



**Karolinska  
Institutet**

Course syllabus for

## **Infection and immunity, 15 credits**

Infektion och immunitet, 15 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Please note that the course syllabus is available in the following versions:

Autumn2015 , Autumn2016 , Autumn2017

Course code	1BI023
Course name	Infection and immunity
Credits	15 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	G2 - First cycle 2
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Microbiology, Tumor and Cell Biology
Decided by	Programnämnd 7
Decision date	2015-04-09
Revised by	Programme committee for study programmes in biomedicine
Last revision	2020-06-10
Course syllabus valid from	Autumn 2017

## **Specific entry requirements**

At least the grade pass at the courses Introduction to Biomedical Science, and General and Organic Chemistry, and at least the grade pass at the parts Basal metabolism (3 credits) and Biochemical laboratory methods (2 credits) of the course Medical Biochemistry, and the part Cell biology (6 credits) of the course Cell Biology and Genetics within the Bachelor's Programme in Biomedicine.

## **Objectives**

Upon completion of the course, the student should be able to:

Regarding knowledge and understanding

- describe the general difference between the innate and the adaptive immune system,
- broadly describe how the innate and the adaptive immune systems mature in the body, how they interact with each other, and how they function in protecting the host from infections,
- illustrate what could happen during immunopathology, i.e. if the immune system is inappropriately activated and attacks cells/molecules/functions in the body,

- describe basic structures and functions of bacteria, viruses and parasites, and know how they are classified,
- describe basic pathogenic mechanisms used by bacteria, viruses and parasites, that are important in the interaction with humans, and to understand how antimicrobial agents work on a molecular level,
- generally describe infectious diseases in a global health perspective,
- use the information acquired during the course to hypothesise how the immune system can be used to fight pathogenic microorganisms, and how microorganisms can avoid the immune system,

Regarding competence and skills

- show practical attainments and knowledge in how microorganisms are handled, including pathogenic microorganisms, and know the procedure of safe laboratory practice,
- find relevant original and review articles in the subjects immunology, infection and microbiology, and to analyse, reflect upon, give feedback and compile data from these in e.g. a short written report,

Regarding judgement and approach

- describe and reflect on the ethical aspects of global health and justice.

## Content

Basic immunology including morphology and general functions of the proteins, cells and organs of the immune system. Maturation, interactions and regulations of innate and adaptive immune responses. Clinical orientated immunology including autoimmunity, allergy and transplantation immunology. Morphology, taxonomy, genetics and metabolism of bacteria. Microbial ecology, including normal flora in humans. Interactions between bacteria and eukaryotic cells. Pathogenicity and virulence factors. Function of antibiotics at a molecular level. Structure, classification and replication of viruses. Viral pathogenicity and antiviral agents. Life cycle and pathogenicity of parasites. Traditional vaccines.

The course is divided into the following parts:

### **Laboratory work and seminars, 4.0 hp**

Grading scale: VU

### **Project work, 3.0 hp**

Grading scale: VU

The students work in groups to look up, analyse and compile data from original articles in a short written report and an oral presentation.

### **Integration of microbiology, infection and immunity, 8.0 hp**

Grading scale: VU

Consists of a summative examination of the subjects of the course.

## Teaching methods

Teaching will be in the form of of cathedral lectures, discussion groups, demonstrations, self studies, question times, half-time exam, laboratory work and a project work in a group, and a final examination. The course also contains a written report and oral presentation of the project work.

## Examination

Written half-time exam (not obligatory) that covers the first parts of the course. The half-time exam is corrected by the students under guidance of teachers. Passed half time exam gives 4% of the total score on the written examination on the part Integration of microbiology, infection and immunity.

Laboratory work and seminars (4 credits). The examination consists of written laboratory reports and active participation in the discussions at the seminars. Graded Fail/Pass.

Project work (3 credits). The examination consists of a written report and an oral presentation. Graded Fail/Pass.

Integration of microbiology, infection and immunity (8 credits). The examination consists of a written examination. Graded with Fail/Pass/Pass with distinction.

The final grade for the whole course is based on the grade for the part Integration of microbiology, infection and immunity. To pass the whole course (grade Pass or above), the grade pass must have been obtained for the other parts on the course.

### Compulsory participation

Laboratory work, project work and seminars are compulsory. The course director decides if and how absence from compulsory components can be compensated. The component is not registered in LADOK unless the student has passed the compulsory component or compensated according to the course director's directions.

### Limited number of examinations or practical training sessions

Students who have not passed the regular examination are entitled to participate in five more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination, for which the student registered but not participated in, will not be counted as an examination.

## Transitional provisions

The course is cancelled and was offered for the last time HT2017. Examination according to this syllabus will be offered for the last time VT2021 for students who have not completed the course with a passing grade.

## Other directives

The course language is English.

Course evaluation will be carried out in accordance with the guidelines established by the Board of Higher Education.

Oral evaluation in the form of course council meetings will be carried out during the course.

## Literature and other teaching aids

*Murphy, Kenneth; Weaver, Casey*

### Janeway's immunobiology

9th edition. : New York, NY : Garland Science/Taylor & Francis Group, LLC, [2016], 2017 - xx, 904 pages

ISBN:9780815345053 LIBRIS-ID:19475010

[Library search](#)

*Murray, Patrick R.; Rosenthal, Ken S.; Pfaller, Michael A.*

**Medical microbiology**

8th edition. : Philadelphia, PA : Elsevier, [2016] - x, 836 pages

ISBN:9780323299565 LIBRIS-ID:18853784

[Library search](#)

**Other literature**

Handouts and articles.