

Course Guide – Master Cognitive Science

Summer 2021

Last update 30.03.2021

Enrollment for Courses and Further Information

IMPORTANT: THE SUMMER TERM STARTS ON 12.04.2021. PLEASE CONSULT ECAMPUS FOR UP-TO-DATE INFORMATION REGARDING THE COURSE FORMAT, STARTING DATES AND FURTHER DETAILS.

Students are requested to register with the university's **eCampus**-system and should be aware of the deadlines. Exceptions include the courses in neuroinformatics, e.g. held by Wiskott and Schöner. Here, there will be **no eCampus 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.

Essay Writing Course in Philosophy:

For all students who did not study philosophy during the BA program but need to learn how to write an essay or still feel insecure about it, we recommend in the summer term the seminar of Alfredo Vernazzani "Philosophy of Perception: Disjunctivism and the Nature of Hallucinations". It can be evaluated as C2 or AM1.

FIRST YEAR PROGRAM

C1.

Social Cognition & Meta-Science

BLOCKSEMINAR

SOCIAL PSYCHOLOGY OF PREJUDICE

(112314)

LUSINE GRIGORYAN

TERM: Summer 2021
PRELIMINARY MEETING: Wednesday, 14.04.2021, 14.00-16.00
MEETING TIME: Saturday, 05.06.2021, 09.30 – 18.30
Saturday, 12.06.2021, 09.30 – 18.30
ROOM: ONLINE
CP: 3

Culture is elusive, very difficult to define and even more difficult to measure. And yet, it affects every aspect of our lives, often without us noticing: "Culture is to humans as water is to fish". In this seminar, we will discuss how culture can be defined and measured, how it is acquired in childhood, and how it affects various aspects of psychological functioning. We will also explore applications of cross-cultural psychology, focusing on acculturation, intercultural communication, and diversity management. Language of instruction: English.

C1.**Social Cognition & Meta-Science***SEMINAR***COGNITION, CURRENTS CONTROVERSIES IN PHILOSOPHY AND COGNITIVE SCIENCE****(030065)**

PROF. DR. TOBIAS SCHLICHT/DR. TOBIAS STARZAK

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 12.00 – 14.00 (First Meeting: 13.04.2021)
ROOM:	ONLINE
CP:	6

We discuss recent work on cognitive phenomena which challenge well-entrenched assumptions about the concept, nature and scope of cognition. For example, alleged cognitive phenomena in simple biological systems such as single celled organisms (e.g. bacteria) and plants have led to the proposal that we should take ascriptions of capacities like perception and memory in such systems literally. Others defend a more traditional concept of cognition in terms of processing of representations. We will read texts from philosophers of mind, cognitive scientists and philosophers of biology and discuss the concept of cognition.

A Reader with texts will be provided before the first session in a moodle-course.

C1.**Social Cognition & Meta-Science***SEMINAR***SELF, NARRATIVE AND EMBODIMENT: PHILOSOPHICAL THEORIES
AND THEIR PSYCHOLOGICAL FOUNDATIONS****(030094)**

DR. ROY DINGS

TERM:	Summer 2021
MEETING TIME:	Thursdays, 14.00-16.00 (First Meeting 15.04.2021)
ROOM:	ONLINE/GABF 04/716
CP:	6

The self is a central concept in philosophy and cognitive science. However, in the last few decades there have been dozens of different conceptualizations and theories on what the self entails or consists of. In this course we will investigate two of the most important views on selfhood: the narrative self and the embodied self. In the first part of the course we will read and critically evaluate recent texts on both the embodied self and the narrative self, both from philosophy and cognitive science. In the second part of the course we shift the focus towards integrating these perspectives. That is, narrative selves are also embodied, so how could we integrate recent theoretical and empirical work on these two self-aspects? To get a better understanding of the problem at hand, we begin by looking at some cases where bodily selves and narrative selves tend to be discussed separately (i.e. non-integrated), such as research on memory and clinical cases in psychiatry. After that we turn towards possible solutions and look at recent work that highlights the integration between embodied selves and narrative selves. In particular we will investigate so called 'pattern theory approaches' to selfhood.

C1.

Social Cognition & Meta-Science

*LECTURE OR SEMINAR***GENERAL PHILOSOPHY OF SCIENCE (030003)****SPECIAL TOPICS IN PHILOSOPHY OF SCIENCE (030067)**

PROF. JAN BAEDKE

TERM:	Summer 2021
LECTURE:	Thursdays, 14.00-16.00, HGA 30 (First Meeting 15.04.2021)
SEMINAR:	Thursdays, 10.00-12.00, GABF 04/358 (First Meeting 15.04.2021)
CP:	4-6

You can choose only one of the two courses (Lecture or Seminar) but not both together!

Lecture: Philosophy of science reflects on the foundations, methods and aims of science. General philosophy of science includes further subjects like patterns of the historical development and the social structure of science. In the closer sense, it can be retraced continuously from the ancient world until present. Several disciplinary terms (such as “philosophy of mathematics” or later “philosophy of physics” and “philosophy of biology”) have been developed not until the 18th century and reflect the increasing significance of specific scientific knowledge for modern philosophy. The lecture gives an overview over the present status of general philosophy of science. It deals, on the one hand, with problems of methods and certain key concepts (such as “explanation” and “understanding”); on the other hand, it examines questions that focus on the significance of the historicity of scientific knowledge for the present sciences.

The lecture is initially addressed to students of philosophy in general and of the master program HPS+ in particular. It is open for interested students of other subjects with (at least) basic knowledge in theoretical philosophy, which is possible to gain in the module “Introduction to theoretical philosophy” (SE1). Parallel to the lecture an accompanying seminar will be offered which serves to deepen and to complement the topics of the lecture. Participation in the seminar is recommended, but only for students of HPS+ it is a requirement in order to complete the “basic module 1”. The language of the lecture will be English. You will be informed about modalities concerning credits in the first session of the lecture.

Introductory Literature:

Martin Curd, M. & James A. Cover (Eds.), *Philosophy of Science. The Central Issues*. 2nd ed., New York, London 2013.

Simon Lohse & Thomas Reydon (Hgg.): *Grundriss Wissenschaftsphilosophie. Die Philosophien der Einzelwissenschaften*. Hamburg 2017.

Alexander Rosenberg, *Philosophy of Science. A Contemporary Introduction*. 2nd ed., New York 2005.

Seminar: Besides logic, epistemology and philosophy of language, philosophy of science is one of the core disciplines of theoretical philosophy. This seminar belongs to the lecture “General Philosophy of Science”; further information on the subjects are given there. The seminar extends and deepens special topics the lecture deals with. Therefore, attending makes only sense when you also visit the lecture. It is obligatory for starters of the master program HPS+. Depending on the attendees the language of the course will be German and/or English.

C2.

