

# Neurobiology

Programme course

6.0 credits

Neurobiologi

8BKG67

Valid from: 2021 Spring semester

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

**Date determined**  
2019-09-12

**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

## Entry requirements

Entry to the course requires at least 90 credits from semester 1-4 in the Bachelor's Programme in Experimental and Industrial Biomedicine.

## Intended learning outcomes

### *Knowledge and understanding*

Having completed the course, the student is expected to be able to:

- Describe the general anatomy and organization of the nervous system
- Describe the nervous system cell types and their functions
- Explain the mechanisms of neuronal signalling and neurotransmission
- Describe the different neurotransmitters and their receptors
- Explain mechanisms of neuroplasticity
- Show in-depth knowledge of processes in membrane physiology, including the action potential
- Explain principles of neuronal connectivity
- Describe key sensory and motor systems, including the concepts of reflex and will- controlled movements
- Demonstrate basic understanding of higher cognitive and affective functions, including memory

### *Skills and abilities*

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

- Identify, use, and interpret the results of, methods to study normal function of the nervous system
- Independently seek and identify relevant literature in neurobiology

### *Judgement ability and approach*

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

- Critically review scientific neurobiology literature and reports from a scientific perspective
- Assess ethical questions in relation to experimental studies of the neural system's function

## Course content

In this course biology, anatomy and functions of the neural system are studied. The course is an introduction to neurobiology through studies of the function of the neural system at a molecular, cellular and systems level. Further, cellular signalling mechanisms and how different neurotransmitters through their receptors modulate sensory, motor, cognitive and affective functions, are studied.

The course encompasses the fields of neurobiology, physiology and anatomy, with links to molecular biology and cell biology, and integrated with biomedical laboratory techniques, biomedical ethics and 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 stimulate and support the student's ability to apply their knowledge and professional competence.

Work methods used on this course are lectures, seminars, tutorial groups and laboratory sessions.

## Examination

The form of examination is an individual written examination and an individual written report. In addition, active participation in compulsory components is required to pass the course.

Compulsory elements include seminars, tutorial groups and written assignments. Active participation entails contribution in the form of work, questions, comments and/or reflections relevant for the task at hand.

The written examination and the written report may be performed an unlimited number of times by those students who have not achieved a passing grade. Completion of the written report is limited to two times.

The examiner can decide to replace the compulsory element with an equivalent task if there is special reason to do so and if possible, with respect to the nature of the compulsory element.

Examination and teaching are normally done in English.

### **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 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