

## Course Calendar

### Master's program "Mind and Brain"

#### Berlin School of Mind and Brain

#### Summer semester 2014

**All times are meant s.t. (sharp)!**

| Monday   | Tuesday   | Wednesday | Thursday  | Friday   |
|--|---|-----------|---|--|
| 9:30 – 11:00<br>Krifka/Solt<br>Language and<br>the Brain       | 9.15 - 10.45<br>Heuser/Bajbouj<br>Neural<br>Signatures of<br>Behaviour<br>(B)               |           |   |  |
| 11:30 – 13:00<br>Berpohl/Brandt<br>Clinical<br>Neuroscience    |   |           | 10:00 - 11:30<br>Meshi<br>Social<br>Cognitive<br>Neuroscience<br>(B)              | 10:00 – 11:30<br>Zhang<br>Tutorial:<br>Language and<br>the Brain |
|  | 12:15 – 13:45<br>Moore<br>Intentions in<br>Actions and<br>Communication<br>(M)              |           | 12:00 – 13:30<br>Kästner<br>Mechanistic<br>Explanations<br>in Life Science<br>(M) | 12:00 – 13:30<br>N.N.<br>Tutorial: Clinical<br>Neuroscience      |
| 14:00 – 15:30<br>N.N.<br>Research<br>Methods                   | 14:30 – 16:00<br>Herbst<br>Time<br>Perception<br>in Psychology<br>and Neuro-<br>science (B) |           | 14:30 – 16:00<br>Klincewicz<br>Tutorial:<br>Ethics and<br>Neuroscience            | 14:30 – 16:00<br>Prehn<br>Tutorial:<br>Research<br>Methods       |
| 16:15 – 17:45<br>Moore<br>Argumentation<br>and Language<br>(M) |   |           | 16:15-17:45<br>Kästner<br>Mind your<br>Body<br>(M)                                |  |

**The classes on Tuesday and Thursday (except the Tutorial on Ethics and Neuroscience) are open for students of other programs. Please register in AGNES, the Online Study and Administration Portal of Humboldt-Universität zu Berlin!**

## **Mandatory Lectures:**

*Monday 9:30 – 11:00*

*start: 14 April 2014*

*Language and the Brain*

*Prof. Dr. Manfred Krifka (Institut für deutsche Sprache und Linguistik, HU Berlin) / Dr. Stefanie Solt (Zentrum für Allgemeine Sprachwissenschaft, Berlin)*

*Bernstein Center for Computational Neuroscience, Philippstraße 12, Haus 6, 10115 Berlin, Lecture Hall*

Language has been investigated from a range of perspectives, rooted in diverse disciplines such as the humanities and philosophy, psychology, and neuroscience. These disciplines have focused on different aspects such as on language as a formal system relating sound to meaning, on the language-related behavior of humans and on how the language system is acquired, and on the ways how language is implemented in the brain. In this course we will outline the linguistic view of the architecture of this formal system, from phonology to syntax to semantics and pragmatics. We will introduce into the major psycholinguistic findings concerning the processing of language, such as the recognition of words, the parsing of sentences, and the computation of the intended meaning. And we will give an overview of what is known about the neural representation of language processing, including language disorders.

The tutorial will complement the course by discussing particular articles that investigate specific aspects of language-related behavior and its neural implementation, and that use a variety of experimental techniques. Together with the course, students will be familiarized with current research questions in the field of language and the brain, and in the current methods and paradigms to address these questions.

*Monday 11:30 – 13:00*

*start: 14 April 2014*

*Clinical Neuroscience*

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

*Bernstein Center for Computational Neuroscience, Philippstraße 12, Haus 6, 10115 Berlin, Lecture Hall*

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 14:00 – 15:30

start: 14 April 2014

*Research Methods*

*N.N.*

*Invalidenstraße 110, 10115 Berlin, room 449*

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 among others 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 be covered, including functional magnetic resonance imaging (fMRI), diffusion tensor imaging (DTI), event-related potentials (ERPs), and 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. The goal for students is to be able to understand the methods covered and critically evaluate research that uses them.

