

Course Guide – Master Cognitive Science

Summer 2016

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Table of Contents

First Year Program	2
C. Topics Selection.....	2
C1. Social Cognition & Meta-Science.....	2
C2. Perception and Action.....	4
C3. Memory, Learning and Decision Making.....	9
C4. Language, Logic and Categories.....	16
AM. Advanced Methods.....	20
AM1. Theory Formation and Conceptual Analysis.....	21
AM2. Advanced Analysis of Language and Logic.....	23
AM3. Behavior Studies.....	24
AM4. Computational Modeling.....	25
AM5. Special Methods in Neuroscience and Genetics.....	27
AM6. EEG-training.....	29
D1. Free Selection.....	31
Second Year Program	37
I. Interdisciplinary Research Module.....	37
I1. Focus Module Philosophy.....	38
I2. Focus Module Psychology.....	39
I3. Focus Module Computational Modeling.....	42
I4. Focus Module Neuroscience.....	44

Enrollment for Courses

Students in the first semester will be registered by the lecturers in the first session of each course. Advanced students (from the second semester on) are requested to register with the university's VSPL-system (info: vspl-support@rub.de) and should be aware of earlier VSPL-deadlines. Exceptions include the courses held by Wiskott, Schöner and Würtz. Here, there will be **no VSPL-registration**, but a manual enrollment in the first session.

Please notice that one and the same course can only be used to be part of one module for each student. Double use of the same course is not allowed.

C1.

Social Cognition & Meta-Science

SEMINAR
SELF AND OTHER (030 081)
PROF. TOBIAS SCHLICHT

TERM:	Summer 2016
MEETING TIME:	Tuesday, 10.00 – 12.00
ROOM:	GA 03/46
CP:	6

In this seminar, we will read and discuss Dan Zahavi's latest book *Self and Other. Exploring subjectivity, empathy and shame* (Oxford: Oxford University Press 2015). It covers the debate between the nature of subjectivity (of consciousness and self-consciousness, say) and empathy or social cognition and their relation.

The exciting bit of the seminar is that it involves a workshop with Dan Zahavi from June 20th – 22nd. Dan will give four talks based on the book. In addition, based on an international call for papers, Master- or PhD students will present critical commentaries on this work. This call is of course also open to the students.

Reading

Dan Zahavi: *Self and Other. Exploring subjectivity, empathy and shame* Oxford: Oxford University Press 2015.

C1.

Social Cognition & Meta-Science

SEMINAR
**NATURE OF PAIN AND EMOTION: INVESTIGATION FROM THE
 PERSPECTIVE OF PHILOSOPHY AND COGNITIVE SCIENCES
 (030 098)**
 PROF. ALBERT NEWEN

TERM:	Summer 2016
MEETING TIME:	THURSDAY, 10:00 – 12:00
ROOM:	GABF 05/703
CP:	6

In the first part of the seminar, we will discuss the main modern theories of emotion and then we will investigate recent philosophical theories of pain. In both parts we will mainly read philosophical texts but also some texts from cognitive psychology and neurosciences are included. Although there is still a vivid debate about the philosophy of emotion, there is already some agreement while this is completely lacking in the case of philosophical theories of pain. One way to develop an adequate approach to a theory of pain consists in carefully developing the similarities and differences of pain and emotion. This would allow us to benefit from the partially settled debate on emotions. We will read central proposals (i) of feeling theories, (ii) of cognitive theories and (iii) of mixed theories of emotion. Mixed theories combine embodied, affective and cognitive features into the individuation of pain but there are still a lot of variants to unfold a multiple feature account. On the basis of this discussion, we will read the most important modern theories of pain while we will observe some general tension in the description of the nature of pain: Some philosophers highlight only the phenomenal experience of pain, i.e. the specific feeling of undergoing a pain episode. Others focus on the information provided by the experience, i.e. information about the location and intensity of tissue damaging body conditions. Still others try to account only for the affective and motivational aspects of pain. Although all accounts seem to refer to an essential feature of pain, they are confronted with two problems. On the one hand, they rely on too narrow criteria with the effect that they cannot explain the complexity of pain processing encompassing various other components such as vegetative changes, bodily expressions or cognitive attitudes. On the other hand, they are in some way too demanding since they consider their chosen criteria to be necessary. Conversely, there exist many borderline cases, especially in the realm of clinical medicine, in which the single feature in question is missing while an instantiation of pain is still present. This points into the direction of multi-criterial individuation of pain in parallel to the individuation of emotion. We will discuss some proposals of the relation of pain and emotion in the final part of the seminar.

Details for receiving a certificate will be presented at the beginning of the seminar. Master students will receive 6 credit points for a determined package of work. PhD-students can receive the usual credit points of the official "Promotionsstudiengang". The workload involves the standard tools of oral presentations and essay writing adjusted according to the credit points. Presentations and discussions will be in English. The literature will be prepared in Blackboard for download at the beginning of the semester. Some important texts are mentioned below while the selection of readings will be announced in Blackboard.

C2.

Perception & Action

SEMINAR

JOHN SEARLE: SEEING THINGS AS THEY ARE (030 082)

PROF: TOBIAS SCHLICHT

TERM:	Summer 2016
MEETING TIME:	MONDAY; 12:00-14:00
ROOM:	GA 3/143
CP:	6

In this seminar we will read and discuss John Searle's latest book on perception. Searle's writings are in general very accessible also to non-philosophers because of his clear language and way of distinguishing and elaborating terms, problems and solutions. The seminar is addressed at beginners as well as advanced students.

The exciting bit of the seminar is that it involves a workshop with John Searle in the spring holiday week, from May 17th -19th. Searle himself will give four talks on the topic based on his book and based on an international call for papers, additional Master- or PhD students will present critical commentaries on his work. This call is of course also open to the students.

Reading:

John Searle: *Seeing things as they are*. Oxford: Oxford University Press 2015

C2.

Perception & Action

*LECTURE & EXERCISE***MOVEMENT GENERATION BY HUMANS AND ROBOTS: A DYNAMICAL SYSTEMS PERSPECTIVE (310 501 & 310 511)**

PROF. GREGOR SCHÖNER

TERM:	Summer 2016
LECTURE:	Thursday, 14.15 – 16.00
EXERCISE:	Thursday, 16.15 – 17.00
ROOM:	NB 3/57
CP:	6

Humans are the dexterous species. We excel at movement generation, in particular, at handling objects and generating the complex sequences of actions that achieve goals. This course looks at the fundamental processes of movement generation in humans and other animals and characterizes the special properties of human movement that emerge from the neural foundation. Object-oriented movement generation entails not only the timing and control of movement, but also object perception, scene representation, and the organization and planning of sequences. Movement generation thus cuts across a wide range of neural processes.

We review experimental results in movement science, discuss mathematical models of movement generation, and use robotic instantiations of such models to illustrate their function. The mathematical language that pervades the theoretical work reviewed in the course comes from the theory of dynamical systems. The course includes tutorials on basic concepts in dynamical systems theory. The exercises provide opportunities to use those concepts in a variety of contexts.

Another goal of the course is to expose students to interdisciplinary science. The exercises include readings of review papers in different relevant fields. An essay exercise practices reading and writing at the level of academic research papers.

The course consists of a weekly 2-hour lecture, followed by a 1-hour exercise session. Exercise sheets given out each week must be handed in and individually corrected. They are discussed in the week after they are due.

C2.

Perception & Action

*SEMINAR***DISCOURSE OVER CURRENT TOPICS IN NEUROSCIENCE (118 164)**

DR. ALEXIS GARLAND

TERM:	Summer 2016
SEMINAR:	Tuesday, 12:00 – 14:00 (First Meeting: April 19, 2016)
ROOM:	GAFO 05/609
CP:	t.b.a.

This will be a discussion-based discourse centered course that will choose a current topic in Neuroscience each week to discuss by focusing on a variety of new research in Neuroscience. Each session, we will discuss a peer-reviewed scientific article. Supplementary comments, links, media and continued discussion will also take place online in a web forum.

C2.

Perception & Action

SEMINAR

THE INTERPLAY BETWEEN REASONING AND PERCEPTION (030 049)

PROF. MARKUS WERNING

TERM:	Summer 2016
MEETING TIME:	Wednesday, 12:00 – 14:00 (First Meeting: April 13, 2016)
ROOM:	GA 04/187
CP:	6

There is a multitude of issues that arise at the interplay of perception and reasoning. Perceptual experience affects our thinking at least in the sense that it serves as causal input for it. However, can perceptions also provide justifications for beliefs and, if so, what do we have to assume about the structure of perception? In turn, how we think about the world, how we conceptualize it, may shape our perception of things. In this seminar, we will look at important issues pertaining to these relations. Some of the guiding questions are the following: How are perceptions involved in the creation of mental representations? Does perception have conceptual or non-conceptual content? Is perception informationally encapsulated or is it cognitively penetrable? In which ways can cognitive factors influence our perception? Is perception theory-laden? Is it possible at all to ground one's beliefs in one's perceptual experiences? Finally, what is the scope of imagistic reasoning?

The seminar will profit from the participation of Dr. Richard Stöckle-Schobel. Aside from active participation, participants will be expected to give a presentation in English. Assistance regarding the English language will be provided.

Literature:

Gauker, C. (2011), *Words and Images*, Oxford University Press.

Goldstone, R. L., & Barsalou, L.W. (1998). Reuniting perception and conception. *Cognition* 65, 231-262.

Gunther, Y. H. (2003, Ed.). *Essays on Nonconceptual Content*. Cambridge, MA, MIT Press.

Pylyshyn, Z. (1999). Is vision continuous with cognition? The case for cognitive impenetrability of visual perception. *The Behavioral and Brain Sciences*, 22(3), 341–365.

Raftopoulos, A. (2009). *Cognition and Perception - How Do Psychology and Neural Science Inform Philosophy?* Cambridge, MA: MIT Press.

Sellars, W. (1956), Empiricism and the Philosophy of Mind, in *Minnesota Studies in the Philosophy of Science, Vol. I: The Foundations of Science and the Concepts of Psychology and Psychoanalysis*, edited by Herbert Feigl and Michael Scriven, University of Minnesota Press, 253-329.

Werning, M. (2012). Non-symbolic Compositional Representation and Its Neuronal Foundation: Towards an Emulative Semantics. In Werning, M., Hinzen, W., & Machery, M. (Eds.), *The Oxford Handbook of Compositionality*. Oxford University Press, Oxford (pp. 633-654).

C2.**Perception & Action**

COLLOQUIUM
CONSCIOUSNESS AND COGNITION (030 125)
PROF. TOBIAS SCHLICHT

TERM:	Summer 2016
MEETING TIME:	Tuesday, 12:00 – 14:00
ROOM:	GA 03/46
CP:	6

In this colloquium, we will study recent papers on these topics and new developments with guests who are invited to present work in progress. Credits can be acquired by way of a longer essay on a topic related to the colloquium.

C3.

Memory, Learning & Decision Making

SEMINAR
PHILOSOPHY OF MEMORY (030 040)
DR. ERICA COSENTINO

TERM: Summer 2016
MEETING TIME: Wednesday, 14:00 – 16.00 (First Meeting: April 13, 2016)
ROOM: GA 04/187
CP: 6

The ability to recall personally experienced events from the past is a crucial part of human experience and a pivotal component of our personal identity. Tulving (1972) introduced the term 'episodic memory' to refer to this special type of memory. Episodic memory has been extensively studied across a variety of disciplines and many competing ideas have been proposed to account for its features, however its nature and function remain unclear and subject of a particularly intense debate.

This seminar on the philosophy of memory aims at clarifying the notion of episodic memory addressing some of the most controversial issues in the field such as (1) the generative nature of episodic memory in opposition to the idea of a merely reproductive process, (2) the role of episodic memory in creating our sense of self, (3) the connection between episodic memory and the imagination of future personal scenarios, (4) the extent to which episodic memory is a uniquely human ability rather than being shared with other nonhuman animals.

While the seminar centers on philosophical issues concerning episodic memory, the aim is to develop a theoretical framework which integrates also the recent advances in the psychology of memory and mental time travel (Suddendorf & Corballis 2007).

Participants will be expected to give a presentation on selected papers. The literature will be announced in the first meeting.

Consultation hour: Thursdays, 11:00 – 12:00 (during the semester).

C3.

Memory, Learning & Decision Making

*LECTURE & EXERCISE***COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY
(310 504 & 310 514)**

PROF. LAURENZ WISKOTT

TERM:	Summer 2016
LECTURE:	Tuesday, 12.15 – 13.45 (First Meeting: April 12, 2016)
EXERCISE:	Tuesday, 9:00 – 12:00 (First Meeting: April 19, 2016)
ROOM:	NB 3/57
CP:	6

This lecture presents models of selforganization in neural systems, in particular addressing vision (receptive fields, neural maps, invariances, attention) and associative memory (Hopfield network).

