FDD3403 Advanced Topics in Brain Science 7.5 credits

Avancerade ämnen i hjärnvetenskap

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for FDD3403 valid from Autumn 2021

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Student should have taken a course equivalent to DD2401 Neuroscience. Background in dynamical systems, stochastic processes, information theory is desirable but not essential.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

On successful completion of the course the student should be able to:

- describe and discuss major theoretical and experimental advances in brain sciences
- describe prominent theories of information processing in the biological brain
- describe links between different brain theories and their own research work
- critically evaluate the novelty and advances made by recent literature
- identify extensions of existing research work
- define new research problems and methods

Course contents

Neural hardware; Neural coding; Receptive fields; Excitation-inhibition balance; Neural assemblies; Synaptic plasticity; Learning and memory; Methods to read and manipulate brain activity; Brain theory

Examination

- EXA1 - Examination, 7.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Students will be evaluated based on oral presentation, a written report and review of at least one written report of another student.

Other requirements for final grade

To pass the course the students must fulfill the following criteria:

- participate in at least 80% course meetings
- write a short review on specific research topic which is not directly overlapping with student's doctoral research
- present the review of a specific research topic
- peer-review at least one review report written by another student

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.