Course syllabus for

Immunology and Microbiology, 13 credits

Immunologi och mikrobiologi, 13 hp
This course syllabus is valid from autumn 2024.
Please note that the course syllabus is available in the following versions:
Autumn2018 , Autumn2019 , Autumn2024

Course code	1BI041
Course name	Immunology and Microbiology
Credits	13 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	Programnämnden för biomedicinprogrammen
Decision date	2018-03-23
Revised by	Programme committee for study programmes in biomedicine
Last revision	2024-03-06
Course syllabus valid from	Autumn 2024

Specific entry requirements

At least grade pass (G) at the courses Introduction to biomedical science; General and organic chemistry; Cell-, stem cell and developmental biology and Genetics, genomics and functional genomics, and at least grade pass (G) at the part Biochemistry (5 credits) of the course Biochemistry, at the Bachelor's programme in Biomedicine.

Objectives

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

Regarding knowledge and understanding

- discuss differences between the innate and the adaptive immune systems,
- describe how the innate and the adaptive immune cells 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 their interaction with humans,
- understand how antimicrobial agents work on a molecular level,
- describe infectious diseases from a of global health perspective, and how climate change may affect these diseases,
- describe how the immune system can be used to fight pathogenic microorganisms, and how microorganisms can avoid the immune system,

Regarding competence and skills

- demonstrate appropriate practical skills and knowledge of safe handling of microorganisms,
- find relevant scientific articles within the subjects of immunology, infection and microbiology, and critically analyse data from these,

Regarding judgement and approach

- describe and reflect on 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: GU

Project work, 2.0 hp

Grading scale: GU

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

Integration of microbiology, infection and immunity, 7.0 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 (2 credits). The examination consists of a written report and an oral presentation. Graded Fail/Pass.

Integration of microbiology, infection and immunity (7 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.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

Transitional provisions

After each course occasion there will be at least six occasions for the examination within a two-year period from the end of the course.

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

Abbas, Abul K.; Lichtman, Andrew H.; Pillai, Shiv

Basic immunology : functions and disorders of the immune system

5. ed. : St. Louis, Missouri : Elsevier, 2016 - x, 335 s.

ISBN:978-0-323-39082-8 LIBRIS-ID:18760622

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.

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