

Master program "Mind and Brain"

Berlin School of Mind and Brain

Humboldt-Universität zu Berlin

Winter semester 2018/2019



ALL TIMES ARE MEANT S.T. (SHARP)!

Monday	Tuesday	Wednesday	Thursday	Friday
10:00 – 11:30 Bermppohl / Brandt / Bajbouj Lecture: Clinical Neuroscience		10:00 – 11:30 Finke Tutorial Clinical Neuroscience	10:00 – 11:30 Bayer Lecture Basic Research Methods	9:00 – 10:30 Ott Tutorial: Neuroanatomy and Neuro- physiology
12:30 – 14:00 Haynes Lecture: Cognitive Neuroscience	12:15 – 13:45 Rotem-Stibbe / Moore Evolution of Language (M)	12:30 – 14:00 Loaiza Tutorium: Philosophy of Mind	12:30 – 14:00 Tudge Advanced Statistics (B)	11:00 – 12:30 Tudge Tutorial: Basic Research Methods
	13:00 – 14:30 Dziobek Research Colloquium (B)	14:30 – 16:00 Coelho Mollo General Philosophy of Science (M)	14:30 – 16:00 Rekers / Finke Spatial Navi- gation: From Grid Cells to Virtual Reality and back (B)	13:30 – 15:00 Irmen Tutorial: Cognitive Neuroscience
16:30 – 18:00 Tudge A practical Introduction to Matlab (B)	14:15 – 15:45 Coelho Mollo Philosophy of Cognitive Science (M)	16:30 – 18:00 Kaltwasser / Guendelman Interpersonal Perception (M/B)		
	18:15 – 19:45 Pauen Philosophical Colloquium (M)			

Block courses: 1-2, 4-5 Oct Khalil/Ott/Villringer, Neuroanatomy & -physiology

8 – 12 Oct Pauen, Philosophy of Mind

10-12 Oct Moore/Schlingloff, Origins of Cooperation

25-27 Feb Moore, Metarepresentation and Metacognition

25 Feb – 1 Mar Pauen/Pulvermüller/Fischer, Meaning-Embodiment-Extrospection

4 – 8 Mar Weigand, Clinical Applications of TMS

Comprehensive Course Calendar

Block courses:

Block courses BEFORE THE START of the semester:

Please find detailed course descriptions on the specified pages.

<i>A. Villringer et al.</i>	<i>Neuroanatomy and Neurophysiology</i>	<i>1-2, 3–4 Oct '18 (p. 3)</i>
<i>M. Pauen</i>	<i>Basic Phil. Concepts and Philosophy of Mind</i>	<i>8–12 Oct 2018 (p. 3)</i>
<i>R. Moore/L. Schlingloff</i>	<i>Origins of Cooperation</i>	<i>10-12 Oct 2018 (p.7)</i>

Block courses AFTER THE END of the semester:

<i>J.-D. Haynes/M. Pauen</i>	<i>Ethics and Neuroscience</i>	<i>18–22 Feb 2019 (p. 5)</i>
<i>R. Moore</i>	<i>Metarepresentation and Metacognition</i>	<i>25-27 Feb '19 (p.8)</i>
<i>M. Pauen/F. Pulvermüller/M. Fischer</i>	<i>Meaning-Embodiment-Extrospection</i>	<i>25 Feb–1 Mar 19 (p.8)</i>
<i>A. Weigand</i>	<i>Clinical Applications of TMS</i>	<i>4 – 8 March 19 (p.9)</i>

Mandatory Lectures:

1 - 2, 4 – 5 October 2018, 9:00 – 17:00

Neurophysiology and Neuroanatomy

Dr. Ahmed Abdelrahim Khalil (CSB Neuroradiology, Center for Stroke Research Berlin, Charité - Universitätsmedizin Berlin) / Dr. Derek Ott (Unfallkrankenhaus Berlin) / Prof. Dr. Arno Villringer (Max Planck Institute for Human Cognitive and Brain Sciences)

venue: Hertwig-Hörsaal, Oscar Hertwig Haus, Campus Nord, Philippstraße 11, 10115 Berlin

Mind and Brain and Einstein Center for Neurosciences students **only!**

The course provides a basic understanding of where (anatomy) in the brain what (physiology) happens. It is of particular value for those students whose background is mainly in a “mind” science such as linguistics or philosophy. Participating students will learn about the fundamental units of brain anatomy, such as lobes, areas, columns, etc. A special emphasis will be put on structure function relationship, i.e., which brain area is responsible for which aspect of brain function. It will be explained how brain areas interact, and what theories exist about bringing together aspects of information from different brain areas into one percept or thought (binding). The physiology part of the course will address fundamentals of neuronal functioning, interaction of neurons, neurotransmission, and will provide an understanding of neurovascular coupling, a basis of the most important functional neuroimaging method, fMRI.

