Course Guide

Master Cognitive Science

Summer 2026

Version as of 27.03.2026

Enrollment for Courses

If not indicated differently, students are requested to register with the university's eCampus-system and should be aware of the deadlines.

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.

If you have studied at the RUB during your Bachelor's, please be aware that you are not allowed to take classes you have already completed in the Bachelor program again in the Master program.

IMPORTANT: The summer term starts on 01.04.2026. Please consult eCampus for up-to-date information regarding the course format, starting dates and further details.

Please remember always to check time, place, and CP for your classes in eCampus and/or with the respective course instructor. These details in the course guide are subject to change and for your convenience only.

FIRST YEAR PROGRAM

BM. Basic Methods

BM1

BM1. Experimental Psychology Lab

SEMINAR
EXPERIMENTAL PSYCHOLOGICAL LAB (119213)
LAURA STEVENS

TERM:	Summer 2026
MEETING TIME:	Wednesday, 12 – 14 (First meeting: 15.04.2026)
ROOM:	GB 02/60
CP:	3/ 6

The goal of the "experimental psychology lab" is the supervised implementation of an independent experimental study, including the research question, operationalization, data collection and statistical evaluation. The content of the study is to investigate possible mechanisms for an increased susceptibility to stress in socially isolated or lonely people. For example, a possible negative bias in emotion recognition can be tested experimentally. The results of this study will be presented in a written report.

C. Topics Selection

C1

C1. Social Cognition & Meta-Science

SEMINAR

DISCOURSE JOURNAL CLUB SOCIAL NEUROSCIENCE (118164)

PROF. DR. DIRK SCHEELE

TERM:	Summer 2026
MEETING TIME:	Tuesday, 14 – 16 (First Meeting: 14.04.2026)
ROOM:	IA 1/163
CP:	3

This seminar will discuss current research findings in social neuroscience. The focus is on studies that examine the influence of social bonding and traumatic experiences on sensory and interoceptive perception (e.g., touch), episodic memory, and social synchrony in healthy participants and patients with mental disorders. In addition to the findings from univariate analyses, the session will cover the results of multivariate fMRI analyses (e.g., MVPA) and innovative protocols for non-invasive brain stimulation. The specific selection of literature will be determined in consultation with the participants. Recent publications will be discussed and critically analyzed from a methodological perspective.

Literature: will be announced in the first seminar session

C1

Social Cognition & Meta Science

SUMMER SCHOOL

SYNTHESIZING KNOWLEDGE: META-ANALYSIS AS A CROSS-DISCIPLINARY TOOL (430014, 550015, 550011)

DR. JULIAN PACKHEISER

TERM:	Summer 2026
PREPARATORY MEETING:	19.06.26, 2-6 pm online via Zoom
BLOCK:	03.08. – 07.08.2026, all day in presence
ROOM:	IB 02/135
CP:	3 or 6

Mandatory preparation meeting: June 19, 2026, 2-6 pm, online via zoom
This Moodle preparatory phase prepares the students to anticipate the Summer School "Synthesizing Knowledge: „Meta-Analysis as a cross-disciplinary Tool (course no. 550011). It serves to determine the students' prior knowledge and supplement it in a targeted manner. A generally understandable reader on the topic of "What is meta-science?" is provided via Moodle, giving students a basic introduction and orientation. At the same time, students are divided into interdisciplinary mixed working groups in order to make use of the existing expertise among the students. Another focus of the preparation is familiarization with the R and RStudio software, which students will use in the summer school for first steps in the analysis.

Participation requirements: For Master's students and doctoral candidates in quantitative research disciplines, in particular psychology, social sciences, education, biology and medicine. Participants are expected to familiarise themselves with the statistics software R and R Studio and to work with it during the Summer School (course no. 550011).

Registration deadline: 16 March – 10 May 2026.
Registration for both, the Summer School and the introductory course, takes place via Campus/course no. 430014.

Block course (Summer School): August 3 - 7, 2026, all day in presence
Research is often messy, fragmented, and difficult to interpret. Reading the literature can feel less like gaining clarity and more like drowning in isolated findings. Making sense of dozens or hundreds of individual studies is both demanding and intellectually challenging. This course equips you with a powerful meta-scientific tool to bring structure to complexity: meta-analysis. Learn how to systematically synthesize evidence and transform scattered results into coherent, quantitative insight.
In the Summer School, theory and practice phases are deliberately alternated in order to gain a practical understanding of theoretical constructs. The content is structured in such a way that it is accessible to students without prior methodological/statistical knowledge. The students carry out analyses under careful supervision, create forest plots and other visualizations.

Please notice! To participate in the Summer School, you must attend the introductory course "Part 1 (Master): Synthesizing Knowledge: Meta-Analysis as a cross-disciplinary Tool" (course no. 550015).

C1

C1. Social Cognition & Meta Science

SEMINAR

THE SOCIAL IN SOCIAL EPISTEMOLOGY (030095)

DR. NORA HANGEL

TERM:	Summer 2026
MEETING TIME:	Wednesday, 14 – 16 (First Meeting: 15.04.2026)
ROOM:	Wasserstr. 221
CP:	3 or 6

In many, if not most, processes that lead to understanding or knowledge, we depend on and/or relate to others. This course examines processes involved in building knowledge and forming beliefs in relation to other individuals (e.g., Experts). It also explores how individuals collaborating in scientific groups form beliefs and how collaboratively organized science relies on a division of cognitive labor and specific forms of social organization that support the epistemic aims of science.

This seminar has a two-fold purpose: First, it examines core concepts related to trust in science, such as trustworthiness, epistemic responsibility, belief, disagreement. Second, it connects these concepts to processes relevant to collaborative knowledge generation in science, including trust and distributed epistemic labor, interpersonal epistemic trust and dependence, peer disagreement, group belief, and judgment aggregation.

Prerequisites: Willingness to engage with English-language texts. BA and MA students (German- and English- speaking) are welcome.

C1

C1. Social Cognition & Meta-Science

SEMINAR

THE COMPUTATIONAL THEORY OF MIND (INCL. WORKSHOP WITH THE AUTHOR) (030050)

PROF. DR. TOBIAS SCHLICHT

TERM:	Summer 2026
MEETING TIME:	Thursday, 14 - 16 (First meeting: 16.04.2026)
ROOM:	GA 6/153
CP:	3 or 6

The Computational Theory of Mind is the view that the human mind is fundamentally a computational system—not just metaphorically but literally: cognition arises through computational processes akin to those in computers. In this seminar, which is taught in English but addressed at Bachelor students interested in the Philosophy of Mind, we will read the introductory book by Matteo Colombo and Gualtiero Piccinini which traces this idea historically, explains its appeal for solving classic problems in philosophy of mind (like the mind-body relation), and shows how computational modeling and AI contribute to understanding mental phenomena. It also addresses challenges: making the theory compatible with how real brains work, cognition's dynamics and situatedness, intentionality, and consciousness. The authors defend and refine the computational approach. The seminar is part of our concept of research-oriented teaching which includes a workshop with the author and other scholars on the topic (June 2-3, 2026) at RUB. The workshop is part of the seminar and students are encouraged to seize the opportunity to engage with the author.

Text: Matteo Colombo & Gualtiero Piccinini (2024): The Computational Theory of Mind. Cambridge University Press.

Secondary Reading: Michael Rescorla (2024): The computational theory of mind (https://plato.stanford.edu/entries/computational-mind/)

C1

C1. Social Cognition & Meta-Science

SEMINAR

PHILOSOPHICAL THEORIES OF THE SELF (030017)

DR. FRANCESCO FANTI ROVETTA

TERM:	Summer 2026
MEETING TIME:	Wednesday, 10 - 12 (First meeting: 15.04.2026)
ROOM:	GA 3/143
CP:	3 or 6

What is, if anything, the self? In this seminar, we will investigate competing attempts to answer this question in contemporary debates. We will consider whether the solution is to be found in memory and the continuity of consciousness, in the stories we can tell others and ourselves about our own lives, in being a biological organism, or in the pre-reflective awareness accompanying experience.

We will also consider arguments that the self is incompatible with a scientific worldview and, therefore, there is no such thing as the self. Conversely, we will look at arguments for pluralism, according to which no single theory is uniquely correct because the right approach is the integration of various proposals. Lastly, we will consider exotic (i.e., non-mainstream) theories of the self, such as the extended self view.

Literature: The reading list will be provided on Moodle before the start of the course.

Office hours: please contact me via email to request a meeting.

C1

C1. Social Cognition & Meta-Science

SEMINAR

THE PHILOSOPHY OF MENTAL DISORDERS (030078)

DR. FRANCESCO FANTI ROVETTA

TERM:	Summer 2026
MEETING TIME:	Tuesday, 16 - 18 (First meeting: 14.04.2026)
ROOM:	GA 6/153
CP:	3 or 6

Mental distress and mental illness can be investigated as biological, neurological, psychological, social, or cultural phenomena. In this seminar, we discuss current philosophical approaches to the definition of mental disorders, and examine the subjective experience of mental illness as a privileged object of analysis.

The seminar is composed of two parts. First, we will familiarize ourselves with foundational philosophical debates on mental disorders. We will discuss different approaches to, and different definitions of, mental disorders focusing in particular on the opposition between naturalist, normativist, and phenomenological accounts. In the second part, we will shift the focus to the question: what is it like to suffer from a certain mental condition? More specifically, we will look into the application of the phenomenological method to the study of specific psychopathological conditions, such as depression, post-traumatic stress disorder, borderline personality disorder, and dementia.

Literature: The reading list will be provided on Moodle before the start of the course.

