UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Research Methods and Data Processing in Cognitive Neuroscience A1N

7.5 credits

Course code: KU725A
Version number: 7
Valid from: 1 January 2026
Ratified by: Curriculum Committee for Bioscience
Date of ratification: 22 May 2025

1. General information about the course

The course is provided by the University of Skövde and is named Research Methods and Data Processing in Cognitive Neuroscience A1N (Forskningsmetoder och datahantering inom kognitiv neurovetenskap 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

The course provides a probing review of some of the most important research methods within cognitive neuroscience, such as EEG, ERP, MRI, and fMRI. The focus is on putting the methods into their respective research contexts, partly through a comprehensive description of their underlying technologies and inherent constraints, and how these constrain experimental designs, and partly through an introduction to processing and interpreting (some of) the methods' data, in various software applications. In addition, students work to improve their ability to critically assess published cognitive neuroscience research, and are introduced to and get to practice creating scientific posters.

4. Objectives

After completed course the student should be able to:

- survey and evaluate the most important research methods within cognitive neuroscience,
- recommend research methods to facilitate different forms of experimental design, and judge the way these designs affect e.g. the selection of participants (as regards gender, age, educational level, handedness, etc.),
- partially process sample data from different research methods, using relevant software tools,
- critique the methods, design, and conclusions of published cognitive neuroscience research, and
- create and present a scientific poster within the topic.

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 an average of the grades for the examination parts Written assignments 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:

- **Written assignments**
  2.5 credits, grades: A/B/C/D/E/F
- **Unsupervised written examination**
  2.5 credits, grades: A/B/C/D/E/F
- **Poster presentation**
  2.5 credits, grades: G/U

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, seminars and lectures.

The teaching is conducted in English.

7. Course literature and other educational materials

Newman, A. (2019). *Research Methods for Cognitive Neuroscience* (1st ed). London, England: Sage Publications Ltd. ISBN 9781446296509.

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

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.