8 - 12 October 2018, 9:00 – 17:00

Basic Philosophical Concepts and Philosophy of Mind

Prof. Dr. Michael Pauen (Institut für Philosophie, HU Berlin)

venue: Hertwig-Hörsaal, Oscar Hertwig Haus, Campus Nord, Philippstraße 11, 10115 Berlin

The course provides a systematic overview over the most central issues in the philosophy of mind. Participating students will learn to apply relevant philosophical concepts, they will be taught to construct a valid argument; they will learn how to distinguish between the most important options in the mind–body debate and how to assess the consequences of neuroscientific research.

Monday 10:00 – 11:30

start: 22.10.2018 (!)

Clinical Neuroscience

Prof. Dr. Felix Bermpohl (Klinik für Psychiatrie und Psychotherapie, Charité) / Prof. Dr. Stephan Brandt (Klinik für Neurologie, Charité) / Prof. Dr. Malek Bajbouj (Klinik für Psychiatrie und Psychotherapie, Charité)

venue: Ostertaghaus (House 4), Campus Nord, Philippstraße 12, 10115 Berlin, Hörsaal 4

Mind and Brain and Einstein Center for Neurosciences students **only!**

The course provides basic knowledge about the neuroscience of clinical psychiatry and neurology. Students will learn the basic pathophysiology of important disorders of the brain and how the brain reacts to these challenges. Participating students will learn (a) how alterations of different cognitive systems (e.g., emotion regulation, language, reward) result in mental disorders, (b) how these alterations can be studied using neuroscience methods, (c) how this knowledge may translate into therapeutic applications. Particular emphasis will be placed on practical aspects of clinical neuroscience, e.g. by demonstrating the examination of a patient.

Ch. Zorumski/E. Rubin, *Psychiatry and Clinical Neuroscience*, Oxford 2011

Monday 12:30 -14:00

start: 22.10.2018 (!)

Cognitive Neuroscience

Prof. Dr. John-Dylan Haynes (Bernstein Center for Computational Neuroscience Berlin)

venue: Bernstein Center for Computational Neuroscience, Philippstraße 12 (House 6), 10115 Berlin, Lecture Hall

*Mind and Brain, Bernstein-Center and Einstein Center for Neurosciences students **only!***

The course provides an introduction to the field of Cognitive Neuroscience which is the study of the neural basis of perception, cognition, and behavior in the intact human brain. The course will cover core topics in Cognitive Neuroscience, including typical experimental paradigms and research methods.

A light introduction to Cognitive Neuroscience for beginners:

Ward. *The student's guide to cognitive neuroscience*. Psychology Press, 3rd edition, 2015.

Thursday 10:00 – 11:30

start: 18.10.2018

Basic Research Methods

Dr. Mareike Bayer (Institut für Psychologie, HU Berlin / Berlin School of Mind and Brain)

venue: Bernstein Center for Computational Neuroscience, Philippstraße 12 (House 6), 10115 Berlin, Lecture Hall

Mind and Brain students **only!**

This course intends to provide knowledge on the theoretical principles and practical applications of psychological research methods in general and neurocognitive methods in particular. It will cover predominantly important steps of conducting quantitative research such as research questions, the design of experiments, validity, types of data, and reporting results. Various technologies for measuring brain structure and function and the limitations of these techniques will also be covered, including functional magnetic resonance imaging (fMRI), event-related potentials (ERPs), transcranial magnetic stimulation (TMS). In addition, eye tracking measures and psychophysiological measures such as skin conductance response will be covered. The application of those methods will be illustrated with examples from various cognitive abilities (e.g., emotion understanding, memory). Wherever possible, the course will allow for hands-on experience with the methods (cf. tutorial). The goal for students is to be able to understand the methods covered and critically evaluate research that uses them.

