

Course handbook

Evaluation and Cognitive Measurement, 6 hp

769A27



VT 2023 (v. 3 – v. 12)

Course leader: Erik Marsja & Emil Holmer

Examiner: Erik Marsja

Administrator: Carl Löfstrand

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Intended learning outcomes

After completion of the course the student should be able to:

- describe methods for evaluating and measuring cognition
- account for and use technical tools for measuring cognition
- carry out measurement of cognition with relevant measures
- account for and use technical tools for measuring environmental factors that affect cognition
- present results from measurement of cognition in an accurate and relevant way
- account for aspects of discrimination related to the measurement of cognition
- analyze the advantages and disadvantages of different measurement methods in relation to what you want to measure

Course content

The course covers methods knowledge in cognitive science with a focus on collecting, analyzing, and presenting results from measures of cognition, such as:

- theory of measurement, including psychometrics, psychophysics, and anthropometry
- technical tools for measuring cognition, including physiological measurement methods, brain imaging, and eye tracking
- measurement of cognitive performance, including experimental methods and observations
- self-assessments of cognitive performance, including assessment forms, usability and UX measures
- environmental measurements, such as sound and light levels linked to psychophysiological aspects

Teaching and working methods

Teaching consists of lectures, seminars, and laboratory work. Students are expected to work both independently and in groups.

NOTE: 6 HP = 160 hours of work
 Timetabled = 40 hours (some voluntary)
 Self-/group study = 120 hours

Examination

The course is examined through:

- active participation in seminars (1 credit, grading scale: U, G)
- written group assignments (2 credits, grading scale: U, G)
- written individual assignment (3 credits, grading scale: U, G, VG)

To pass the course, you must pass as an active participant in the seminars and pass both the written group assignment and the written individual assignment. To get VG on the course, you need to get VG on the written individual assignment.

Grades

Three-grade scale, U, G, VG.

Lectures, seminars, and laboratory work

The course is divided in two parts. The first part, week 3 to week 5 of the course, provides an overview of both general and specific theoretical and practical issues related to the measurement of cognition. In the first part, you focus on self-study, and attend seminars. You also need to form a group and start sketching out what you will do in Part 2 of the course in a PM.

The second part, starting at the end of week 5, focuses the application of methods to measure cognition, and how results from measurements should be presented. In the second part, you work with a group assignment, the results from which is presented in an examination seminar at the end of the course.

NOTE: Course activities on Wednesdays take place between 8-10, and on Fridays between 13-15. EM = Erik Marsja. EH = Emil Holmer. CS = Carine Signoret. MA = Mattias Arvola. TA = Torbjörn Andersson.

Part 1

Week 1: Introduction to measurement theory

Lecture 1, January 18 – Course introduction & Lecture (EH & EM)

Seminar 1, January 20 – Selecting measurements (EM)

Week 2: Experimental and observational approaches

Lecture 2, January 25 (EM)

Seminar 2, January 27 (EH)

Week 3: Environmental measurements and anthropometry

Lecture 3, February 1 (TA)

Seminar 3, February 3 (TA)

Week 4: Usability and UX

Lecture 4, February 8 (MA)

Seminar 4, February 10 (MA)

Week 5: Technical tools for measuring cognition

Laboration (counts as a seminar), February 15 – An example of a psychophysiological measurement of cognition: Demonstration of EEG (CS)

Part 2

Week 5

Seminar 5, February 17 – Discussion of group-PM's (EH)

Week 6

Group work/Testing, February 22 (no teacher)

Group work/Testing, February 24 (no teacher)

Week 7

Group work/Testing, March 1 (no teacher)

Group supervision, March 3 (the teacher depends on which method the group applies)

Week 8

Group work/Testing, March 8 (no teacher)

Q&A Before deadline for group work, March 10 (EH)

Week 9

Group work/Testing, March 15 (no teacher)

Q&A Before deadline for group work, March 17 (no teacher)

Week 10

Group work/Preparing presentation, March 22 (no teacher)

Seminar 6, March 24 – Examination (EH, EM)

Seminars (1 credit)

There are seven scheduled activities that counts as seminars: four topic-based seminars and one laboration in Part 1, and the group-PM discussion and examination seminars in Part 2. To pass for 1 credit at G, the student must be present and actively participating during all seven seminars. If absent, the student must do a seminar-specific supplemental assignment. Detailed instructions are available on Lisam.

Written group assignment (2 credits)

The written group assignment includes a PM, prepared during the first part of the course, and a report of the results obtained from the measurements of cognition conducted during Part 2 of the course. The assignment is presented and discussed during the examination seminar. For a detailed description of the assignment, see separate document on Lisam.

Written individual assignment (4 credits)

The written individual assignment focuses all themes of the course and represents a summary and discussion of theoretical and practical issues in the measurement of cognition. For a detailed description of the assignment, see separate document on Lisam.

Plagiarism

Plagiarism is not allowed. See the following website for details of LiUs policy on plagiarism (including definitions), and for links to other useful resources:

<https://liu.se/en/article/plagiering-upphovsratt>

Written assignments will be analysed for possible plagiarism using the web-based service 'Ouriginal'.

Course evaluation

The course will be evaluated via an EvaLiUate form, which will be sent out at the end of the course. Your opinions are important, so please remember to fill it in! If you have any questions or suggested improvements during the course, please contact Emil or Erik.

Practical information

Course leaders: Erik Marsja, erik.marsja@liu.se
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Literature

See separate literature list on Lisam.