C3.

Memory, Learning & Decision Making

SEMINAR
DISCOURSE IN EPISODIC MEMORY (118 161)
PROF. SEN CHENG

TERM: Summer 2016
MEETING TIME: Monday, 14:00 – 16:00
ROOM: GA 04/187
CP: 3

When we remember events from our lives, whether they are the once-in-a-lifetime or everyday kind, we use our episodic memory. Although a small region of the brain called the hippocampus was identified to be important for episodic memories a long time ago, the nature and neural basis of episodic memory remain unclear. This class will employ a novel, highly interactive format to introduce the students to the cutting edge of the research into episodic memory. Students will be involved in choosing the literature discussed in class and discuss their views with an invited speaker who will also give a scientific talk.

C3.

Memory, Learning & Decision Making

SEMINAR
 THE NEW UNCONSCIOUS (030 096)
 DR. BEATE KRICKEL

TERM: Summer 2016
 MEETING TIME: Wednesday, 12:00 – 14:00 (First Meeting: April 13, 2016)
 ROOM: GA 03/149
 CP: 6

Recently, the notion of the unconscious (unconscious mental states or processes) has regained attention in the cognitive and affective sciences. This is an interesting development also from a philosophical perspective. The following questions arise:

- In which sense can states/processes that are not conscious be mental?
- How does the notion of the unconscious relate to concepts such as “subpersonal”, “automatic”, “implicit”, “unattended”?
- Even if it might be unproblematic to speak of unconscious cognitive states (such as unconscious beliefs and desires) – can there be unconscious affective states such as unconscious fears?
- Why and when do scientists speak of unconscious mental states/processes? Which explanatory role do these notions have?
- How does the recent debate connect to historical works such as Freud’s theory of the unconscious?

The seminar is planned as a research seminar in which students are expected to discuss and analyze papers from different disciplines in small groups. At the end of the course, students are supposed to present their research.

IMPORTANT: Please make sure to attend the first session where the groups will be formed.

Books/papers:

Berlin, H. A. (2011). „The Neural Basis of the Dynamic Unconscious,” *Neuropsychoanalysis*, 13 (1), 5-31.

Drayson, Z. (2012). „The Uses and Abuses of the Personal/Subpersonal Distinction.” *Philosophical Perspectives*, 26, 1-18.

Searle, J.R. (1992). *The Rediscovery of the Mind*. MIT Press. (Chapter 7)

Hassin et. al. (2004). *The New Unconscious*. Oxford University Press.

C3.

Memory, Learning & Decision Making

SEMINAR
JOURNAL CLUB: STRESS UND LERNEN (118 917)
PROF. OLIVER T. WOLF

TERM:	Summer 2016
MEETING TIME:	Wednesday, 12:00 – 14:00
ROOM:	GAFO 02/368
CP:	t.b.a.

In der Veranstaltung werden aktuelle englischsprachige Zeitschriftenartikel zum Themenbereich Stress und kognitive Prozesse vorgestellt und kritisch diskutiert.

Seminar will be held in English language.

C3.

Memory, Learning & Decision Making

*BLOCKSEMINAR***DEVELOPMENTAL NEUROPSYCHOLOGY (115 411, 115 412)***PROF. SARAH WEIGELT*

TERM:	Summer 2016
MEETING TIME:	Saturday and Sunday, 9:30 – 16:30
ROOM:	GAFo 02/373 18.-19.06.2016 (Group 1) GAFO 03/252 25.-26.06.2016 (Group 2)
CP:	3

Developmental neuropsychology is a new research field integrating developmental psychology and cognitive neuroscience to unravel human brain development. Methodological tools of cognitive neuroscience such as neuroimaging are now being used in children and adolescents and open up fascinating views onto the normal as well as abnormal development of brain and behavior. You will get insights into the foundations of human brain development and neurodevelopmental disorders.

Course credit depends on your active participation and an oral (poster) presentation, 3 CP.

Course language: English

Literature for those who can't wait to start reading (the actual literature for the seminar will be distributed via Blackboard): Nelson & Luciana (2008) Handbook of Developmental Cognitive Neuroscience. MIT Press.

C3.

Memory, Learning & Decision Making

LECTURE
COGNITIVE NEUROSCIENCE (118 128)
PROF. NIKOLAI AXMACHER

TERM:	SUMMER 2016
MEETING TIME:	TUESDAY, 14:00 – 16:00 (FIRST MEETING: APRIL 20, 2016)
ROOM:	GAFO 05/609
CP:	T.B.A.

Lecture concerning the cognitive neuroscience of memory. Critical discussions of central topics is a main goal of this lecture and will be part of the grading.

This lecture alone is part of module C3.

To be accepted for the Module "Advanced Methods" AM5, this lecture must be combined with the seminar "Cognitive Neuroscience (see announcement under AM5). Please note that one and the same course can only be used in one module in your study plan.

C4.

Language, Logic & Categories

SEMINAR
**SENSORI-MOTOR THEORIES OF LANGUAGE AND COGNITION
 (030 095)**
 DR. ERICA COSENTINO

TERM:	Summer 2016
MEETING TIME:	Thursday, 14:00 – 16:00 (First Meeting: April 14, 2016)
ROOM:	GABF 04/716
CP:	4-6

One of the most controversial issues in the contemporary cognitive science concerns the extent to which language and cognition involve sensory, motor and emotional processes. Theories can be classified along a continuum according to the relevance they attribute to these processes. One pole of this continuum is the amodal-symbolic account, which claims that meaning arises from the syntactic combination of mental symbols largely decoupled from sensory, motor and emotional processes. At the other pole of the continuum, the embodied-simulative account maintains that cognitive activities such as thinking and semantic comprehension recruit processes also involved in actions, perceptions and emotions. More precisely, meanings are grounded on the multimodal simulation of perceptions, actions, and emotions.

Currently, most theories of language and cognition lie somewhere in between these two poles, acknowledging that sensori-motor and emotional processes play *at least some* role in thinking and semantic comprehension. However, the debate is still completely open regarding the level of embodiment and involvement in different stages of processing. Furthermore, it is still not clear whether different theories describe different aspects of meaning (and are then compatible) or whether they are mutually exclusive explanations of the same phenomena.

Given that the nature and representation of meaning is a topic of increasing cross-disciplinary interest, this seminar explores sensori-motor theories of language and cognition together with behavioral and neural evidence supporting this view and critically investigates theoretical, empirical, and methodological issues related to it.

