Modelling of Cognitive Processes (H002000)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size   (nominal values; actual values may depend on programme)

Credits 5.0	Study time 150 h	Contact hrs	30.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent	lecture	15.0 h
			seminar: practical PC room classes	15.0 h
			online lecture	0.0 h
			online seminar: practical PC room classes	0.0 h

Lecturers in academic year 2020-2021

Verguts, Tom	PP02	lecturer-in-charge
Senoussi, Mehdi	PP02	co-lecturer

Offered in the following programmes in 2020-2021	crdts	offering
Master of Science in Psychology (main subject Teacher Education and Training)	5	A
Master of Science in Psychology (main subject Theoretical and Experimental Psychology)	5	A
Exchange Programme in Psychology	5	A

Teaching languages

English

Keywords

neural networks, formal models, theories of cognitive processes

Position of the course

Modelling of Cognitive Processes is a deepening course in the master program (Theoretical and Experimental Psychology). The focus is on developing formal models of behavior and cognition in order to derive hypotheses on neural and behavioral data.

Contents

In this course, the following topics are covered:
Formal modeling, neural network models.

Initial competences

Instruments of Experimental Psychology

Final competences

1 Realizing the importance of formal modelling in psychologie.
2 Understanding formal structure of neural networks.
3 Critically evaluating the implementation of cognitive theories in formal models.
4 Extracting the essence of scientific articles in the domain of cognitive modelling.
5 Implementing one's own ideas about cognitive mechanisms in a neural model.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, seminar: practical PC room classes, online lecture, online seminar: practical PC room classes

Extra information on the teaching methods

There are both theoretical lessons and computer lessons. In the computer lessons, students are introduced to a computer program that will be used to program models on their own. In this way, they learn both theoretically and practically to work with formal models.

Learning materials and price

- Support via website
- Slides and PDFs
Cost: 1 EUR

References

- McLeod, P., Plunkett, K., & Rolls, E.T. (1998). Introduction to connectionist modelling of cognitive processes. Oxford University Press: Oxford, UK.
- Rolls, E.T., & Treves, A. (2004). Neural networks and brain function. Oxford University Press: Oxford, UK.
- Farrell, S., & Lewandowsky, S. (2018). Computational modeling of cognition and behavior. Cambridge University Press: Cambridge, UK.

Course content-related study coaching

Interactive support and support via Ufora.

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination, open book examination

Examination methods in case of periodic evaluation during the second examination period

Written examination, open book examination

Examination methods in case of permanent evaluation

Participation, assignment, skills test

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

Evaluation of the computer tests throughout the year. Final exam consisting of both theory and a computer test.
Feedback about the non-period evaluation: The student can receive oral feedback about each computer test.

Calculation of the examination mark

A combination of periodic (50%) and permanent (50%) evaluation.
In case the student does not pass the periodic evaluation, the score on the non-periodic evaluation will be transferred to the retake examination period.
The final score is the weighted average of the components of the evaluation. Students can only pass for this course if they achieve a minimum of 10/20 for each component.

When students obtain less than 10/20 for at least one of the components, the following rules apply:
-       8/20 or 9/20 for at least one of the components: the student can no longer pass the entire course unit: if the total score is a mark of ten or more out of twenty, then this is reduced to the highest failing mark (9/20).
-       less than 8/20 for at least one of the components, the student can no longer pass the entire course unit: if the total score is a mark of eight or more out of twenty, then this is reduced to the highest non-deliberative mark (7/20).