UNIVERSITY OF BORÅS

Biotechnology Processes and Application
Biotekniska processer och applikationer
7.5 credits

Ladok Code: A523TA
Version: 4.0
Established by: Committee for Education in Technology 2021-06-18
Valid from: Spring 2022

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Biotechnology (A1F)
Disciplinary Domain: Technology
Prerequisites: Completed course in Industrial Biotechnology 7.5 credits
Subject Area: Biotechnology
Grading Scale: Seven-degree grading scale (A-F)

Content
The course deals with the importance of biotechnology and opportunities for the development towards a more sustainable society with a focus on industrial biotechnology. The course covers various areas such as biorefineries for biofuels e.g. ethanol and biogas processes, but also the production of other products such as biopolymers, organic acids, amino acids, enzymes, biosurfactants, etc. Students also gain insight into local and global developments in biotechnology and the future labour market.

Learning Outcomes
After completing and passing the course, the student will be able to:

Knowledge and understanding
1.1. describe the latest developments in industrial biotechnology and describe various bioprocesses, among other things, for the production of biofuels, biomaterials, biopolymers, and fermented food and feed,
1.2. explain the general structure of the most important bioprocesses and explain their value chains for converting residual products into higher value ones,
1.3. describe how microorganisms and enzymes are used to refine various raw materials into products with higher value.

Skills and abilities
2.1. use literature to understand and analyse different products and processes in industrial biotechnology,
2.2. critically examine different bioprocesses in terms of technology and economics and assess their feasibility for given applications,
2.3. discuss and, both orally and in writing, present various aspects of biotechnological processes and their products.

Evaluation ability and approach
3.1. evaluate biotechnological products and processes based on technical, economic, and social aspects in relation to the 2030 agenda for the 17 global sustainability goals defined by the UN.

Forms of Teaching
The teaching consists of lectures, project work with supervision, and seminars.
Teaching is conducted in English.

The language of instruction is English.

Forms of Examination
The course is examined through the following examination components:

- Written Individual Examination
  Learning outcomes 1.1-1.3
  Credits: 5.0
  Grading scale: Seven-point grading scale (A-F)
- Group work with written assignment, oral presentation, and seminar
  Learning outcomes: 2.1-2.3, 3.1
  Credits: 2.5
  Grading scale: Seven-point grading scale (A-F)

  The course is assessed with the grades A / B / C / D / E / Fx / F. To get an E or higher grade on the course, all parts of the examination must be passed / E or better. The final grade for the course is obtained via a weighted average value between the parts: Written individual examination (2.5 credits) and Group work (2.5 credits).

  If the student has received a decision/recommendation regarding special pedagogical support from the University of Borås due to disability or special needs, the examiner has the right to make accommodations when it comes to examination. The examiner must, based on the objectives of the course syllabus, determine whether the examination can be adapted in accordance with the decision/recommendation.

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

Student Influence and Evaluation

The course is evaluated in accordance with current guidelines for course evaluations at the University of Borås in which students' views are to be gathered. The course evaluation report is published and returned to participating and prospective students in accordance with the above-mentioned guidelines, and will be taken into consideration in the future development of courses and education programmes. Course coordinators are responsible for ensuring that the evaluations are conducted as described above.

Miscellaneous

The course is a programme course for the Master's programme Resource Recovery- Biotechnology and Bioeconomics. This syllabus is a translation from the Swedish original.