Participants will be expected to give a presentation on selected papers. The literature will be announced in the first meeting.

Consultation hour: Thursdays, 11:00 – 12:00 (during the semester).

C4.

Language, Logic & Categories

SEMINAR
NEGATION IN LANGUAGE AND COGNITION (030 101)
VIVIANA HAASE, M.A.,

TERM: Summer 2016
MEETING TIME: Wednesday, 10:00 – 12:00 (First Meeting April 13, 2016)
ROOM: GA 04/187
CP: 6

One aim of contemporary philosophy of language and linguistics is to explain our competent use of natural languages. There is a remarkable amount of detailed models claiming how we compute the meanings of various types of complex expressions, including adjectives, adverbs, quantifiers, etc. Most of these models and data focus on affirmative expressions while only few models take into account negative expressions. Negation is a logical operator reversing the semantic value of an expression. Hence, negation turns an affirmative sentence into its denial. It has been a matter of an intense debate in linguistics and philosophy how negated concepts are represented in the brain and how negation is integrated into the sentence meaning. Negative sentences are syntactically more complex than their affirmative counterparts, which is expected to have impact on the comprehension processes. Accordingly, it has been observed that sentences containing a negation are harder to process than affirmative sentences. The aim of this course is to present various theories on negation and its use in natural languages, and then consider some of the empirical data investigating the comprehension of negative sentences.

Before entering into empirical research an introduction to the methods used in the selected papers will be given.

Aside from active participation, participants will be expected to give a presentation in English. According to the credit points two small homeworks on selected papers will be required additionally. Questions can be asked in German. The literature will be announced in the first meeting.

Office hours: Wednesday, 2:00 – 3:00 p.m. and by appointment.

C4.

Language, Logic & Categories

SEMINAR

NONMONOTONIC LOGIC (030 089)

DR. CHRISTIAN STRAßER, DR. MATHIEU BEIRLAEN

TERM:	Summer 2016
MEETING TIME:	Thursday, 10.00 – 12.00 (First Meeting April 14, 2016)
ROOM:	GABF 04/358
CP:	6

Non-monotonic logics aim to capture patterns of defeasible reasoning (DR). DR is indispensable when dealing with a world full of uncertainties: we constantly draw conclusions that we may reject later in view of new information. Moreover, most of human reasoning is defeasible. For instance, when noticing that the streets are wet, I infer that it has been raining. However, once I discern that the roofs are not wet, I retract my previous inference. In situations like this, we make inferences from premises that do not warrant that our conclusion holds: they only warrant that the conclusion is sufficiently likely.

DR is not restricted to everyday contexts. It is also abundant in the (pure and applied) sciences. When observing time after time again that metals, unlike water, do not expand when solidified, it makes sense to accept the generalization that no metal expands when solidified. However, this conclusion had to be rejected once Gallium was discovered. DR is also an indispensable tool in expert reasoning. When hearing about a patient, John, who shows signs that best fit hyperthyroidism, a physician may conclude that John should be tested further for this condition. However, as soon as our physician is informed that John's thyroid has been removed, he will retract his previous inference.

As these examples indicate, DR comes in many forms: we reason from effect to cause (abduction), we make generalizations (induction), we reason on the basis of what is normally or typically the case (default reasoning), we infer on grounds of the information our senses give us about our environment etc. Given that DR is central for human reasoning, this urges us to study DR with exact formal methods. Only in this way are we able to explicate and evaluate reasoning processes in a precise way and to assist and correct people in reasoning.

In this seminar we will cover several important formal accounts of DR including the domains of default reasoning, reasoning on the basis of inconsistent information, abductive reasoning, etc.

The literature for the course will be announced during the first sessions.

Students can get points by giving talks, writings essays, or by means of a written and/or oral test.

C4.

Language, Logic & Categories

*KOLLOQUIUM***PHILOSOPHY MEETS COGNITIVE SCIENCE: INVESTIGATING
LANGUAGE AD COGNITON (030 126)***PROF. MARKUS WERNING*

TERM:	Summer 2016
MEETING TIME:	Thursday, 16:00 – 18:00 (First Meeting April 14, 2016)
ROOM:	GA 04/187
CP:	6

In the research colloquium current topics at the interface between Philosophy and Cognitive Science will be discussed. In this seminar we focus on the investigation of language and cognition. The colloquium hosts talks by visiting leading experts and local researchers as well as presentations by doctoral and master students. Students will be given the (assisted) opportunity to present their projects in English.

AM. Advanced Methods

Advanced methods are usually studied in the second semester. One exception is the "fMRI"-course which is only offered in the winter. Students who already have basic knowledge in cognitive neuroscience can choose to learn the "fMRI"-technique in the first semester. Necessary background: basic knowledge in cognitive neuroscience. The fMRI-seminar must be integrated into the course program during the first or the third semester; in the case you want to learn the fMRI –technique in the first semester, an individual application for the course is necessary: boris.suchan@rub.de. The laboratory-class "Neural substrates of memory function" is a flexible whole day course that can be integrated whenever a student is free to do so; usually it only makes sense in the semester breaks. Further advanced methods can be found in the program from the last summer semester on our webpage: http://www.ruhr-uni-bochum.de/philosophy/mcs/program_courses.html. They will again be offered in the upcoming summer semester.

AM1.

Theory Formation and Conceptual Analysis

SEMINAR
THEORIES OF SELF CONSCIOUSNESS (030 097)
PROF. ALBERT NEWEN

TERM:	Summer 2016
MEETING TIME:	Tuesday 10.00 – 12.00 (First Meeting April 12, 2016)
ROOM:	UFO 0/02
CP:	6

This seminar is a research-oriented seminar which especially enables the participants to develop a project which leads into a BA-thesis or a master-thesis. It has a focus in philosophy but will involve some psychological texts as well. The main topic is the discussion of modern theories of human self-consciousness. Self-consciousness can be defined as the ability to consciously represent one's own states, especially (but not only) mental states, *as one's own* (Newen, Vogeley 2003). In the case of competent speakers, this involves an indexical representation typically expressed by the word "I". If the relevant representation of my own states does involve neither language competence nor consciousness, then we still have to presuppose a characteristic *immediate self-representation*. The self can be defined as the bearer of self-conscious states. From a naturalistic point of view, the self is a cognitive system that enjoys some form of self-consciousness. These definitions allow in principle to ask whether animals or robots can have self-representations (independent from consciousness). While 'self' is mainly used to characterize the epistemic dimension of self-consciousness, i.e. the capacity to have consciousness of one's own mental states, 'person' is used in debates searching for criteria of being a person which could serve as a basis for having rights and duties in society. From a linguistic point of view, the term 'self' is an artificial term which was constructed by nominalization of variants of the first-person pronoun 'I' in natural language. We use expressions like 'It's me', 'myself', 'she herself/he himself'.

Concerning self-consciousness, we can distinguish four central questions which allow us to illustrate the wide range of this central debate:

The epistemological question: Do we have a privileged access to our own mental phenomena such that only we can know with certainty which mental phenomena we have?

The ontological question: Is there a self as an ontologically irreducible entity?

The cognitive question: How can we investigate the natural basis of self-c. with the methods of empirical psychology and cognitive neuroscience?

The question about personal identity: What is the criterion of being a person and of remaining the same person?

In the seminar we will discuss texts concerning all four dimensions of human self-consciousness.

Details for receiving a certificate will be presented at the beginning of the seminar. Bachelor-students will receive 4 credit points for a determined package of work while master students will receive 6 credit points for a higher workload. The workload involves the standard tools of oral presentations and essay writing. Presentations and discussions will be in English. The literature will be prepared in Blackboard for download at the beginning of the semester.

To prepare the participation please read the following texts:

Gallagher, S., Zahavi. D.: Phenomenological Approaches to Self-Consciousness, in: Stanford Encyclopedia of Philosophy,

<http://plato.stanford.edu/entries/self-consciousness-phenomenological/>

Newen, A.: The Self. A lexical entry. [This text will be available on my homepage:

<https://www.ruhr-uni-bochum.de/philosophy/staff/newen/lehre.html>]

AM2.

Advanced Analysis of Language and Logic

LECTURE
EPISTEMIC LOGIC (030 006)
PROF. HEINRICH WANSING

TERM:	Summer 2016
MEETING TIME:	Thursday, 14.00 – 16.00 (First Meeting: April 14, 2016)
ROOM:	GA 03/49
CP:	6

Epistemic Logic is the logic of operators such as “agent a knows that”, “agent a believes that” (doxastic logic), “the group of agents G knows that”, and “it is common knowledge that”. Epistemic logic is or ought to be related to epistemology, the general philosophical theory of knowledge. In this introduction to epistemic logic we will first deal with some fundamental topics in epistemology, namely the problem of defining the notion of knowledge and approaches to the concept of epistemic justification. In a second step, the modal logic of knowledge and belief will be introduced. This approach is confronted with a number of problems referred to as problems of logical omniscience. In a third step, familiarity with the modal logic of knowledge will enable us to consider the so-called knowability paradox. This paradox has received much attention in the debate between realistic and anti-realistic conceptions of truth. Also, the notion of common knowledge will be introduced and discussed. Finally, the logical analysis of knowledge will be refined and brought in closer connection with general epistemology by considering so-called justification logics. These systems extend the logical analysis of knowledge by explicitly incorporating a formal representation of justification. We shall also look at dynamic epistemic logic, the study of modal logics of model change.

Credits can be obtained by passing an oral examination or writing an essay.

AM3

Behaviour Studies

BLOCKSEMINAR

DEVELOPMENTAL NEUROPSYCHOLOGY (115 411, 115 412)

PROF. SARAH WEIGELT

TERM:	Summer 2016
MEETING TIME:	Saturday and Sunday, 9:30 – 16:30
ROOM:	GAFO 02/373 18.-19.06.2016 (GROUP 1) GAFO 03/252 25.-26.06.2016 (GROUP 2)
CP:	3

Developmental neuropsychology is a new research field integrating developmental psychology and cognitive neuroscience to unravel human brain development. Methodological tools of cognitive neuroscience such as neuroimaging are now being used in children and adolescents and open up fascinating views onto the normal as well as abnormal development of brain and behavior. You will get insights into the foundations of human brain development and neurodevelopmental disorders.

Course credit depends on your active participation and an oral (poster) presentation, 3 CP.

Course language: English

Literature for those who can't wait to start reading (the actual literature for the seminar will be distributed via Blackboard): Nelson & Luciana (2008) Handbook of Developmental Cognitive Neuroscience. MIT Press.

AM4.

Computational Modeling

LECTURE & EXERCISE
MATHEMATICS FOR MODELING AND DATA ANALYSIS
(310 503 & 310 513)
PROF. LAURENZ WISKOTT

TERM:	Summer 2016
LECTURE:	Thursday, 12.15 – 13.45 (First Meeting: April 14, 2016)
EXERCISE:	Thursday, 9:00 – 12:00 (First Meeting: April 21, 2016)
ROOM:	NB 3/57
CP:	6

This course covers mathematical methods that are relevant for modeling and data analysis. Particular emphasis will be put on an intuitive understanding as is required for a creative command of mathematics. The following topics will be covered: Functions, Hilbert-Spaces, matrices as, transformations, systems of linear differential equations, qualitative analysis of nonlinear differential equations, Bayes theory, multiple integrals.

AM5.

Special Methods in Neuroscience and Genetics

LECTURE
COGNITIVE NEUROSCIENCE (118 128)
PROF. NIKOLAI AXMACHER

TERM: Summer 2016
MEETING TIME: Tuesday, 14:00 – 16:00 (First Meeting: April 20, 2016)
ROOM: GAFO 05/609
CP: t.b.a.

Lecture concerning the cognitive neuroscience of memory. Critical discussions of central topics is a main goal of this lecture and will be part of the grading.

To be accepted for the Module "Advanced Methods" AM5, this lecture must be combined with the seminar "Cognitive Neuroscience". If you want to participate in the lecture alone, then the lecture can only be accepted as part of module C3.

AM5.

Special Methods in Neuroscience and Genetics

SEMINAR
COGNITIVE NEUROSCIENCE (118 129)
PROF. NIKOLAI AXMACHER

TERM:	Summer 2016
MEETING TIME:	t.b.a. (First Meeting: see http://www.ruhr-uni-bochum.de/neuropsy/lehre.html)
ROOM:	t.b.a.
CP:	t.b.a.

Seminar corresponding to the lecture „Cognitive Neuroscience / Kognitive Neurowissenschaft“.

To be accepted for the Module "Advanced Methods" AM5, this seminar must be combined with the lecture "Cognitive Neuroscience" (118 128).

AM5.

Special Methods in Neuroscience and Genetics

SEMINAR
RESEARCH COLLOQUIUM GENETIC PSYCHOLOGY (118 911)
PROF. ROBERT KUMSTA

TERM:	Summer 2016
MEETING TIME:	Monday, 16:00 – 18:00
	http://www.gen-psych.ruhr-uni-bochum.de/teaching/index.html.en
ROOM:	GAFO 04/425
CP:	t.b.a.

