview of the bioinformatics domain and its applications while illustrating the importance of computer science/statistics and mathematics for the domain by exemplifying some of the most basic concepts in bioinformatics e.g. sequence alignment. The emphasis here is on the understanding of the biological problem that one wants to solve with bioinformatics tools. An overview of the most important databases that will be useful during other courses is also given.

Contents
- Bioinformatics introduction: its origin, its most important research domains and its applications
- Alignment methods: overview, principles and examples of why they are being used
- Sequence homology (FastA, BLAST)
- Motif detection
- Genome browsers (NCBI, Ensembl, ...)

Initial competences
basic biological concepts (definition of a gene, genome, cell...)
see e.g. course C003712

Final competences
1. To know the most important biological concepts.
2. To know the most important problems in bioinformatics and their applications.
3. To know the most important biological databases.
4. To be able to apply the most important sequence alignment techniques.
5. To be able to recognize certain biological problems and the appropriate bioinformatics tool to solve it.
6. To recognize that bioinformatics is an interdisciplinary field.

(Approved)
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

Learning materials and price
   Slides through Ufora

References

Course content-related study coaching
   Additional information through Ufora

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
   Oral examination

Possibilities of retake in case of permanent evaluation
   Examination during the second examination period is not possible

Extra information on the examination methods
   • Periodic evaluation: written examination with closed book
   •

Calculation of the examination mark
   100% periodic evaluation;