Perception & Action

*LECTURE & EXERCISE***AUTONOMOUS ROBOTICS: ACTION, PERCEPTION, AND COGNITION (310501 & 310511)**

PROF. GREGOR SCHÖNER

TERM:	Summer 2021
LECTURE:	Thursday, 14.15 – 16.00 (First Meeting: 15.04.2021)
EXERCISE:	Thursday, 16.15 – 17.00 (First Meeting: 22.04.2021)
ROOM:	NB 3/57
CP:	6

Neuroinformatics is concerned with the discovery of new solutions to technical problems of information processing. These solutions are sought based on analogies with nervous systems and the behaviour of organisms. This course focuses on three exemplary problems to illustrate this approach:

- (a) Artificial action (autonomous robotics);
- (b) Artificial perception (robot vision);
- (c) Artificial cognition (simplest cognitive capabilities of autonomous robots such as decision making, memory, behavioural organization). The main methodological emphasis is on nonlinear dynamical systems' approaches and dynamic (neural) fields.

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

C2.

Perception & Action

SEMINAR

THE PHILOSOPHY OF ANIMAL MINDS (030101)

DR. TOBIAS STARZAK

TERM:	Summer 2021
MEETING TIME:	Wednesdays, 12.00 – 14.00 (First Meeting: 14.04.2021)
ROOM:	ONLINE
CP:	6

Can animals think? And if so, what do they think about and what are the limits of animal thought? Are they rational in the same sense humans are? Or is there a distinct animal rationality? Do they have concepts or beliefs? Do they understand causality or other minds? How can we get access to the animal mind? And how can we choose between alternative explanations for animal behavior? Philosophers have been discussing questions like these since antiquity and they do so for various reasons. Answers to these questions can have important implications for animal ethics but they are also important from an anthropological perspective, since one possible way to determine human nature is by comparison to non-human animals. But is there really an essential difference between humans and non-human animals, a so-called *anthropological* difference? Or are there only gradual differences that add up to a something that seems more fundamental than it really is? And why do we put more emphasis on some differences than on others? Finally, what can we learn about the psychological abilities in question and our mental vocabulary by studying the animal mind?

In this seminar, we will discuss these philosophical questions in due consideration of the relevant empirical literature from comparative psychology. The language of the seminar is English.

Literature:

A reader for download will be provided at the beginning of the seminar.

C2.

Perception & Action

SEMINAR

THE EVOLUTION OF MORALITY (030102)

DR. TOBIAS STARZAK

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 10.00 – 12.00 (First Meeting: 20.04.2021)
ROOM:	ONLINE
CP:	6

Moral thinking pervades our practical lives, but where does it come from? Is there an innate basis to human morality or is it a cultural phenomenon? Can we give a plausible evolutionary account of our sense of morality? What purpose does this sense of morality serve? What does that mean for the normative status of our moral judgments? Can this evolutionary perspective help to answer to moral skepticism? Or does an adaptive explanation of morality in terms of genetic success (“if it is just something that helped our ancestors make more babies”, as Joyce writes) rather undermine morality’s central role in our life?

In this seminar we’ll discuss these question on the basis of Richard Joyce’s 2005 book *The evolution of morality*. The language of the seminar is English.

Literature:

Richard Joyce (2005): *The evolution of morality*, MIT Press

C2.**Perception & Action***SEMINAR***PHILOSOPHY OF PERCEPTION (030092)**

JUN.PROF. DR. PETER BRÖSSEL

TERM:	Summer 2021
MEETING TIME:	Wednesday, 12.00 – 14.00 (First Meeting: 14.04.2021)
ROOM:	TBA
CP:	6

TBA

C2.

Perception & Action

ESSAY WRITING SEMINAR

**PHILOSOPHY OF PERCEPTION:
DISJUNCTIVISM AND THE NATURE OF HALLUCINATIONS
(030095)
DR. ALFREDO VERNAZZANI**

TERM:	Summer 2021
MEETING TIME:	Thursdays, 10.00 – 12.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE/GA 04/358
CP:	6

This is an Essay Writing Course in Philosophy:

For all students who did not study philosophy during the BA program but need to learn how to write an essay or still feel insecure about it, we recommend in the summer term the seminar of Alfredo Vernazzani “Philosophy of Perception: Disjunctivism and the Nature of Hallucinations”. It can be evaluated as C2 or AM1. Details about the demands are clarified in the first meeting.

Content:

Suppose you see an object on your desk (say, a book). Your perceptual capacities make this object present in your experience. Call this the “good case”. Now suppose that, in another moment, you *seem* to see the book on your desk. Apparently, the same book is present in your experience, but the moment you try to fetch it, you hit the desk. The book was a mere hallucination! Call this the “bad case.”

Philosophers of perception are divided about the nature of the good and bad cases. According to some philosophers, both the good and bad case are the same kind of mental states. *Disjunctivists* disagree: on their view, a mental state is *either* a good case (an instance of perception) *or* something altogether different (perhaps, an hallucination!), although it seems to us to be perceiving something. This raises some questions: If the two mental states are different, why are we deceived by hallucinatory cases? What is the nature of our access to perceptual appearances? What arguments can be given in support of Disjunctivism? Is Disjunctivism plausible in light of contemporary cognitive science? The issue of Disjunctivism touches thus on the very nature of perceptual experience and our perceptual access to the world.

In this seminar we will discuss together some classic and recent texts on Disjunctivism, and get thereby better acquainted with one of the most important topics in contemporary philosophy of perception.

Study material:

As a preliminary introduction to the topic, I recommend Matthew Soteriou’s entry “The Disjunctive Theory of Perception” in the *Stanford Encyclopedia of Philosophy* (2020): <https://plato.stanford.edu/entries/perception-disjunctive/>

We will read papers by Hinton, McDowell, Burge, Martin, and Snowdon, among others. The papers will be made available on Moodle.

C3.**Memory, Learning & Decision Making***LECTURE & EXERCISE***COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY
(310504 & 310514)**

PROF. LAURENZ WISKOTT

TERM:	Summer 2021
LECTURE:	Tuesdays, 12.15 – 13.45 (First Meeting: 13.04.2021)
EXERCISE:	Tuesdays, 10.30 – 12.00 (Preliminary Meeting: 20.04.2021, 9.00 – 10.30)
ROOM:	NB 3/57 (both, lecture & exercise)
CP:	6

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

Prerequisites: Good mathematical skills, linear algebra and calculus.

Mostly lecture notes will be provided.

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

C3.**Memory, Learning & Decision Making***LECTURE & EXERCISE***INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE
(310506 & 310516)**

PROF. SEN CHENG

TERM:	Summer 2021
LECTURE:	Mondays, 16.00 – 18.00 (First Meeting: 12.04.2021)
EXERCISE:	Fridays, 10.00 – 12.00 (Preliminary Meeting: 16.04.2021)
ROOM:	ONLINE
CP:	6

Computational neuroscience uses quantitative methods to describe what nervous systems do, study how they function, and explain the underlying principles. This class introduces the basics of the mathematical and computational methods used in contemporary neuroscience research. These methods are applied to problems in perception, motor control, learning, and memory.

Knowledge of calculus, linear algebra, and statistics is required for this class, knowledge of neuroscience is not.

C3.**Memory, Learning & Decision Making***SEMINAR***DISKURS ENGRAMM****(118163)**

DR. MARIE-CHRISTIN FELLNER

TERM:	Summer 2021
MEETING TIME:	Thursdays, 16.00 – 18.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE
CP:	3

What is the format of human memory? In this course we will discuss recent papers investigating memory using a variety of methods (iEEG, fMRI, behavioral methods). Specifically, we will discuss how multivariate pattern analysis methods might shed light on human memory representations.

Hybridlehre, synchron und asynchron.

C3.**Memory, Learning & Decision Making***SEMINAR***DECISION MAKING IN COGNITIVE SCIENCE
(030100)**

DR. ELMARIE VENTER

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 10.00 – 12.00 (First Meeting: 13.04.2021)
ROOM:	ONLINE
CP:	6

How do we make decisions? Can we predict what decision someone will make based on neural activity? What effects how we make decisions? In this seminar, we will approach these questions from a neuroeconomic perspective. Neuroeconomics is an emerging field of study that combines various fields including neuroscience, behavioral economics and psychology. Some central issues that will be discussed include influences on decision making (such as framing and emotions), making decisions under risk and uncertainty, and the neural mechanisms of decision making. We will engage with philosophical literature as well as empirical studies.

Literature will be provided on Moodle.

C3.

Memory, Learning & Decision Making

SEMINAR

MEMORY AND SELF

(030088)

PROF. MARKUS WERNING

TERM:	Summer 2021
MEETING TIME:	Thursdays, 16.00 – 18.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE/GA 04/187
CP:	6

Ever since John Locke famously equated personal identity with memory have philosophers investigated the intimate relation between memory and the self. In recent years, these investigations have been fruitfully informed by the ever-increasing experimental data on memory gathered by cognitive scientists. For example, evidence of perspective switching in episodic remembering, the role of lifelogging technologies on one's autobiography, and the postulation of false memories all point towards the need to radically shift the way we think about our selves, past, present and future. Can we still consider ourselves to be stable entities existing throughout time? Is it true that who we are depends on how we remember? Or is it how we cast ourselves into an ever-changing immediate future in varying contexts?

Is memory really a storage of past experiences, or is more akin to a predictive process depending on our projected present and future self and amounting to a construction of a past scenario? Moreover, empirical findings have prompted a heated debate on the role of imagined future scenarios on the sense of who we are and the related issue of whether and how they can foster, and in what circumstances, our capacity to resist temptation and exercise self-control.

The seminar will provide an overview of the current controversies on memory and the self, also addressing their relation to discussions on future foresight and self-control. It starts by examining a traditional view of memory as constitutive for personal identity. We will then move on to contemporary accounts of memory and self that draw on recent research on cognitive science. Among these is the finding that people can switch from a first-person (or field) perspective to a third-person (or observer) perspective, which has informed discussions on self-control and mental time travel. Certain ethical implications arise out of the consideration that persons sometimes heavily depend on evocative objects for recalling their personal past, or that imagined episodes can supposedly be implanted in their autobiography. Finally, we will turn to questions concerning the distinct phenomenology of memory and the self.

Students will have the opportunity to link up with our DFG research group "Constructing Scenarios of the Past" as well as with our DFG Research Training Group "Situated Cognition".

Aside from active participation, participants will be expected to give a presentation in English. Assistance regarding the English language will be provided upon request.

Literature:

Boyle, A. (2019). The impure phenomenology of episodic memory. *Mind & Language*, mila.12261. <https://doi.org/10.1111/mila.12261>.

Cosentino, E. (2020). Self-control, mental time travel, and the temporally extended self. In A. Mele (ed.), *Surrounding Self-Control*, Oxford University Press, pp. 434-452.

Heersmink, R. (2017). Distributed selves: Personal identity and extended memory systems. *Synthese*, 194(8), 3135–3151. <https://doi.org/10.1007/s11229-016-1102-4>.

Liefke, K. & Werning, M. (submitted). Experiential Imagination and the Inside/Outside-Distinction.

McCarroll, C. J. (2018). *Remembering from the outside: Personal memory and the perspectival mind*.

C3.

Memory, Learning & Decision Making

*SEMINAR***EVENT COGNITION: MEMORY AND PERCEPTION OF NATURALISTIC ACTIVITIES (118164)**

DR. DAVID STAWARCZYK

TERM:	Summer 2021
MEETING TIME:	Tuesday, 14.00 – 16.00 (First Meeting: 13.04.2021)
ROOM:	IA 1/157
CP:	3

Everyday experiences consist in a continuous flow of experience, yet people seem to automatically and effortlessly segment this flow of information into discrete and meaningful event. For instance, one might describe baking a cake by listing the following parts: "Preheating the oven, mixing the ingredients, pouring the dough in a mold, etc." An extended amount of evidence suggests that this segmentation process has pronounced impact in how people perceive, remember, and respond to everyday events. In this seminar, I will use a cognitive neuroscience approach to describe the major aspect of event cognition, that is how people build in mind and update event models of current situations, how such models affect memory encoding, and how are used to guide perception and behavior.

C4.

Language, Logic & Categories

SEMINAR

**GENERIC STATEMENTS AND LAWS OF NATURE
(030107)**

DR. MATTHIAS UNTERHUBER

TERM:	Summer 2021
MEETING TIME:	Mondays, 16.00 – 18.00 (First Meeting: 12.04.2021)
ROOM:	ONLINE/GA 04/187
CP:	6

The seminar will focus on laws of nature, generalizations as expressed in natural language, and their interconnection. We will address the following questions: (1) What are laws of nature? (2) How are generalizations expressed in natural language? (3) Which connection exists between generalizations in natural language and laws of nature, if any? Concerning (1), we will discuss the notion of *ceteris paribus* laws, i.e., laws of nature that explicitly allow for exceptions and their role in the special sciences (e.g., biology, chemistry, psychology). With respect to (2), we will focus on generic statements, statements such as *birds can fly*, which describe law-like regularities rather than particular matters of fact. On this point, the seminar will examine linguistic research on the semantics and pragmatics of generic statements. Regarding (3), we will discuss approaches which aim to utilize the semantics and pragmatics of generic statements for a better understanding of laws of nature in the special sciences.

Suggested Readings:

Reutlinger, A., & Unterhuber, M. (2014). Thinking about Non-Universal Laws. *Erkenntnis*, 79(10), 1703–1713.

Leslie, S.-J., & Lerner, A. (2016). Generic Generalizations. In E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition).

Retrieved from <https://plato.stanford.edu/archives/win2016/entries/generics/>

Mari, A., Beyssade, C., & Del Prete, F. (2013). Introduction. In A. Mari, C. Beyssade, & F. del Prete (Eds.), *Genericity* (pp. 1–92). Oxford: Oxford University Press.

C4.