C1

C1. Social Cognition & Meta Science

SEMINAR

SYNTHETIC RELATIONSHIPS: TRUST, EMOTION, AND SOCIAL INTERACTION IN THE AGE OF ARTIFICIAL INTELLIGENCE (TBA)

DR. NAEM HAIHAMBO

TERM:	Summer 2026
MEETING TIME:	16 - 18
ROOM:	tba
CP:	3

This seminar explores how artificial intelligence is changing the way humans form and experience social relationships. As conversational AI, chatbots, and digital companions become increasingly present in everyday life, new questions arise about how people perceive and interact with artificial agents. Do we treat AI systems as social partners, social surrogates, or as a form of parasocial relationship?

Students will examine psychological, neuroscientific, and ethical perspectives on human-AI interaction. Topics will include anthropomorphism, trust and social influence by AI, emotional attachment to artificial agents, AI companionship and loneliness, and the broader societal implications of synthetic relationships. We will also discuss potential benefits and risks of AI-mediated interaction, and how researchers can contribute to responsible and evidence-based discussions about the role of AI in an increasingly technologically mediated social world.

C1

C1. Social Cognition & Meta-Science

SEMINAR

SOZIALPSYCHOLOGIE (GRUPPE 4)

- THE PSYCHOLOGY OF ADVERTISING (112315)

DR. MORITZ INGENDAHL

TERM:	Summer 2026
MEETING TIME:	Wednesday, 12 - 14 (First meeting: 15.04.2026)
ROOM:	IA 1/87
CP:	3

Early morning, Black Friday: crowds gather in front of a department store, some having spent the night on the cold pavement. Why? To get a discounted TV they don't really need — but feel they must have. A few months later, a viral commercial sparks outrage online for "manipulating emotions," while others praise it as brilliant storytelling. Same ad, completely different reactions. What's actually going on here? Why do some messages make us pull out our wallets instantly, while others trigger skepticism or moral backlash? Why do we trust certain brands like old friends and dismiss others without a second thought? In this seminar, we dive into the psychological machinery behind advertising: How do attitudes form, what makes persuasion work, and how do cognitive biases shape our consumption behavior? Join us as we explore the surprising, sometimes irrational, and always fascinating ways advertising influences what we think, feel, and buy. In this seminar, we will study the psychological processes that play a role in advertising. From the perspective of social cognition research, we will focus on the core research areas of attitude formation and judgment & decision-making.

Literature: Textbook: Vogel, T., & Wanke, M. (2016). Attitudes and attitude change. Psychology Press.

Students can receive 3 CP graded in this course.

C1

C1. Social Cognition & Meta-Science

SEMINAR

AKTUELLE THEMEN DER ERKENNTNISTHEORIE UND METAPHILOSOPHIE (030059)

JUN.PROF. DR. JOACHIM HORVATH

TERM:	Summer 2026
MEETING TIME:	Wednesday, 14 - 16
ROOM:	GABF 05/703
CP:	3 or 6

Language of Instruction: German

In diesem Seminar, das auch Elemente eines Kolloquiums enthalten wird, werden wir aktuelle Themen aus der Erkenntnistheorie und der Metaphilosophie sowie verwandten Gebieten diskutieren. Gelegentlich wird es auch Vorträge von externen Gästen (auf Deutsch oder Englisch) geben, die in der Regel führende Experten auf ihrem Gebiet sind. Studierende im fortgeschrittenen Bachelor-, im Master- oder im Promotionsstudium sind im Seminar herzlich willkommen. Darüber hinaus haben die Teilnehmer*innen die Möglichkeit, Themen oder Arbeiten vorzustellen, die für sie von Interesse sind, einschließlich ihrer eigenen Arbeiten, zum Beispiel im Zusammenhang mit ihrer Abschlussarbeit (auf Deutsch oder Englisch).

Dozent: Horvath, Joachim

Sprechstunde: nach Vereinbarung

Prüfungsformen: nach individueller Absprache

C2

C2. Perception & Action

LECTURE

WAHRNEHMUNG (PERCEPTION) (118311)

PROF. DR. JONAS ROSE

TERM:	Summer 2026
MEETING TIME:	Monday, 10 – 12 (First Meeting: 13.04.2026)
ROOM:	IA 02/461
CP:	3

In this lecture, we will cover the neural basis of different sensory modalities. Starting with the physical stimulus and its detection at the receptor we will then continue along the sensory hierarchy in the brain. Finally, the modulation of the stimulus through attention, categorization and multimodal integration will be covered. In addition to our focus on human sensory systems, we will compare the sensory systems and capabilities of different species.

The lecture will be held in English.

C2

C2. Perception & Action

SEMINAR

WAHRNEHMUNG (PERCEPTION) (118312)

PROF. DR. JONAS ROSE

TERM:	Summer 2026
MEETING TIME:	Monday, 14 – 16 (First Meeting: 13.04.2026)
ROOM:	GA 04/187
CP:	3

This seminar complements the lecture 'perception' by adding a more hands-on approach. You will give short lectures and conduct mini-experiments to highlight specific topics and deepen the understanding of selected mechanisms.

C2

C2. Perception & Action

SEMINAR

JOURNAL CLUB: NEUROBIOLOGY (190573)

[WISSENSCHAFTLICHE PRÄSENTATIONEN IN ENGLISCH]

PROF. DR. MELANIE MARK

TERM:	Summer 2026
MEETING TIME:	Wednesday, 10- 11
ROOM:	ND 6/56a
CP:	3

This course is a weekly journal club with focus on neuroscience. Please contact sekretariat@neurobiologie.ruhr-uni-bochum.de or Melanie.Mark@rub.de for further information.

Requirements: basic understanding of neurosciences

C2

C2. Perception & Action

SEMINAR

THEORIES OF EMOTION AND EMPATHY [THEORIEN DER EMOTIONEN UND DER EMPATHIE] (030018)

PROF. DR. MARKUS WERNING

TERM:	Summer 2026
MEETING TIME:	Tuesday, 16 - 18 (First Meeting: 14.04.2026)
ROOM:	GA 04/187
CP:	3 or 6

There is little we are more familiar with than our own emotions, e.g. our anger at the referee about an unjust decision, or the disgust we feel when smelling a rotten banana. Despite this familiarity with our own emotions, we seem to lack a coherent theory of emotions that receives widespread agreement. In this seminar, we investigate this tension by raising some of the most difficult but also most interesting problems that both philosophers and neuroscientists of emotions face: (1) Are emotions natural kinds? (2) Are emotions mental or bodily states? (3) What do emotions represent, if they represent at all? (4) What do emotions like happiness and sadness have in common? (5) What is the interplay between thoughts and emotions? (6) Do we have access to other people's emotions through our empathetic abilities? (7) How are emotion words processed in language. To this end, we will analyze current philosophical theories of emotions and empathy, and discuss their merit in light of the state-of-the-art picture on emotions in the cognitive and neurosciences.

Aside from active participation, participants will be expected to give a presentation in English or German.

Literature

- Goldie, Peter (2010, ed.). The Oxford Handbook of Philosophy of Emotion. Oxford: Oxford University Press
- Prinz, Jesse J. (2004). Gut Reactions – A Perceptual Theory of Emotion. New York: Oxford University Press.

Note by program coordination: Cognitive Science students should give their presentation in English, a course with German examination counts towards the 15 CP that can be taken in courses with German as language of instruction.

C2

C2. Perception & Action

BLOCK SEMINAR

THE NEUROSCIENCE OF CONSCIOUSNESS (118142)

PROF. DR. LUCIA MELLONI

TERM:	Summer 2026
BLOCK:	13. & 14.06.26 (Sa & Su), 20.06.26 (Sa), each 10 - 18
ROOM:	GABF 04/356
CP:	3

What does it mean to be conscious? How do we determine if a person has lost consciousness or not? How does your experience presumably differ from mine? This course offers an in-depth exploration of consciousness, the jewelry in the crown of mind sciences. The course will introduce both neuroscientific and philosophical perspectives, bridging empirical research with theoretical inquiry. Students will examine the mind-body problem, different types of conscious experiences, and the neural correlates of consciousness. Key discussions will include the hard problem of consciousness, state vs. content consciousness, and the inferential challenges of studying consciousness in infants, animals, and artificial intelligence.

We will explore altered states of consciousness, disorders such as blindsight and hemineglect, and the role of brain structures and neurophysiology in both typical and atypical conscious experiences. Through interactive lectures, students will engage with experimental paradigms like attentional blink, no-report paradigms, and neuroimaging techniques, while critically addressing the confounds of attention, memory, and decision-making in consciousness research.

The course also integrates prominent theories such as Global Workspace Theory, Integrated Information Theory, and Predictive Coding, culminating in discussions on how adversarial collaborations can help adjudicate between competing models of consciousness. With a blend of hands-on activities, group debates, and practical case studies, students will gain a comprehensive understanding of the neuroscience underlying conscious states and contents.

The seminar will not be graded (pass/fail).

C2

C2. Perception & Action

BLOCK SEMINAR

MENTAL REPRESENTATION (030142)

PROF. DR. NICO ORLANDI

TERM:	Summer 2026
BLOCK:	tba
ROOM:	tba
CP:	tba

Nico Orlandi (UC Santa Cruz, DAAD Guest Professorship Philosophy of Cognitive Science)

Mental representation is the central explanatory notion of contemporary cognitive science. It is what presumably distinguishes the subject matter of psychology from the subject matter of the rest of the empirical sciences (physics, chemistry, biology etc.). And it is routinely appealed to, to explain how humans act, reason, remember, perceive and understand. Yet there is little agreement concerning what mental representations are, how they acquire their intentional content, and whether they are needed in a scientific study of the mind. This class explores contemporary accounts of mental representation in western cognitive science. It starts by outlining the function that the notion of representation is called to perform, and it then looks at two central debates: the debate concerning how representations acquire their content, and the debate concerning whether the notion of representation is needed to explain mental activity — a debate framed in the context of the contrast between classical and connectionist accounts of mental representation. This is a fairly advanced course in philosophy of mind designed for graduate students but recommended also to advanced undergraduates who are interested in cognitive science. The class does not require prior knowledge of philosophy of mind, but it does require an understanding of what arguments are and of how they should be reconstructed and evaluated. It also requires knowledge of how philosophy papers should be read and written.

C2

Perception & Action

SEMINAR

DIE MACHT DER GERÜCHE. WIE DAS RIECHEN UNSER VERHALTEN BEEINFLUSST (118141)

PD DR. CHRISTOPH VAN THRIEL

TERM:	Summer 2026
MEETING TIME:	Tuesday, 16 – 18 (First Meeting: 14.04.2026)
ROOM:	IA 1/87
CP:	3

Language of instruction: German

Das olfaktorische System des Menschen unterscheidet sich erheblich von den anderen Sinnessystemen. Die physiologischen Grundlagen des Riechens sind im Einführungstext (Albrecht and Wiesmann 2006) beschrieben. In einem aktuellen Review (Stevenson 2010) werden drei Bereiche des Geruchssinns beschrieben, bei denen angenommen wird, dass das olfaktorische System das Verhalten des Menschen beeinflussen kann.

Diese Bereiche sind:

1. Nahrungsaufnahme/Ernährung
2. Vermeidung von Gefährdungen aus der Umwelt
3. Soziale Kommunikation

Ein weiterer, relevanter Bereich, der in diesem Review nicht angesprochen wird, ist die Wirkung von Gerüchen auf kognitive Leistungen (Beispieltext: Habel et al. 2007).

In den letzten Jahren beschäftigt sich die kognitive Neurowissenschaft zunehmend mit dem olfaktorischen System. Im Seminar sollen aktuelle Forschungsarbeiten zu den vier o.g. Funktionsbereichen referiert werden. Dabei können neben Humanstudien auch tierexperimentelle Studien vorgestellt werden. Die Themen/Studien werden während der Vorbesprechung vergeben. Dabei wird eine aktive Mitarbeit der TeilnehmerInnen bei diesem Auswahlprozess erwartet.

Literature:

Stevenson, R.J., 2010. An initial evaluation of the functions of human olfaction. Chem Senses 35, 3–20. https://doi.org/bjp083 [pii] 10.1093/chemse/bjp083

Hatt, H., 2019. Geruch, in: Brandes, R., Lang, F., Schmidt, R.F. (Eds.), Neuro- Und Sinnesphysiologie. Springer, Berlin, pp. 781–788. https://doi.org/10.1007/978-3-662-56468-4_62

Albrecht, J., Wiesmann, M., 2006. [The human olfactory system. Anatomy and physiology]. Nervenarzt 77, 931–939. https://doi.org/10.1007/s00115-006-2121-z

C3

C3. Memory, Learning & Decision Making

SEMINAR

DISCOURSE NEURAL BASIS OF LEARNING (118161)

PROF. DR. JONAS ROSE, ANNIKA VERFERS, M.SC.

TERM:	Summer 2026
MEETING TIME:	Monday, 8 - 10 (First Meeting: 13.04.2026)
ROOM:	GA 04/187
CP:	3

Current literature in cognitive neuroscience, with a focus on birds, will be presented and discussed in depth. We aim to follow up on novel approaches, interesting angles and to have a critical discussion of research methods and interpretations.

C3

C3. Memory & Learning

SEMINAR

DECISION-MAKING IN SCIENCE AND SOCIETY (030094)

DR. NORA HANGEL

TERM:	Summer 2026
MEETING TIME:	Friday, 10 – 12 (First Meeting: 17.04.2026)
ROOM:	GABF 04/511
CP:	3 or 6

The relation between science and society is both continually open to debate and subject to change. This course will help to better understand this relationship and discuss both its affordances and its responsibilities with a focus on how scientific knowledge is produced, evaluated, and communicated. The course is organized around three themes. It starts with the societal preconditions of scientific research, as stated in Germany's *Grundgesetz* Art. 5(3). After introducing key concepts concerning values in science – including value-free ideals, as well as legitimate and illegitimate values – the second part focuses on scientific decision-making in experimental behavioral sciences, particularly experimental psychology. Among the many decisions experimental scientists face in their day-to-day practice we discuss a) the benefits and downsides of preregistering experiments, hypothesis testing and exploratory practices, communicating uncertainty and evaluating evidence. In addition, we address b) socio-epistemic decisions related to collaboration, epistemic trust, and the communication of limitations and uncertainties within a competitive academic environment. Thirdly, the course returns to the science-society relationship by examining how science communication impacts society. This includes challenges of policy recommendations, expert knowledge, and communication to the general public. The course concludes with an analysis of known challenges such as false balance and manufactured doubt, and reflects on the shared responsibilities of science and society in maintaining a mutually beneficial relationship.

Prerequisites: Willingness to engage with English-language texts. BA and MA students (German- and English- speaking) are welcome.

C3

C3. Memory & Learning

SEMINAR

L.A. PAUL: TRANSFORMATIVE EXPERIENCE (030060)

PROF. DR. TOBIAS SCHLICHT

TERM:	Summer 2026
MEETING TIME:	Thursday, 10 – 12 (First Meeting: 16.04.2026)
ROOM:	GABF 05/608
CP:	3 or 6

L.A. Paul's Transformative Experience (2014) argues that some life choices fundamentally change who we are and what we value, in ways we cannot fully imagine beforehand. Decisions like becoming a parent, changing careers, or undergoing religious conversion involve experiences that are epistemically transformative, because we cannot know what they are like until we have them, and personally transformative, because they reshape our preferences and identity. Paul shows that standard decision theory fails here, since we cannot assign reliable values to outcomes we cannot comprehend. She proposes rethinking rational choice, emphasizing commitment, trust, and self-shaping over expected utility in human decision making. In this seminar which is part of our research-oriented teaching, we will study Paul's book closely and lay a foundation for a workshop with the author (May 27-29, 2026) at RUB when Laurie Paul presents new work on the topic from her forthcoming book in the context of the Rudolf-Carnap Lectures. The workshop is part of the seminar and students are expected to participate and will have a chance to engage with the author.

Text: L.A. Paul (2024): Transformative Experience. Oxford University Press

Secondary Reading: Rebecca Chan (2023) Transformative Experience (https://plato.stanford.edu/entries/transformative-experience/) Katie Steele & H. Orri Stefansson (2025) Decision Theory (https://plato.stanford.edu/entries/decision-theory/)

C3

C3. Memory & Learning

SEMINAR

REINFORCEMENT LEARNING (211135)

PROF. DR. ROBERT SCHMIDT

TERM:	Summer 2026
MEETING TIME:	Thursday, 08:30 – 10.00 (First meeting: 16.04.2026)
ROOM:	IC 03/441
CP:	3

Reinforcement Learning is one of the three main learning principles in machine learning and one of the most active research areas in artificial intelligence. It is a computational approach to learning in which an agent tries to maximize the total amount of reward it receives while interacting with a complex, uncertain environment.
This Bachelor seminar is based on the 2nd edition of the famous, seminal book on reinforcement learning written by Sutton and Barto (http://incompleteideas.net/book/the-book.html). The book introduces core topics of reinforcement learning from an artificial intelligence or engineering perspective, considering idealized learning situations, and evaluating the effectiveness of different learning methods. To effectively solve learning problems that are of scientific or economic interest, algorithms for machines are explored and evaluated through mathematical analysis and computational experiments. Compared to unsupervised or supervised learning approaches, reinforcement learning is more focused on goal-directed learning from interaction with the environment. The first part of the book addresses core concepts of reinforcement learning for problems with small state and action spaces, allowing for exact solutions using table-based methods. In the second part of the book these approaches are then extended using approximate methods for larger and more complex problems.

Learning Outcomes:

- Knowledge on different reinforcement learning algorithms
- Explain the underlying mathematical problem formulations and the implementation of the algorithms to solve them
- Gain insight into how to frame learning problems in the reinforcement learning framework
- Discuss practical applications of the theoretical frameworks
- Present the algorithms and mathematical problem formulations to an audience

Teaching form: In the seminar sessions students will present chapters of the book "Reinforcement Learning", followed by discussions on the chapter topics.

Exam: Oral presentation and active participation

Requirements: Knowledge of calculus, linear algebra, and probability concepts. Background in artificial intelligence, e. g. via the course "Introduction to Artificial Intelligence".

Registration: Seats are limited. If you want to participate, please send an e-mail to Prof. Schmidt: robert.schmidt@rub.de

Literature: Sutton, R. S., & Barto, A. G. (2018). Reinforcement learning: An introduction. MIT press.
Free online version: http://incompleteideas.net/book/the-book.html

C3

C3. Memory & Learning

LECTURE + EXERCISE

COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY (211049)

PROF. DR. RER. NAT. LAURENZ WISKOTT

TERM:	Summer 2026
EXERCISE:	Tuesday, 10.30 – 12 (First Meeting: 21.04.2026)
	(self-study time without teacher)
TUTORIAL:	Tuesday, 12.15– 13.45 (First Meeting: 21.04.2026)
LECTURE:	Tuesday, 14.15 – 15.45 (First Meeting: 14.04.2026)
ROOM:	NB 3/72
CP:	6

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

This lecture covers basic neurobiology and models of selforganization in neural systems, in particular addressing

- Learning and self-organization
  - Hebbian Learning
  - Neural learning dynamics and constrained optimization
  - Dynamic field theory
- Vision
  - Receptive fields
  - Neural maps
- Hippocampus
  - Navigation
  - Episodic memory
  - Hopfield Network
  -

Learning outcomes (Lernziele):

After the successful completion of this course the students

- know basic neurobiological facts about the visual system and the hippocampus,
- know a number of related models and methods in computational neuroscience,
- understand the mathematics of these methods,
- can communicate about all this in English.

Teaching format:

One unit consists of a lecture of 90 min, self-study time over the week, group work on exercises without teacher for 90 min the week after the lecture, discussion of exercises and general Q&A session with teacher for 90 min right after, followed by the lecture of the next unit.

(more information next page)

[COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY (211049), Prof. Dr. Laurenz Wiskott]

Enrollment:
To enroll in this course with me, you just have to enroll in the Moodle course and participate. (Note by program coordination: In addition, please register for the lecture in ecampus.)

Exam (Prüfungsformen): The course is concluded with an oral exam (possibly also a digital written exam, if there are many participants, as will be decided within the first two weeks).

Condition for granting the credit points: Passing the exam.

Requirements:
The mathematical level of the course is mixed but generally high. The tutorial is almost entirely mathematical. Mathematics required include calculus (functions, derivatives, integrals, differential equations, ...), linear algebra (vectors, matrices, inner product, orthogonal vectors, basis systems, ...), and a bit of probability theory (probabilities, probability densities, Bayes' theorem, ...).

Literature: Mostly lecture notes will be provided.

C3

C3. Memory, Learning & Decision Making

LECTURE & EXERCISE

INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE (211046)

PROF. DR. SEN CHENG

TERM:	Summer 2026
LECTURE:	Monday, 16 – 18 (First Meeting: 13.04.2026)
ROOM:	NB 3/57
EXERCISE:	Friday, 10 – 12 (First Meeting: 17.04.2026)
ROOM:	NB 3/72
CP:	6

If this course is used for Module AM4, it cannot be used for C3.

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.

Assessment written final exam - 120 min - date: TBA

Course material available on Moodle (registration required)

Literature "Theoretical Neuroscience" by Dayan and Abbott, MIT Press

Enrollment: eCampus/Flexnow

Contact:

Prof. Sen Cheng, NB 3/33, sen.cheng@rub.de

Office hours: Thursdays 14:00-15:00

C4

C4. Language, Logic & Categories

BLOCK SEMINAR

AN INTRODUCTION TO MATHEMATICAL PHILOSOPHY (030145)

DR. SAM SANDERS

TERM:	Summer 2026
BLOCK:	03.08.26- 07.08.26 (Mo-Fr), 10 - 16
ROOM:	GA 1/128 CIP-Pool
CP:	3 or 6

The structural application of mathematical methods and ideas to philosophy is a fairly novel field, known as “mathematical philosophy”. We discuss some interesting case studies that are accessible to students in philosophy and related areas. All required concepts from logic and mathematics (e.g. computability theory) shall be introduced and explained to the extent necessary.

Students can receive 3 CP for active participation and 6 CP graded for submitting a research paper.

C4

C4. Language, Logic & Categories

SEMINAR

MINDS WITHOUT MIRRORS – RICHARD RORTY'S "PHILOSOPHY AND THE MIRROR OF NATURE (030065)

DR. KRZYSZTOF DOLEGA

TERM:	Summer 2026
MEETING TIME:	Wednesday, 16 - 18
ROOM:	GABF 04/352
CP:	3 or 6

This seminar examines Richard Rorty's radical challenge to the idea that the mind represents the world by mirroring it. In "Philosophy and the Mirror of Nature," Rorty rejects the traditional picture of the mind as an inner space containing representations, impressions, or beliefs that must correspond to external reality. Instead, Rorty redescribes mental vocabularies as tools embedded in language and social practice, rather than as references to inner objects of immutable nature. This shift dissolves long-standing problems about representation, skepticism, and the relation between mind and world, replacing them with questions about the ways in which we use language to justify beliefs and coordinate action.
Throughout this course we will consider what it means to think of minds not as mirrors of nature, but as nodes within evolving practices of description and interpretation, as well as look at the views inspired by Rorty's shift, and question whether abandoning the "mirror" model undermines or liberates philosophy of mind.

Literature: Rorty, R. (1979). Philosophy and the mirror of nature. Princeton University Press. Rorty, R. (1991). Objectivity, relativism, and truth: Philosophical papers, Vol. 1. Cambridge University Press. Brandom, R. B. (Ed.). (2000). Rorty and his critics. Blackwell. Ramalho, M. C. (Ed.). (2007). The Cambridge companion to Rorty. Cambridge University Press.

C4

C4. Language, Logic & Categories

SEMINAR

EMPIRICAL METHODS IN PHILOSOPHY OF LANGUAGE (030036)

DR. MARIA SPYCHALSKA

TERM:	Summer 2026
MEETING TIME:	Tuesday 14 – 16 (First Meeting: 14.04.2026)
ROOM:	GA 6/153
CP:	3 or 6

If this course is used for AM2, it cannot be used for C4.

One central and still open question in pragmatics concerns the role of **Theory of Mind (ToM)**—understood as the ability to attribute mental states such as beliefs and intentions to oneself and others—in the interpretation and production of meaning. Within the Gricean framework (Grice, 1975), this ability is taken to be essential for pragmatic inferencing of all kinds, including the derivation of implicatures, reference resolution, the interpretation of irony, metaphor, and indirect requests. However, the precise role that ToM plays in pragmatic inference remains debated.

This journal paper–based seminar focuses on the role of ToM in pragmatics, with particular emphasis on the notion of **perspective-taking**—the process by which speakers and hearers represent others' mental states by adopting their perspective—and its function in communication. The seminar combines theoretical and experimental readings that examine how perspective-taking contributes to pragmatic understanding and language use.

The course is particularly suitable for master's students and advanced bachelor students in cognitive science and philosophy, especially those with an interest in empirically oriented approaches to the philosophy of language and mind.

Literature: selected articles (to be provided)

Grice, H. P. (1975). Logic and Conversation. In Cole, P. and Morgan, J. L., editors, Syntax and Semantics, volume 3 of Speech Acts, pages 41–58. Academic Press, New York. Reprinted in Studies in the Way of Words.

Requirements for passing (3CP): Active participation and a presentation in class

Graded (6CP): An individual or a team project/ extended second presentation

C4

C4. Language, Logic & Categories

SEMINAR

TOPICS IN THE PHILOSOPHY OF LANGUAGE AND COGNITION (030029)

PROF. DR. MARKUS WERNING

TERM:	Summer 2026
MEETING TIME:	Wednesday, 12 – 14 (First Meeting: 15.04.2026)
ROOM:	GA 04/187
CP:	3 or 6

In the seminar, we will discuss a selection of up-to-date topics in the philosophy of language and cognition. The seminar provides an opportunity for BA, MA, and PhD students to present their own thesis projects and receive feedback. It addresses students who have a particular interest in theoretical and experiment studies on the comprehension of language and its interaction with cognition. To earn credits, students are expected to do a presentation. To earn up to 6CPs, students can choose between writing a term paper and taking the opportunity to do an internship in our EEG lab plus protocol.

The topics we will discuss, among others, are:

- The influence of linguistic context on lexical meaning – theory and experiments
- Implicatures, presuppositions, co-suppositions and how to test them in experiments
- The role of co-speech gestures in communication – theory and experiments
- The evaluation of large language models relative to human language comprehension using EEG and other methods

Even though, the language of most papers and presentations will be in English, contributions to discussions can also be made in German.

Literature:

- Werning, M., Hinzen, W., & Machery, E. (Eds.). (2012). *The Oxford Handbook of Compositionality*. Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199541072.001.0001
- Schlenker, P. (2022). *What it all means: Semantics for (almost) everything*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/12128.001.0001
- Schlenker, P. (2022). *What it all means: Semantics for (almost) everything*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/12128.001.0001

C4

C4. Language, Logic & Categories

SEMINAR

CONCEPTS (030117)

PROF. DR. NICO ORLANDI

TERM:	Summer 2026
MEETING TIME:	Wednesday, 14 – 16 (First Meeting: 15.04.2026)
ROOM:	GABF 04/709
CP:	3 or 6

This class is an examination of concepts in contemporary (western) philosophy of mind and in cognitive science. Concepts are generally understood as explanatory posits that are introduced to explain a number of human capacities, such as thinking, reasoning and categorizing. Aside from this general consensus, however, there is little agreement as to what concepts are. We will look at leading theories of concepts and at their problems. Then we will look at recent work on the acquisition of concepts. This is a fairly advanced course in philosophy of mind designed for graduate students but recommended also to advanced undergraduates who are interested in cognitive science. The class does not require prior knowledge of philosophy of mind, but it does require an understanding of what arguments are and of how they should be reconstructed and evaluated. It also requires knowledge of how philosophy papers should be read and written. A prior introductory logic class or a prior writing- intensive philosophy class is strongly recommended.

C4

C4. Language, Logic & Categories

SEMINAR

RECENT WORK IN PHILOSOPHICAL LOGIC (030063)

PROF. DR. HEINRICH WANSING

TERM:	Summer 2026
MEETING TIME:	Thursday, 10 – 12
ROOM:	GABF 04/358
CP:	3 or 6

The seminar is devoted to discussing some recent work in Philosophical Logic. Topics include modal logic (broadly conceived), constructive logic, paraconsistent logic, and connexive logic.

Prerequisites: Some previous knowledge of classical logic and the readiness to present a journal article or survey chapter in the seminar.

CP can be earned by writing a short essay based on a presentation in the seminar.

Background literature: Graham Priest, An Introduction to Non-Classical Logic. From If to Is, CUP, 2012, and appropriate entries in the Stanford Encyclopedia of Philosophy or the Handbook of Philosophical Logic.

C4

C4. Language, Logic & Categories

SEMINAR

IMRE LAKATOS' METHODOLOGY OF SCIENTIFIC RESEARCH PROGRAMS 50 YEARS LATER (030067)

DR. KRZYSZTOF DOLEGA

TERM:	Summer 2026
MEETING TIME:	Thursday, 12 - 14
ROOM:	GABF 05/703
CP:	3 or 6

This seminar revisits Imre Lakatos's account of scientific rationality, developed in The Methodology of Scientific Research Programmes, fifty years on. Lakatos proposed that science advances through competing research programmes, each organized around a stable "hard core" and a revisable "protective belt." Rather than rejecting theories at the first anomaly, programmes are assessed over time by whether they produce novel hypotheses and observations or merely accommodate existing ones.

The course will also consider the legacy of Lakatos' framework. His work has inspired multiple formal approaches to theory change and scientific dynamics, including attempts to model research programmes using logical, probabilistic, and computational tools. These developments connect Lakatos' historically informed methodology with contemporary formal philosophy of science, raising the question of whether scientific progress can be both historically grounded and formally articulated.

Literature: Lakatos, I. (1976). Proofs and refutations: The logic of mathematical discovery. Cambridge University Press. Lakatos, I. (1978). The methodology of scientific research programmes: Philosophical papers (Vol. 1). Cambridge University Press. Motterlini, M. (Ed.). (1999). The philosophy of Imre Lakatos. Cambridge University Press. Balzer, W., Moulines, C. U., & Sneed, J. D. (1987). An architectonic for science: The structuralist program. Reidel. Salmon, W. C. (1990). The dynamics of science. In C. W. Savage (Ed.), Scientific theories (Vol. 14, pp. 1–30). University of Minnesota Press.

C4

C4. Language, Logic & Categories

LECTURE & EXERCISE

INTRODUCTION TO ARTIFICIAL INTELLIGENCE (211045)

PROF. DR. SEN CHENG, PROF. DR. RER. NAT. LAURENZ WISKOTT, PROF. DR. TOBIAS GLASMACHERS, PROF. DR. CHRISTIAN STRAßER, PROF. DR. ROBERT SCHMIDT, PROF. DR. NILS JANSEN, PROF. DR.-ING. SETAREH MAGHSUDI

TERM:	Summer 2026
MEETING TIME	Friday, 10 – 14 (First Meeting: 17.04.2026)
ROOM:	HGD 30
CP:	6

This course gives an overview over representative methods in artificial intelligence: formal logic and reasoning, classical methods of AI, probabilistic reasoning, machine learning, deep neural networks, computational neuroscience, neural dynamics, perception, natural language processing, and robotics.

Requirements: Basic knowledge of calculus and linear algebra.

Learning outcomes: After successful completion of this course, students will be able to

- summarize a number of fundamental methods in artificial intelligence,
- explain their mathematical basis and algorithmic nature,
- apply them to simple problems,
- decide which methods are suitable for which problems, and
- communicate about the above aspects in English.

Enrollment: All students must enroll in the Moodle course to receive the class material and announcements. If you have problems with that, please contact Aya Altamimi (aya.altamimi@ini.rub.de).

Examination: Condition for granting the credit points: Passing grade on final written digital exam (90 minutes). You can find more details about the examination here.

Every student who wishes to take the exam must register in the corresponding course in the RUB online exam system (https://online-exam.ruhr-uni-bochum.de/). You will take the exam in this Moodle environment.
Important: This is another instance of Moodle that looks the same, but it is different from the Moodle course that we use to share class materials and announcements!

For taking the exam, it is also required to be registered for the exam in ecampus. Details will follow via e-mail by the program coordinator.

Language of instruction: German

AM. Advanced Methods

Advanced methods are usually studied in the second semester. Solely the "fMRI"-course is only offered during the winter term.

AM1

AM1. Theory Formation & Conceptual Analysis

SEMINAR

PHILOSOPHY OF SCIENCE AFTER THE PRACTICE TURN (030096)

DR. NORA HANGEL

TERM:	Summer 2026
MEETING TIME:	Thursday, 14 - 16
ROOM:	Wasserstr. 221
CP:	3 or 6

This course is an introduction to Philosophy of Science in Practice, a branch of philosophy of science that has developed over the past decades through the systematic study of and interaction with scientific practices. While it examines how knowledge is generated and validated with traditional conceptions of rationality and truth it also recognizes contextual factors and thus considers theory in connection to scientific practice in real-world contexts. Students will study different conceptions of “practice” and its role as organized, goal-directed activity in science. In the course we will discuss different methodical interactions between philosophical analysis, historical case studies, and contemporary scientific practice that can benefit philosophical investigations.

This course is conceptualized to serve as theory background for the more practice-oriented course “**Philosophy in the Field**”.

Prerequisites: Willingness to engage with English-language texts. BA and MA students (German- and English- speaking) are welcome.

AM1

AM1. Theory Formation & Conceptual Analysis

SEMINAR

PHILOSOPHY IN THE FIELD QUALITATIVE METHODS IN PHILOSOPHY OF SCIENCE IN PRACTICE (030097)

DR. NORA HANGEL

TERM:	Summer 2026
MEETING TIME:	Thursday, 16 - 18
ROOM:	Wasserstr. 221
CP:	3 or 6

This course is offered in conjunction with the course “Philosophy after the Practice Turn” for students, who want to get first-hand experience how to do philosophy in practice with qualitative methods. While “**Philosophy after the practice turn**” is a standalone class, for this class: “Philosophy in the Field”, students are highly encouraged to enroll in both courses to learn about the theory and the practice. Within one semester, the aim is to do an empirically informed philosophy project. Students will engage in cognitive ethnography, develop a philosophically relevant research question, operationalize the question to construct a topic guide, learn about research ethics and data protection, methodological questions, do fieldwork, analysis, interpretation and communication of the results. The course will end with discussing limitations of doing empirically informed philosophy of science.

Prerequisites: A willingness to actively participate in the research process is required

AM1

AM1. Theory Formation & Conceptual Analysis

SEMINAR

CONCEPTUAL ENGINEERING (030093)

PROF. DR. NICO ORLANDI

TERM:	Summer 2026
MEETING TIME:	Wednesday, 16 – 18 (First Meeting: 15.04.2026)
ROOM:	GABF 04/709
CP:	3 or 6

Nico Orlandi (UC Santa Cruz, DAAD Guest Professorship Philosophy of Cognitive Science)

Conceptual engineering is usually understood as the design, implementation, and evaluation of concepts in projects that aim to ameliorate our understanding of the social and political world. But what are concepts such that conceptual engineering would even be possible? And is conceptual engineering something we should want to do (and why)? This seminar aims to address these questions by reading literature in western analytic philosophy starting from the work of feminist philosopher Sally Haslanger. Haslanger is often credited with introducing the idea of 'ameliorative' projects that, rather than simply describing the concepts we have, strive to design our concepts in ways that meet our social and political goals. We will look at critical reactions to this idea, as well as at ways of developing it.

AM1

AM1. Theory Formation & Conceptual Analysis

BLOCK SEMINAR

SCIENTOMETRICS AND SCIENCE MAPPING (030148)

DR. EUGENIO PETROVICH

TERM:	Summer 2026
BLOCK:	Saturdays: 11.04.26, 25.04.26, 16.05.26, 13.06.26, 11.07.26
	10- 16
ROOM:	GABF 04/516
CP:	tba

Scientometrics is the quantitative study of science. It provides a distinctive perspective on how scientific knowledge develops, spreads, and changes over time and, in the last decades, it has become central in the management of scientific research, especially in research evaluation. For philosophers, scientometrics offers empirical tools to investigate classic questions about scientific progress, disciplinary structure, collaboration, and the dynamics of research communities. This course aims to introduce students to scientometrics by presenting both its applied side (quantitative methods for research evaluation) and its descriptive side, with a particular focus on science mapping, i.e., a set of data-driven techniques for constructing maps of scientific fields based on large collections of scientific publications. Students will not only learn the theoretical foundations of science mapping, but also acquire hands-on experience in creating their own maps using VOSviewer, a freely available science mapping software.

AM1

AM1. Theory Formation & Conceptual Analysis

BLOCK SEMINAR

QUANTITATIVE STUDIES OF PHILOSOPHY (030149)

DR. EUGENIO PETROVICH

TERM:	Summer 2026
BLOCK:	Mo – Fr: 27.07.2026 – 31.07.2026, 10-16
ROOM:	GABF 04/358
CP:	tba

Scholars in digital humanities, scientometrics, and philosophy itself are increasingly using quantitative methods to study the structure and dynamics of philosophy as a discipline. This course aims to provide an overview of the main methodologies used in quantitative studies of philosophy, presenting key research in this emerging field and discussing influential case studies. In addition, the course will host invited talks by leading scholars who apply quantitative approaches to areas such as the history of twentieth-century philosophy, integrated history and philosophy of science, and philosophy of science.

AM1

AM1. Theory Formation & Conceptual Analysis

SEMINAR

PHILOSOPHISCHE METHODEN: EINE EINFÜHRUNG (030019)

JUN. PROF. DR. JOACHIM HORVATH

TERM:	Summer 2026
MEETING TIME:	Thursday, 10 – 12 (First Meeting: 16.04.2026)
ROOM:	GABF 04/709
CP:	3 or 6

Language of instruction: German

In diesem Seminar werden wir sowohl allgemeine Fragen zu Methoden diskutieren, wie „Was sind Methoden überhaupt?“ und „Wie sollten Methoden bewertet werden?“, als auch spezifische Fragen zu philosophischen Methoden, wie „Gibt es überhaupt philosophische Methoden?“, „Gibt es exklusiv philosophische Methoden?“ und „Was sind wichtige philosophischen Methoden?“. Hierzu werden wir einige philosophische Methoden genauer betrachten, wie zum Beispiel Argumentation, Begriffsanalyse, formale Methoden, experimentelle Methoden und Gedankenexperimente. Der Kurs basiert auf dem Einführungsband *Methods in Analytic Philosophy: A Primer and Guide* (Hrsg. Joachim Horvath, Steffen Koch und Michael G. Titelbaum), der bei der PhilPapers Foundation frei verfügbar ist (https://philpapers.org/archive/HORAPA-2.pdf). Hier gibt es auch einige Flexibilität, welche philosophische Methoden wir vertieft behandeln werden, für die wir dann auch weiterführende Literatur heranziehen. Neben der Fähigkeit, einführende philosophische Texte auf Englisch zu lesen, wäre eine gewisse philosophische Erfahrung für dieses Seminar hilfreich, das sich mit Methoden als zentralem Aspekt der philosophischen Praxis befassen wird.

