Advanced neurobiology

Avancerad neurobiologi
7.5 credits

Programme course

8MEA18

Valid from: 2025 Spring semester

Determined by	**Main field of study**	
Chairman of The Board for First and Second Cycle Programmes	Medical Biology	
Date determined	**Course level**	**Progressive specialisation**
2023-12-29	Second cycle	A1N
Revised by	**Disciplinary domain**	
	Medicine, Natural sciences	
Revision date	**Subject group**	
	Medical Biology	
Offered first time	**Offered for the last time**	
Spring semester 2025		
Department	**Replaced by**	
Institutionen för biomedicinska och kliniska vetenskaper		

Specific information

Course language is English.

Course offered for

- Master's Programme in Experimental and Medical Biosciences

Entry requirements

Bachelor's degree in a major subject area with relevance for biomedical sciences, equivalent to a Swedish Kandidatexamen with a total of at least 90ECTS credits in some of the following subjects:

- biochemistry
- cell biology
- molecular biology
- genetics
- gene technology
- microbiology
- physiology
- immunology
- histology
- anatomy
- pathology

or similar.

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

Exemption from Swedish.

Intended learning outcomes

By the end of the course the student will be able to:

Knowledge and understanding

- Identify, describe, and provide a detailed account of complex neurobiological processes
- Relate neurobiological phenomena to cellular and molecular mechanisms

Competence and skills

- Acquire, define the scope of, and compile knowledge from various biological and medical areas relevant to neurobiology
- Integrate acquired knowledge with current research in medical neurobiology
- Use common techniques prevalent in neurobiological research

Judgement and approach

- Evaluate and discuss results from scientific publications in the field of neurobiology
- Evaluate and discuss results obtained from experimental studies within neurobiology

Course content

In this course, the student achieves advanced knowledge in neurobiology and an overview of the methods available for studying the nervous system. The focus is on current research areas within neurobiology. More specifically, the course includes:

- Molecular mechanisms for neuron communication
- Neurodegenerative diseases: molecular mechanisms
- Development and plasticity of the nervous system
- Behavior and higher functions
- Examination of scientific articles
- Ethics

Teaching and working methods

Within the Faculty of Medicine, student-centered and problem-based learning forms the basis of teaching. The student takes personal responsibility for the learning through an active and processing approach to the learning tasks. The working methods challenge the students to independently formulate questions for learning, to seek knowledge and to assess and evaluate acquired knowledge in dialogue with others. Students work together in groups based on real-life situations to develop their own learning, contribute to fellow students' learning and to practice cooperation. The teacher's role is to support students in this way of working.

This course includes lectures, tutorial groups, laboratory work and seminars.

Examination

The examination in this course consists of an individual written exam and an individual written literature study including oral presentation at a seminar.

Active participation in the compulsory parts is necessary to pass the course and assessment is carried out continuously. Active participation includes giving individual contributions and/or reflections with relevance to the learning tasks.

The compulsory parts of this course are tutorial groups, seminars and laboratory work.

The course is examined in English.

Grades

The grades for the course are Fail, Pass or Pass with Distinction. Grades for the individual written exam and the individual written literature study form the basis for the final course 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

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

Three-grade scale, U, G, VG

Course literature

List of relevant literature is available at least 2 months prior to the start of the course as decided by the Department of Biomedical and Clinical Sciences (BKV). There is no mandatory literature in the course.

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.