Language, Logic & Categories

SEMINAR

THEORIES OF CONCEPTS & COGNITION**(030096)**

DR. NINA POTH

TERM:	Summer 2021
MEETING TIME:	Thursdays, 10.00 – 12.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE
CP:	6

Many traditional theories in philosophy of mind and cognitive science understand concepts to play a central role in cognitive processes such as learning, reasoning, language, perception, and action. However, concepts seem to find only a limited role in recent debates in situated cognition, which understands cognition as expanding beyond the brain and the body. In this course, we will critically examine contemporary philosophical issues and questions about concepts and their relevance to cognition. Some of these questions include, but are not limited to:

- What are concepts and how do they relate to our thoughts and actions?
- Are we born with basic concepts (e.g., 'green', as opposed to 'green house') or do we learn them?
- Do non-human animals have concepts?
- To what extent can concepts be grounded in sensorimotor representations?
- Is the term 'concept' dispensable to explain cognition in a relevant sense?

We will draw on a variety of resources in investigating these questions, including findings from psychology, neuroscience, and artificial intelligence.

Due to the unforeseeable circumstances regarding the COVID-19 pandemic, the seminar will initially be held online using Moodle and Zoom. This might change at a later date.

Recommended readings:

Margolis, Eric and Stephen Laurence, "Concepts", *The Stanford Encyclopedia of Philosophy* (Summer 2019 Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/sum2019/entries/concepts/>>

Carey, Susan. "Précis of the origin of concepts." *Behavioral and Brain Sciences* 34.3 (2011): 113.

Hurley, Susan. "Animal action in the space of reasons." *Mind & Language* 18.3 (2003): 231-257.

Mahon, Bradford Z., and Alfonso Caramazza. "Concepts and categories: a cognitive neuropsychological perspective." *Annual review of psychology* 60 (2009): 27-51.

Weiskopf, Daniel A. "The theoretical indispensability of concepts." *Behavioral and Brain Sciences* 33.2-3 (2010): 228-229.

C4.

Language, Logic & Categories

*SEMINAR***BAYESIAN BRAINS, CONSPIRACY THEORIES, AND INTELLECTUAL VICES
(030093)**

PROF. DR. TOBIAS SCHLICHT

TERM:	Summer 2021
MEETING TIME:	Thursdays, 10.00 – 12.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE
CP:	6

One of the leading hypotheses in cognitive science is the claim that cognitive processes are aimed at optimal results prescribed by the norms of Bayesian decision theory, according to which the optimal procedure for carrying out inference under uncertainty is prescribed by Bayes' theorem, which itself is a rule derived from probability theory. The theorem prescribes how one's subjective degree of belief in some hypothesis should change in response to new evidence. The so-called 'Bayesian brain hypothesis' refers to a family of views according to which cognition itself consists in or is underpinned by processes approximating Bayesian inference. However, this view faces the problem of explaining how people arrive at irrational beliefs, such as conspiracy theories about cellular 5G networks being the cause of the Covid-19 virus, despite abundant evidence against their plausibility. We address this challenge to Bayesianism by turning to lessons from vice epistemology, social epistemology and situated approaches to cognition. The working hypothesis is that a full understanding of the dynamics of irrational beliefs requires a multifactorial model integrating multiple factors, including personal intellectual traits and societal influence.

C4.

Language, Logic & Categories

SEMINAR

PROPOSITIONAL ATTITUDES**(030099)**

JUN.PROF. DR. KRISTINA LIEFKE

TERM:	Summer 2021
MEETING TIME:	Thursdays, 14.00 – 16.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE/GA 04/187
CP:	6

This seminar gives a systematic introduction to propositional attitudes. The latter are mental states like beliefs and desires that are typically ascribed by sentences of the form *a Vs [= thinks/wishes/...] that p*. Part I of the seminar is dedicated to the empirical properties of propositional attitudes (e.g. their opacity & possible non-specificity) and to the (*de dicto/de re*-)ambiguity of attitude ascriptions that is brought about by these properties. Part II introduces Hintikka's (1969) classical relational account of these properties. This account analyzes propositional attitudes as relations to a proposition [= to a set of possible worlds]. Part III identifies challenges for Hintikka's account that arise from (i) its relational character, (ii) the coarse-grainedness of 'possible world'-style propositions, and (iii) the uniform treatment of diverse attitudes. Time permitting, we will discuss some recent answers to these challenges.

Prerequisites: basic familiarity with logic and the philosophy of language.

Literature:

Readings: A selection of texts will be made available through Moodle before the start of the semester. This selection will include

- Quine, W.V. (1956). Quantifiers and propositional attitudes. *Journal of Philosophy* 53(5), 177-187. [for Part I]
 Pearson, H. (2021). Attitude verbs. In D. Gutzmann *et al.* (eds.): *The Wiley Blackwell Companion to Semantics*. Available at: <<https://l.rub.de/f22c002c>>. [for Part II; an accessible introduction to the topic]
 Moltmann, F. (2003). Propositional attitudes without propositions. *Synthese* 135(1), 77-118. [for Part III]

C4.

Language, Logic & Categories

SEMINAR

EMBODIED AND ENACTED LINGUISTIC MEANING

(030089)

PROF. MARKUS WERNING

TERM:	Summer 2021
MEETING TIME:	Thursdays, 12.00 – 14.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE/GA 04/187
CP:	6

According to a leading view in cognitive science, linguistic understanding is embodied, enacted, and situated. (i) Language comprehension is regarded as *embodied* in the sense that meaning is not symbolic, but grounded in perceptual, motoric and emotional brain processes (Pulvermüller & Fadiga, 2010). (ii) That linguistic communication is *enacted* becomes manifest when we consider co-speech gestures and non-verbal signalling in face-to-face communication (Wu & Coulson, 2007). (iii) Language understanding is moreover argued to be situated such that the meaning contributions words make to the meaning of a sentence are dependent on discourse and environmental context (Cosentino, Baggio, Kontinen, & Werning, 2017; Liefke & Werning, 2018). In the seminar we will review the arguments, empirical evidence, and models for and against this view of meaning. We will also address specific problems such as the issue of compositionality (Werning, 2012), the problem of abstract concepts (Löhr, 2019), and the phenomenon of conceptual synaesthesia (Mroczko-Wąsowicz & Werning, 2012).

Students will have the opportunity to gain live insight into ongoing experimental research of our EEG lab as well as our modelling and theoretical work.

They will also be able to link up with our DFG Research Training Group “Situating Cognition”.

Aside from active participation, participants will be expected to give a presentation in English. Assistance regarding the English language will be provided.

Literature:

Cosentino, E., Baggio, G., Kontinen, J., & Werning, M. (2017). The time-course of sentence meaning composition. N400 effects of the interaction between context-induced and lexically stored affordances. *Frontiers in Psychology*, 8(818). <https://doi.org/10.3389/fpsyg.2017.00813>

Liefke, K., & Werning, M. (2018). Evidence for Single-Type Semantics—An Alternative To e/t-Based Dual-Type Semantics. *Journal of Semantics*, 35(4), 639–685. <https://doi.org/10.1093/jos/ffv009>.