Dozent : Horvath, Joachim

Sprechstunde : nach Vereinbarung

Prüfungsformen : Kurzpräsentation als Sitzungsexpert*in, Hausarbeit, mündliche Prüfung

AM2

AM2. Advanced Analysis of Language & Logic

SEMINAR

EMPIRICAL METHODS IN PHILOSOPHY OF LANGUAGE (030036)

DR. MARIA SPYCHALSKA

TERM:	Summer 2026
MEETING TIME:	Tuesday 14 – 16 (First Meeting: 14.04.2026)
ROOM:	GA 6/153
CP:	3 or 6

If this course is used for C4, it cannot be used for AM2.

One central and still open question in pragmatics concerns the role of **Theory of Mind (ToM)**—understood as the ability to attribute mental states such as beliefs and intentions to oneself and others—in the interpretation and production of meaning. Within the Gricean framework (Grice, 1975), this ability is taken to be essential for pragmatic inferencing of all kinds, including the derivation of implicatures, reference resolution, the interpretation of irony, metaphor, and indirect requests. However, the precise role that ToM plays in pragmatic inference remains debated.

This journal paper–based seminar focuses on the role of ToM in pragmatics, with particular emphasis on the notion of **perspective-taking**—the process by which speakers and hearers represent others' mental states by adopting their perspective—and its function in communication. The seminar combines theoretical and experimental readings that examine how perspective-taking contributes to pragmatic understanding and language use.

The course is particularly suitable for master's students and advanced bachelor students in cognitive science and philosophy, especially those with an interest in empirically oriented approaches to the philosophy of language and mind.

Literature: selected articles (to be provided)

Grice, H. P. (1975). Logic and Conversation. In Cole, P. and Morgan, J. L., editors, Syntax and Semantics, volume 3 of Speech Acts, pages 41–58. Academic Press, New York. Reprinted in Studies in the Way of Words.

Requirements for passing (3CP): Active participation and a presentation in class

Graded (6CP): An individual or a team project/ extended second presentation

AM3

AM3. Behaviour Studies & Data Analysis

LAB COURSE

OPEN NEURAL DATA (211426)

PROF. DR. ROBERT SCHMIDT,

SIMON NAGEL, M.SC, SHOTO YAMADA, M.SC.

TERM:	Summer 2026
MEETING TIME:	Thursday, 10 – 12 (First Meeting: 16.04.2026)
ROOM:	IC 03/441
CP:	3

In November 2022 the International Brain Laboratory has released an unprecedented Big Open data set with brain recordings. In an international collaboration between 12 different research groups neural activity in 194 different brain regions (that's basically all of them!) was recorded in mice performing a standardized decision-making task. The data contains activity of 32784 neurons, which allows, for the first time, to examine how activity in any part of the brain is related to sensory, cognitive, and motor processing. For the published data the Open Neurophysiology Environment (ONE) API is available to access and process the different types of data files. In this computer programming practical you will learn about the research questions surrounding this exciting dataset and how to access and process the data. First, we will study the available documentation about the data set and the provided API, and learn the basics about brain recordings. Second, we will access and process the data so that it can be analysed. Finally, we will apply modern data science methods (such as clustering, dimensionality reduction, or computational statistics) to analyse the data and learn about information processing in the brain.

Learning Outcomes:

- obtain hands-on skills in accessing and processing of Big Open Data
- acquire relevant domain knowledge at the intersection of computer science and neuroscience
- become familiar with neural signals and how they are processed using data science methods
- visualize and interpret the results of data analysis

Examination: Exercises and reports during the semester

Requirements: Programming in Python, APIs

Registration: Seats are limited. If you want to participate, please send an e-mail to Prof. Schmidt: robert.schmidt@rub.de

Literature: Link to the IBL dataset: https://int-brain-lab.github.io/iblenv/notebooks_external/data_release_brainwidemap.html

AM3

AM3. Behaviour Studies & Data Analysis

SEMINAR

VISUALIZING RESEARCH: A PRACTICAL GUIDE FOR THE ILLUSTRATION AND COMMUNICATION OF FINDINGS (110012)

DR. NAEM HAIHAMBO

TERM:	Summer 2026
MEETING TIME:	Tuesday, 14 – 16 (First Meeting: 14.04.2026)
ROOM:	IA 1/87
CP:	3

This course provides practical skills for visualizing data and designing figures for use in academic posters, presentations, and papers. Participants will learn techniques for creating clear, engaging, and scientifically accurate visualizations using tools such as MATLAB, R, readily available basic tools such as powerpoint and R, as well as online tools. Topics include the principles of effective design, selecting appropriate graph types, and tailoring visuals for different audiences. The course emphasizes hands-on activities, with participants working on their own data to create publication-ready figures.

Students can receive 3 CP graded in this course.
Literature: Literature will be announced in the first session.

AM3

AM3. Behaviour Studies & Data Analysis

BLOCK SEMINAR

SCIENTIFIC APPLICATIONS IN MATLAB (118162)

WEI LIN (WINSTON) SEAH, M.SC.

TERM:	Summer 2026
BLOCK:	17.8., 24.8., 31.8. und 7.9; 10.00 – 16.00
ROOM:	tba
CP:	3

Working on real-world projects is essential for building up programming skills. Such projects are often open-ended with numerous possible approaches but also constrained by factors such as time and data quality. Solving problems under these conditions fosters creative thinking and strategic time management.

This block seminar introduces students to practical applications of MATLAB programming in scientific research and other related fields, such as data science and computer vision.

Students can receive 3 CP graded in this course.

Prerequisites:
Students are expected to have basic programming skills in MATLAB, or fluency in another programming language. It is recommended that you complete the “Programming in Matlab” (118155) Seminar for an introduction to MATLAB fundamentals, prior to participating in this block seminar.

While in-person meetings take place in a PC room, students are required to have their own devices with MATLAB installed to work on their projects on their own outside of meeting times.

AM3

AM3. Behaviour Studies & Data Analysis

SEMINAR

EYE-TRACKING (118163)

HENRIK EICHHORN

TERM:	Summer 2026
MEETING TIME:	Tuesday, 14 – 16 (First Meeting: 14.04.2026)
ROOM:	IA 02/460
CP:	3

Psychology seeks to understand human experience and behavior, yet much of the evidence we need lies hidden within individual subjectivity. Emerging research technologies are now opening windows into what was once accessible only through introspection, and eye-tracking stands at the forefront of this transformation. As early as 1935, Guy Thomas Buswell conducted pioneering eye-tracking research, discovering a fundamental insight: people naturally direct their gaze toward regions in images that contain the most meaningful and relevant information. Today's sophisticated eye-tracking devices allow us to observe attention shifts and information sampling as they unfold in real time, revealing the hidden dynamics of human perception. In this seminar, we'll begin by exploring foundational literature on eye-tracking to understand the standard metrics and the diverse research questions this method can address. You will learn how to measure, process, analyze and present data gained from this method and discuss possibilities and limitations. You'll then gain hands-on experience with eye-tracking equipment and have the opportunity to participate in data collection. Afterwards, you will have to give a short presentation of the results.

In this course, students can gain 3 CP ungraded.

AM4

AM4. Computational Modeling

SEMINAR

WORKSHOP COMPUTATIONAL NEUROLOGY 2026: MODELING REAL-LIFE NEUROPSYCHIATRIC DISEASES (200012)

PROF. DR. XENIA KOBELEVA, DR. NIKOLAI SYROV

TERM:	Summer 2026
MEETING TIME:	10.4. (onsite), 17.4. (onsite), 24.4. (online), 8.5 (online), 22.5. (onsite), 12.6 (onsite), 27.6. (onsite) 13.30 - 15.30 with 20min break inbetween, self-organized group work with about 3 hours/weeks
ROOM:	MB (South entrance), Floor 6, Seminar Room
CP:	6

Why attend?

This is a perfect starter course to understand more about modeling and computational techniques in neurology. The course will be a blend of theoretical concepts and practical application. Through group work you will gain the skills to develop your own modeling projects. We will work with real-life data of patients with neuropsychiatric diseases, creating opportunities for hands-on learning. Furthermore, the models you will develop have the potential to lead to real concrete applications for clinical practice! Projects developed during the course can be further refined beyond the workshop, possibly leading to bachelor and master theses and publishable research. Open to students from diverse disciplines, the course fosters interdisciplinary teamwork and emphasizes the importance of effectively communicating and collaborating with individuals from different academic and professional backgrounds. Besides computational neurology, by working in multidisciplinary teams you will learn to discuss with and understand the point of view of team members with different backgrounds is a crucial skill in modern day science and industry (in all fields).

Course syllabus:

First day (10/04): Intro to Python (onsite).

This day is tailored for students with little or no prior experience in programming. We will introduce fundamental concepts related to using Jupyter Notebooks and the basics of some widely used Python libraries (e.g., Numpy, Pandas, Matplotlib, Seaborn), give a small introduction to loading and visualizing data. It serves as a gentle entry point for those who are new to programming. If you already use Python on a weekly basis or if you already have completed some projects, you can skip the session.

Second day (17/04): Intro to Neuroanatomy, fMRI/EEG and neuropsychiatric diseases (onsite).

This day is designed to provide students with a comprehensive introduction to neuroana-tomy, fMRI and EEG. We introduce these neuroimaging techniques, their resolutions and brain atlases. You will also learn about brain parcellations and how to connect them using diffusion tractography data or functional neu-roimaging. Furthermore, we will introduce neuropsychiatry. We will divide you into small groups of 4-5 people and we will assign each group to a specific disease and computational model combination. The overall goal of the group work, which will already start today with some brainstorming, will be to model brain activity changes in each disease using the assigned computational model.