Dieses Forum dient zur Vorstellung aktueller Forschungsprojekte und Qualifikationsarbeiten (Bachelorarbeiten, Masterarbeiten, Promotionsprojekte) der Arbeitseinheit Genetic Psychology. Darüber hinaus werden eingeladene Wissenschaftler aktuelle Forschungsergebnisse vorstellen.

AM6.

EEG-training

SEMINAR & PRACTICAL COURSE
 ANGEWANDTE NEUROPSYCHOLOGISCHE METHODEN /
 ADVANCED EEG-ANALYSIS (118 152, 118 153, 118 130, 118 151)
 PROF. NIKOLAI AXMACHER

TERM:	Summer 2016
SEMINAR 1:	Wednesday, 12:00 – 14:00 (First Meeting: April 20, 2016)
LAB COURSE:	Wednesday, 8.00 – 10.00 (First Meeting: April 20, 2016)
SEMINAR 2:	Monday, 16.00 – 18.00 (First Meeting: April 11, 2016)
SEMINAR 3:	Monday, 10:00 – 12:00 <IN GERMAN>
CP:	9

Dear students,

concerning EEG-courses, please make early decisions and contact the lecturers running the courses:
 Please notice the entry conditions of the courses.

There are three levels with which you can study the EEG-method.

1. If you want to be intensely informed about EEG method but do not plan to use it for the master thesis project, then it is recommended that you participate in seminar 2 only (or for German speakers please participate in the seminar of Boris Suchan on EEG instead it will be accepted as a course in the module "Advanced Methods" this time).
2. If you plan to use EEG-methods for your master thesis project, then you are supposed to participate in the following package of seminar and laboratory course, i.e. at least seminar 1 (offered by Fellner and Waldhauser) and laboratory course (offered by Fellner and Waldhauser)
3. You may specialize very intensely in EEG-methods, then you can combine three courses, one of the courses on EEG described under number 1 and the intense package described under number 2.

**Seminar 1: "Angewandte neuropsychologische Methoden EEG" (118 153),
 max. 20 participants
 Dr. Marie Fellner, Dr. Gerd Waldhauser
 Wednesday, 12:00 – 14:00, (First Meeting: April 20, 2016) Room GAFO 04/271**

The seminar course stands in direct relation to the laboratory course with the same name (also 2 SWS).
 Participation in both modules is mandatory.

The goal is to relay the ability to develop further research questions in cognitive neuroscience based on published neuropsychological literature, and to develop, independently conduct, and analyze studies corresponding to these research questions. An additional goal is to acquire the ability to present the results in writing corresponding to the standards of neuroscientific journals. The course will be held in English.

**Laboratory Course: "Angewandte neuropsychologische Methoden EEG" (118 152),
max. 20 participants
Dr. Marie Fellner, Dr. Gerd Waldhauser
Wednesday, 8:00 – 10: 00, (First Meeting: April 20, 2016) Room GAFO 04/615**

The laboratory course stands in direct relation to the seminar course with the same name (also 2 SWS). Participation in both modules is mandatory.

The goal is to relay the ability to develop further research questions in cognitive neuroscience based on published neuropsychological literature, and to develop, independently conduct, and analyze studies corresponding to these research questions. An additional goal is to acquire the ability to present the results in writing corresponding to the standards of neuroscientific journals. The course will be held in English.

**Seminar 2: "Advanced EEG Analyses" (118 130)
Dr. Hui Zhang
Monday, 16:00 – 18:00, (First Meeting: April 11, 2016) Room GAFO 05/609**

In this seminar, we will discuss the book "Analyzing Neural Time Series Data: Theory and Practice" by Mike X Cohen. Students will be asked to present chapters from this book, and to apply the methods to data collected during the practical course.

Preconditions: Basic knowledge in EEG and interest/experience in Mathematics and programming. If you have any questions please contact the lecturer.

Für deutschsprachige Studierende des M.A. Cognitive Science. Bitte planen Sie anstelle von Seminar 2 eine Teilnahme am Seminar 3 von Boris Suchan zum Thema EEG-Methoden.

Dieser Kurs wird auch im Modul „Advanced Methods“ anerkannt. Es ermöglicht ein größeres Angebot im Bereich EEG für alle M.A. Cognitive Science-Studierende.

**Seminar 3: „Ereigniskorrelierte Potentiale in der Neuropsychologie“ (118 151) <IN GERMAN>
Prof. Dr. Boris Suchan
Monday, 10:00 – 12:00, Room GAFO 05/609**

Das Seminar beschäftigt sich mit der Technik des Elektroenzephalogramms und den ereigniskorrelierten Potentialen. Diese Methode ist in der Neuropsychologie sowohl in Forschung als auch in der klinischen Anwendung sehr wichtig. Im Seminar werden alle wichtigen Paradigmen vorgestellt und diskutiert. Ebenfalls werden praktische Übungen im Labor durchgeführt. Eine Literaturliste wird zu Beginn des Seminars verteilt.

I. Free Selection

Please notice that under the category "free selection" we only describe courses which are in German as additional offers. For the German speakers please notice that you are only allowed to have maximally three courses in German in the whole program. For all students including the English speaking students the following rule holds: All courses of the whole program can also be accepted in the module free selection, i.e. if you have completed (or you have a clear plan how to complete) the obligatory modules, you can choose whatever course supports you best to realize the optimal master thesis. Furthermore, we can in principle accept also internships up to 10 credit points in the category of free selection. The internship must of course be equivalent to the number of credit points and it must be an internship that is proven to qualify for the program "Cognitive Science" and ideally supports the master thesis. If you aim to use an internship as a way to complete a part of this module then please contact Dr. Brössel or Prof. Newen in advance.

D1.

Free Selection

VORLESUNG
KOGNITION UND GEHIRN (112 611)
 PROF. OLIVER WOLF

TERM:	Summer 2016
MEETING TIME:	Monday, 14.00 – 16.00 (First Meeting, April 11, 2016)
ROOM:	HGA 30
CP:	t.b.a.

Die Vorlesung ist für Studierende ab dem 4. Semester geeignet. Sie bietet einen Überblick über Befunde und Theorien zu aktuellen Themen der kognitiven Neurowissenschaft. Die Vorlesung setzt Grundkenntnisse der Kognitionspsychologie und der Biopsychologie voraus, die bis zum 4. Semester vermittelt werden. Kenntnisse aus dieser Vorlesung werden im Master Studiengang Psychologie und Kognitive Neurowissenschaft vorausgesetzt.

