

# Immunology

Programme course

6.0 credits

Immunologi

8BKG34

Valid from: 2020 Autumn semester

**Determined by**  
Chairman of The Board for First and  
Second Cycle Programmes

**Date determined**  
2018-09-04

**Revision date**  
2020-09-11

## Main field of study

Medical Biology

## Course level

First cycle

## Advancement level

G2X

## Course offered for

- Experimental and Industrial Biomedicine

## Entry requirements

General entry requirements for undergraduate studies  
and

English corresponding to the level of English in Swedish upper secondary  
education (English 6)

And

Chemistry, Mathematics and Biology corresponding to the level in Swedish upper  
secondary education (Chemistry 2, Mathematic 4 and Biology 2)

Exemption from Swedish 3

## Intended learning outcomes

### Knowledge and understanding

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

- Describe the structure of the innate immune system and how this is initiated, regulated and effectuated in the body's defence against different microorganisms.
- Describe the significance of different inflammatory cells and mediators.
- Describe how the body's adaptive immunity is regulated, activated and interacts with the innate immune system in the event of different infections.
- Describe the role of the immune system in different diseases and medical problems such as autoimmune disorders, allergies, wound healing and the use of implants.
- Explain how to use the mechanisms of the immune system for medical treatment of infections.
- Describe how to use biomedical, experimental and clinical laboratory methods that are based on the interaction between antigens and antibodies.

### Skills and abilities

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

- Apply biomedical laboratory methodology with reference to basic immunological techniques.
- Document the results of work with immunological laboratory techniques and describe these orally and in writing.

### Judgement ability and approach

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

- Critically appraise, process and communicate popular science and academic literature within immunology.

## Course content

During the course, the student will study basic mechanisms used by the human body to defend against microbes, the role of the immune system in other conditions, and how we can use immunological mechanisms to fight infections and to achieve a specific detection of molecules in the laboratory. More specifically, this includes inflammatory mediators (e.g. the complement system and cytokines), inflammatory cells (e.g. phagocytes), the inflammatory process, including the development and structure of the immune system (e.g. antibodies, antibody formation, antigen-presenting cells, B-cells and T-cells), different types of vaccine and adjuvant, diseases and problems caused by the immune system (allergic reactions, autoimmune disorders, healing and problems with implants), as well as immunological methods and principles.

The course encompasses the fields of immunology, medical microbiology, virology, cell biology, pathology, physiology and biochemistry.

## Teaching and working methods

At the Faculty of Medicine and Health Sciences student centred and problem based learning make up the foundation of the teaching. The student takes responsibility for, studies and researches current content of the courses and study programme. The methods of the course work challenge the students to independently formulate questions for learning, to seek knowledge and in dialogue with others judge and evaluate achieved knowledge. Students in the Bachelor's programme in Experimental and Industrial Biomedicine work together in groups based on reality based and course related biomedical issues to apply their knowledges, develop their own learning, contribute to the fellow students' learning and to practice cooperation. Throughout the study programme theory is integrated with practical modules. The course methods and integration modules stimulates and support the student's ability to apply their knowledge and professional competence.

Work methods used in this course are lectures, seminars, group work and skills training in the form of laboratory sessions.

## Examination

The form of examination is an individual written examination. In addition, active participation in compulsory course elements is required in order to pass the course. Compulsory course elements include seminars, laboratory sessions, reports and written assignments.

The written examination may be performed an unlimited number of times by those students who have not achieved a passing grade.

If special circumstances prevail, and if it is possible with consideration of the nature of the compulsory component, the examiner may decide to replace the compulsory component with another equivalent component.

### **Application for examination/written exam**

Instructions on how to apply for examinations are given prior to the beginning of each course.

### **Retake examination**

The date for re-examination should normally be announced by the date of the regular examination at latest; in which case the scope must be the same as at the regular examination.

### **Examination of students with functional disability**

If the LiU coordinator for students with disabilities has granted a student the right to an adapted examination for a written examination in an examination hall, the student has the right to it. If the coordinator has instead recommended for the student an adapted examination or alternative form of examination, the examiner may grant this if the examiner assesses that it is possible, based on consideration of the course objectives.

### **Change of examiner**

A student who has obtained a failing grade twice in a course or module, has the right to request for a new examiner except for extraordinary reasons.

### **Grades**

The grades for the course are either fail (F) or grades 3-5, where 3 corresponds to pass, 4 corresponds to satisfactory and 5 corresponds to excellent. The grade for the individual written exam (F, 3-5) forms the basis for the final grade of the course.

## Grades

Four-grade scale, LiU, U, 3, 4, 5

## Course literature

A literature reference list must be set no later than two months before the course begins by the programme committee for the Bachelor's Programme in Experimental and Industrial Biomedicine. There is no compulsory course literature.

## Other information

Planning and implementation of the course is to be based on the wordings in the course syllabus. A course evaluation is compulsory for each course and should include how the course is in agreement with the course syllabus. The course coordinator will analyse the course evaluation and propose appropriate development of the course. The analysis and proposal will be returned to the students, the Director of Studies, and as needed to the Education Board, if related to general development and improvement.

The course is carried out in such a way that knowledge of gender, gender identity/expression, ethnicity, religion or other belief system, disability, sexual orientation and age is addressed, highlighted and communicated as part of the programme.

If the course is cancelled or undergoes major changes, examination is normally offered under this course syllabus, at a total of three occasions, within/in connection to the two following semesters, of which one in close proximity to the first examination.

## Department

Medicinska fakulteten