APPLIED NEUROCOGNITIVE PSYCHOLOGY LAB

Prof. Dr. Jochem Rieger

We investigate neural processes in the sensation-perception-action-cycle in an interdisciplinary team. Central to our research are cutting edge brain decoding methods which we use to learn from invasive and noninvasive neuroimaging methods in humans how the brain accomplishes everyday tasks. The aim of our research is twofold. On the one hand we are interested in basic research questions on how the brain constructs percepts from environmental sensory data, represents percepts, makes decisions, and controls muscles to interact with the environment. On the other hand we are interested to apply our research to construct brain-machine interfaces to supplement human cognition, communication, and motor function. Examples for our work on decoding of cognitive states and our brain controlled grasping project can be found on the lab-website.

jochem.rieger@uni-oldenburg.de

BIOLOGICAL PSYCHOLOGY LAB

Prof. Dr. Christiane Thiel

Our research focuses on visuospatial attention, learning and plasticity and the pharmacological modulation of such processes. The combination of pharmacological challenges with cognitive tasks in the context of functional neuroimaging (fMRI) studies is a powerful approach to directly assess pharmacological modulation of human brain activity. For example, we have performed several pharmacological fMRI studies showing a nicotinic modulation of visuospatial attention. A long-term goal of such studies is to provide an experimental approach that has relevance to studying mechanisms of recovery and treatment effects in patients with neurological damage.

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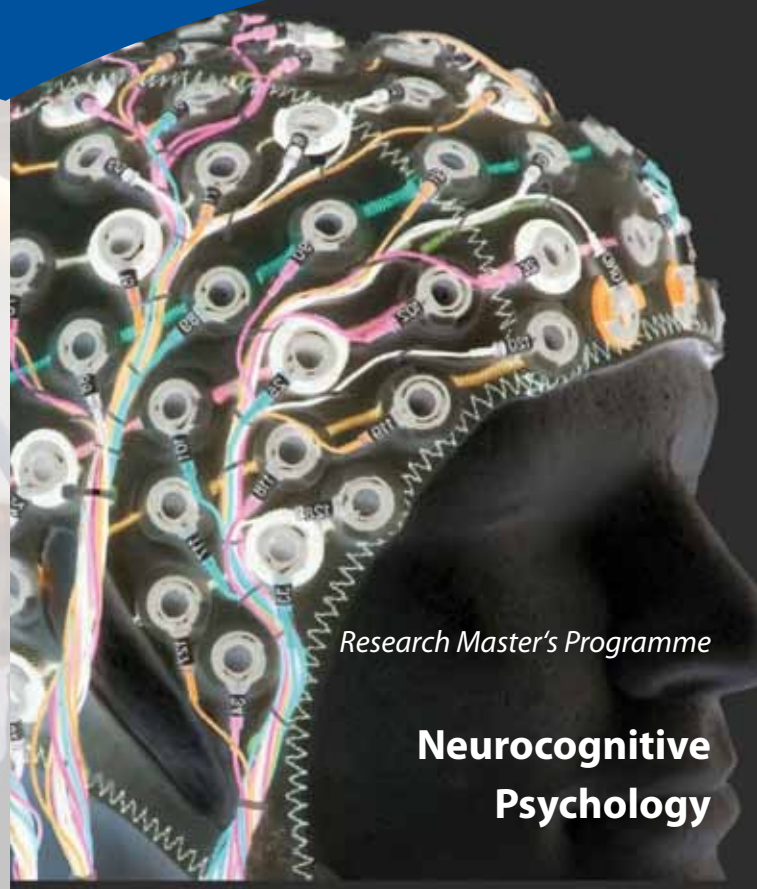
CARL VON OSSIETZKY universität OLDENBURG



Research Master's Programme

Neurocognitive Psychology

DEPARTMENT OF PSYCHOLOGY
CARL VON OSSIETZKY UNIVERSITY OLDENBURG

in Oldenburg, Germany

PSYCHOLOGICAL METHODS AND STATISTICS LAB

Prof. Dr. Andrea Hildebrandt

By applying and advancing multivariate statistical and psychometric modeling techniques, our research aims at better understanding individual differences in general cognitive functioning and social cognition. We develop and evaluate computerized test batteries rooted in experimental psychology for measuring human abilities and combine psychometric, neurometric (EEG, (f)MRI), molecular-genetic and hormonal assessments to investigate within- and between-person variations in cognition, emotion and personality. A special focus of our research is the processing of invariant and variant facial information – a basic domain of social cognition. We ask how are abilities in the social domain special as compared with cognitive processing in general. To this aim we investigate typically functioning individuals across the life span, including old age and pathological conditions. Beyond these goals, we enjoy contemplating about conceptual issues in psychological measurement.

andrea.hildebrandt@uni-oldenburg.de

EXPERIMENTAL PSYCHOLOGY LAB

Prof. Dr. Christoph Herrmann

The lab is headed by Christoph Herrmann and focuses on physiological correlates of cognitive functions such as attention, memory and perception. The methods that are used comprise electroencephalography (EEG), magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI), transcranial electric stimulation (TES), transcranial magnetic stimulation (TMS), eye-tracking, neural network simulations, and psychophysics. A focus of the research lies in the analysis of oscillatory brain mechanisms. Oscillatory brain activity is considered to be one of the electrophysiological correlates of cognitive functions. We analyse these brain oscillations in healthy and pathological conditions, simulate them for a better understanding and try to modulate them.

