



LUND
UNIVERSITY

Faculty of Medicine

BIMM22, 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 Committee for Biomedical, Medical and Public Health Education on 2015-06-09 to be valid from 2015-07-01, spring semester 2016.

General Information

The course is an elective component of the Master of Medical Science 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 of new methods based on neuroprotective and regenerative treatment
- 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 scientifically and professionally 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 fields 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 fields:

- 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 of knowledge and understanding.

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

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 course, students must have 120 first or second cycle credits in science subjects, including at least 30 credits in cell biology/biochemistry, 15 credits in human physiology and 15 credits in pathobiology/pharmacology/toxicology/molecular medicine.

Further information

The course largely corresponds to the course BIMM54 Molecular and Experimental Neurobiology.

Subcourses in BIMM22, Biomedicine: Molecular and Experimental Neurobiology

Applies from V16

- 1501 Written exam, 5,0 hp
Grading scale: Fail, Pass
- 1502 Course portfolio, 2,5 hp
Grading scale: Fail, Pass