Block course: 18 – 22 Feb 2019, 9:00 – 17:00

Winter School on Ethics and Neuroscience

Prof. Dr. John-Dylan Haynes (Bernstein Center for Computational Neuroscience Berlin)

Prof. Dr. Michael Pauen (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain)

Prof. Dr. Thomas Schmidt (Institut für Philosophie, HU Berlin)

Prof. Dr. Jesse Prinz (Einstein Visiting Fellow, Berlin School of Mind and Brain)

venue: Ostertaghaus (House 4), Campus Nord, Philippstraße 12, 10115 Berlin, Hörsaal 4 (Room 111) /

Bernstein Center for Computational Neuroscience, Philippstraße 12 (House 6), 10115 Berlin, Lecture Hall

Participants will be familiarized with basic ethical concepts and theories and will gain an overview of ethically relevant aspects of neuroscience. Thereby, participants will learn to know how ethical issues are tackled in philosophical ethics, and they will get an overall view of the theoretical interfaces between ethics and neuroscience.

Mandatory Tutorials:

Wednesday 10:00 – 11:30

start: 24.10.2018

Tutorial: Clinical Neuroscience

Prof. Dr. Carsten Finke (Charité - Universitätsmedizin Berlin / Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Wednesday 12:30 – 14:00

start: 17.10.2018

Tutorial: Philosophy of Mind

Juan Loaiza Arias (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 9:00 – 10:30

start: 19.10.2018

Tutorial: Neuroanatomy and Neurophysiology

Dr. Derek Ott (Unfallkrankenhaus Berlin)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 11:00 – 12:30

start: 19.10.2018

Tutorial: Basic Research Methods

Dr. Luke Tudge (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 13:30 – 15:00

start: 26.10.2018

Tutorial: Cognitive Neuroscience

Friederike Irmen (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Block Courses:

10 – 12 Oct 2018, 9:15 – 17:45

Origins of Cooperation

Dr. Richard Moore (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain) / Laura Schlingloff (Central European University, Budapest)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

Cooperative behaviours lie at the heart of human ethical life and provide the basis for our social interactions. While humans are uniquely adept at working together to achieve common goals, and frequently even act altruistically, cooperative tendencies can be found in many animals. Yet from the perspective of evolutionary biology, the existence of cooperation is puzzling. On account of the existence of cases where individuals gain by deceiving others, some take it for granted that cooperative individuals ought not to evolve. Since the unit over which natural selection operates is the reproductive success of individuals, there should be selection against unselfish individuals, and for those who are willing to exploit others for personal gain.

In this course we will look at the nature of cooperation, and how its evolution might be explained. Over the course of the seminar, we will discuss key concepts and sketch a picture of the particularities of the human cooperative mind. We will start by looking at cooperative behaviours across different taxa, in particular our closest relatives – the great apes. We will then explore ways in which apes' and human children's cooperative interactions are similar or different, what cognitive mechanisms might underlie such interactions, and how these mechanisms possibly developed in the course of evolution. Readings will be drawn from Philosophy of Mind, Philosophy of Biology, and empirical research on the development of cooperative motivations in ontogeny and phylogeny.

Readings (excerpt):

Clutton-Brock, T. (2009). Cooperation between non-kin in animal societies. *Nature* 462(5): 51-57.

Hare, B. & Tomasello, M. (2004). Chimpanzees are more skilful in competitive than in cooperative cognitive tasks. *Animal Behaviour* 68: 571-581.

Rekers, Y.; Haun, D. B. M. & Tomasello, M. (2011). Children, but Not Chimpanzees, Prefer to Collaborate. *Current Biology* 21(20): 1756-1758.

Melis, A. P. & Semmann, D. (2010). How is human cooperation different? *Philosophical Transactions B* 365(1553): 2663-2674.

J. M. Burkart; S. B. Hrdy & van Schaik, C. P. (2009). Cooperative breeding and human cognitive evolution. *Evolutionary Anthropology* 18(5): 175-186.

Fehr, E.; Fischbacher, U. & Gächter, S. (2002). Strong reciprocity, human cooperation, and the enforcement of social norms. *Human Nature* 13(1): 1-25.

Kuhlmeier, V. A.; Dunfield, K. A. & O'Neill, A. C. (2014). Selectivity in early prosocial behavior. *Frontiers in Psychology* 5(836): 1-6.