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NEUROPSYCHOLOGY LAB

Prof. Dr. Stefan Debener

We use methods from experimental psychology and psychophysiology to study the relationship between the human brain and cognitive functions. One focus of our research is related to sensory deprivation and compensatory mechanisms. We study how hearing loss and deafness change the functional organization of the brain and what the consequences of these changes are for auditory rehabilitation. Related to this topic are studies investigating how information from different sensory modalities is combined to create a coherent percept of an object. Our key tool is the high-density EEG, but we also use MEG, fMRI, concurrent EEG-fMRI and mobile, wireless EEG. Because these tools provide us with complex, mixed signals that reflect different features of human brain function, we spend some time on the application and evaluation of signal un-mixing and signal integration procedures as well.

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PROGRAMME OVERVIEW

The Master's course Neurocognitive Psychology is a research-oriented international graduate programme which offers systematic coverage of the major fields in psychology as well as an in-depth training in cognitive neuroscience.

The programme takes 2 years to complete and is offered through the Department of Psychology. As a graduate student, you will be able to choose from a variety of research and/or applied modules. The department's research spans cutting-edge topics such as multisensory integration, brain oscillations and behaviour, cortical plasticity, computational neuroscience, brain-machine interfaces and pharmaco-neuroimaging, to name a few. Different state-of-the-art neuroscience tools and psychology labs are available to gain hands-on experience in magnetic resonance imaging, magnetoencephalography, high-density electroencephalography, eye tracking, transcranial magnetic and electrical stimulation and psychophysics. As such, the Department of Psychology in Oldenburg is probably among the best-equipped in the country. Practical experience is provided in several of our applied modules in collaboration with local hospitals and rehab centres.

This programme has been accredited by AQAS and is running since October, 2010. It is part of the Network of European Neuroscience Schools (NENS).

REASONS TO STUDY NEUROCOGNITIVE PSYCHOLOGY IN OLDENBURG

* Hands-on research experience in state-of-the-art neuroscience and psychology labs (fMRI, EEG, TBS, MEG, fNIRS)
* International: English-taught psychology programme with many international students
* Interdisciplinary background of teachers and students
* Extracurricular opportunities: academic writing, LaTeX, career day, option to go abroad

TESTIMONIAL:

'As a student from the U.S., I feel that this is the perfect program for international students! The neurocognitive psychology program is all in English and the faculty does everything they can for foreign students to transition well! With an active student body and a lot of research opportunities, I am having a great learning experience without ever getting homesick!'
- Brittni, USA

CURRICULUM

The programme is entirely taught in English and comprises a total of 120 ECTS credit points (CP). It consists of a general component (45 CP), a specialisation component (24 CP), a practical part (21 CP), and a Master's thesis (30 CP). The programme is designed in a modular fashion and the number of mandatory modules decreases towards the end of the programme, offering increased flexibility to students. The mandatory general component includes research methods, psychological diagnostics, scientific work, a MATLAB course as well as an elective subject. The specialized component offers ten different modules from which students may choose, depending on interest. There is an especially extensive range of study offerings in the field of applied and experimental cognitive neuroscience, reflecting the research focus of the Department of Psychology. Practical components such as the internship, the practical project, and the Master's thesis facilitate the application of acquired knowledge. In the two latter modules, students are encouraged to formulate their own research question, carry out a scientific experiment, and present their findings according to academic conventions.

The Master's programme Neurocognitive Psychology has the following structure:

General part (mandatory): 45 CP
* Research methods 12 CP
* Psychological Assessment and Diagnostics 12 CP
* Communication of scientific results 6 CP
* Computation in Neuroscience 9 CP
* Minor 6 CP

Specialized part (choose 4*6, or 2*9 + 1*6): 24 CP
* Clinical Psychology 9 CP
* Transcranial Brain Stimulation 6 CP
* Neurophysiology 6 CP
* Neurocognition 6 CP
* Sex and Cognition 6 CP
* Neuropsychology 6 CP
* Applied Cognitive Psychology 6 CP
* Human Computer Interaction 6 CP
* Neuromodulation of Cognition 6 CP
* fMRI Data Analysis 9 CP

Project part (internship mandatory; choose 1 practical project): 21 CP
* Internship or lab visit 12 CP
* Practical project 9 CP

(chose from Applied Neurocognitive Psychology, Biological Psychology, Psychological Methods and Statistics, Experimental Psychology, Neuropsychology)

Master's part (mandatory): 30 CP
* Master's thesis 27 CP
* Master's colloquium 3 CP

Total: 120 CP

CAREER PERSPECTIVES

The programme prepares students for a career in research or for an employment in applied settings (such as hospitals or industry). Several of the research based modules prepare students in depth for entering a PhD programme in the area of cognitive neuroscience. The applied modules additionally guarantee a basic training in the area of clinical neuropsychology and human computer interaction.

APPLICATION AND ADMISSION

Admission Requirements
Bachelor's degree with a main focus on psychology or cognitive sciences (alternatively, Bachelor's degree from other relevant disciplines: natural sciences, mathematics, informatics, audiology, or medicine) including 5 CP in statistics, 5 CP in psychological/neuroscientific experimental work, 6 CP in general/cognitive psychology and 5 CP in biological psychology/neurosciences.

Proof of English proficiency, level B2 or above.

Letter of motivation, written in English.

The degree of eligibility depends upon the grade of the Bachelor's degree and additional qualifications (scientific work experience, motivation, publications, stay abroad, volunteer work). Further details on admission can be found on our website.

Application
Applicants with German Bachelor's degree:
apply via www.uol.de/studium/bewerben-master/
(June 1 - July 15)

International applicants:
apply via www.uni-assist.de
(May 1 - July 15, but preferably June 15)

FURTHER INFORMATION

For questions regarding the study programme
Dr. Kerstin Bleichner
phone: +49 (0)441 798-2947
e-mail: psychology@uni-oldenburg.de

For full details on the programme visit:
www.uol.de/en/neurocogpsy