



LUND
UNIVERSITY

Faculty of Medicine

**BIMM26, Biomedicine: Molecular and Experimental
Neurobiology, 7.5 credits**
*Biomedicin: Molekylär och experimentell neurobiologi, 7,5
högskolepoäng*
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by The Master's Programmes Board on 2023-05-23 to be valid from 2023-05-30, spring semester 2024.

General Information

This course is an elective course in the Master's programme in Biomedicine.

Language of instruction: English

Main field of studies

Biomedicine

Depth of study relative to the degree requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

On completion of the course, students shall be able to use professional discourse to:

- explain neurobiological processes in the brain
- account for the functional anatomy of the brain, including the basal ganglia and cortex, cell types in the CNS and their function, and neurogenesis and its significance for normal brain function
- account for the cognitive functions of the human brain and synaptic transmission, and discuss the probable mechanisms behind different forms of synaptic plasticity in the CNS
- account for and analyse the probable mechanisms for cell death in the CNS, the emergence of neurodegenerative diseases and epilepsy, and argue for different types of therapeutic interventions for these diseases
- account for the experimental foundations and ethical problems relating to new

- methods based on neuroprotective and regenerative treatments
- explain how electrophysiological studies are carried out on acute brain tissue slices in vitro using field and whole-cell patch-clamp recording

Competence and skills

On completion of the course, students shall, in a scientific and professional manner, be able to

- independently present, critically evaluate and discuss research articles within neurobiology

Judgement and approach

On completion of the course, students shall be able to

- reflect on ethical approaches within neurobiology research
- identify their need of further knowledge and take responsibility for their ongoing learning.

Course content

The course provides students with specialised knowledge of the most recent scientific and technological developments within neurobiology. Students will learn about the basic mechanisms and experimental strategies within different areas of neurological research. The course consists of two parts: 1) Fundamental and basic neurobiology, and 2) Brain diseases and treatments. The course covers the following areas:

- The functional neuroanatomy of the brain
- Cellular and molecular neurobiology
- Neurodegenerative diseases
- Network-related diseases

Course design

The teaching consists of lectures, seminars, teamwork in small groups and laboratory sessions. The course also includes study visits to laboratories where modern techniques within neurobiology research are demonstrated. Attendance is compulsory for all group tuition, laboratory sessions and study visits.

Assessment

The assessment is based on two examination components: a written exam and a course portfolio.

The written exam is used to assess the learning outcomes relating to knowledge and understanding.

The course portfolio is used to assess the learning outcomes relating to knowledge and understanding, competence and skills, and judgement and approach through active participation in group exercises and laboratory sessions, written assignments and oral presentations.

Other forms of examination may be used if there are special reasons.

The examiner, in consultation with Disability Support Services, may deviate from the

regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass.

Entry requirements

To be admitted to the course, students must have at least 120 first or second-cycle credits in science subjects, including at least 15 credits in cell biology, 15 credits in biochemistry, 15 credits in pathobiology/pharmacology/toxicology/molecular medicine, 7.5 credits in physiology and 5 credits in neurobiology.

Further information

Overlapping course: BIMM22 Biomedicine: Molecular and Experimental Neurobiology, 7.5 credits

Subcourses in BIMM26, Biomedicine: Molecular and Experimental Neurobiology

Applies from V24

- 2401 Written exam, 5,0 hp
Grading scale: Fail, Pass
- 2402 Course portfolio, 2,5 hp
Grading scale: Fail, Pass