UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Cognitive Neuroscience: Research Practice A1N

7.5 credits

Course code: KU731A
Version number: 1
Valid from: 1 January 2027
Ratified by: Curriculum Committee for Bioscience
Date of ratification: 11 June 2026

1. General information about the course

The course is provided by the University of Skövde and is named Cognitive Neuroscience: Research Practice A1N (Kognitiv neurovetenskap: forskningspraktik A1N). It comprises 7.5 credits and is a second-cycle course. The level of progression is A1N.

The course is a part of the main field of study in Cognitive Neuroscience. The disciplinary domain of the course is Natural Sciences.

2. Entry requirements

The prerequisite for this course is passed course KU538G Bachelor Degree Project in Cognitive Neuroscience G2E (or equivalent).

A further requirement is proof of skills in English, equivalent of studies at upper secondary level in Sweden, known as English 6 or English level 2. This is normally demonstrated by means of an internationally recognized test, e.g., IELTS, TOEFL, or an equivalent.

3. Course content

This course gives students direct hands-on experience with the research infrastructure and methodologies actively used in the cognitive neuroscience laboratories at the University of Skövde. Through laboratory work and structured analysis exercises, students develop the practical skills and methodological insight needed to independently operate and make informed use of each method.

The available infrastructure includes electroencephalography and event-related potentials (EEG/ERP), virtual reality (VR), motion tracking, and physiological measures such as heart rate, skin conductance, and respiration. Students gain hands-on experience operating each of these methods in the laboratory, working through the full practical workflow from setup and data acquisition to the challenges and decisions that arise in real recording conditions. This direct practical experience forms the basis for understanding how the realities of each method shape and constrain experimental design.

Data analysis is a central component of the course. Students work with neurophysiological data using dedicated software platforms (such as MATLAB or R), applying scripting workflows for data management and analysis, with an emphasis on practical application and developing a working understanding of the analytical steps involved. The course also introduces students to dedicated software for designing and presenting experimental paradigms, providing the practical foundation needed to construct and run their own experiments.

The course culminates in an independent research proposal in which students integrate their practical and methodological knowledge to specify a research question, select and justify appropriate methods, and outline the variables and analyses needed to address it.

4. Objectives

After completed course the student should be able to:

- plan and execute neurophysiological data collection, managing the full workflow from system setup and acquisition through preprocessing and quality control,
- evaluate how the technical properties and practical constraints of neurophysiological methods inform and limit experimental design choices,
- implement scripting workflows to process and analyze neurophysiological data using dedicated software platforms, and
- formulate and justify a research proposal specifying a research question, experimental paradigm, and methodological approach that accounts for the practical constraints and limitations of the chosen method.

5. Examination

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

A final grade of the course is only issued when all the examination parts have been passed and is determined by a weighted average of the grades for the examination parts Individual assignment and Unsupervised written examination. The average value is rounded to the nearest integer (half rounded up) and translated into a final grade of the course.

The examinations of the course consist of the following modes of assessment:

- **Individual assignment**
  3.5 credits, grades: A/B/C/D/E/F
- **Laboratory assignment**
  1.5 credits, grades: G/U
- **Unsupervised written examination**
  2.5 credits, grades: A/B/C/D/E/F

Students with a permanent disability who have been approved for directed educational support may be offered adapted modes of assessment.

6. Types of instruction and language of instruction

The teaching is comprised of workshops and lectures.

The teaching is conducted in English.

7. Course literature and other educational materials

Luck, S. J. (2014). *An Introduction to the Event-Related Potential Technique* (2nd ed.). Cambridge, MA: MIT Press. ISBN 9780262525855.

Scientific articles and other relevant materials may be added according to the teacher's instructions.

8. Student influence

Student influence in the course is ensured by means of course evaluation. The students are informed about the results of the evaluation and potential measures that have been taken or are planned, based on the course evaluation.

9. Additional information

The content of the course corresponds completely or partially with the following course(s) and cannot be included in the required credits of a degree qualification:

- KU726A - Cognitive Neuroscience: Research Practice A1N 7.5 credits

Further information about the course, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.