(more information next page)

[Workshop Computational Neurology (118155), Prof. Dr. Xenia Kobeleva]

Third day (24/04): The brain as an oscillator and a network, oscillatory analysis, de-coding fMRI and EEG signals (online).
On the third day, we will talk in more detail about brain oscillations and their origins and how to analyze them using time-frequency analyses. We will discuss methods measuring brain activity oscillations with different temporal resolutions (EEG, fMRI, etc.). We will also discuss the role of oscillations for information transfer within large-scale and local brain networks.

Fourth day (08/05): Single Node Neural Mass Models (online).
How to recreate brain-like oscillations. On this day, we will use an oscillatory model to sim-ulate the activity of a single brain region. We will evaluate its dynamics (e.g., oscillations) and how they change as a function of different model parameters, and discuss the interpre-tation of these parameters in this context. Through hands-on exercises, you will have the opportunity to work with these models and gain practical experience applying them to your project.

Fifth day (22/05): Whole Brain Neural Mass Modeling of Healthy Subjects and how to adapt a healthy model (onsite).
On the fifth day, we will create a real brain network simulation. We will connect neural masses into a network, and we will fit this network to real empirical data so that the simu-lated brain activity resembles the real empirical one. We will also cover strategies on how to implement disorder-specific aspects into whole-brain modeling.

Sixth day (12/06): Last session with group work and open questions (onsite).
During this session you will have opportunity to meet for group work and to get help with open questions to finalize your projects.

Final day (26/06): Outro session (onsite).
As an output of the work, we ask you to prepare short presentations of the group work and reflections on interdisciplinary teamwork and modeling of neurological diseases.

Further Information:
As you can see in the syllabus, we will offer both online (Zoom) and onsite sessions. Additional details regarding software to be installed before the workshop will be provided in due course. Since the project will involve combining expertise from both the biological/neuroscientific and the programming/ computational world, you need to have at least little prior programming knowledge (e.g., attendance of an online programming course, etc.) and an introduction will be given during a dedicated day to refresh your skills. Based on last year's reviews of students with no programming knowledge struggling with following the course, we do not accept students with no programming knowledge, but kindly ask you to attend necessary courses and sign up next year.

Registration Information:
This is a course with limited spaces with strict selection of participants. For registration (and inquiries), please send us an email **until 31.03.2026** with your university, full name, field of study + semester, between 3 and 5 sentences about why you want to attend and why you should be accepted to the course (what can you bring to the group work) and one sentence on your previous knowledge in neuroscience and programming and whether you want to attend the programming day. In your statement we ask you to confirm that you will attend all sessions and participate in the group work. Please send all the information to: computationalneurology@ruhr-uni-bochum.de

AM4

AM4. Computational Modeling

LECTURE & EXERCISE

COMPUTATIONAL NEUROSCIENCE: SINGLE-NEURON MODELS (211039)

PROF. DR. ROBERT SCHMIDT,
SHOTO YAMADA, M.SC., SIMON NAGEL, M.SC.

TERM:	Summer 2026
LECTURE:	Friday, 08.30 – 10.00 (First Meeting: 17.04.2026)
ROOM:	IC 04/109
EXERCISE:	Friday, 10.00 – 12.00 (First Meeting: 17.04.2026)
ROOM:	IC 04/109
CP:	6

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

This module starts with a primer on neuroscience and the role of computational neuroscience. The next part of the module covers biologically-grounded models of single neurons, including leaky-integrate-and-fire and conductance-based neurons, but also more abstract models of neural activity and spike trains. You will learn how these different computational models describe and simplify the underlying biological processes to a different degree. We will examine in detail how these different neuron models can be used in numerical simulations to address research questions on computation in single neurons and circuits. In the exercises accompanying the lectures you will gain hands-on experience in implementing the different neuron models in Python, running numerical simulations, and performing calculations related to analytical solutions of the model equations and biophysics. The focus is on single neuron models, but we will also make use of available software (e.g. NEST Desktop) to examine how single neuron models can be integrated into simulations of neural networks. While the emphasis throughout the module is on methodological issues, how models can be built, tested and validated at each level, we will also draw connections to specific brain regions to motivate and illustrate the models.

Learning Outcomes:

- apply techniques from computational neuroscience to simulate neural activity
- become familiar with different types of single neuron models, their mathematical description, and their different levels of biological abstraction
- acquire skills in modelling neurons, synapses and circuits and connect these models to biology and computation
- understanding of the biological basis for computation in neurons

Assessment: Oral exam (15-45 minutes) or written exam at the end of the semester (120 min).
Please register for the course in ecampus, too.
Requirements: Programming in Python, mathematical knowledge (linear algebra and calculus) and an interest in neurobiology
Literature:
Gerstner, W., Kistler, W. M., Naud, R., & Paninski, L. (2014). Neuronal dynamics: From single neurons to networks and models of cognition . Cambridge University Press.
Dayan, P., & Abbott, L. F. (2005). Theoretical neuroscience: computational and mathematical modeling of neural systems . MIT press.

AM4

AM4. Computational Modeling

LECTURE & EXERCISE

MATHEMATICS FOR MODELING AND DATA ANALYSIS (211047)

PROF. DR. LAURENZ WISKOTT

TERM:	Summer 2026
EXERCISE:	Thursday 9 – 10.30: self-study time without teacher (First Meeting: 23.04.2026)
TUTORIAL:	Thursday 10.30 – 12.00 (First Meeting: 23.04.2026)
LECTURE:	Thursday 12.30 – 14.00 (First Meeting: 16.04.2026)
ROOM:	NB 3/57
CP:	6

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

This course covers some mathematical methods that are relevant for modeling and data analysis. Particular emphasis is put on an intuitive understanding as is required for a creative command of mathematics. The following topics are covered:

- Functions and how to visualize them
- Vector spaces
- Matrices as transformations
- Systems of linear differential equations
- Qualitative analysis of nonlinear differential equations
- Bayesian theory
- Markov chains

Teaching format:

One unit consists of a lecture of 90 min, self-study time over the week, group work on exercises without teacher for 90 min the week after the lecture, discussion of exercises and general Q&A session with teacher for 90 min right after, followed by the lecture of the next unit.

Enrollment: To enroll in this course with me, you just have to enroll in the Moodle course and participate.
Note by program coordination: Please also register in ecampus.

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

- know the material covered in this course, see Content,
- do have an intuitive understanding of the basic concepts and can work with that,
- can communicate about all this in English.

Exam:

The course is concluded with an oral exam (possibly also a digital written exam, if there are many participants, as will be decided within the first two weeks). Registration for the exam with us happens at the end of the course.
You also need to register via ecampus. Details about this will be sent by the program coordination. There are no prerequisites for the exam, like 50% points in tutorials or the like.

AM4

AM4. Computational Modeling

LAB COURSE

AN INTRODUCTION TO PYTHON FOR DATA ANALYSIS (211421)

PROF. DR. RER. NAT. LAURENZ WISKOTT, SHIRIN REYHANIAN MASHHADI

TERM:	Summer 2026
MEETING TIME:	Block (Mo-Fr): 31.08. - 11.09.2026, 10.30 – 16.30
ROOM:	IC 03/410
CP:	3

Condition for granting the credit points: Passing the exam.
Requirements: Basic knowledge of linear algebra and calculus.

Python is a programming language that is widespread among scientists due to its readability and powerful standard libraries. This practical course teaches Python 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 mild machine learning. During the second week, participants will implement a project in Python.

Content

- **Python basics:** syntax, interpreter, control structures, data types, OOP
- **Scientific computing:** NumPy, Matplotlib, scikit-learn
- **Project:** realization of a project in Python

Grading

Grading is based on the project in the second week. If crucial components of Python are not covered in your project, we might also test your knowledge on the subject.

Requirements:

We expect fluency in one other programming language and familiarity with concepts like

- control structures
- data types
- functions
- object-oriented programming

These concepts will not be taught separately.

Furthermore, the course will be taking place in a room without PCs, meaning that students are required to use their own laptops during the course.

Registration:

Enroll by sending an email to python@ini.rub.de with the info below during this time window: **1.6.26 – 31.6.25**.

In your mail please include:

name, student ID number (Matrikelnummer), study program and semester, a short explanation about your coding experience (one or two sentences). We will inform you whether you are allocated a spot or not.

AM4

AM4. Computational Modeling

LECTURE & EXERCISE

INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE (211046)

PROF. DR. SEN CHENG

TERM:	Summer 2026
LECTURE:	Monday, 16 – 18 (First Meeting: 13.04.2026)
ROOM:	NB 3/57
EXERCISE:	Friday, 10 – 12 (First Meeting: 17.04.2026)
ROOM:	NB 3/72
CP:	6

If this course is used for Module C3, it cannot be used for AM4.

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.

Assessment written final exam - 120 min - date: TBA

Course material available on Moodle (registration required)

Literature "Theoretical Neuroscience" by Dayan and Abbott, MIT Press

Enrollment: eCampus/Flexnow

Contact:

Prof. Sen Cheng, NB 3/33, sen.cheng@rub.de

Office hours: Thursdays 14:00-15:00

AM5

AM5. Special Methods in Neuroscience & Genetics

SEMINAR

TRANSLATIONAL METHODS IN COGNITIVE NEUROSCIENCE (110012)

DR. HARLEEN CHHABRA [PROF. DR. JONAS ROSE]

TERM:	Summer 2026
MEETING TIME:	Thursday, 14 – 16 (First Meeting: 16.04.2026)
ROOM:	IA 1/91
CP:	3

The course will focus on the advanced neuroimaging techniques like MRI, EEG, MEG and more. The course will also give the students insight into the non-invasive brain stimulation techniques like TMS, tDCS and will compare them to the widely used ECT and deep brain stimulation techniques. The discussions during the course will be a combination of theory and relevant publications. After the course the students will have the knowledge to design a well-informed multimodal research study.

