UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

PROGRAMME SYLLABUS

Molecular Biodesign

180 credits

Programme code: MOLBG
Version number: 6
Valid from: 1 July 2026
Ratified by: Curriculum Committee for Bioscience
Date of ratification: 28 August 2025

1. General information about the study programme

The study programme is provided by the University of Skövde and is named Molecular Biodesign (Molekylär biodesign). It comprises 180 credits and is a first-cycle programme. The main field of study is Bioscience.

2. Entry requirements

General entry requirements. Additional requirements: Mathematics 2a or 2b or 2c, Science studies 2 or Biology 1 and Chemistry 1, English 6 (or the equivalent). The level of English proficiency is normally shown by an internationally recognized test, e.g. IELTS or TOEFL.

Or:
Mathematics level 2a or Mathematics level 2b or Mathematics level 2c, Science studies level 2 or Biology level 1 or Chemistry level 1, English level 2 (or the equivalent).
The level of English proficiency is normally shown by an internationally recognized test, e.g. IELTS or TOEFL.

The entry requirements above are applicable for admission to the study programme. For further studies within the programme, the entry requirements for each course must be met. These entry requirements are specified in each separate course syllabus.

3. Study programme content

The education program is based on the Bioscience subject area. The students will learn the basics in biology, such as cells, ecosystems, evolution, genes, chemical processes and organisms. In addition the subject is both broadened (programming, statistics, scientific methodology) and specialized (bioinformatics, biomarkers, molecular genetics, design and diagnostics).

The program is concluded with a thesis project of 30 credits, during which the acquired knowledge though the study programme is used to independently formulate and solve a research- and/or development-related problem within Bioscience.

The studies are mainly pursued as lectures, seminars, laborations and excursions combined with project work.

The following courses are included in the programme:

Bioinformatic Analysis with Python 1 G1N, 7.5 credits

Cell Biology G1N, 7.5 credits

Evolution G1N, 7.5 credits

Genetics G1N, 7.5 credits

Basic Chemistry G1N, 15 credits

Bioinformatics Introduction G1N, 7.5 credits

Introduction to Molecular Biodesign G1N, 2 credits

Microbiology G1N, 7.5 credits

Biological Life Forms and Function G1N, 4.5 credits

Laboratory basic course G1N, 1 credit

Method and Design in Life Science G1F, 7.5 credits

Biochemistry G1F, 7.5 credits

Molecular Biodesign I G1F, 7.5 credits

Molecular Genetics G1F, 7.5 credits

Literature Review in Bioscience G2F, 7.5 credits

Molecular Biodesign II G2F, 15 credits

Molecular Diagnostics and Biomarkers G2F, 7.5 credits

Protein Biochemistry G2F, 7.5 credits

Thesis Project in Bioscience G2E, 30 credits

Eligible courses

Ecology, Nutrient Cycling and Landscape Processes G1N, 7.5 credits

Sustainable Development G1N, 7.5 credits

Bioinformatic Analysis with Python 2 G1F, 7.5 credits

Expression Analysis with R G1F, 7,5 credits

Immunology and Infection Biology G1F, 7,5 credits

Project in Applied Bioinformatics G1F, 7.5 credits

4. General objectives

Objectives for education at the first-cycle level in The Higher Education Act

First-cycle courses and study programmes shall develop:

- the ability of students to make independent and critical assessments,
- the ability of students to identify, formulate and solve problems autonomously, and
- the preparedness of students to deal with changes in working life.

In addition to knowledge and skills in their field of study, students shall develop the ability to:

- gather and interpret information at a scholarly level,
- stay abreast of the development of knowledge, and
- communicate their knowledge to others, including those who lack specialist knowledge in the field.

5. Study programme objectives

Objectives of the Bachelor's degree in Higher Education are

Knowledge and understanding
For a Bachelor's Degree, the student should be able to

- demonstrate knowledge and understanding in the major subject area including knowledge of the scientific basis, methodologies in the field, specialization within a sub-area and understanding of current research directions.

Skills and Abilities
For Bachelor's Degree, the student should be able to

- demonstrate the ability to search, evaluate and critically interpret relevant information in a study case and to critically discuss relevant phenomena, issues and situations,
- demonstrate the ability to identify, formulate and solve problems and to perform tasks within specified time limits,
- demonstrate the ability to orally and in writing explain and discuss information, problems and solutions in dialogue with different groups, and
- demonstrate the skills required to independently work within the educational field.

Critical judgment and approach
For Bachelor's Degree, the student should be able to

- demonstrate skills in the major field of study, make evaluations with respect to relevant scientific, social and ethical aspects,
- demonstrate an understanding of the role of knowledge in society and people's responsibility for application of knowledge, and
- demonstrate the ability to identify their individual needs for further knowledge and developing their skills.

Local objectives for the study programme at the University of Skövde

After completion of the programme the student shall show

- good knowledge and skills for professional activity within the public or private sector as well as continued studies on advanced level in life science or practical biotechnology,
- good knowledge and skills in how different tools and methods can be used in biotechnology such as methods for identification and
- validation of biomarkers, as well as methods for modification and design of molecules and organisms,
- good knowledge in and ability to discuss peoples responsibility for how biotechnology can be used for a sustainable development, and
- show an understanding of entrepreneurship and innovation, its methods, as well as practical knowledge in how a project is planned and managed.

6. Language of instruction

The teaching is conducted in English.

7. Degree qualification

Students who complete the program with at least a pass grade meet the general requirements for obtaining a Degree of Bachelor of Science with a major in Bioscience.

Degree certificates are issued after application. Information about how to submit an application can be found on the website of the University of Skövde.

8. Changes to the programme syllabus

The programme syllabus and its courses may be changed, within the framework of the objectives for the study programme.

9. Student influence

Student influence in the study programme is ensured by means of programme evaluations. The students are informed about the results of the evaluations and potential measures that have been taken or are planned, based on the course evaluations.

10. Additional information

Further information about the study programme, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.