Löhr, G. (2019). Embodied cognition and abstract concepts: Do concept empiricists leave anything out? *Philosophical Psychology*, 32(2), 161–185. <https://doi.org/10.1080/09515089.2018.1517207>.

Mroczko-Wąsowicz, A., & Werning, M. (2012). Synesthesia, Sensory-Motor Contingency, and Semantic Emulation: How Swimming Style-Color Synesthesia Challenges the Traditional View of Synesthesia. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2012.00279>.

AM. Advanced Methods

Advanced methods are usually studied in the second semester. 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

ESSAY WRITING SEMINAR

PHILOSOPHY OF PERCEPTION:

DISJUNCTIVISM AND THE NATURE OF HALLUCINATIONS

(030095)

DR. ALFREDO VERNAZZANI

TERM:	Summer 2021
MEETING TIME:	Thursdays, 10.00 – 12.00 (First Meeting: 15.04.2021)
ROOM:	ONLINE/GA 04/358
CP:	6

This is an Essay Writing Course in Philosophy:

For all students who did not study philosophy during the BA program but need to learn how to write an essay or still feel insecure about it, we recommend in the summer term the seminar of Alfredo Vernazzani "Philosophy of Perception: Disjunctivism and the Nature of Hallucinations". It can be evaluated as C2 or AM1. For students who studied philosophy during the BA program, this course can only count for the C2 module. Details about the demands are clarified in the first meeting.

Content:

Suppose you see an object on your desk (say, a book). Your perceptual capacities make this object present in your experience. Call this the "good case". Now suppose that, in another moment, you *seem* to see the book on your desk. Apparently, the same book is present in your experience, but the moment you try to fetch it, you hit the desk. The book was a mere hallucination! Call this the "bad case."

Philosophers of perception are divided about the nature of the good and bad cases. According to some philosophers, both the good and bad case are the same kind of mental states. *Disjunctivists* disagree: on their view, a mental state is *either* a good case (an instance of perception) *or* something altogether different (perhaps, an hallucination!), although it seems to us to be perceiving something. This raises some questions: If the two mental states are different, why are we deceived by hallucinatory cases? What is the nature of our access to perceptual appearances? What arguments can be given in support of Disjunctivism? Is Disjunctivism plausible in

light of contemporary cognitive science? The issue of Disjunctivism touches thus on the very nature of perceptual experience and our perceptual access to the world.

In this seminar we will discuss together some classic and recent texts on Disjunctivism, and get thereby better acquainted with one of the most important topics in contemporary philosophy of perception.

Study material:

As a preliminary introduction to the topic, I recommend Matthew Soteriou's entry "The Disjunctive Theory of Perception" in the *Stanford Encyclopedia of Philosophy* (2020): <https://plato.stanford.edu/entries/perception-disjunctive/>

We will read papers by Hinton, McDowell, Burge, Martin, and Snowdon, among others. The papers will be made available on Moodle.

AM2.**Advanced Analysis of Language and Logic***THERE ARE NO COURSES THIS SEMESTER***AM3****Behaviour Studies & Data Analysis***THERE ARE NO COURSES THIS SEMESTER*

AM4.

Computational Modeling

*LECTURE & EXERCISE***MATHEMATICS FOR MODELING AND DATA ANALYSIS
(310503 & 310513)**

PROF. LAURENZ WISKOTT

TERM:	Summer 2021
LECTURE:	Thursdays, 12.15 – 13.45, (First Meeting: 15.04.2021)
EXERCISE:	Thursdays, 10.30 – 12.00, (Preliminary Meeting: 22.04.2021, 9.00 – 10.30)
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, vector spaces, matrices as transformations, systems of linear differential equations, qualitative analysis of nonlinear differential equations, Bayes theory, multiple integrals.

Requirements: Basic knowledge of linear algebra and calculus.

If this seminar is used for Module I3, it cannot be used for AM4.

AM4.

Computational Modeling

*SEMINAR***PROGRAMMIEREN IN MATLAB / PROGRAMMING IN MATLAB
(118155)**

DR. ROLAND PUSCH, PROF. JONAS ROSE

TERM:	Summer 2021
MEETING TIME:	Thursdays, 14.00 - 16.00 and 16.00 - 18-00 (First Meeting: 15.04.2021)
ROOM:	IB 02/109 PC-POOL
CP:	3

This course will be held in German language, but there will be a **second group in English language**, if there are enough interested students. So if you would like that to happen, please apply early.

In dem Projektseminar nehmen die Studierenden an einem Forschungsprojekt teil und gewinnen einen Einblick in die Versuchsdurchführung, Datenanalyse und -interpretation. Im Vordergrund steht dabei die Einführung in die Programmierung mit Matlab, die in wöchentlichen Sitzungen stattfindet und von zeitintensiven Hausaufgaben begleitet wird. In den Seminarsitzungen werden die Studierenden eigene Versuche entwerfen, programmieren und durchführen. Die erhobenen Daten werden die Studierenden mit ihren neu gewonnenen Programmierkenntnissen in Matlab auswerten. In einem separaten Blocktermin wird das Projekt inhaltlich erarbeitet. Am Ende werden alle drei Aufgabenbereiche in einem Bericht zusammenlaufen, in dem die inhaltlichen Aspekte des Projekts, die erhobenen Daten und deren Auswertung beschrieben werden.

Rückfragen bitte an: roland.pusch@rub.de; jonas.rose@rub.de

AM4.

Computational Modeling

LAB COURSE/BLOCKSEMINAR

INTRODUCTION TO PYTHON

(310533)

EDDIE SEABROOK

TERM:	Summer 2021
MEETING TIME:	06.09. - 17.09.2021, 10.00-16.00 (2 weeks full day) (Preliminary Meeting: 06.09.2021)
ROOM:	ONLINE/PC-POOL NN
CP:	3

Important: Five seats will be reserved for students from Cognitive Science. After that, the seats will be allocated on a first-come, first-serve basis based on enrollment emails.

Content:

Python is a programming language that is wide-spread among scientists due to its readability and powerful standard libraries. This practical course teaches Python 3 to students with prior experience in other programming languages. In addition to introducing the language itself, we will focus on scientific computing including vectors and matrices as well as data processing and possibly simple machine learning. All course-work is done in teams of two.

During the first week, participants will work on Jupyter notebooks autonomously and discover Python 3 in a largely self-taught manner. Teaching assistants are present and support is provided if required.

During the second week, participants will implement a project in Python 3 using the previously acquired skills. We provide a default project, usually from the area of machine learning. Alternatively, own project ideas can be realized if discussed early on with the Teaching Assistants.

Learning outcomes: After the successful completion of this course the students

- will know and be able to apply basic syntax and structure of Python 3,
- will understand numerical representations and processing of data using Numpy,
- will have gained first practical experience in planning and conducting a small project in a team using Python 3.

Language: The course language is English.

Requirements: We expect fluency in one other programming language and familiarity with concepts like: loops and control structures (while, for, if ...); basic data types and structures (boolean, int, float, string, arrays, ...); functions; and object-oriented programming.

These concepts will not be taught separately. A solid understanding of basic maths and algorithms is also recommended for a successful project.