Heintz, C.; Karabegovic, M. & Molnar, A. (2016). The Co-evolution of Honesty and Strategic Vigilance. *Frontiers in Psychology* 7: 1503.

Jara-Ettinger, J.; Tenenbaum, J. B. & Schulz, L. E. (2015). Not so innocent: toddlers' inferences about costs and culpability. *Psychological Science* 26(5): 633-640.

25 Feb – 1 March 2019, 9:30 – 16:30

Meaning – Embodiment - Extrospection

Prof. Dr. M. Fischer (Universität Potsdam) / Prof. Dr. M. Pauen (Berlin School of Mind and Brain) / Prof. Dr. Dr. F. Pulvermüller (FU Berlin)

venue: Universität Potsdam, Campus Golm, Karl-Liebknecht-Str. 24-25, 14476 Potsdam, Haus 14 (Department Psychologie), Raum 015

Preparatory meeting: 20 December 2018, 18:15

venue: Humboldt-Universität zu Berlin (main building), Unter den Linden 6, 10099 Berlin, room 3059

MIND / BRAIN

Traditionally, philosophy, psychology, and linguistics used to focus on abstract descriptions when it comes to explain and understand cognition. In particular, the conceptual or semantic system has been framed in terms of a symbolic system in which meaning is defined in terms of abstract features or relationships between symbols. This view has been challenged in recent years both by philosophical arguments and empirical evidence showing that cognitive processes can only be understood if bodily processes are taken into account, that is, if meaning and concepts are 'grounded' in the world and in human actions and emotions. In addition, results from brain research have been interpreted to provide strong evidence that concepts are grounded and 'embodied'. The current 'embodiment debate' aims at an integrative account that tackles relevant philosophical issues and explains a broad range of psychological and neuroscience data.

The seminar will start with a discussion of the main philosophical issues. Afterwards, empirical papers from psychology, linguistics and neuroscience which fueled the debate about embodied cognition will be read.

25 – 27 Feb 2018, 9:15 – 17:45

Metarepresentation and Metacognition

Dr. Richard Moore (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain) / Johannes Mahr (Central European University, Budapest)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

Metarepresentation – the ability to think about representations – and metacognition – the ability to monitor cognitive processes – have been hypothesised to play a number of key roles in human life. For example, metacognition has been supposed to play an important role in action guidance and control (Proust); and metarepresentation is thought necessary for both mental time-travel, including episodic memory and future planning (Corballis, Suddendorf), and social cognition (Sperber). In this seminar, we will set out to clarify the nature of metacognition and metarepresentation – by considering whether they are elements of a single ability, or a number of related abilities. We will also consider and evaluate competing claims about the extent to which metarepresentation and metacognition are implicated in different aspects of human life, and possible sources of their development in ontogeny and phylogeny.

This class will be suitable for advanced students in the Philosophy of Mind and Psychology, and related cognitive sciences. It is not recommended to students with no background in this area of research.

Key texts:

- Carruthers, P. (2009). Mindreading underlies metacognition. *Behavioural and Brain Sciences*, 32(2), 164-182.
- Michaelian, K. (2016). *Mental Time Travel: Episodic Memory and Our Knowledge of the Personal Past*. MIT Press
- Proust, J. (2013). *The Philosophy of Metacognition: Mental Agency and Self-Awareness*. OUP.
- Sperber, D. (Ed.). (2000). *Metarepresentations: A multidisciplinary perspective* (Vol. 10). Oxford University Press.
- Suddendorf, T. & Corballis, M. (2007). The evolution of foresight: What is mental time travel, and is it unique to humans? *Behavioural and Brain Sciences*, 30(3), 299-313.

4 – 8 March 2019, 9:30 – 11:00, 11:30 – 13:00, 14:00 – 15:30

Clinical Applications of TMS

Dr. Anne Weigand (Institut für Psychologie, HU Berlin / Berlin School of Mind and Brain)

Preparatory meeting: Tuesday, 15 January 2018, 10:00

Venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

Transcranial magnetic stimulation (TMS) is a powerful method of non-invasive brain stimulation that can be used to assess causal relations between brain activity and behavior. In addition, TMS has the capacity to modulate cortical activity beyond the duration of application and holds great promise as a therapeutic tool.