***Mandatory Tutorials:***

*Wednesday 14:30 – 16:00*

*start: 16 April 2014*

*Tutorial: Ethics and Neuroscience*

*Dr. Michał Klincewicz (Berlin School of Mind and Brain)*

*Invalidenstraße 110, 10115 Berlin, room 449*

The first and main theme of the course will be a set of ethical issues that arise as a consequence of advances in neuroscience, such as mind reading, neural enhancement, and brain-computer interfaces. The second theme will focus on issues that lie at the intersection of neuroscience and ethics, such as personal identity, free will, and the nature of consciousness. We will also consider how and whether advances in neuroscience can bear on metaethics, that is, on the philosophical inquiry into the nature and existence of values, moral evaluations, and ethical properties in general.

Levy, N. (2012), Neuroethics. *WIREs Cogn Sci*, 3: 143–151. doi: 10.1002/wcs.1157

Friday 10:00 – 11:30

start: 25 April 2014

*Tutorial: Language and the Brain*

*Dr. Lu Zhang (Berlin School of Mind and Brain)*

*Invalidenstraße 110, 10115 Berlin, room 449*

Friday 12:00 – 13:30

start: 25 April 2014

*Tutorial: Clinical Neuroscience*

*N.N.*

*Invalidenstraße 110, 10115 Berlin, room 449*

Friday 14:30 – 16:00

start: 25 April 2014

*Tutorial: Research Methods*

*Dr. Kristin Prehn (Klinik für Neurologie, Charité)*

*Invalidenstraße 110, 10115 Berlin, room 449*

***Elective Courses:***

*Focus MIND*

Monday 16:15 – 17:45

start: 28 April 2014

*Argumentation and Language*

*Dr. Richard Moore (Berlin School of Mind and Brain / Institute of Philosophy, HU Berlin)*

*Dorotheenstraße 24, 10117 Berlin, room 1.406*

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 first half of the course, we'll look at the nature of philosophical argument and key aspects of philosophical reasoning – including the nature of deductive reasoning, the syllogism, rules of inference, and styles of philosophical argument. In the second half of the course, 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.

For further queries, please write to me at: r.t.moore@gmail.com

Detailed readings will be announced in the spring – but for some fairly gentle background reading, try:

Dennett, D. (2013). *Intuition Pumps and Other Tools for Thinking*. Allen Lane.

Tuesday 12:15 – 13:45

start: 22 April 2014

*Intentions in Action and Communication*

Dr. Richard Moore (Berlin School of Mind and Brain / Institute of Philosophy, HU Berlin)

Sophienstraße 20-22a, 10178 Berlin, room 4.11

(This class has been rescheduled from winter semester 2013/14.)

Intention, along with belief and desire, is one of the ingredients of folk psychology to which we appeal in explaining behaviour. Its relationship to purposive action makes it central to human life. But what are intentions? And how do they figure in the life of the mind?

The latter question has become particularly important in recent years, because cognitive scientists have argued that certain varieties of intentional behaviour are both uniquely human, and play a foundational role in human cognitive development. For example, Tomasello and colleagues have argued that humans but not great apes are capable of joint action – characterised by being performed with ‘shared intentions’ – in which participants work together to achieve shared goals; and that joint action explains various aspects of children’s cognitive development. Tomasello also argues that humans but not apes act with Gricean communicative intentions. These statements turn on the idea that intentions can be cognitively complex – but this makes empirical claims difficult to evaluate independently of an account of how intentions figure in mental life.

In this course, we will study three classic sources of work on intentional action: Elizabeth Anscombe’s *Intention*, Paul Grice’s paper ‘Meaning’, and a series of papers by Michael Bratman on the nature of joint action. We’ll also discuss empirical work on intention possession and attribution in human children and non-human great apes.

For further queries, please write to me at: r.t.moore@gmail.com

Core readings:

- Anscombe, G. E. M. (1957). *Intention*. Harvard UP.
- Bratman, M. (1999). *Faces of Intention*. Cambridge UP.
- Davidson, D. (1963). *Actions, reasons, and causes*.

