

# Medical Systems Physiology

Programme course

6.0 credits

Medicinsk systemfysiologi

8BKG46

Valid from: 2020 Spring 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

- Bachelor's Programme in Experimental and Industrial Biomedicine
- 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:

- Demonstrate an advanced understanding of the structure, physiology and regulation of the major organ systems of the body, such as the circulatory system, kidneys, respiratory system, digestive tract and musculoskeletal system.
- Explain how organ systems interact in order to control the basic functions of the body.
- Explain how the balance of the body is maintained and regulated with regard to homeostasis
- Demonstrate an advanced understanding of the physiology and specialisation of different cell types in different types of tissue and describe how the cell composition affects organ function
- Describe fundamental mechanisms of tissue and organ repair in conjunction with an injury or disease.

### *Skills and abilities*

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

- Apply advanced laboratory methodology pertaining to physiological and biochemical measurement methods used in molecular biology
- Identify, use and interpret methodology and results in order to determine physiological function
- Independently collect, delimit and critically process scientific material from an academic, ethical and social perspective.
- Present scientific information orally and in writing

### *Judgement ability and approach*

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

- Critically appraise and evaluate knowledge within the field of medical physiology from an academic, ethical and social perspective.
- Critically read, appraise and give criticism of scientific literature and biomedical papers
- Assess how environmental factors affect the organ systems of the body

## Course content

During the course, the student will study human physiology from a medical perspective. Knowledge of the organisation and function of the human body is developed further from the course Medical Physiology, maintaining the focus on organ systems and their interaction. The term 'homoeostasis' is used to describe the normal functioning of the body and how abnormalities can result in disease. During the course, the student will study basic biomedical methodology, with a focus on illustrating physiological processes. The course provides greater knowledge of human physiology and system physiology, and prepares the student for further studies in neurobiology.

The course covers the fields physiology, cell biology, molecular biology, anatomy and histology, which are integrated with biomedical laboratory technology, biomedical ethics and a scientific approach.

## 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 laboratory sessions, lectures, seminars and tutorial groups.

## Examination

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

The examiner can decide to replace the compulsory element with an equivalent task if there are special reason to do so and if it is possible regarding the character of the compulsory element.

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

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

### **Retake of examination**

Point of time for retake examination must normally be announced no later than the time of the regular examination. The extent of the retake examination must be the same as the regular examination.

### **Examination of students with functional disabilities**

If LiU's coordinator for students with functional disabilities has issued a student the right to customized examination at a written hall examination the student has the right to this. If the coordinator instead has given the student a recommendation of customized examination or alternative examination form, the examiner can decide on this if the examiner consider it possible based on the objectives of the course.

### **Change of examiner**

A student who has obtained a failing grade twice for a course or a part of a course is, after request, entitled to be appointed another examiner, unless there are special reasons to the contrary.

### **Grades**

The course is graded with the grades Fail (U) or passing grades 3-5, where 3 corresponds to approved, 4 corresponds to approved with credit and 5 corresponds to approved with distinction. An aggregation of the grades from the individual written exam and the individual written report forms the basis of 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