In this course we will first focus on the physical and hardware foundations of TMS (including the principle of electromagnetic induction, stimulation parameters, and coil types), related safety considerations, and practical aspects of its application (including motor threshold determination and the use of neuronavigation). Following this, we will discuss recent evidence concerning the efficacy of TMS to treat a number of psychiatric conditions (including major depression, autism, obsessive compulsive disorder, schizophrenia, and post traumatic stress disorder).

Elective Courses:

Focus MIND

Tuesday 12:15 – 13:45

start: 16.10.2018

Evolution of Language

Lialin Rotem-Stibbe (Berlin School of Mind and Brain) / Dr. Richard Moore (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

In this course we will read and engage in a number of on-going debates in topics related to language evolution. These will include recent debates on the question of whether syntactic abilities (i.e. the ability to combine words into meaningful, hierarchically organised strings of elements) is part of our biological inheritance, or learned in childhood; on whether language is an adaptation or an exaptation; on the sorts of selection pressure that might have given rise to syntactic structure; and on whether animal communication is continuous or discontinuous with human forms of communication. A central theme of the course will also be an examination of the relationship between communication and language. We will read philosophical writings on language evolution, empirical studies of communication in primates, and linguistic analyses of the theoretical foundations of syntax. For those without a background in linguistics, foundations readings in linguistic theory will also be provided.

The course will culminate with detailed readings of two recent books: Liljana Progovac's *Evolutionary Syntax*, and Angela Friederici's *Language in Our Brain*.

Background reading for the interested:

Pinker, S. & Bloom, P. (1990). Natural language and natural selection. *Behavioral and Brain Sciences*.

Tuesday 14:15 – 15:45

start: 16.10.2018

Philosophy of Cognitive Science

Dr. Dimitri Coelho Mollo (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

The aim of this course is to dig deep into the foundations of Cognitive Science, examining its conceptual underpinnings. The focus will be on the nature and explanatory role of the notions of representation, computation, and cognitive architecture. We will delve into issues such as: What is a representation? How do cognitive states represent, and what determines their representational content? What does it mean to say that the cognitive system computes? What are cognitive architectures and how to assess their explanatory adequacy? We will take a look at texts in philosophy, psychology, and neuroscience in trying to answer these questions.

Tuesday 18:15 – 19:45

start: 23.10 2018

Prof. Dr. M. Pauen (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain)

Philosophical Research-Colloquium

venue: Berlin School of Mind and Brain, Luisenstraße 56, 10117 Berlin, room 220

MIND

The weekly colloquium is open for advanced students and doctoral students who are interested in current debates in the philosophy of mind. We will discuss recent research papers as well as papers by the participants.

Participation by appointment only. Please contact my secretary Ms. Anja Mayer if you want to sign up for the colloquium: anja.mayer@hu-berlin.de.

Wednesday 14:30 – 16:00

start: 17.10.2018

General Philosophy of Science

Dimitri Coelho Mollo (Institut für Philosophie, HU Berlin / Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

In this seminar we will look at some of the central questions in the philosophy of science. We will examine debates about scientific realism and antirealism, the nature of scientific explanation, reductionism, and the (dis)unity of science. Questions that we will tackle include: What sets science apart from non-science? Should we be ontologically committed to the theoretical posits of our best sciences? How do scientific explanations work, and what tells the good from the bad ones? Are the special sciences reducible to more basic sciences? Is science unified or plural? We will read classic as well as recent work in philosophy of science to help shed light on these and related questions.

Focus BRAIN

Monday 16:30 – 17:45

start: 22.10.2018

A practical Introduction to Matlab for Brain Sciences

Luke Tudge (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

Mind and Brain students **only!**

MATLAB is by far the most widely used programming tool in cognitive neuroscience. A number of popular tools for performing brain imaging are programmed in Matlab, and a decent mastery of this language is a real plus for all experimental cognitive neuroscientists. In this course, we will learn how to turn ideas into experiments and data using this programming language. We will take a practical approach and "program our way" through all the steps leading from planning an experiment, to presenting and running it, gathering, analyzing and simulating data.

In general, this course is for *Mind and Brain students only* but if not all places are taken by our students we are happy to offer those places to interested students of other programs. When you would like to take the course, please send an email to the program coordinator who will put you on a waiting list: mb-education@hu-berlin.de (Dirk Mende).

