Master program "Mind and Brain"

Berlin School of Mind and Brain

Humboldt-Universität zu Berlin

Winter semester 2016/2017

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

Monday	Tuesday	Wednesday	Thursday	Friday
		9:00 – 10:30 C. Finke The Famous Cases of Oliver Sacks (M/B)		
10:00 – 11:30 Lecture: D. Ott / F. Schlagenhauf Neuroanatomy and -physiology	10:15 – 11:45 R. Moore Writing and Argumentation (M)	10:45 – 12:15 C. Finke Cognitive Deficits in Neurological Diseases (B)	10:15 – 11:45 I. Dziobek Neuroscience meets Psychotherapy (B)	10:00 – 11:30 Tutorial: S. Ovadia-Caro /M. Martins Neuroanatomy and -physiology
12:15 – 13:45 Lecture: J.-D. Haynes Cognitive Neuroscience	12:15 – 13:45 I. Dziobek Research Colloquium (B)	12:45 – 14:15 D. Coelho Mollo Philosophy of Cognitve Science (M)	12:15 – 13:45 I. Dziobek Novel Theories and Cognitive Neuroscience Methods in Face Perception (B)	12:30 – 14:00 Tutorial: L. Kaltwasser Cognitive Neuroscience
14:15 – 15:45 I. Dziobek Lecture: Basic Research Methods	14:15 – 15:45 L. Kästner Philosophy of Logic (M)	14:30 – 16:00 Eickers Social and Moral Emotions (M)	14:15 – 15:45 L. Tudge Applied Statistics (B)	14:30 – 16:00 Tutorial: K. Prehn Basic Research Methods
14:15 – 15:45 L. Tudge A practical Introduction to Matlab (B)	16:15 – 17:45 L. Kästner Descartes Meditations (M)	16:15 – 17:45 D. Meshi Neuroscience of Decision Making (B)		
	18:15 – 19:45 M. Pauen Philosophical Colloquium (M)			

Block courses: Ethics and Neuroscience (p. 3), Origins of Moral Thought (p. 8)

Comprehensive Course Calendar

Mandatory Lectures:

Monday 10:00 – 11:30 *start: 17.10.2016*

Neurophysiology and Neuroanatomy

Dr. Derek Ott (Institut für Diagnostik der Epilepsien), Dr. Florian Schlagenhauf (MPI Human Cognitive and Brain Sciences, Leipzig)

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

Mind and Brain 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 adress 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.

Monday 12:15 -13:45 *start: 24.10.2016*

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 and Bernstein-Center 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.

Monday 14:15 – 15:45 *start: 17.10.2016*

Basic Research Methods

Prof. Dr. Isabel Dziobek (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 hypothesis testing, formulating experimental conditions, and statistical designs. 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, eyetracking 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: 20 – 24 Feb 2017, 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:

Friday 10:00 – 11:30 *start: 21.10.2016*

Tutorial: Neuroanatomy and Neurophysiology

Smadar Ovadia-Caro / Dr. Mauricio Martins (both Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 12:30 – 14:00 *start: 04.11.2016 (!)*

Tutorial: Cognitive Neuroscience

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

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 14:30 – 16:00 *start: 21.10.2016*

Tutorial: Basic Research Methods

Dr. Kristin Prehn (Charité - Universitätsmedizin Berlin)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Elective Courses:

Focus MIND

Tuesday 10:15 – 11:45 *start: 18.10.2016*

Writing and Argumentation

Dr. Richard Moore (Institut für Philosophie, HU Berlin & Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

The goal of this series of seminars will be to train students in the language and argumentation skills required for reading and writing philosophy. It is aimed at both philosophy students and, perhaps especially, graduate students from the non-philosophy cognitive sciences. Students will be trained not just in how to read and understand philosophical arguments, but to evaluate critically them, too. The goal will be to enable students to argue with philosophers on their own terms – capable not just of appropriating philosophers' ideas for their own work, but to be able and confident to critically accept or reject and develop these ideas too.

In the earlier parts of the course, we'll look at the nature of philosophical argument and key aspects of philosophical reasoning. Later we'll look at particular examples of philosophical argument in more detail, through close readings of a series of classic papers in the Philosophy of Mind by a range of authors including Millikan, Fodor, Chomsky, Churchland and Jackson.

Course texts:

Many (but not all) of the readings in this course are taken from:

- Sinnott-Armstrong, W. & Fogelin, R. (2014). *Understanding Arguments* (9th edition, concise). Stamford, CT: Cengage.
- Beakley, B. & Ludlow, P. (eds.) (2006). *The Philosophy of Mind: Classical Problems/Contemporary Issues*. Cambridge, MA: MIT.

