

**Molecular Virology, 5.0 credits**

Molekylär virologi, 5.0 hp

Third-cycle education course

8FO0117

Department of Biomedical and Clinical Sciences

Valid from: Second half-year 2024

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

**Approved**  
2020-05-04

**Registration number**  
LIU-2019-01975

## 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

## Learning outcomes

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

### *Knowledge and understanding*

- Explain the molecular details of the virus life cycle and identify the implications for human disease and treatment
- Explain the biotechnological importance and usage of viruses
- Relate and summarize different virological disciplines in a broader context

### *\*Competence and skills\**

- Study virus evolution and epidemiology with bioinformatic tools

### *Judgement and approach*

- Analyse and critically evaluate scientific papers in the field of virology.

## Contents

In this course the students will obtain advanced knowledge of different aspects of virology – from the molecular basis of the virus life cycle to the importance of viruses in human medicine and the use of viruses in biotechnology and cell biology. The course also includes application of bioinformatic tools to study virus evolution and epidemiology. The following parts are included:

- Molecular mechanisms of the virus life cycle
- Emerging viruses and pandemics
- Virological methods in research
- Mechanisms of virus evolution
- Human viral diseases
- Viral immunology, antiviral therapy and vaccination
- Viral vectors and gene therapy
- Infection genetics and viral pathogenesis
- Bioinformatics and phylogenetics

## 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 lectures, seminars, tutorial groups, group assignments, demonstrations and laboratory work

## **Examination**

The examination consists of an individual written report and oral presentation of an in-depth literature study on research level. Moreover, active participation in the compulsory parts is necessary to pass the course, and assessment of them is carried out continuously. Active participants mean that the student contribute with work and reflexions that are relevant for the task at hand. Compulsory parts in this course are: seminars, tutorial groups and laboratory work. Absence from compulsory activities needs to be complemented in order to pass.

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*

Pass or Fail  
*Course certificate*

On the student's request, course certificate is issued by the course examiner.

## **Grading**

Two-grade scale

## **Course literature**

A list of recommended literature will be provided by the course coordinator before the start of the course.

## **General information**

The course is read together with a course in the Master's Programme in Experimental and Medical Biosciences.

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.