LUND UNIVERSITY

LTH
FACULTY OF ENGINEERING

Course syllabus

Miljöbioteknik
Environmental Biotechnology

KBTF11, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED B/K
Date of Decision: 2023-04-18

General Information

Main field: Biotechnology.
Elective for: B4-pt, MBIO1, MLIV1, W4-p, W4-ms
Language of instruction: The course will be given in English

Aim

This course gives an overview of how biotechniques can be applied in the remediation of polluted water, soils, and gas systems, including waste handling. The aim is to give the students a practical and theoretical understanding of engineering, cellular and molecular aspects of the bioremediation processes.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- understand the fundamentals of the different biotechnical methods for the treatment of water, soil, and gas systems
- understand the fundamentals for waste handling
- understanding the basis of the experimental methods for the design and execution of an environmental biotechnology process at the laboratory level

Competences and skills
For a passing grade the student must

- be able to carry out mass balancing calculations over environmental biotechnology processes
- be able to carry out, evaluate and report an environmental biotechnological process at laboratory level

- be able to integrate theoretical and practical knowledge for the design and execution of an environmental biotechnology process at the laboratory level

Judgement and approach
For a passing grade the student must

- have knowledge of questions related to biosafety and environmental processes

Contents

The theoretical part of the course includes three types of lectures:

- blocks lectures: water treatment, solids treatment including soil bioremediation and gas treatment
- transversal lectures: environmental microbiology, microbial metabolism of hazardous compounds and environmental bioanalysis
- guest lecturers from companies in environmental biotechnology

The practical part consists in a structured laboratory practical for the design, development, and assessment of an environmental bioprocess.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: Written exam and written report. Final grading is based upon the written exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts
Code: 0123. **Name:** Environmental Biotechnology.
Credits: 5,5. **Grading scale:** TH. **Assessment:** Written exam.
Code: 0223. **Name:** Laboratory Work.
Credits: 2. **Grading scale:** UG. **Assessment:** Written report.

Admission

Admission requirements:

- Basic knowledge on microorganisms´ biology. General microbiology or biochemistry or cell biology or bioprocess or another course including basic knowledge on microorganisms' biology

The number of participants is limited to: 27
Selection: Completed university credits within the programme. Priority is given to students enrolled on programmes that include the course in their curriculum.
The course overlaps following course/s: KBT080, VVAN20, KBTF10

Reading list

- Compendium and handouts distributed during the course.

Contact and other information

Course coordinator: Javier Linares-Pastén , javier.linares-pasten@biotek.lu.se
Course homepage: http://www.biotek.lu.se/kbt080