Course Specifications
Valid in the academic year 2016-2017

Bioinformatics Algorithms (C003083)

Course size
Crds 3.0  Study time 80 h  Contact hrs 25.0 h

Course offerings and teaching methods in academic year 2016-2017
A (semester 2)  English  lecture 15.0 h  seminar: practical 10.0 h

Lecturers in academic year 2016-2017
Fack, Veerle  WE02  lecturer-in-charge

Offered in the following programmes in 2016-2017
Master of Science in Bioinformatics (main subject Bioscience Engineering) 3 A
Master of Science in Bioinformatics (main subject Systems Biology) 3 A
Master of Science in Biochemistry and Biotechnology 3 A
Master of Science in Biochemistry and Biotechnology 3 A
Exchange programme in Biochemistry and Biotechnology (master's level) 3 A
Exchange Programme in Bioinformatics (master's level) 3 A

Teaching languages
English

Keywords
Algorithms, data structures, complexity, bio-informatics

Position of the course
This course is part of the minor Bio-informatics. It aims at introducing the students in the use, design and analysis of standard algorithms and data structure. Furthermore it aims at making the students acquainted with more specific algorithms and data structures which are used to solve problems from bioinformatics.

Contents
- What are algorithms?
- Analysis of algorithms
- Algorithm design techniques (e.g. exhaustive method, recursion, divide-and-conquer, greedy algorithms, dynamic programming, branch-and-bound)
- Algorithms for string searching, with applications in bio-informatics
- Standard datastructures, with applications in bio-informatics

Initial competences
Basic knowledge of programming, e.g. Python, Perl or Java

Final competences
1. Are familiar with some standard algorithm design techniques and can apply them to problems from bio-informatica.
2. Are able to analyse an algorithm.
3. Know some standard datastructures which are used in bio-informatics.

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

(Approved)
Teaching methods
   Lecture, seminar: practical PC room classes

Learning materials and price
   Lecture notes (20 euro)
   Electronic learning environment

References

Course content-related study coaching

Evaluation methods
   end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
   Written examination

Examination methods in case of periodic evaluation during the second examination period
   Written examination

Examination methods in case of permanent evaluation
   Oral examination, assignment

Possibilities of retake in case of permanent evaluation
   Examination during the second examination period is possible

Calculation of the examination mark
   40% permanent evaluation
   60% periodic evaluation

(Approved)