Registration:

To registering via your examination office/FlexNow/..., please send an eMail to python@ini.rub.de
Include your name, your student ID, and your study program.

AM5.

Special Methods in Neuroscience/Genetics

*BLOCKSEMINAR***NEUROEPIGENETICS (118161)**

DR. VANESSA LUX

TERM:	Summer 2021
PRELIMINARY MEETING:	Thursday, 08.04.2021, 12.00 – 14.00
MEETING TIME:	Friday, 23.04.2021, 09.00 – 18.00 Saturday, 24.04.2021, 9.00 – 18.00
ROOM:	ONLINE
CP:	3

Neuroepigenetics studies epigenetic modifications in neuronal cells. First evidence indicates that epigenetic mechanisms regulate neuronal cell expression and contribute to cell differentiation, brain development, learning, and memory. The course will give an overview of hot topics in developmental neurobiology, memory research, learning, and stress research. Students will acquire basic knowledge of epigenetic mechanisms (DNA methylation, histone modifications, and RNA interference) and underlying models of gene-environment interaction. Moreover, we will discuss the potential of neuroepigenetics and its methods (molecular analyses, animal models, peripheral biomarkers) for psychological research questions. As an add-on, participants will learn strategies how to read and evaluate research papers efficiently. The course is taught in English.

The course is organized as online workshop: After a short general introduction to the topic, students will work individually and in groups on different subtopics. The results will be presented at (online) focus meetings, which will be scheduled at the first meeting with all participants.

AM6.

EEG-training

SEMINAR & PRACTICAL COURSE

COURSE NEUROPHYSIOLOGICAL METHODS: EEG

(118157, 118158, 118152, 118153)

DR. LAURA-ISABELLE KLATT & JULIAN ELIAS REISER (SEM 1 & LAB: EN)

DR. DANIEL SCHNEIDER & DR. STEFAN ARNAU (SEM 2 & LAB: GE)

TERM:	Summer 2021
SEMINAR 1 & LAB:	08./09.05.2021, 09.00 - 18.00 ONLINE 29./30.05.2021, 09.00 – 18.00 LAB 14.07.2021, 10.00 – 12.00 Preliminary Meeting: 19.04.2021, 15.00 – 16.00
CP:	6
SEMINAR 2:	15./16.05.2021, TBA 12./13.06.2021, TBA Preliminary Meeting: TBA
ROOM:	ONLINE/LAB
CP:	3

Please make early decision and contact the lecturers running the courses: Please notice the entry conditions of the courses.

The course takes place as a Hybrid-Version: Online synchron & asynchron as well as in presence (Lab), if possible.

SEMINAR 1: Seminar course neuropsychological methods: EEG (118158)

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 of the course is independently conducting and analyzing an EEG study. On the basis of published neuropsychological literature students will develop new research questions and present the results of the experiment in writing corresponding to the standards of neuroscientific journals. The basic skills and literature will be discussed in the seminar. The course language is English.

LAB (Laboratory Course): Practical course neuropsychological methods: EEG (118157):

Requirement: Seminar course neuropsychologischer Methoden

The Practical course stands in **direct relation to the seminar course**. Participation in both modules is mandatory. The goal of the course is independently conducting and analyzing an EEG study. On the basis of published neuropsychological literature students will develop new research questions and present the results of the experiment in writing corresponding to the standards of neuroscientific journals. The basic skills and literature will be discussed in the seminar. The course language is English.

SEMINAR 2: Seminar und Praktikum angewandte neuropsychologische Methoden – EEG (118153, 118152)

<IN GERMAN>

Das Seminar steht in direktem Zusammenhang mit dem gleichnamigen Praktikum (ebenfalls 2 SWS). Die Teilnahme an beiden Veranstaltungen ist erforderlich. Ziel des Kurses ist die eigenständige Durchführung und Auswertung eines EEG Experimentes. Auf der Basis von veröffentlichten neuropsychologischen Literatur sollen weiterführende Forschungsfragen im Bereich der kognitiven Neurowissenschaft entwickelt werden und die Ergebnisse des Experiments sollen entsprechend den Standards neurowissenschaftlicher Fachzeitschriften in schriftlicher Form präsentiert werden. Im Seminar werden begleitend die erforderlichen Grundlagen und Literatur diskutiert.

AM7.

fMRI Training

*SEMINAR & PRACTICAL COURSE***IMAGING BASED APPROACH IN BIOPSYCHOLOGY (fMRI)
(TBA)**

DR. MEHDI BEHROOZI

TERM:	Summer 2021
PRELIMINARY MEETING:	Wednesday, 14.04.2021, 10.00 – 12.00
MEETING TIME:	Wednesdays, 10.00 – 12.00
ROOM:	ONLINE/SCANNER CENTERS
CP:	3

Limit: 15 students with priority for Cognitive Science students. Those who are interested in this course must send an email to Dr. Mehdi Behroozi: mehdi.behroozi@ruhr-uni-bochum.de

During the past two decades, technological leaps in advanced analytical methods, as well as higher temporal and spatial resolution, turned functional magnetic resonance imaging (fMRI) into a neuroscientific core technique to study of human and non-human brain function. Thus, it is essential to learn the basics of fMRI for those who want to make their career out of this technique. This course will be divided into two sessions:

This course will take place in two sections:

The theoretical sessions will cover the physics and physiology of fMRI, and the relationship between neuronal and BOLD activity patterns.

The practical sessions will focus on data preprocessing (motion correction, slice time correction, spatial smoothing, temporal filtering, etc) and post-processing (GLM, MVPA) techniques and how they can be used to learn about the neuronal mechanism underlying various cognitive abilities. Besides, students will visit the human and animal scanner centers to get familiar with the fMRI machine and learn about data collection.

The theoretical part will be online. When the corona crisis end, the lab sessions will take place and we will visit scanner centers. In any case, if corona regulations stay with us, we will work more on advanced data processing techniques such as Multi-voxel pattern analysis (MVPA).

D. 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. Brüssel or Prof. Newen in advance.

D1.

Free Selection

VORLESUNG
KOGNITION UND GEHIRN
(112611)
 PROF. OLIVER WOLF

TERM:	Summer 2021
MEETING TIME:	Mondays, 14.00 – 16.00, First Meeting: 12.04.2021
ROOM:	HIA
CP:	3

Falls es zu Online Lehre kommt wird diese Vorlesung asynchron angeboten

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.

Literatur wird zu Beginn der Veranstaltung bekannt gegeben und wird im Moodle zur Verfügung gestellt.

D1.

Free Selection

LECTURE
EVOLUTION UND EMOTION
(112251)
PROF. ONUR GÜNTÜRKÜN

TERM: Summer 2021
MEETING TIME: Thursdays, 16.00 – 18.00 (First Meeting: 15.04.2021)
ROOM: HIA
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 Entwicklung? 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 und Epigenetik 2) Verhaltensgenetik. 3) Entwicklung des Lebens und des Menschen. 4) Emotionsmechanismen. 5) Soziobiologie.

