Programme Syllabus

Bioinformatics - Master's Programme
60 credits

Programme Code: BIIMA
Academic Level: Advanced level
Version: 23.1
The Programme Syllabus is valid from: Autumn term 2020
Date of Approval: 28 November 2019

1 Name and Scope of the Study Programme
The programme is provided by the University of Skövde and is named Bioinformatics - Master’s Programme. It comprises 60 credits.

2 General Objectives
Courses and study programmes on the advanced level shall involve the acquisition of specialist knowledge, competence and skills in relation to courses and study programmes on the basic level, and in addition to the requirements for courses and study programmes on the basic level shall:

- further develop the ability of students to integrate and make autonomous use of their knowledge,
- develop the students’ ability to deal with complex phenomena, issues and situations, and
- develop the students’ potential for professional activities that demand considerably autonomy, or for research and development work.

(Objectives for courses and study programmes on the advanced level, The Higher Education Act)

3 Programme Objectives
Main area of education is Bioinformatics.

Objectives for Master’s Degree according to the Higher Education Ordinance

Knowledge and Understanding

For a Master’s Degree students shall be able to

- show knowledge and understanding within the main area of the education, inclusive of wide knowledge within the area, a considerable in depth knowledge within certain parts of the area as well as deeper insight into current research and development, and
- show in depth knowledge of methodology within the main area of the education.

Proficiency and Ability

For a Master’s Degree the students shall be able to

- show the ability to critically and systematically integrate knowledge and analyse, assess and manage complex phenomena, questions and situations even with limited information,
- show the ability to identify and formulate questions, independently, as well as to plan and, with adequate methods, carry out advanced assignments within specified time limits.
- show the ability to, orally and in writing, account for and discuss their conclusions and the knowledge and arguments these are based on in dialogue with different groups, and
- show the proficiency required to participate in research and development in other advanced activity.

Ability to Evaluate and Relate

For the Master’s Degree students shall

- show the ability, within the main area of the education, to make assessments in accordance with relevant research, societal and ethical
aspects as well as show awareness of ethical aspects in research and development,

- show insight into the possibilities and limitations of research, its role in society and human beings’ responsibility for how it is used, and

- show the ability to identify the need for further knowledge and to take responsibility for the development of their knowledge.

**Local Objectives for the Programme at The University of Skövde**

After completing the programme a student shall:

- demonstrate good knowledge and understanding of how digitalization can be used to improve health and well-being.

- demonstrate knowledge and understanding of how digitalization can contribute to sustainable development through efficient use of data from molecular biological and biomedical experiments.

**4 Programme Content**

The program’s first semester consists of courses at the advanced level in bioinformatics to provide the necessary knowledge for further studies on the subject. For the majority of courses during the first semester supervised exercises and assignments have a prominent role. These exercises are designed to develop skills in practical problem solving through application of relevant bioinformatics methods.

During the first semester a course on current bioinformatics research problems is given and which provides an introduction to research methodology, with a focus on methodology with relevance in bioinformatics. During the second semester students will also carry out an independent thesis work of 30 credits. During the thesis work, the student should independently apply their knowledge to solve a current and relevant research problem in bioinformatics.

**The following courses are included in the programme**

- Bioinformatic Analysis with Perl G1N, 7.5 credits
- Bioinformatics concepts and methods A1N, 7.5 credits
- Bioinformatics - the research process A1F, 7.5 credits
- Bioinformatics analysis with R A1N, 7.5 credits
- Master Degree Project in Bioinformatics A1E, 30 credits

**5 Admission Requirements**

Prerequisite is a Bachelor’s degree (equivalent to a Swedish Bachelor’s Degree) in molecular biology, biomedicine or computer science. A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6 / English course B. This is normally demonstrated by means of an internationally recognized test, e.g. IELTS or TOEFL or the equivalent.

The above admission requirements apply for admission to the programme. For further studies within the programme, the admission requirements for each course must be complied with. These admission requirements are specified in each separate course syllabus.

**6 Degree**

A student who passes the courses in the programme fulfills the requirements for a Master of Science (60 credits) with a major in Bioinformatics.

Degrees are awarded after application. Information about how to submit an application can be found on the University’s website.

**7 Approval of Study Programme and Programme Syllabus**

The study programme was approved by the University governing board at the University of Skövde on 29 April 2003. This programme syllabus was approved by the Curriculum Committee for Bioscience on 28 November 2019. It is valid from the autumn semester of 2020 and replaces the programme syllabus approved on 25 October 2018.

**8 Changes to the Programme Syllabus**

The programme studies are carried out in accordance with the current programme syllabus in effect at the time when the studies were initiated, provided that the structure of the programme is followed and that no leave of studies has been granted.

In the event of continued studies after a period of approved leave of studies, the students is to follow the programme syllabus in effect the term that the student resumes his/her studies. If substantial changes to the
programme syllabus have been made, the student may contact a student and career counsellor in order to set up an individual study plan.

Reservations are made for the fact that the programme syllabus and its courses are subject to change, within the framework of the objectives of the programme.

9 Additional Information
Further information about the study programme will be available on the University’s web pages prior to a programme start.

National and local regulations for higher education are available on the University’s website.

During the programme, as well as after its completion, there are follow-ups. The main purpose of these follow-ups is to contribute to improvements of the programme. The students’ experiences and views constitute one of the criteria for the follow-up and are gathered by means of programme evaluations. The students will be informed of the results of the follow-up and any decisions regarding actions that are to be taken.