

## Neurobiology

Neurobiologi

6.0 credits

Programme course

8BKG67

Valid from: 2022 Spring semester

<b>Determined by</b>	<b>Main field of study</b>	
Chairman of The Board for First and Second Cycle Programmes	Medical Biology	
<b>Date determined</b>	<b>Course level</b>	<b>Progressive specialisation</b>
2019-09-12	First cycle	G2X
<b>Revised by</b>	<b>Disciplinary domain</b>	
Chairman of The Board for First and Second Cycle Programmes	Medicine	
<b>Revision date</b>	<b>Subject group</b>	
2020-09-11; 2021-05-03	Medical Biology	
<b>Offered first time</b>	<b>Offered for the last time</b>	
Spring semester 2021		
<b>Department</b>	<b>Replaced by</b>	
Institutionen för biomedicinska och kliniska vetenskaper		

## 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.

Examination and teaching are normally done in English.

### **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.

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**

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

### **Re-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 for students with disabilities**

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 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.

An examiner may also decide that an adapted examination or alternative form of examination if the examiner assessed that special circumstances prevail, and the examiner assesses that it is possible while maintaining the objectives of the course.

### **Nomination of another examiner**

A student who has taken two examinations in a course or a part of a course without obtaining a pass grade is entitled to the nomination of another examiner, unless there are special reasons to the contrary.

## 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 conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

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.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.