Bekanntgabe der aktuellen Literatur während der Veranstaltung und über Moodle.

D1.

Free Selection

*LECTURE***BIOPSYCHOLOGIE (112631)**

PROF. ONUR GÜNTÜRKÜN

TERM:	Summer 2021
MEETING TIME:	Mondays, 16.00 – 18.00 (First Meeting: 12.04.2021)
ROOM:	HIA
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 neuronalen Grundlagen des Wahrnehmens und Erkennens kennenlernen.

Literatur:

Buch: Onur Güntürkün, Biopsychologie, Hogrefe Verlag 2012, Kapitel 5 – 12.

Bekanntgabe weiterer aktueller Literatur während der Veranstaltung und über Moodle.

D1.

Free Selection

SEMINAR
PSYCHIATRISCHE GENETIK UND EPIGENETIK
(118162)
ELISABETH HUMMEL

TERM: Summer 2021
MEETING TIME: Tuesday, 12.00 – 14.00 (First Meeting: 13.04.2021)
ROOM: IB 02/135
CP: 3

Only 2 people may join. If you are interested, please send an application to Elisabeth Hummel (elisabeth.hummel@rub.de)

In diesem Seminar wird über aktuelle Forschungsergebnisse aus der molekularen Verhaltensgenetik diskutiert. Im Fokus stehen dabei Befunde der psychiatrischen Genetik, sowie Ergebnisse zu Gen-Umwelt-Interaktionen, Genexpression und der Epigenetik. Beispielsweise wird die Frage nach den Mechanismen behandelt, wie sich frühe Umweltfaktoren „biologisch festschreiben“ (biological embedding of experience), und welche Rolle dabei epigenetische Prozesse spielen. Außerdem wird der Nutzen von Biomarkern besprochen. Die genaue Auswahl der Literatur findet in Absprache mit den Teilnehmern statt. Aktuelle Publikationen werden besprochen und methodenkritisch analysiert

D1.

Free Selection

SEMINAR
LERNEN UND PROBLEMLÖSEN
(030268)
 PROF. NIKOL RUMMEL

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 12.00 – 14.00 (First Meeting: 20.04.2021)
ROOM:	ONLINE
CP:	3

In diesem Seminar sollen zunächst grundlegende Konzeptualisierungen menschlichen Lernens erarbeitet werden; anschließend werden verschiedene Formen des Lernens kontrastiert (formales, nonformales und informelles Lernen). Der zweite Teil der Veranstaltung beschäftigt sich mit dem Konzept des Problemlösens. 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 Instruktionsmethode genutzt. Dadurch stellt sich die Frage nach dem Zusammenspiel von Problemlösen und Lernen. Abschließend werden spezifische Situationen, in denen Lernen und Problemlösen stattfinden, betrachtet und die damit einhergehenden Möglichkeiten bzw. Herausforderungen diskutiert.

Die Seminarsitzungen werden mit Impulsreferaten, vertiefenden Diskussionen und Gruppenarbeiten so gestaltet, dass eine aktive und interaktive Auseinandersetzung aller Teilnehmer/innen mit den Inhalten gefördert wird.

Anforderungen für den (unbenoteten) Leistungsnachweis: Lektüre ausgewählter Texte und Bearbeitung von kleinen Aufgaben zur Vorbereitung der Sitzungen; aktive Mitarbeit.

Die **Anmeldungen** erfolgen in eCampus in der Zeit vom **22.03.2021 (08:00 Uhr) bis zum 31.03.2021 (23:59 Uhr)** (mit Ausnahme der Vorlesungen, der gekoppelten Einführungsseminare und der Tutorien). Die Ergebnisse des Anmeldeverfahrens können spätestens ab dem **12.04.2021** in eCampus abgerufen werden.

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.

1.

Focus Module Philosophy

COLLOQUIUM

RESEARCH COLLOQUIUM:

PHILOSOPHY MEETS COGNITIVE SCIENCE: LANGUAGE AND MEMORY (030128)

PROF. MARKUS WERNING

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 16.00 – 19.00 (First Meeting: 13.04.2021)
ROOM:	ONLINE
CP:	2-6

In the research colloquium current topics at the interface between Philosophy and Cognitive Science will be discussed. The colloquium hosts talks by leading international 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.

This semester the sessions of the research colloquium will alternate in a bi-weekly rhythm between the topics “Memory” and “Language”. The memory talks will be organized in cooperation with Prof. Kourken Michaelian, Dr. Erica Cosentino, and Dr. Anco Peeters. The language talks will be hosted together with Prof. Kristina Liefke.

A detailed schedule will be published in due course at <https://www.ruhr-uni-bochum.de/phil-lang/colloquium.html>.

With few exceptions, talks will be held via Zoom and will be open to the international academic public.

11.

Focus Module Philosophy

*COLLOQUIUM***EXTRA RESEARCH COLLOQUIUM "METAPHILOSOPHY AND
EXPERIMENTAL PHILOSOPHY"****(030126)**

JUN.-PROF. JOACHIM HORVATH

TERM:	Summer 2021
MEETING TIME:	Wednesday, 16.15 – 17.45 (First Meeting: 14.04.2021)
ROOM:	ONLINE/GAFO 04/619
CP:	3-6

In this research colloquium, we will discuss current topics from metaphilosophy and experimental philosophy, broadly construed. The colloquium will also host talks by a number of external guests, many of which are leading experts in their field. Students at the master or doctoral level will be given the opportunity to present their work in English.

11.

Focus Module Philosophy

*COLLOQUIUM***RESEARCH COLLOQUIUM: RATIONALITY AND COGNITION
(030125)**

JUN.-PROF. DR. PETER BRÖSSEL

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 16.00 – 18.00 (First Meeting: 13.04.2021)
ROOM:	ONLINE
CP:	3-6

TBA

11.

Focus Module Philosophy

*COLLOQUIUM***INTERDISCIPLINARY READING CLUB: RECENT DEBATES ON SITUATED & SOCIAL COGNITION (030098)**

DR. SABRINA CONINX, JULIA WOLF, DR. TOBIAS STARZAK

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 14.00 – 16.00 (First Meeting: 13.04.2021)
ROOM:	GA 04/187
CP:	3-6

The Interdisciplinary Reading Club offers a systematic engagement with the work of researchers central to the field of situated cognition, including aspects of social cognition, situated affectivity, and comparisons between humans and animals. The Interdisciplinary Reading Club consists of three components. First, there will be presentations by external guests working in the field of situated cognition. Second, we will discuss central papers in the debate to be read in advance. Third, participants will have the opportunity to present their own work and receive feedback from the group. The Reading Club has an interdisciplinary dimension such that perspectives from philosophy, psychology, neurosciences, biology, and cognitive science are interconnected with a focus on the situatedness of cognitive processes. The aim of the Interdisciplinary Reading Club is to offer a platform for discussion of ongoing research and to support the education of students, especially at a PhD or advanced Master level. Presentations and discussions will be in English.