Tuesday 13:00 – 14:30

start: 16.10.2018

Research Colloquium

Prof. Dr. Isabel Dziobek (Institut für Psychologie, HU Berlin / Berlin School of Mind and Brain) / Dr. Anne Weigand (Institut für Psychologie, HU Berlin / Berlin School of Mind and Brain)

venue: Please contact Dr. Jennifer Kirchner for information where the course will take place!

BRAIN

Participation by appointment only. Please contact my lab manager Dr. Jennifer Kirchner **by 8 October** if you want to sign up for the colloquium: mb-soccog@hu-berlin.de.

Wednesday 16:30 – 18:00

start: 17.10.2018

Interpersonal Perception

Dr. Laura Kaltwasser (Berlin School of Mind and Brain) / Simon Guendelman (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

How do we perceive others? The seminar deals with the processing of social stimuli – covering psychological and neuroscientific research from basic principles of face cognition up to the influence of stereotypes onto social interaction. We want to revise classical and current literature regarding the complex interplay of interpersonal perception, social cognition and social interaction in everyday situations. Topics include the perception of faces, emotions, attributes, personality, intentions and attractiveness, but also associated psychological processes such as empathy and stereotypes on the neurophysiological, cognitive and social level. A main emphasis will lie on interpersonal perception in terms of top-down influences.

Thursday 12:30 – 14:00

start: 18.10.2018

Advanced statistics

Luke Tudge (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

This course follows 'Applied Statistics'. Although 'Applied Statistics' is not a prerequisite, a basic acquaintance with the content of that course is assumed, or with the content of a typical undergraduate statistics course for psychologists. In 'Advanced Statistics' we will cover five main topics: 1) Limitations of hypothesis testing, and an overview of the alternatives. 2) Variants of simple linear regression, such as multiple regression, logistic regression, multivariate analysis of variance (MANOVA), and linear mixed effects models. 3) Methods of comparing the performance of models, such as measures of fit, information criteria, and cross-validation. 4) Resampling-based methods, such as bootstrapping and permutation tests. 5) An introduction to Bayesian methods using JASP. The class will be mostly oriented towards learning the theory behind each method, with occasional practical demonstrations using the statistics package R. Further practical experience will be gained through homework assignments using R. An introductory session prior to the start of the course will cover the basics of R for those not already familiar with it. After completing this course, students should have an understanding of a broad 'toolbox' of different statistical methods, be able to select methods appropriate to their research questions, and present and interpret the results.

Thursday 14:30 – 16:00

start: 18.10.2018

Spatial Navigation: From Grid Cells to Virtual Reality and back

*Sophia Rekers (Berlin School of Mind and Brain) / Prof. Dr. Carsten Finke (Charité -
Universitätsmedizin Berlin / Berlin School of Mind and Brain)*

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

How different species find their way from one place to another has fascinated researchers for centuries. Nevertheless, the field of spatial navigation is as relevant as ever with the Nobel Prize winning discovery of place and grid cells, the potential of spatial navigation for non-invasive, early diagnostics of Alzheimer's disease and the application of increasingly immersive virtual reality (VR) technologies. In this seminar, you will learn about (i) how we navigate and what research on how blind people navigate can teach us, (ii) the surprisingly diverse ways how spatial navigation has been operationalized, (iii) the neural basis of spatial navigation and (iv) the challenges and potentials of the neuropsychological assessment of spatial navigation in different neurological conditions like stroke, Alzheimer's disease and autoimmune encephalitis. Furthermore, students will (v) acquire hands-on experience with different VR paradigms in digital diagnostics and cognitive training and will be offered the opportunity to create their own navigation experiments. Throughout the seminar, students are asked to critically question conceptualizations, clinical and experimental methods and the interpretation of empirical data and learn about the exemplary role of spatial navigation for questions overarching research in cognitive neuroscience, such as gender and age differences, transferability and validity of experimental and clinical paradigms.

If you have questions, please contact

Dr. Dirk Mende

mb-education@hu-berlin.de

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NB: The Mandatory Lectures and the Mandatory Tutorials are for Mind and Brain students only. The Elective Courses are open for students of other programs. If you are a student of Humboldt-Universität, please register for these courses in the *Übergreifender Wahlpflichtbereich* section of AGNES. If you are a student of another university, you have to fill a registration as guest auditor or visiting student in the beginning of the course. Please find information here: <http://www.mind-and-brain.de/master/course-calendars/>