Tuesday 14:15 – 15:45 *start: 18.10.2016*

Philosophy of Logic

Dr. Lena Kästner (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

This course explores issues central to the philosophy of logic. We will start by discussing foundational concepts of classical logic such as the material conditional and logical consequence. In due course we will consider various extensions of classical logic as well as some challengers. We will look into modal logic, counterfactual logics, many valued logics, and even logical pluralism (i.e. the view that we may not have to pick a single logical system). Knowledge of basic propositional logic is required for participation.

Core readings will be taken from Graham Priest's Introduction to Non-Classical Logic (Cambridge University Press, 2008).

Tuesday 16:15 – 17:45 *start: 18.10.2016*

Descartes' Meditations

Dr. Lena Kästner (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

This course will focus on the classic works of early modern philosopher René Descartes. His "Meditations" (1641) are deeply influential both in classical and contemporary philosophy, especially in philosophy of mind and epistemology. We will not only read and discuss Descartes' original writings in depth but also consider their impact on and applicability to modern philosophy and scientific research. This is an advanced course, though designed specifically for students with interdisciplinary backgrounds. Basic knowledge in philosophy of mind is required and students' willingness to engage with interdisciplinary material is presupposed.

Tuesday 18:15 – 19:45 *start: 18.10 2016*

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

Philosophical 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 9:00 – 10:30 *start: 19.10.2016*

The Famous Cases of Oliver Sacks

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

venue: Alte Nervenklinik, Bonhoefferweg 2 (Studenteneingang), Charité Campus Mitte, 10117 Berlin, Seminarraum Level 3

MIND/BRAIN

Oliver Sacks was one of the most influential and famous contemporary neurologists. In his books, he introduced rare and unusual neurological disorders to a general audience, including disorders of perception, memory and language. These case reports are of clinical interest, but also reveal important principles of brain function. In this seminar, we will read some of Oliver Sacks' most interesting patient descriptions and explore the current neuroscientific understanding of these disorders based on recent research.

Wednesday 12:45 – 14:15 start: 19.10.2016

Philosophy of Cognitive Science

Dimitri Coelho Mollo (King's College, London & Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

At the basis of most work in Cognitive Science lie the notions of representation, computation, and cognitive architecture. However, these notions are rarely investigated in their own right and are often taken for granted by scientists and philosophers alike. The aim of this course is to dig deep into the foundations of Cognitive Science and examine its assumptions and conceptual underpinnings. We will see how to understand those fundamental notions, the explanatory role they play in Cognitive Science, and the problems they pose. We will delve into issues such as: What is a representation? How and what do cognitive states represent? 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.

Wednesday 14:30 – 16:00 *start: 19.10.2016*

Social and Moral Emotions

Gina Eickers (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

In this seminar we will explore the significance of emotions for sociality and morality. For that purpose, we will first ask what emotions are at all, and what their role in sociality and morality is. Are (all) emotions socially and morally relevant? Why and how? We will look at how distinctive features of social and moral emotions can be defined, and work on the following questions: How do emotions contribute to our understanding and judgments of other people's actions? Are emotions fundamentally important for social and moral actions and understanding? Are there distinct social emotions and distinct moral emotions? How can we differentiate between social and moral emotions? We will read texts from philosophy and social/moral psychology.

Block course: 27 Feb – 1 March 2017, 10:00 – 18:00

The Origins of Moral Thought

Dr. Richard Moore (Institut für Philosophie, HU Berlin & Berlin School of Mind and Brain) / Dr. Jan Engelmann (Max Planck Institute for Evolutionary Anthropology, Leipzig)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

Both humans and animals seem to feel empathy. For example, chimpanzees and humans alike seem to feel distress when confronted with the pain of others; and both take steps to help others to relieve that pain. However, only humans seem to live by moral norms, and to engage in moral reasoning. Presumably, at some point our early *hominin* ancestors underwent cognitive changes that made them able and motivated to hold others accountable for their morally relevant behaviour – but how and why did these changes come about? In this class, we will set out to develop an account of the cognitive developments that made possible the emergence of moral thinking in humans; of the selection pressures that would favour the emergence of morality in our ancestors; and of the development of moral thinking in human ontogeny. We'll also consider the question of whether evolutionary approaches to the study of moral development have implications for meta-ethics – for example, by bearing upon questions pertaining to moral realism, and to our knowledge of moral properties.

Preliminary readings:

- Kitcher, P. (2011). *The Ethical Project*. Cambridge, MA: Harvard UP.
- Tomasello, M. (2015). *A Natural History of Human Morality*. Cambridge, MA: Harvard UP.

Focus BRAIN

Monday 14:15 – 15:45 *start: 17.10.2016*

A practical Introduction to Matlab for Brain Sciences

Luke Tudge (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

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.

Tuesday 12:15 – 13:45 *start: 18.10.2016*

Research Colloquium

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

venue: Invalidenstraße 110, 10115 Berlin, room 419

MIND/BRAIN

Wednesday 10:45 – 12:15 *start: 19.10.2016*

Cognitive Deficits in Neurological Diseases

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

venue: Alte Nervenklinik, Bonhoefferweg 2 (Studenteneingang), Charité Campus Mitte, 10117 Berlin, Seminarraum Level 3

BRAIN

Almost all neurological diseases are associated with cognitive deficits, although frequently sensory or motor symptoms dominate the clinical presentation, e.g. in Parkinson’s disease, multiple sclerosis or stroke. In this seminar, students will get to know the most common neurological diseases and their

typical clinical manifestation with a specific focus on their distinct cognitive profiles. Recent studies investigating neural correlates of these cognitive deficits will be introduced. Students will learn about pathophysiological concepts and therapeutic strategies and whenever possible, patients will be invited to the classroom to report their symptoms and their view of the disease.

Wednesday 16:15 – 17:45 *start: 19.10.2016*

Neuroscience of Decision Making

Dr. Dar Meshi (FU Berlin)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

As human beings living in today's society, we're faced with a multitude of decisions every day. These decisions range from the somewhat trivial (e.g., what food to eat, and what clothes to wear), to the more important (e.g., what career path to take, and whom to spend the rest of your life with). But how do we make these decisions? How do we value and compare options? How do we finally decide to take action?

By using functional magnetic resonance imaging over the last 20 years, neuroscientists have been able to look into the brain to better understand the decision-making process. In this class, students will learn the answers to the above questions and others, as well as key theories and ideas in the field of decision neuroscience. Recent studies will be introduced and covered. Students will not only learn about the results of these studies, but they will be educated on the methodology and different types of relevant analyses in the field. Finally, students will critically discuss the usefulness of this field of research.

Literature:
Rangel, A., Camerer, C., & Montague, P. R. (2008) A framework for studying the neurobiology of value-based decision making. Nature Reviews Neuroscience, 9(7), 545-556.

Thursday 10:15 – 11:45 *start: 20.10.2016*

Neuroscience meets Psychotherapy: Biomarker Development for the Diagnosis and Prediction of Treatment Outcome in Mental Disorders

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

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

Currently, the diagnosis of mental disorders relies entirely on clinical observation – it does not incorporate information from neuroscience research. It has been argued that to clarify the underlying causes of mental disorders it will be necessary to relate biological to behavioral components of abnormal functioning. This will allow the development of biomarkers for the diagnosis of mental disorders. In this class we will focus among others on the Research Domain Criteria (RDoC) project, a biological framework for understanding mental disorders, which draws on research approaches from genetics, neuroscience, and behavioral science. In addition, the focus of this class will be on novel research using biomarkers in the prediction of treatment outcome. The question will be tackled of how we can characterize and identify patients who will benefit most from a given type of psychotherapy. Finally, recent work on biomarkers in the context of mental disorders has stimulated a new line of investigations into augmentation of psychotherapy through neuroscientific methods. As examples of this work, this class will focus on the augmentation of psychotherapy through non-invasive brain stimulation and neuromodulation by oxytocin.

Thursday 12:15 – 13:45 *start: 21.10.2016*

Let's face it – Novel Theories and Cognitive Neuroscience Methods in Face Perception

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

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

This course will focus on face perception, which is key to human social interaction. Many different types of important information are visible in faces (e.g. identity, emotion, attraction, familiarity) and the processes and mechanisms involved in extracting this information are complex and often highly specialized. The range of perspectives and techniques in face perception research has in recent years led to many important advances in our understanding of face processing. We will focus in this class on some of the most influential science on face perception including on social aspects of face perception (attraction, recognition, emotion), the neural networks and mechanisms underlying face perception (using Magnetic Resonance Imaging (fMRI), Electroencephalography (EEG), Magnetoencephalography (MEG), Diffusion Tensor Imaging (DTI), patient data, and direct stimulation of the brain by means of Transcranial Magnetic Stimulation (TMS), visual adaptation and single-cell recordings), and comparative aspects of face perception (comparing adult human abilities with those of chimpanzees and children).

Thursday 14:15 – 15:45 *start: 20.10.2016*

Applied Statistics

Luke Tudge (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

In this course, students will learn how to analyze data with statistical procedures, to report and visualize those analyses, and to interpret similar reports in the published literature. An introductory section of the course will provide some basic theoretical background on the two key concepts of probability and evidence, and how they can be quantified. After that, we will cover the most common statistical procedures typically encountered in an introductory statistics course, including *t*-tests, chi-square, correlation, regression, and analysis of variance. For each procedure, there will be a practical session in which students run the analyses themselves using the statistics software *R*, followed by a short homework assignment in which they report the results. No previous knowledge of statistics or of *R* is assumed. By the end of the course, students should have the necessary skills to analyze data from their own research projects.

If you have questions, please contact

Dr. Dirk Mende

mb-education@hu-berlin.de

+49 (0)30 2093 -1792

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 *Überfachlicher 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/