

**Infection Biology - Clinical Perspectives, 5.0 credits**

Infektionsbiologi med kliniska perspektiv, 5.0 hp

Third-cycle education course

8FO0144

Department of Biomedical and Clinical Sciences

Valid from: Calendar year 2025

**Approved by**  
The Research and PhD studies  
Committee

**Approved**  
2023-09-25

**Registration number**  
LiU-2023-00969

## Entry requirements

Entry requirement for studies on third-cycle education courses

- second-cycle degree,
- 240 credits in required courses, including at least 60 second-cycle credits,  
or
- acquisition of equivalent knowledge in some other manner

For this course, the doctoral student is also required to have basic knowledge in microbiology, cell biology and immunology.

## Learning outcomes

By the end of the course, the students will be able to:

### *Knowledge and understanding*

- Explain the mechanisms underlying the ability of various pathogenic microorganisms to cause disease,
- Describe the various interactions between the human host and infectious agent, from molecular to clinical level and apply this knowledge to explain clinical manifestations.

### *Competence and skills*

- Motivate the choice of experimental and diagnostic methods in medical microbiology,
- Integrate results from current research in infection biology and apply a new hypothesis to their research project,
- Develop and argue for a research proposal in the field of infection biology.

### *Judgement and approach*

- Critically review and discuss scientific articles in infectious biology,
- Reflect on problems and new issues in current research in infection biology,
- Critically evaluate the possibility of applying a new hypothesis to their research project,
- Consider the need to gain further knowledge and research to continuously develop their skills.

## Contents

The main content of the course is current areas in infection biology, medical microbiology, and virology with a focus on interactions between humans and pathogenic microorganisms, and with a perspective on clinical and global medicine.

The following specific subject areas are included in the course:

- Human microbiota
- Human pathogenic microorganisms
- Interactions between host and pathogenic microorganisms
- Virulence strategies and mechanisms exerted by pathogenic microorganisms
- Microorganisms and immune system
- Vaccines and vaccine development
- Antimicrobial agents and resistance to them
- Epidemiology of human infectious diseases
- Transmission routes and zoonoses
- New infectious diseases
- Experimental and diagnostic methods in medical microbiology
- Infectious diseases in the perspective of global medicine

## Educational methods

The pedagogical approach applied at the Faculty of Medical and Health Sciences is student centered, problem-based learning (PBL). The student takes responsibility for his/her own learning and seeks and evaluates information and knowledge based on own queries and formulated problems. The role of the teacher is to guide and support the students.

Educational methods applied in this course are tutorial groups, seminars, lectures, laboratories, study visits and demonstrations.

The course will be given in part in parallel with an elective course with the same name at the advanced level for the Master's Programme in Experimental and Medical Biosciences as well as an freestanding course with the same name.

The course is given in English.

## Examination

The course is examined through an individually designed research plan within the field of infection biology. The research proposal is presented orally and discussed at a seminar.

Students who have not achieved a passing result are offered an opportunity for re-examination in connection with the course. After that, participation in an examination is offered at a later course session. The scope for re-examination must be the same as for ordinary examination.

Attendance and active participation in the compulsory items are a requirement to be approved for the course and assessment of them takes place continuously.

Compulsory parts of the course are tutorial groups, seminars, and demonstrations.

Students who fail are offered one re-examination occasion in close connection to the course. After that participation in a coming course examination is offered. The re-examination should be equally comprehensive as the ordinary examination.

### Change of examiner

Students who have failed the course or part of the course twice are entitled to request another examiner for the following examination occasion.

## Grading

Two-grade scale

## Course literature

A list of recommended literature will be provided during the implementation of the course.

## General information

The course is planned and carried out according to what is stated in this syllabus. Course evaluation, analysis and suggestions for improvement should be fed back to the Research and PhD studies Committee (FUN) by the course coordinator.

If the course is withdrawn or is subject to major changes, examination according to this syllabus is normally offered at three occasions within/in close connection to the two following semesters.