

*Course syllabus*

# Teknisk biologi Technical Biology

**KBKA05, 7,5 credits, G1 (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:** Technology.

**Compulsory for:** K2

**Language of instruction:** The course will be given in English

## Aim

The aim of the course is to give basic knowledge in biochemistry and microbiology and to give an overview of the possibilities of modern biotechnology.

## Learning outcomes

### *Knowledge and understanding*

For a passing grade the student must

- Be able to describe the structure of prokaryotic and eukaryotic cells
- Be able to describe how to work aseptically and how to grow cells
- Be able to describe the structure and function of genes and how they can be expressed as proteins
- Be able to describe the structure and function of proteins and enzymes
- Be able to describe possibilities of modern biotechnology
- Be able to describe cell metabolism in a general way
- Be able to describe industrial applications of microbiology
- Be able to describe technical use of enzymes

### *Competences and skills*

For a passing grade the student must

- be able to use a number of common biochemical and microbiological techniques

- be able to present results from the lab in a written report

## Contents

- The structure of prokaryotic and eukaryotic cells
- Sterilisation and aseptic working methodology
- Cell growth and cultivation techniques
- The genes and their expression as proteins
- Proteins (structure, function, purification and characterisation)
- Enzymes (structure and function)
- Basic metabolism
- Technical use of enzymes
- Possibilities of modern gene technology
- Industrial microbiology
- Group discussions around biochemical issues

## Examination details

**Grading scale:** TH - (U,3,4,5) - (Fail, Three, Four, Five)

**Assessment:** Written examination, literature report and reports from laboratory practicals.

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:** 0108. **Name:** Technical Biology, Theory.

**Credits:** 6. **Grading scale:** TH. **Assessment:** Written examination. **Contents:** The structure of prokaryotic and eukaryotic cells. Sterilisation and aseptic working methodology. Cell growth and cultivation techniques. The genes and their expression as proteins. Proteins (structure, function, purification and characterisation). Enzymes (structure and function). Basic metabolism. Technical use of enzymes. Possibilities of modern gene technology. Industrial microbiology.

**Code:** 0208. **Name:** Technical Biology, Laboratory.

**Credits:** 1,5. **Grading scale:** UG. **Assessment:** Practical reports. **Contents:** The use of some common biochemical and microbiological techniques

## Admission

**The number of participants is limited to:** No

## Reading list

- Willey, Sherwood and Woolverton: Prescott's Microbiology, 11th ed. McGraw-Hill, 2019, ISBN: 978-1-260-57002-1.
- Compendium in Biochemistry.
- Manuals to laboratory practicals.

## Contact and other information

**Course coordinator:** Professor Lei Ye, lei.ye@tbiokem.lth.se

**Course coordinator:** Lektor Magnus Carlqvist, magnus.carlqvist@tmb.lth.se

**Course homepage:** <http://www.tbiokem.lth.se/english/education/technical-biology/>