



**Karolinska
Institutet**

Course syllabus for

Bioinformatics, 5.5 credits

Bioinformatik, 5.5 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Please note that the course syllabus is available in the following versions:

Spring2012 , Spring2017 , Spring2020

Course code	4BI084
Course name	Bioinformatics
Credits	5.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	AV - Second cycle
Grading scale	Fail (U), pass (G) or pass with distinction (VG)
Department	Department of Medical Biochemistry and Biophysics
Decided by	Programnämnd 7
Decision date	2011-11-25
Revised by	Programme committee for study programmes in biomedicine
Last revision	2021-04-22
Course syllabus valid from	Spring 2020

Specific entry requirements

Bachelor's degree or professional qualification worth at least 180 credits in biomedicine, biotechnology, cellular and molecular biology or medicine.

Objectives

Upon completion of the course the student should be able to:

Regarding knowledge and understanding

- * explain and describe theories and methods that are used within bioinformatics,
- * account for how bioinformatics methods are used within biomedical research,

Regarding competence and skills

- * use different bioinformatics technologies,
- * analyse bioinformatics data appropriately,

Regarding judgement and approach

- * critically assess and evaluate which methods that should be used to solve specific bioinformatics issues.

Content

The course treats both sequence related and non-sequence related bioinformatics including databases, handling of sequence data, pair-wise alignment, multiple alignment and phylogeny. Furthermore the course covers:

- * bioinformatics portals and different search engines,
- * patterns and motives for DNA and proteins,
- * profile searches and structure predictions,
- * molecular modelling with ligand dockings,
- * enzyme databases as well as microarray and gene ontology data,

A short background is given to the algorithms that are used in the different programs.

Teaching methods

The teaching includes lectures, demonstrations and group- and data practicals with written assignments. The data analyses will be carried out using web-based programs.

Examination

The course is examined through a written examination.

Compulsory participation

No compulsory attendance, but all tasks and written assignments must be passed. Attendance of lectures and exercises is strongly recommended.

Limited number of examinations or practical training sessions

Students who have not passed the regular examination are entitled to participate in five more examinations. If the student is not approved after four examinations, he/she is recommended to retake the course at the next regular course date, and may, after that, participate in two more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination for which the student registered but not participated in, will not be counted as an examination.

The course director assesses if, and in that case how, absence can be compensated. Before the student has participated in all compulsory parts or compensated absence in accordance with the course director's instructions, the student's results for respective part will not be registered. Absence from a compulsory activity may result in that the student cannot compensate the absence until the next time the course is given.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

Transitional provisions

The course has been cancelled and was given for the last time in spring 2021. According to the syllabus, the final semester when examination will be offered to students who have not completed the course is spring 2023. Six occasions to take the examination will be offered during the transitional period.

Other directives

The teaching is given in English.

Course evaluation will be carried out in accordance with the guidelines established by the Board of Education.

Literature and other teaching aids

Specific material referred to during the course forms the course literature.