



Faculty of Social Sciences

## PSYD54, Psychology: Cognitive Neuroscience, 30 credits

*Psykologi: Kognitiv neurovetenskap, 30 högskolepoäng*

First Cycle / Grundnivå

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### Details of approval

The syllabus was approved by the board of the Department of Psychology on 2023-11-14 and was last revised on 2024-03-15 by Academic Director of Studies at Department of Psychology . The revised syllabus comes into effect 2024-03-15 and is valid from the autumn semester 2024.

### General information

The course is given as a freestanding course at the first cycle level and may be included in a Bachelor Degree in Psychology.

*Language of instruction:* Swedish and English

*Main field of study*

*Specialisation*

Psychology

G1N, First cycle, has only upper-secondary level entry requirements

### Learning outcomes

On completion of the course, the students shall be able to

#### Knowledge and understanding

- Show knowledge about the structure and function of the brain
- Describe the structure of the neurons and reflect on principles of neuronal communication and change
- Describe the development of the central nervous system and reflect on factors that can influence the development of and changes in the brain
- Reflect on principles behind methods that are used in cognitive neuroscience such as reaction time and performance measures, lesion and patient data and different brain imaging methods

- Reflect on basic brain functions such as sensory processing, perception, motor function and motivation
- Evaluate the relevant neurocognitive theories related to higher cognitive functions, such as attention, memory, language, thinking, problem-solving, cognitive control, decision-making and consciousness
- Evaluate how emotions affect higher cognitive functions such as attention, memory and decision making
- Demonstrate knowledge about different types of brain damage and psychotic syndromes

### Competence and skills

- Apply cognitive neuroscience theory in the understanding of everyday phenomena
- Conduct small empirical studies about cognitive functions, and report the results of the studies in accordance with the international standards for the publication of empirical research in psychology
- Search for and evaluate scientific information in cognitive neuroscience
- Communicate knowledge within cognitive neuroscience to different audiences

### Judgement and approach

- Evaluate scientific information in cognitive neuroscience and use a critical approach to reflect on modern theories and research results in the area

### Course content

Through theoretical studies and practical exercises, the course aims to convey knowledge about the structure and function of the brain and key areas of modern cognitive neuroscience, such as attention, memory, language, and cognitive control, as well as emotions and social interaction. The understanding of normal function is the primary focus of the course, but clinical examples will also be used, as they provide substantial illustrations of normal functioning. Furthermore, the course aims to provide knowledge about relevant research methods within the area, and major emphasis will be placed on the interdisciplinary nature of the subject.

The course consists of three modules.

#### **Module 1.** Introduction to brain function (10 credits)

The module provides students with basic knowledge of neuroanatomy, brain development and change, cellular function and communication, and basic brain functions, such as sensory processing, perception, motor function and motivation. Furthermore, important methods to study cognitive functions and mental processes (e.g. response times, accuracy) and to study the activity of the brain and functional anatomy (e.g. lesion and patient data, brain imaging methods) are described.

#### **Module 2.** Higher cognitive functions (15 credits) (2 parallel components)

*Component 1 - Theory (10 credits)*

The module focuses on higher cognitive functions, such as, attention and cognitive control, memory, language, social interaction, problem-solving and thinking and decision-making. Furthermore, the module communicates knowledge about the neurocognitive basis of emotion and how cognitive function is influenced by emotion. The module also introduces different types of brain damages and psychoorganic syndrome.

*Component 2 - Cognitive laboratory session (5 credits)*

After the lectures introducing each higher cognitive function, the student will participate in laboratory demonstrations. During the laboratory demonstrations the students get the opportunity to train important skills for conduction of empirical studies in cognitive neuroscience, including reporting of the results in accordance with the international norms for publication in the psychology.

**Module 3. Project Work (5 credits)**

The module includes a literature review but can also consist of a short empirical oriented project.

**Course design**

The teaching consists of lectures, group exercises, laboratory sessions and seminars. Attendance at the seminars and laboratory sessions is compulsory. Participation is compulsory unless there are valid reasons for not doing so. The opportunity to compensate for or resit compulsory components will be offered to students who have been unable to participate due to circumstances beyond their control such as accidents, sudden illness or similar. This also applies to students who have missed teaching because of activities as a student representative.

**Assessment**

Module 1 and module 2 (component 1) are examined through written examinations and presentations (compulsory attendance in seminars). The examination of module 2 (component 2) includes a compulsory laboratory report. The assessment of module 3 is based on the project work and subsequent presentation at a special seminar. Three exam sessions are offered in connection with the course: a first examination, a resit soon after the first examination and a catch-up exam. Within a year after a major change to the course or its cancellation, at least two further exam sessions are offered on the same course content. After this, further re-examination opportunities are offered but in accordance with the current course syllabus.

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.

**Grades**

Grading scale includes the grades: Fail, Pass, Pass with distinction

The student's grade is assessed based on how well the student fulfils the learning outcomes of the course. Regarding the grade of Fail, the student has not fulfilled the learning outcomes of the course. For the grade of Pass, the student must fulfil the learning outcomes specified for the course. For the grade of Pass with Distinction, it is required, in addition, that the learning outcomes are fulfilled particularly well. The grades awarded for compulsory teaching components are Pass or Fail. For the grade of Pass, the student must show acceptable results. For the grade of Fail, the student has shown unacceptable results. To receive the grade of Pass for the whole course, at least the grade of Pass is required in all modules and components. To receive the

grade of Pass with Distinction for the whole course, the grade of Pass with Distinction is required in a majority of the total credits for the course based on the modules/components that can apply the grades Fail/Pass/Pass with Distinction. At the start of the course, students are informed about the learning outcomes stated in the syllabus and the grading scale, and how it is applied in the course.

### **Entry requirements**

General requirements and studies equivalent of courses Social Studies 1b or 1a1+1a2 from Swedish Upper Secondary School.