D1.

Free Selection

SEMINAR
DISKURS DER NEUROPSYCHOLOGIE (118 163)
PROF. NIKOLAI AXMACHER

TERM: Summer 2016
MEETING TIME: Thursday, 10.00 – 12.00 (First Meeting: April 21, 2016)
ROOM: GAFO 05/609
CP: t.b.a.

Hier wird der intensive Austausch über ein vorgegebenes Forschungsthema in einer kleinen Gruppe ermöglicht. Ein wichtiger Aspekt ist auch die Einladung und Betreuung von Gastrednern und die Teilnahme am wissenschaftlichen Vortrag. Die kritische Auseinandersetzung mit den Lerninhalten in Form von Diskussionen ist ein zentrales Lernziel und geht in die Bewertung mit ein.

D1.

Free Selection

SEMINAR
JOURNAL CLUB (118 915)
PROF. NIKOLAI AXMACHER

TERM:	Summer 2016
Meeting Time	Thursday, 16:00 – 18:00
	First Meeting: see http://www.ruhr-uni-bochum.de/neuropsych/lehre.html)
Room:	GAFO 05/609
CP:	t.b.a.

In Analogie zu den Kognitiven Neurowissenschaften - der Untersuchung der neuronalen Korrelate kognitiver Prozesse - wurden in den letzten Jahren auch Konzepte der Psychoanalyse mit bildgebenden Methoden untersucht. Dieses Seminar vermittelt einen Überblick über diese Studien. Dabei werden aktuelle Untersuchungen zu zentralen psychoanalytischen Konzepten (Verdrängung, Konversion, Träume, Traumatisierung...), aber auch Studien zu den Mechanismen der psychodynamischen Psychotherapie sowie psychodynamische Konzeptualisierungen neuropsychologischer Symptome vorgestellt und diskutiert.

D1.

Free Selection

LECTURE
EVOLUTION UND EMOTION (112 251)
PROF. ONUR GÜNTÜRKÜN

TERM:	Summer 2016
MEETING TIME:	Thursday, 16.00 – 18.00 (First Meeting: April 14, 2016)
ROOM:	HGA 10
CP:	3

Wie verlief bisher die Geschichte des Lebens? Innerhalb welchen Gesamtszenarios bettet sich die Entstehung des Menschen ein und welche Anteile unseres heutigen Denkens, Handelns und Fühlens reflektieren die Gesetzmäßigkeiten, die bei der Phylogenese unseres Gehirns wirksam waren? Wie determiniert die Interaktion von Umweltfaktoren und genetischer Anlage unsere kognitiven Leistungen? Um solche Fragen beantworten zu können, müssen wir die Evolutionstheorie mit allen ihren Implikationen kennenlernen. In der Vorlesung sollen folgende Themen behandelt werden:

- 1) Mechanismen der Genetik.
- 2) Entwicklung des Lebens und des Menschen.
- 3) Emotionsmechanismen.
- 4) Soziobiologie.

Literatur:

Bekanntgabe der aktuellen Literatur während der Veranstaltung und über Blackboard.

D1.

Free Selection

LECTURE
BIOPSYCHOLOGIE (112 631)
PROF. ONUR GÜNTÜRKÜN

TERM: Summer 2015
MEETING TIME: Thursday, 12.00 – 14.00 (First Meeting: April 14, 2016)
ROOM: GAFO 03/252
CP: 3

Das Wissen um Hirnaufbau und Hirnfunktion ist die Grundlage für das Verstehen sämtlicher bio- und neuropsychologischer Fragestellungen. In dieser Vorlesung wollen wir uns exemplarisch das Sehsystem des Menschen vornehmen. Wir wollen seine Funktionen verstehen, indem wir die Anatomie und Physiologie des Sehsystems kennenlernen und neuropsychologische Ausfälle anschauen. Danach wollen wir kennenlernen, wie die visuelle Information in die Prozesse des präfrontalen Cortex integriert wird, so dass die Fähigkeit zum Behalten, Planen und Handeln entsteht. Kurz gesagt, wollen wir die neuralen Grundlagen des Wahrnehmens und Erkennens kennenlernen.

Literatur:

Onur Güntürkün, Biopsychologie, Hogrefe Verlag 2012, Kapitel 5 - 12

Bekanntgabe weiterer aktueller Literatur während der Veranstaltung und über Blackboard.

D1.

Free Selection

SEMINAR
LERNEN UND PROBLEMLÖSEN (030 268)
 PROF. NIKOL RUMMEL

TERM:	Summer 2016
MEETING TIME:	Thursday, 10.00 – 12.00
ROOM:	GABF 05/703
CP:	4

Die Fähigkeit Probleme zu lösen wird als eine der Schlüsselkompetenzen für die Bewältigung von Anforderungen im beruflichen wie privaten Alltag angesehen. Entsprechend stellt sich die Frage, wie eine solche Problemlösefähigkeit zu vermitteln ist. Gleichzeitig wird Problemlösen als Instruktionmethode genutzt. Dadurch stellt sich die Frage nach dem Zusammenspiel von Problemlösen und Lernen. In dem Seminar wird zunächst auf theoretischer Basis die Fähigkeit zum Lernen definiert; anschließend werden verschiedene Formen des Lernens kontrastiert. Der zweite Teil der Veranstaltung beschäftigt sich mit dem Konzept des Problemlösens. Schließlich werden Lernen und Problemlösen einander gegenübergestellt. Abschließend werden spezifische Situationen, in denen Lernen und Problemlösen stattfinden betrachtet und die damit einhergehenden Möglichkeiten bzw. Herausforderungen diskutiert.

Anforderungen für einen kleinen Studiennachweis: Lektüre ausgewählter Texte und Bearbeitung von kleinen Aufgaben zur Vorbereitung der Sitzungen; aktive Mitarbeit; Klausur.

Die Gesamtnote konstituiert sich aus einer individuell und schriftlich zu erbringenden Leistung, deren Form von der/dem Lehrenden festgelegt wird. Darüber hinaus werden weitere, jedoch unbenotete Leistungen verlangt.

SECOND YEAR PROGRAM

Please notice that one and the same course can only be accepted as part of one Module. Double use of the same Module is prohibited.

