

BIOR16, Biology: Immunology, 15 credits

Biologi: Immunologi, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2007-04-12 and was last revised on 2014-12-18. The revised syllabus applies from 2014-12-18, spring semester 2015.

General Information

The course is an optional second-cycle course for a degree of Bachelor or Master of Science in Biology and Molecular Biology. The course is also offered as a single subject course. The language of instruction is English.

Language of instruction: English

Main field of studies

Molecular Biology

Biology

Depth of study relative to the degree requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

On completion of the course the student shall be able to:

- account for the components and organisation of the mammalian immune defence
- account for the basics in immunochemistry and immunogenetics
- describe basic immunological processes at the cellular-, organ-, and organismal level

- account for activation and regulation of the immune defence
- describe basic mechanisms for defence against infection, and describe at a general level hypersensitivity reactions and immuno-related diseases
- describe at a general level the ontogeny and phylogeny of the immune defence
- account for basic immunological methods

Competence and skills

On completion of the course the student shall be able to:

- apply a number of basic immunological methods
- search and compile immunological scientific literature
- discuss and evaluate immunological issues stated in e.g. media
- carry out oral and written reporting of material with immunological content

Judgement and approach

On completion of the course the student shall be able to:

- evaluate and interpret results from immunological studies
- relate immunology to doctoral studies and work

Course content

Basic immunology:

The structure and function of the immune system, mainly the mammalian. Innate and acquired immunity.

Immunochemistry:

Immunisation, isolation, and characterisation of antibodies, and the structure and function of immunoglobulins. Antigen-antibody reactions and the complement system. MHC proteins (transplantation antigens) and immunogenetics.

Cellular immunology:

Lymphoid cells and organs. Lymphocyte differentiation, activation and interaction. Effector cells. Cytokines. Immunoregulation.

Immunobiology:

Defence against infection, inflammation, hypersensitivity reactions, and immune diseases. The ontogeny and phylogeny of the immune defence.

Immunological methods:

Immunoprecipitation (qualitative and quantitative methods), agglutination, immunoblotting, radio- and enzymeimmuno assays and immunohistology.

Immune cell activation and detection.

Course design

The teaching consists of lectures, laboratory sessions, projects and seminars. The lectures are often given by invited researchers from different subdisciplines of immunology. The laboratory sessions are carried out as group assignments and are presented in writing. During the seminars, group discussions regarding immunological issues and cases, as well as projects about different themes, with literature search, report writing and presentations, are carried out. During the course, study visits are

conducted to show different applications of immunology and to provide the students with contacts for the future. Participation in laboratory sessions, projects and seminars, and thereby other integrated teaching, is compulsory.

Assessment

The examination is carried out as compulsory parts of the course, and as a written examination at the end of the course. For students who have not passed the regular examination, an additional examination in close connection to this is offered.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

To pass the entire course, approved examination, approved laboratory reports, approved written assignments, approved project report, and participation in all compulsory parts, are required. The final grade is based on the written examination.

Entry requirements

For admission to the course, English 6 and 90 credits of scientific studies including knowledge corresponding to MOBA01 Cell Biology 15 credits, BIOA01 Genetics and Microbiology 15 credits, Chemistry 15 credits, and BIOC01 Human Physiology 15 credits, or BIOB02 Zoology 12 credits, are required.

Further information

The course may not be included in a degree together with BIO617 Immunology 15 credits.

Subcourses in BIOR16, Biology: Immunology

Applies from V14

- 0711 Theory, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 0712 Seminars, 3,0 hp
Grading scale: Fail, Pass
- 0713 Laboratory Work, 4,5 hp
Grading scale: Fail, Pass

Applies from H07

- 0701 Immunology, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction