



Master program “Mind and Brain”

Berlin School of Mind and Brain

Humboldt-Universität zu Berlin

Winter semester 2015/2016

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

Monday	Tuesday	Wednesday	Thursday	Friday
10:00 – 11:30 Lecture: D. Ott et al. Neurophysiology and Neuroanatomy				
	10:15 – 11:45 R. Moore Radical Interpretation (M)	10:15 – 11:45 C. Finke The Manipulation of Memory (M/B)	10:15 – 11:45 Meshi/Bender Neuroscience of Motivation (B)	10:00 – 11:30 Tutorial: M. Martins Neuroanatomy and Neurophysiology
12:15 – 13:45 Lecture: J.-D. Haynes Cognitive Neuroscience	12:15 – 13:45 I. Dziobek Cognition and Emotion in Decision- Making (M/B)	12:15 – 13:45 C. Finke Characteristic Alterations of Functional Connectivity in Neurological and Psychiatric Disorders (B)	12:15 – 13:45 I. Dziobek Research Colloquium (B)	12:30 – 14:00 Tutorial: L. Naumann Cognitive Neuroscience
14:00 – 15:30 I. Dziobek Lecture: Basic Research Methods - M. Chaumon A practical Introduction to MATLAB (B)	14:15 – 15:45 L. Kästner Scientific Explanation (M)	14:15 – 15:45 R. Moore Writing and Argumentation (M)	14:15 – 15:45 I. Dziobek Contemporary Approaches in Psychotherapy: The Many Ways to Mental Health (M/B)	14:30 – 16:00 Tutorial: K. Prehn Basic Research Methods
	16:15 – 17:45 L. Kästner Thought Experiments (M)	16:15 – 19:45 J. Fingerhut Psychology of Aesthetics and Art (M)	16:15 – 17:45 L. Tudge Introduction to Statistics (B)	

Comprehensive Course Calendar

Mandatory Lectures:

Monday 10:00 – 11:30

start: 12.10.2015

Neurophysiology and Neuroanatomy

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

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

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 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.

Monday 12:15 -13:45

start: 12.10.2015

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

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 14:00 – 15:30

start: 12.10.2015

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.

15 – 19 Feb 2016, 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

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.

The course provides an introduction to central notions and theories discussed in philosophical ethics and an overview of ethical issues in neuroscience as well as of consequences neuroscience does or might have for ethics.

4 – 8 April 2016, 9:00 – 17:00

Clinical Neuroscience

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

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

Mind and Brain 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.

This lecture is the first part of a module (5 ECTS). The corresponding tutorial for this lecture will be offered next semester (summer semester 2016). For gaining credits students have to attend both parts of the module.

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

11 – 15 April 2016, 9:00 – 17:00

Neuroimaging

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

venue: tba (to be announced)

Mind and Brain students **only!**

The course provides an introduction to a number of key non-invasive research methods in structural and functional neuroimaging. Participating students will learn about the basics of functional MRI, EEG, MEG and TMS including technological and physiological foundations, experimental design and basic and advanced statistical methods. The goal is to provide an understanding of functional neuroimaging that will allow students to design, perform and analyse their own studies.

This lecture is the first part of a module. The corresponding tutorial for this lecture will be offered next semester (summer semester 2016). For gaining credits students have to attend both parts of the module.

Mandatory Tutorials:

Friday 10:00 – 11:30

start: 16.10.2015

Tutorial: Neurophysiology and Neuroanatomy:

Dr. Mauricio Martins (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 12:30 – 14:00

start: 16.10.2015

Tutorial: Cognitive Neuroscience

Laura Naumann (Bernstein Center for Computational Neuroscience)

venue: Invalidenstraße 110, 10115 Berlin, room 449

Friday 14:30 – 16:00

start: 16.10.2015

Tutorial: 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: 13.10.2015

The Theory and Practice of Radical Interpretation

Dr. Richard Moore (Institut für Philosophie, HU Berlin)

venue: Unter den Linden 6, Room 2014 B

MIND

On what basis do we attribute mental states to others? An intuitive answer is that we take others' utterances to be revelatory of their thoughts, and so acquire knowledge of their minds through knowledge of their verbal behaviour. However, Donald Davidson argued that when we fail to share a common language with those whose behaviour we would interpret, a potentially vicious circle forms: we can't understand their mental states without knowing the language that they speak; but we can't acquire knowledge of this language without knowledge of the mental states that their utterances express.

To remedy this problem, Davidson argues that we can interpret the utterances of others by using a theory of interpretation, which enables the systematic mapping of utterances to their truth conditions. However, this method requires the use of a 'Principle of Charity' – whereby the Radical Interpreter makes best sense of others' utterances by interpreting them as being maximally consistent with what she would be given to say in identical circumstances. This principle may therefore be unsuitable in cases where similarity between interpreter and the target of interpretation cannot be taken for granted.

By way of exploring possible limitations of Davidson's theory – not least, in the form of his increasingly controversial claim that only those who speak can think – we'll consider it in the context of on-going efforts by primatologists to interpret the vocal and gestural utterances of wild and semi-wild chimpanzees. This course will therefore serve as an introduction both to some key ideas in the philosophy of language and communication, and to the use of comparative psychology and ethology as methods for coming to understand the minds of others.

Light background reading for the curious:

Everett, D. (2008). *Don't Sleep, There Are Snakes: Life and Language in the Amazonian Jungle*. London: Profile.

Hobaiter, C. & Byrne, R. (2014) The meanings of chimpanzee gestures. *Current Biology*. 24(14): 1596–1600.

Moore, R. (2014). Ape gestures: Interpreting chimpanzee and bonobo minds. (Commentary on Hobaiter & Byrne) *Current Biology*, 24(14): R645-R647.

Primary reading materials for the course will include selections from:

Davidson, D. (1984) *Inquiries into Truth and Interpretation*. Oxford: OUP.

Davidson, D. (2001) *Subjective, Intersubjective, Objective*. Oxford: OUP.

Tuesday 12:15 – 13:45

start: 13.10.2015

Cognition and Emotion in Decision Making

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

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND/BRAIN

Mainstream approaches for studying human decision-making often focus narrowly on the concept of "value" in explaining what determines people's preferences in choices. These rarely characterize clearly mental activities surrounding these choices, such as the cognitive mechanisms used to perceive value (e.g. imagining their outcomes, remembering goals), how value is represented (e.g. as a feeling or thought), and how value is affected by emotional states. The aim of the seminar "Cognition and Emotion in Decision-Making" is to give a deeper view of findings from the rapidly expanding field of decision-making, and to demonstrate how examining phenomena from other perspectives can shed new light on their basic nature.

Tuesday 14:15 – 15:45

start: 13.10.2015

Scientific Explanation

Lena Kästner (Berlin School of Mind and Brain)

Invalidenstraße 110, 10115 Berlin, room 449

MIND

How does a scientist come up with an explanation? What qualifies as a scientific explanation? How has our conception of explanation changed? Are explanations causal in nature? What are contemporary accounts of scientific explanation? What kind of information is considered explanatory, and why? -- All of these are questions about scientific explanations. This class will explore possible answers while looking into recent debates on explanation, experimentation, and causation. Students are expected to have basic knowledge of philosophy of science and be familiar with reading both philosophical and empirical research literature.

Tuesday 16:15 – 17:45

start: 13.10.2015

Thought Experiments

Lena Kästner (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

Thought experiments are used in a number of disciplines and in a variety of different ways. Philosophers famously talk about, e.g., zombies, the Chinese room, brains in vats, Mary the vision scientist, twinearth scenarios, or the Alzheimer's patient Otto. But what precisely do these scenarios teach us? What exactly is a thought experiment, and what can we learn from it? Are thought experiments just intuition pumps or can they actually teach us something about the real world?

Throughout this class we will discuss different thought experiments, their nature and their implications. Basic knowledge in philosophy of mind, epistemology, metaphysics, philosophy of language, and logic is required. Students will be actively involved in designing sessions.

Wednesday 10:15 – 11:45

start: 14.10.2015

The Manipulation of Memory

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

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND/BRAIN

“Face It, Your Brain Is a Computer” was the title of an op-ed in The New York Times written by Gary Marcus, professor of psychology and neural science at New York University. In analogy, memory is frequently seen as hard drive, where we securely read and write our memories. However, while a hard drive exactly returns the initially stored information upon retrieval, our memory representations are dynamically changing and may be subject to a wide range of unnoticed alterations. In this seminar, we will learn about different ways our memory might be manipulated and will consider ethical and legal consequences of such manipulations. We will discuss (i) the seminal experiments of Elizabeth Loftus on false memories and more recent work on eyewitness testimony (ii) the mechanism of reconsolidation and ways of altering memories by interfering with reconsolidation; (iii) recent studies that created false memories in rodents using optogenetic manipulation; (iv) studies investigating how to suppress unwanted memories; and (v) possible ways to enhance memory by pharmacologic interventions, cognitive training and deep-brain stimulation.

Wednesday 14:15 – 15:45

start: 14.10.2015

Writing and Argumentation

Dr. Richard Moore (Institut für Philosophie, HU Berlin)

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 Putnam, Burge, Fodor, Chomsky, Churchland and Jackson.

Course texts:

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.

Wednesday 16:15 – 19:45 (bi-weekly!)

start: 14.10.2015

Psychology and Aesthetics of Art

Joerg Fingerhut (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

MIND

In this course we will discuss key positions in philosophical aesthetics that aim at identifying the psychological underpinnings of our experiences of beauty and the sublime and of our interactions with artworks. The questions that we will address include: What is the nature of aesthetic experience? What are the processes that differentiate perception of pictures from our everyday perception? How do we perceive film and architecture? How do we evaluate art? Is our evaluation of an artwork as 'good' based on an emotion? We will explore these issues by reading combinations of philosophical and empirical papers (mostly from the field of neuroaesthetics). This will enable us to assess the explanatory scopes of different approaches to aesthetics and the arts.

Thursday 14:15 – 15:45

start: 15.10.2015

Contemporary Approaches in Psychotherapy: The Many Ways to Mental Health

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

venue: Luisenstraße 56, 10117 Berlin, room 419

MIND / BRAIN

This course will cover the theories, historical and philosophical bases, and techniques of major contemporary psychotherapy approaches, ethical issues associated with the field, and critiques that have been directed at those therapeutic approaches. Readings, films, class discussions, and experiential class exercises will be used to facilitate the exploration of the theories and techniques of the major classic and contemporary approaches to psychotherapy.

In half of the sessions of this course various approaches of psychotherapy will be discussed such as e.g. cognitive behavioral therapy, psychoanalysis, mindfulness-based treatment, drama therapy, schema-focused therapy, tele-health, and music and dance therapy. In the other half, superordinate topics will be covered such as the identification of factors of psychotherapy effectiveness, benefits of group vs. individual psychotherapy and short-term vs. long-term therapy, ethical issues in psychotherapy as well as gender and cultural perspectives in psychotherapy.

Focus BRAIN

Monday 14:00 – 15:30

start: 12.10.2015

A practical Introduction to MATLAB for Brain Sciences

Dr. Maximilien Chaumon (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.

Wednesday 12:15 – 13:45

start: 14.10.2015

Characteristic Alterations of Functional Connectivity in Neurological and Psychiatric Disorders

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

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

While lesions responsible for severe neurological deficits, e.g. an ischemic area in stroke or lesions in multiple sclerosis, can easily be detected using routine MRI, many neuropsychiatric symptoms are not reflected in structural imaging analyses. Recently, resting state functional MRI has become a widely used tool to study neurological and psychiatric disorders given its fast acquisition and applicability in almost all patient populations. These investigations have revealed characteristic alterations of functional connectivity in many neuropsychiatric disorders that correlate with symptom severity and are beginning to serve as prognostic disease markers. In this seminar, we will discuss recent findings of resting state fMRI in schizophrenia, autism and Alzheimer's disease and how they might relate to specific diseases symptoms. We will also see that functional connectivity alterations exist in many neurological disorders beyond visible damage in structural MRI and read about first studies that use resting state fMRI to differentiate between diseases states, e.g. between different levels of impairments of consciousness. Finally, we will also talk about studies that demonstrate the relevance of individual functional connectivity profiles for cognitive performance and the impact of ongoing dynamics in large-scale functional connectivity for behavior.

Thursday 10:15 – 11:45

start: 15.10.2015

Neuroscience of Motivation

Dr. Dar Meshi (FU Berlin), Dr. Drew Bender (MPI for Human Development, Berlin)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

Why did you get up in the morning and go to school? Why do you have sex, listen to music, do drugs, or do the hundreds of other things that you may do? This class will attempt to answer these questions and make sense of your behavior from a cognitive neuroscience perspective.

This class will begin with an overview of the field and then move on to the evolutionary basis for the motivation of behavior. We will then define and explain what rewards are and how they activate a specific network of regions in the brain, called the reward system. Students will read primary research articles that investigated the neuroscience of motivation, focusing on the variety of rewards that motivate human behavior: social rewards (connection, sex, reputation), money, food, drugs, music, curiosity, etc. Students will also learn about the neuroimaging techniques involved in this type of research, as well as the methodology and different types of relevant analyses in the field. Finally, students will critically discuss the usefulness of this field of research.

Literature

Mobbs, D. & McFarland, W. (2010). The neuroscience of motivation. *NeuroLeadership Journal*. 3,1-10.

Thursday 12:15 – 13:45

start: 15.10.2015

Research Colloquium

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

venue: Luisenstraße 56, 10117 Berlin, room 419

BRAIN

Current research studies (Master theses, dissertations, research projects of the social cognition) from the filed of cognitive neuroscience in general and social cognitive neuroscience and experimental psychopathology in particular will be presented and discussed in this research colloquium. Master students will gain insight in the various stages – and associated challenges - of the experiential research process, as well as present and get feedback regarding the planning, execution, and interpretation of their own experiential master theses.

Thursday 16:15 – 17:45

start: 15.10.2015

Introduction to Statistics

Luke Tudge (Berlin School of Mind and Brain)

venue: Invalidenstraße 110, 10115 Berlin, room 449

BRAIN

This course covers introductory concepts in statistics for psychology, with no background knowledge assumed except for high school mathematics. We will cover basic probability theory, sampling, distributions, summarising data, hypothesis testing, correlation, parametric and non-parametric procedures. We will not cover in detail the use of statistical software such as SPSS or R, but this course will provide the background necessary for starting to work with these tools in a future course. After completing this course, students should be able to interpret measures of location and spread (e.g. means and standard deviations), test statistics (e.g. t and F), and probabilities, in particular p -values and what they do and do not represent. Students should also be ready to select appropriate simple statistical tests for their own data (correlation, t -tests, analysis of variance), check the assumptions and report the results accurately.

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 *überfachlicher Wahlpflichtbereich* section of AGNES. If you are a student of another university, please contact the course coordinator (Dr. Dirk Mende): You have to fill a registration as guest auditor or visiting student which you can get from the course coordinator.