

# Cellbiological Methodology and Immunobiology

Programme course

9 credits

Cellbiologisk metodik med immunbiologi

NVCB02

Valid from: 2017 Spring semester

**Determined by**

Board of Studies for Chemistry, Biology  
and Biotechnology

**Date determined**

2017-01-25

## Main field of study

Biology

## Course level

First cycle

## Advancement level

G2X

## Course offered for

- Protein Science, Master's programme

## Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Prerequisites

Biology, Biochemistry, Cell Biology, Microbiology

## Intended learning outcomes

The course gives basic knowledge about how different methods can be used for studying cell and tissue structure and function. It will also provide theoretical knowledge of concepts and methods in immune biology and immunology. After the course the student will be able to:

- explain how cells and tissues should be prepared for further analysis
- for a given cell biological problem to choose appropriate analytical method
- explain the advantages and disadvantages of different analytical methods
- explain the theory behind the chosen preparation method for cells/tissue
- explain the theory behind the chosen method of analysis
- perform a theoretical project included literature search
- account for project work in written and oral
- defend their own presentation and oppose to the work of others
- Give an overview of the innate / natural immunity, including inflammation process.
- Give an overview of the adaptive / acquired immunity.
- Describe the theory behind and application of important immunological methods.

## Course content

Tissue and cell preparation for microscopy.  
Biological markers for methods discussed within the course. Fluorometry, cytometry and flow cytometry.  
Cell culture and cell separation.  
Chemiluminescence.  
Electron microscopy, fluorescence microscopy, ratio imaging and confocal microscopy: construction and function of the equipment.  
Inflammatory cells and mediators.  
Inflammation and the development and structure of the immune system.  
Diseases and problems caused by the immune defence.  
Immunological methods.

## Teaching and working methods

The course consists of lectures, practical exercises on the basis of "problem-based learning", hand-in assignments, a theoretical project and seminars.

## Examination

UPG3	Assignments oral and written presentation	3 credits	U, G
UPG1	Hand-in assignments	3 credits	U, G
LAB1	Laboratory work	3 credits	U, G

Grades are given as 'Pass' or 'Fail'.

## Grades

Two-grade scale, U, G

## Other information

Supplementary courses: Stem Cell Engineering

## Department

Institutionen för klinisk och experimentell medicin

## Director of Studies or equivalent

Kajsa Holmgren Peterson

## Examiner

Kajsa Holmgren Peterson

## Course website and other links

<http://www.hu.liu.se/ike/grundutbildning/kurser-for-tekniska-hogskolan/cellbiologisk-metodik-med-immunbiologi?l=sv>

## Education components

Preliminary scheduled hours: 46 h

Recommended self-study hours: 194 h

## Course literature

Artiklar och kompendier För immunbiologiska delen: Janeway's Immunobiology. 8th ed. Kenneth Murphy(2011). Garland Science (eller motsvarande).

## Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at [http://stydokument.liu.se/Regelsamling/Innehall/Utbildning\\_pa\\_grund-\\_och\\_avancerad\\_niva](http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva).