



Cognitive Science & Cognitive Computing



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What is Cognitive Science?

Cognitive science studies phenomena such as perception and attention, memory and learning, planning, decision-making and problem-solving, feeling, thinking, speaking and acting. In the 1970s, cognitive science emerged from a series of individual disciplines in the natural sciences and humanities to become an interdisciplinary and multidisciplinary field of research. On the one hand, the aim is to understand cognitive phenomena in biological systems. On the other hand, the knowledge gained is used to create artificial systems with comparable capabilities. While cognition was originally understood as a symbol processing process in the brain, cognition research today is interested in a broader spectrum of phenomena that often also include the body and parts of the environment.

Methods such as machine learning in artificial neural networks remain central to cognition research. However, cognitive science also makes use of modern measurement methods such as EEG and eye tracking and allows subjects to explore virtual realities or examines the social behavior of primates in order to learn more about cognition beyond the classical laboratory situation. Philosophical issues such as the ethics of artificial intelligence are also addressed.

At the Institute of Cognitive Science at the University of Osnabrück, students are introduced to current research according to their interests and contribute to advancing this research themselves.



For contact data and further information about our courses of study, please consult the web page of the Institute of Cognitive Science:

www.ikw.uni-osnabrueck.de



Cognitive Science - Bachelor's program

Brief description:

The Bachelor's program "Cognitive Science" offers students a broad introduction to the methodological and content-related foundations of scientific research in the subfields of cognitive science: (computational) linguistics, cognitive (neuro)psychology, artificial intelligence, neuroinformatics, neuroscience and philosophy of cognitive science. In addition, students are introduced to areas of computer science and mathematics relevant to cognitive science. Building on these foundations, they develop an initial specialization. They choose from a wide range of courses according to their interests. A stay at a university abroad, which is an integral part of the program, allows students to gain their first international experience. In the last semester of the program, students work on their first major research project and write their bachelor's thesis.

Key information

Form of study: full-time degree program

Standard period of study: 6 semesters (180 ECTS)

Academic degree to be acquired: Bachelor of Science

Language of instruction: predominantly English, some German (appropriate language skills must be proven)

Admission requirements: University entrance qualification (Abitur or comparable foreign qualification). Further requirements according to admission regulations.

Start: Winter semester

"What I appreciate most about my degree is the diversity and flexibility; the many choices allowed me to figure out which direction I liked best and where I could best realize my potential."

Rebecca Watzlawek, Bachelor's Program Cognitive Science



Cognitive Science - Master's Program

Brief description:

The Master's program "Cognitive Science" gives students the opportunity to specialize in at least two areas of cognitive science according to their interests and academic background and to develop their individual academic profile. In interdisciplinary courses, students learn to understand and establish connections between the subfields of cognitive science. Within the framework of a two-semester study project, they deal intensively with a research question and develop a solution approach, present and document it, gaining valuable experience in independent project management under conditions that are common in professional scientific research at universities and in industry. At the end of the program, students write a master's thesis in which they can demonstrate their research skills in detail.

Key information:

Form of study: full-time degree program

Standard period of study: 4 semesters (120 ECTS)

Academic degree to be acquired: Master of Science

Language of instruction: English (appropriate language skills must be proven)

Admission requirements: Bachelor's degree (or equivalent) in Cognitive Science. Applicants with a Bachelor's degree (or equivalent) in closely related fields such as artificial intelligence, biology, computer science, (computational) linguistics, mathematics, neuroscience, medicine, philosophy or psychology may also be admitted. Further requirements according to the admission regulations.

Start: Winter or summer semester

"Studying Cognitive Science in Osnabrück was an excellent decision for me. Not only do you have a choice of more interesting courses and study projects than you could ever take, but you can also contribute your own ideas and are encouraged to do so."

Daniel Müller, Master's Program Cognitive Science



Cognitive Computing - Master's Program

Brief description:

The Master's program "Cognitive Computing" is similar in structure to the Master's program "Cognitive Science", but is designed as a part-time program and focuses on in-depth specialization in the computer-oriented areas of cognitive science: artificial intelligence, computational linguistics, neuroinformatics and neuroscience. In addition to the study projects that are also available to students of the Master's program "Cognitive Science", the program "Cognitive Computing" is characterized by the fact that students can carry out a specially tailored study project directly in their company in close cooperation with their supervisors at the Institute of Cognitive Science. In order to enable close supervision of the students in this part-time program, a tuition fee typically has to be paid by the employing company.

Key information:

Form of study: in-service degree program

Standard period of study: 4 semesters (120 ECTS)

Academic degree to be acquired: Master of Science

Language of instruction: English (appropriate language skills must be proven)

Admission requirements: Bachelor's degree (or comparable degree) in Cognitive Science or a closely related field of study such as (business) computer science, artificial intelligence, (computational) linguistics, mathematics, natural sciences, engineering or another field of study with a high computer science content. Further requirements according to the admission regulations.

Start: Winter semester



Research groups at the Institute of Cognitive Science

The Institute of Cognitive Science at Osnabrück University is composed of several research groups, which use modern research methods to investigate cognitive phenomena from different perspectives in an interdisciplinary way:

- Biologically oriented Computer Vision
- Computational Neuroscience
- Ethics of Artificial Intelligence
- Cognitive Modeling
- Artificial Intelligence
- Machine Learning
- Natural Language Processing
- Neurobiopsychology
- Neurocomputation
- Neuroinformatics
- Philosophy of Mind and Cognition
- Psycho- and Neurolinguistics
- Comparative Bio-Cognition

In addition, several associated research groups at other institutes of the university contribute to research and teaching in the field of cognitive phenomena. Taken together, these perspectives provide a comprehensive picture of the subject area of cognition.