Students who are interested should write an email to Dr. Sabrina Coninx (sabrina.coninx@rub.de) and come to the first meeting.

12.

Focus Module Psychology

*COLLOQUIUM***SCIENTIFIC COLLOQUIUM: COGNITIVE PSYCHOLOGY AND
PSYCHONEUROENDOCRINOLOGY****(118913)**

PROF. OLIVER T. WOLF

TERM:	Summer 2021
MEETING TIME:	Tuesday, 16.00 – 18.00 (First Meeting: 13.04.2021)
ROOM:	IA 02/445
CP:	3

In this forum, current research projects of the Cognitive Psychology Unit (including master's theses and doctoral projects) are presented. One focus is on experimental stress research. Here, the question "What stresses us" as well as the question "How does stress influence our cognitive skills" are of interest. In addition, invited guests from other working groups of the faculty, from adjacent faculties of the RUB or from other universities will present current research findings on cognitive psychology or psychoneuroendocrinology.

A schedule will be available on the LS homepage from the beginning of April.

12.

Focus Module Psychology

*COLLOQUIUM***RESEARCH COLLOQUIUM: NEUROPSYCHOLOGY
(118912)**

DR. NIKOLAI AXMACHER

TERM:	Summer 2021
MEETING TIME:	Thursdays, 14.00 – 16.00 (First Meeting: 15.04.2021)
ROOM:	IB 6/127
CP:	3

Presentation of ongoing research, as well as lectures by guest lecturers on clinical neuropsychological topics. A schedule with information about topics and speakers will be announced at the beginning of the semester via notice board and on the homepage.

12.

Focus Module Psychology

*SEMINAR***JOURNAL CLUB: LEARNING AND MEMORY****(310526)**

PROF. SEN CHENG

TERM:	Summer 2021
MEETING TIME:	Tuesdays, 12.00 – 13.30 (First Meeting: 13.04.2021)
ROOM:	ONLINE
CP:	3

We will discuss the latest research results in learning and memory at the systems level. Each session will consist of either a presentation based on a published article or a research talk. Presentations will be given by one participant and will be followed by a group discussion. Research talks will be given by members of the computational neuroscience group or external invited guests. Some meetings will be held via video conferencing with participants from the USA. To accommodate the schedule of external participants, some meetings might have to be moved to a different date and time. The topics to be discussed will focus on the functional role of the mammalian hippocampus in spatial navigation and episodic memory. They will cover a diverse set of approaches: electrophysiology, imaging, computational modeling, and robotics. Students will select articles to present in consultation with the instructor.

Journal articles to be selected by students in consultation with the instructor.

Assessment: presentation in class

Requirement: advanced knowledge of learning and memory

Course material: available on Trello (trello.com/b/ETW0pTnY)

Capacity: max. 15 students

Enrollment: eCampus

12.

Focus Module Psychology

*COLLOQUIUM***RESEARCH COLLOQUIUM: INTERDISCIPLINARY PERSPECTIVES ON EPISODIC MEMORY (310524)**

PROF. SEN CHENG

TERM:	Summer 2021
MEETING TIME:	Fridays, 14.00 – 15.30 (First Meeting: 16.04.2021)
ROOM:	ONLINE
CP:	3

This research colloquium covers the range of topics in the interdisciplinary research unit FOR 2812 "Constructing scenarios of the past: A new framework in episodic memory". Presentations will focus on the cognitive and neuronal mechanisms underlying scenario construction in episodic memory. The discussed studies employ and integrate approaches from philosophy, psychology, as well as experimental and computational neuroscience. The colloquium hosts talks by leading international experts and local researchers as well as presentations by doctoral and master students. In addition, students will read journal articles and book chapters related to the topics of the talks.

13.

Focus Module Computational Modeling

*LECTURE & EXERCISE***COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY
(310504 & 310514)**

PROF. LAURENZ WISKOTT

TERM:	Summer 2021
LECTURE:	Tuesdays, 12.15 – 13.45 (First Meeting: 13.04.2021)
EXERCISE:	Tuesdays, 10:30 – 12:00 (Preliminary Meeting: 20.04.2021, 09:00 – 10:30)
ROOM:	NB 3/57 (both, lecture & exercise)
CP:	6

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

Prerequisites: Good mathematical skills, linear algebra and calculus.

Mostly lecture notes will be provided

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

13.

Focus Module Computational Modeling

*LECTURE & EXERCISE***MATHEMATICS FOR MODELING AND DATA ANALYSIS
(310503 & 310513)**

PROF. LAURENZ WISKOTT

TERM:	Summer 2021
LECTURE:	Thursdays, 12:15 – 13:45, (First Meeting: 15.04.2021)
EXERCISE:	Thursdays, 10:30 – 12:00, (Preliminary Meeting: 22.04.2021, 09:00 – 10:30)
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, vector spaces, matrices as transformations, systems of linear differential equations, qualitative analysis of nonlinear differential equations, Bayes theory, multiple integrals.

Requirements: Basic knowledge of linear algebra and calculus.

If this seminar is used for Module AM4, it cannot be used for I3.

13.

Focus Module Computational Modeling

*LECTURE & EXERCISE***AUTONOMOUS ROBOTICS: ACTION, PERCEPTION, AND COGNITION****(310501 & 310511)**

PROF. GREGOR SCHÖNER

TERM:	Summer 2021
LECTURE:	Thursday, 14.15 – 16.00 (First Meeting: 15.04.2021)
EXERCISE:	Thursday, 16.15 – 17.00 (First Meeting: 22.04.2021)
ROOM:	NB 3/57
CP:	6

Neuroinformatics is concerned with the discovery of new solutions to technical problems of information processing. These solutions are sought based on analogies with nervous systems and the behaviour of organisms. This course focuses on three exemplary problems to illustrate this approach:

- (a) Artificial action (autonomous robotics);
- (b) Artificial perception (robot vision);
- (c) Artificial cognition (simplest cognitive capabilities of autonomous robots such as decision making, memory, behavioural organization). The main methodological emphasis is on nonlinear dynamical systems' approaches and dynamic (neural) fields.

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

14.

Focus Module Neuroscience

COLLOQUIUM
RESEARCH COLLOQUIUM BIOPSYCHOLOGY
(118914)
PROF. ONUR GÜNTÜRKÜN

TERM: Summer 2021
MEETING TIME: Mondays, 13.00 – 15.00 (First Meeting: 12.04.2021)
ROOM: IB 6/127
CP: 6

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.

Link: <http://www.bio.psy.ruhr-uni-bochum.de/>

14.

Focus Module Neuroscience

*COLLOQUIUM***RESEARCH COLLOQUIUM: GENETIC PSYCHOLOGY
(118911)**

DR. VANESSA LUX

TERM:	Summer 2021
MEETING TIME:	Mondays, 16.00 – 18.00 (First Meeting: 12.04.2021)
ROOM:	IB 5/103
CP:	3

This forum serves to present current research projects and qualification theses (bachelor theses, master theses, PhD projects) of the Genetic Psychology Unit. In addition, invited scientists will present current research results.