- Davidson, D. (1978). *Intending*.
- Grice, P. (1948/1957). Meaning. In Grice 1989: *Studies in the Way of Words*. London: Harvard UP.
- Grice, P. (1967/1987). Utterer's meaning and speaker's intentions. In Grice 1989: *Studies in the Way of Words*. London: Harvard UP.
- Grice, P. (1967/1987). Logic and conversation. In Grice 1989: *Studies in the Way of Words*. London: Harvard UP.
- Tomasello, M. (2008). *Origins of Human Communication*. MIT: Cambridge, MA.
- Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*, 28: 675-735.

Thursday 12:00 – 13:30

start: 17 April 2014

*Mechanistic Explanations in the Life Sciences*

Dr. Lena Kästner (Berlin School of Mind and Brain / Institute of Philosophy, HU Berlin)

Invalidenstraße 110, 10115 Berlin, room 449

How do scientists explain phenomena? The received view used to be that scientific explanations subsume phenomena under laws. However, philosophy of science has recently experienced a mechanistic turn. Proponents of the “new” mechanistic view suggests that to explain a phenomenon is to identify its implementing *mechanism*. A mechanism is defined as a set of (temporally) organized activities and (spatially organized) entities working together in such a way that they exhibit the phenomenon to be explained.

This seminar will introduce the mechanistic account of scientific explanations. We are going to read Craver and Darden's (2013) recent book on the discovery of mechanisms in the life sciences. Following their lead we will examine various examples of mechanistic explanations in the life sciences. In due course, we will learn about how scientists search for, discover, represent, characterize, and model mechanisms to explain phenomena. We shall examine the vices and virtues of this mechanistic perspective and reflect it against the background of examples from (our own) contemporary empirical research.

Literature:

Craver, C.F. and Darden, L. (2013). *In Search of Mechanisms: Discoveries Across The Life Sciences*. Chicago, IL: University of Chicago Press.

Thursday 16:15 – 17:45

start: 17 April 2014

*Mind your Body*

Dr. Lena Kästner (Berlin School of Mind and Brain / Institute of Philosophy, HU Berlin)

Invalidenstraße 110, 10115 Berlin, room 449

Cognition is typically conceived of as “what the mind does”. But what does the mind? And, importantly, how does it do it? Most scientists believe that cognition is biologically grounded in the brain. But is it really just the brain that is doing the work? Embedded, embodied, and extended views of cognition challenge this idea. They suggest there is more to cognition than the neural processes in the brain.

In this seminar, we will trace a continuous development leading from the good old-fashioned conception of cognition as ‘pure symbolic processing’ detached from body and environment to recognizing that body and environment may play a (perhaps crucial) role in cognitive processing. According to the most radical views, body and environment are even constitutive of at least some cognitive processes. But if cognitive processes are constituted by our body and environment where are the bounds of cognition? For instance, if you look up a phone number in your address book, does that mean your memory extends into your address book? And if your address book is synced into a cloud, does your memory extend all the way into the servers where your cloud is hosted?

We will be reading seminal papers on both the traditional conceptions of cognition and the more recent embodied, embedded, and extended views to learn about the hallmarks of these different positions. During discussions, we will critically examine them with respect to their plausibility, adequacy, and implications.

Literature:

Robbins, P., and Aydede, M. (2009) A short primer on situated cognition. In: P. Robbins, and M. Aydede (eds.) *The Cambridge Handbook of Situated Cognition*. Cambridge: Cambridge University Press, 3–11.

Clark, A. and Chalmers, D. (1998). The extended mind. *Analysis*, 58(1):7–19.