I. Interdisciplinary Research Module

Usually the interdisciplinary research modules should be completed in the third semester (winter semester). To keep flexibility for the students we offer some courses for these modules in the summer semester as well. Please check individually with the lecturer whether the colloquium will be in English. If the announcement is in English it is in English. But even if the announcement is in German the course may be in English because the literature discussed is in English.

11.

Focus Module Philosophy

COLLOQUIUM

CONSCIOUSNESS AND COGNITION (030 125)

PROF. TOBIAS SCHLICHT

TERM:	Summer 2016
MEETING TIME:	Tuesday, 12:00 – 14:00
ROOM:	GA 03/46
CP:	6

In this colloquium, we will study recent papers on these topics and new developments with guests who are invited to present work in progress. Credits can be acquired by way of a longer essay on a topic related to the colloquium.

11.

Focus Module Philosophy

*KOLLOQUIUM*PHILOSOPHY MEETS COGNITIVE SCIENCE: INVESTIGATING
LANGUAGE AND COGNITION (030 126)

PROF. MARKUS WERNING

TERM:	Summer 2016
MEETING TIME:	Thursday, 16:00 – 18:00 (First Meeting April 14, 2016)
ROOM:	GA 04/187
CP:	6

In the research colloquium current topics at the interface between Philosophy and Cognitive Science will be discussed. In this seminar we focus on the investigation of language and cognition. The colloquium hosts talks by visiting leading experts and local researchers as well as presentations by doctoral and master students. Students will be given the (assisted) opportunity to present their projects in English.

12.

Focus Module Psychology

*SEMINAR***JOURNAL CLUB: STRESS UND LERNEN (118 917)**

PROF. OLIVER T. WOLF

TERM:	Summer 2016
MEETING TIME:	Wednesday, 12:00 – 14:00
ROOM:	GAFO 02/368
CP:	t.b.a.

In der Veranstaltung werden aktuelle englischsprachige Zeitschriftenartikel zum Themenbereich Stress und kognitive Prozesse vorgestellt und kritisch diskutiert.

Seminar will be held in English language.

12.

Focus Module Psychology

SEMINAR

RESEARCH COLLOQUIUM GENETIC PSYCHOLOGY (118 911)

PROF. ROBERT KUMSTA

TERM:	Summer 2016
MEETING TIME:	Monday, 16:00 – 18:00 http://www.gen-psych.ruhr-uni-bochum.de/teaching/index.html.en
ROOM:	GAFO 04/425
CP:	t.b.a.

Dieses Forum dient zur Vorstellung aktueller Forschungsprojekte und Qualifikationsarbeiten (Bachelorarbeiten, Masterarbeiten, Promotionsprojekte) der Arbeitseinheit Genetic Psychology. Darüber hinaus werden eingeladene Wissenschaftler aktuelle Forschungsergebnisse vorstellen.

13.

Focus Module Computational Modeling

LECTURE & EXERCISE
COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY
(310 504 & 310 514)
PROF. LAURENZ WISKOTT

TERM:	Summer 2016
LECTURE:	Tuesday, 12:15 – 13:45 (First Meeting: April 12, 2016)
Exercise:	Tuesday, 9:00 – 12:00 (First Meeting: April 19, 2016)
ROOM:	GAFO 04/425
CP:	6

This lecture presents models of selforganization in neural systems, in particular addressing vision (receptive fields, neural maps, invariances, attention) and associative memory (Hopfield network).

If this seminar is used for Module C3, it cannot be used for I3.

13.

Focus Module Computational Modeling

*LECTURE & EXERCISE***MOVEMENT GENERATION BY HUMANS AND ROBOTS: A DYNAMICAL SYSTEMS PERSPECTIVE (310 501 & 310 511)***PROF. GREGOR SCHÖNER*

TERM:	Summer 2016
LECTURE:	Thursday, 14.15 – 16.00
EXERCISE:	Thursday, 16.15 – 17.00
ROOM:	NB 3/57
CP:	6

Humans are the dexterous species. We excel at movement generation, in particular, at handling objects and generating the complex sequences of actions that achieve goals. This course looks at the fundamental processes of movement generation in humans and other animals and characterizes the special properties of human movement that emerge from the neural foundation. Object-oriented movement generation entails not only the timing and control of movement, but also object perception, scene representation, and the organization and planning of sequences. Movement generation thus cuts across a wide range of neural processes.

We review experimental results in movement science, discuss mathematical models of movement generation, and use robotic instantiations of such models to illustrate their function. The mathematical language that pervades the theoretical work reviewed in the course comes from the theory of dynamical systems. The course includes tutorials on basic concepts in dynamical systems theory. The exercises provide opportunities to use those concepts in a variety of contexts.

Another goal of the course is to expose students to interdisciplinary science. The exercises include readings of review papers in different relevant fields. An essay exercise practices reading and writing at the level of academic research papers.

The course consists of a weekly 2-hour lecture, followed by a 1-hour exercise session. Exercise sheets given out each week must be handed in and individually corrected. They are discussed in the week after they are due.

If this seminar is used for Module C2, it cannot be used for I3.

14.

Focus Module Neuroscience

SEMINAR
RESEARCH COLLOQUIUM NEUROPSYCHOLOGY (118 912)
PROF. NIKOLAI AXMACHER

TERM: Summer 2016
MEETING TIME: t.b.a.
(First Meeting:
see <http://www.ruhr-uni-bochum.de/neuropsy/lehre.html>)
ROOM: GAFO 05/609
CP: t.b.a.

Vorstellung laufender Forschungsarbeiten, sowie Vorträge von Gastdozenten zu klinisch-neuropsychologischen Themen. Ein Zeitplan mit Informationen über Themen und Referenten wird zu Beginn des Semesters per Aushang und auf der Homepage bekannt gegeben. Die kritische Auseinandersetzung mit den Lerninhalten in Form von Diskussionen ist ein zentrales Lernziel und geht in die Bewertung mit ein.

14.

Focus Module Neuroscience

COLLOQUIUM
RESEARCH COLLOQUIUM BIOPSYCHOLOGY (118 914)
PROF. ONUR GÜNTÜRKÜN

TERM: Summer 2016
MEETING TIME: Monday, 13.00 – 15.00
(First Meeting: see <http://www.bio.psy.ruhr-unibochum.de>)
ROOM: GAFO 05/425
CP: t.b.a.

The research colloquium is open to all employees and graduate students of the Biopsychology department. The Aim is to present and discuss their research. In addition external guests are invited to give talks on different aspects of biopsychology. You can have a look at the schedule at the department's information board and our homepage: <http://www.bio.psy.ruhr-unibochum.de/>