## *Focus BRAIN*

*Tuesday 9:15 – 10:45*

*start: 15 April 2014*

### *Neural Signatures of Behaviour*

*Prof. Dr. Isabella Heuser-Collier (Klinik für Psychiatrie und Psychotherapie, Charité) / Prof. Dr. Malek Bajbouj (Klinik für Psychiatrie und Psychotherapie, Charité)*

*Klinik für Psychiatrie und Psychotherapie, Eschenallee 3, 14050 Berlin, Großer Konferenzraum, EG*

A variety of different neuroscience approaches are currently broadly used in order to better understand neural underpinnings of complex human behavior. In order to investigate the different facets, deconstruction of behavior into experimental settings is needed. Those experiments in cognitive neuroscience are mainly based on constructs with long-standing traditions in other older disciplines. However, the relevance and value of outcomes are still often a matter of debate. The present seminar will provide insights into current methods used to map and chart behavioral dimensions such as emotions, attention and personality. In addition, it will deal with the impact of ageing and environmental factors such as stress and trauma on behavior and its neuronal correlates. Moreover, the seminar will convey critical insights into the borders between normal and pathological behavior as well as into current discussions in the field of neuroenhancement.

*Tuesday 14:30 – 16:00*

*start: 15 April 2014*

### *Time Perception in Psychology and Neuroscience*

*Sophie Herbst, M.Sc. (Berlin School of Mind and Brain)*

*Invalidenstraße 110, 10115 Berlin, room 449*

Time is a very prevalent subjective experience. Any event, external (e.g. a visual stimulus) or internal (e.g. a thought), is extended in time, and its duration seems inherently bound to the event itself. Interestingly, subjective time often diverges from objective time, as expressed in proverbs like “time flies when we are having fun”, or the impression that time passes faster when we grow older.

In this seminar, we will focus on the psychological and neuronal aspects of temporal experience: we will travel back in time, and discuss some historical work from Wundt and Fechner, as well as James’ perspective on the sense of time.

From there on, we will learn about empirical approaches, used to study temporal experience. Most research has been done on short timescales (milliseconds to seconds), but we will also discuss phenomena that span a wider temporal perspective.

Equipped with the methodological knowledge to understand and interpret findings from the literature, we will discuss selected models on how the brain can account for our temporal



experience. These include information processing models, such as the internal clock model, but also neural oscillator models and recent models of neural population coding.

Towards the end of the seminar, we will have gained a good overview about the field of timing research, its approaches, models, and its problems. Based on the acquired knowledge, we will discuss what we have learned and which questions are still to be answered.

The basis for the seminar will be readings, assigned in the first session. Students are required to read at least on basic paper per session, and will be encouraged to read some more advanced papers, or even explore some literature on their own. In each session, one or two students will prepare a (rather short) presentation that summarize the reading of the week and provide the basis for the group discussion. In the last sessions, we will try to come up with new questions and approaches to answer them, which can be done alone or in groups and will result in a short paper, to be handed in after the end of the seminar.

Grondin, Simon. "Timing and time perception: a review of recent behavioral and neuroscience findings and theoretical directions." *Attention, Perception, & Psychophysics* 72.3 (2010): 561-582

*Thursday 10:00 – 11:30*

*start: 17 April 2014*

*Social Cognitive Neuroscience*

*Dr. Dar Meshi (Department of Education and Psychology, FU Berlin)*

*Invalidenstraße 110, 10115 Berlin, room 449*

Human beings are social animals. We evolved in social groups, and therefore, our brains are wired to interact with others and behave in social situations. By using functional magnetic resonance imaging over the last 10 to 15 years, neuroscientists have been able to ask questions about the brain and human social behaviors. For example: How do we understand the intentions of others? What process in the brain underlies prosocial behaviors, such as giving to charity? When making decisions, how are we influenced by others? How does our brain process social rewards such as receiving compliments? Is sharing information about ourselves rewarding? How is love of another person represented in the brain? What happens in our brain when we are socially rejected?

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 social cognitive 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.

Adolphs, R. (2003) Cognitive neuroscience of social behavior. *Nature Reviews Neuroscience*, 4(3), 165-178.

For further information, please contact:

Dr Dirk Mende

Doctoral and Master's Program Coordinator

Berlin School of Mind and Brain

[mb-education@hu-berlin.de](mailto:mb-education@hu-berlin.de)