Lecturer: Dr. Harleen Chhabra

AM5

AM5. Special Methods in Neuroscience & Genetics

SEMINAR

TIERMODELLE IN DER PSYCHIATRIE (112636)

PATRICK REINHARDT

TERM:	Summer 2026
MEETING TIME:	Wednesday, 14 – 16 (First Meeting: 15.04.2026)
ROOM:	IA 02/452
CP:	3

Language of instruction: German

Wie verhalten sich schizophrene Mäuse? Können Ratten depressiv werden? Und warum werden Hamster nicht alkoholabhängig?
Tiermodelle sind in den Neurowissenschaften weit verbreitet, aber besonders im Kontext psychiatrischer Störungen nicht unumstritten. In diesem Seminar sollen unterschiedliche Tiermodelle psychiatrischer Störungen, ihre Aussagekraft und Limitationen besprochen werden. Ziel des Seminars ist es, den Teilnehmenden einen Überblick über Tierforschung im Kontext Psychiatrie zu geben, sowie sie in die Lage zu versetzen Studien methodenkritisch zu analysieren.
Die Basis des Seminars werden Impulsvorträge zu unterschiedlichen Modellen, sowie Gruppenarbeiten und Diskussionen im Plenum bilden.
Grundlegende Kenntnisse der klinischen Psychologie werden zur Teilnahme vorausgesetzt.
Literatur wird zu Beginn des Seminars bekanntgegeben.

Kontakt: patrick.reinhardt@rub.de

AM5

AM5. Special Methods in Neuroscience & Genetics

SEMINAR

MOLEKULARE PSYCHOLOGIE: VERHALTENSGENETISCHES SEMINAR (118159)

DR. DIRK MOSER, FABIAN BERG, M.SC.

TERM:	Summer 2026
PRELIMINARY MEETING:	Friday, 14 – 16 (First Meeting: 17.04.2026)
ROOM:	IB 5/103
CP:	3

Language of instrucion: German/English

Molekulare Psychologie / Molecular Psychology

Das Seminar vermittelt eine kompakte Einführung in genetische, epigenetische und weitere molekulare Grundlagen menschlichen Verhaltens. Thematisiert werden evolutions- und zellbiologische Mechanismen, Gen-Umwelt-Interaktionen sowie Prozesse wie DNA-Variationen, DNA-Methylierung, Histon-Modifikationen und miRNA-Regulation. Ein besonderer Fokus liegt auf Stressperzeption und der Rolle von Biomarkern wie zellfreier DNA (cfDNA) und kleinen extrazellulären Vesikeln (sEVs).

Wir diskutieren aktuelle Forschung aus der molekularen Verhaltens- und psychiatrischen Genetik, etwa zur Frage, wie frühe Umweltfaktoren biologisch verankert werden („biological embedding“) und welche Bedeutung epigenetische Mechanismen hierbei haben. Die Studierenden analysieren aktuelle Publikationen und stellen ihre Ergebnisse in 30-minütigen Vorträgen vor. Die Literatur wird gemeinsam ausgewählt.

Zielgruppe: Studierende der Medizin, Biologie und Psychologie

Zeit: Wöchentlich 90 Minuten

Literatur: Wird in der Vorbesprechung mitgeteilt.

AM5

AM5. Special Methods in Neuroscience & Genetics

PRACTICAL COURSE

MOLEKULARE PSYCHOLOGIE: MOLEKULARGENETISCHES GRUNDPRAKTIKUM 1 (118156)

DR. DIRK MOSER

TERM:	Summer 2026
MEETING TIME:	Preliminary Meeting: 16.04.2026, 13.00 (IB 5/103)
	1 week at the start of the summer semester break
	(dates will be discussed in the preliminary meeting)
	Monday to Friday, 9 – 13
ROOM:	IB 5/103
CP:	3

Language of instruction: German

Das Grundpraktikum „Molekulare Psychologie“ soll interessierten Studierenden die Schnittmenge zwischen Psychologie und Biologie experimentell begreifbar machen. Dazu extrahiert jeder Praktikumsteilnehmerin aus eigenem Blut DNA und untersucht diese im Verlauf der Woche auf verschiedene, in der psychobiologischen Forschung relevante Genvarianten. Dabei kommt eine Vielzahl molekularbiologischer Methoden zur Anwendung.

Begleitend zum Praktikum werden die molekularen Grundlagen, die experimentellen Möglichkeiten sowie die Ergebnisse der eigenen praktischen Versuche in Spezialvorträgen präsentiert und diskutiert.

Voraussetzungen: Teilnahmevorraussetzung sind gute bis sehr gute Kenntnisse in Biologie/ Molekularbiologie/Psychobiologie

Literatur: Skript (wird nach der Vorbesprechung verteilt)

AM6

AM6. EEG-training

SEMINAR & PRACTICAL COURSE

NEUROPSYCHOLOGICAL METHODS: EEG

(118157 + 118158)

DR. LAURA-ISABELLE KLATT & DR. CHRISTINE HUCKE

TERM:	Summer 2026
PRELIMINARY MEETING:	17.4.2026, 10.00 s.t. online
PRACTICAL COURSE:	24. & 25.04.2026, 9-18
SEMINAR:	22.5., 12.6., 19.6., 03.07. and 17.7.2026, 10-14
ROOM:	Leibniz Institut für Arbeitsforschung in Dortmund
CP:	6

This course takes place at the *Leibniz Institut für Arbeitsforschung* in Dortmund (Ardeystr. 67, 44139 Dortmund).

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

SEMINAR: Seminar course neuropsychological methods: EEG (118158)
& LAB (Laboratory Course): Practical course neuropsychological methods: EEG (118157):
Students must enroll for both the "practical course" and the "seminar course". The practical laboratory course is directly linked to the accompanying seminar course (also 2 SWS). Participation in both courses is mandatory to complete the module.
Participants will learn how to collect and preprocess EEG data and how to conduct basic EEG analyses. On the basis of published neuroscientific literature students will develop a basic research questions and learn to analyze the data accordingly. The EEG data analysis will be conducted in MATLAB, using the open source toolbox EEGLAB. Based on provided code, students will learn to execute an EEG preprocessing pipeline and to compute, plot, and interpret event-related potentials. In addition, students will acquire and refine their MATLAB skills (including the ability to read and modify EEG analysis code) through interactive and practical exercises. The course language is English. In-person lectures will be accompanied by materials and asynchronous video lectures on Moodle. Data collection (practical course) will take place as a blocked weekend session (Friday and Saturday). In addition, 5 in-person sessions - 4 h each - will take place throughout the semester. The whole course takes place at the IfADo in Dortmund. The grade will be based on intermitting assignments throughout the semester.

Requirements:
The EEG data analysis will be conducted in MATLAB, using the open source toolbox EEGLAB. Thus, students should be willing to work with code. Note that this course does not require you to write EEG analysis code from scratch, but basic MATLAB skills are needed to read and modify existing code. In addition, basic knowledge of statistical analyses (ANOVAs, t-tests, GLM) is required.

Literature:
An Introduction to the Event-Related Potential Technique, 2nd Edition (2014, MIT Press)
Steven J. Luck

D. Free Selection

Please notice that under the category "free selection" we only list courses held in German as additional offers. Please notice that you are only allowed to have maximally 15 CP from courses in German in the whole program.

Furthermore, any other course of the Cognitive Science Master Program can be counted as part of the free selection module, i.e., if you have completed (or have a clear plan of how you will complete) the obligatory modules, you may choose any additional courses from any module and credit them as part of the free selection module.

Additionally, it is possible to credit internships in the category of free selection. The internship must of course be equivalent in working hours to the number of credit points and it must qualify for the Cognitive Science Master Program (ideally supporting your master thesis). If you aim to credit an internship as part of this module, then please contact the program coordinator (cogsci-info@rub.de) in advance.

D1 Free Selection

LECTURE

KOGNITION UND GEHIRN (112611)

PROF. DR. OLIVER WOLF

TERM:	Summer 2026
MEETING TIME:	Monday, 12 – 14 (First Meeting: 13.04.2026)
ROOM:	HIA
CP:	3

Language of instruction: German

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.

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

D1

Free Selection

LECTURE

EVOLUTION UND EMOTION (112251)

PROF. DR. PHIL. DR. H.C. ONUR GÜNTÜRKÜN

TERM:	Summer 2026
MEETING TIME:	Thursday, 16 – 18 (First Meeting: 16.04.2026)
ROOM:	HIA
CP:	3

Language of instruction: German

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

Literatur: Bekanntgabe der aktuellen Literatur während der Veranstaltung und über Moodle

D1

Free Selection

LECTURE

BIOPSYCHOLOGIE (112631)

PROF. DR. PHIL. DR. H.C. ONUR GÜNTÜRKÜN

TERM:	Summer 2026
MEETING TIME:	Monday, 16 – 18 (First Meeting: 13.04.2026)
ROOM:	HIA
CP:	3

Language of instruction: German

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, sodass 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 Moodle.

D1

Free Selection

SEMINAR

EINFÜHRUNG IN DIE PHILOSOPHIE DER KÜNSTLICHEN INTELLIGENZ (030056)

JUN.PROF. DR. JOACHIM HORVATH

TERM:	Summer 2026
MEETING TIME:	Wednesday, 16 – 18 (First Meeting: 22.04.2026)
ROOM:	GA 6/153
CP:	6

Language of Instruction: German

In diesem Begleitseminar wollen wir uns auf einführende Weise mit grundlegenden philosophischen Fragen und Problemen beschäftigen, die sich aus der rasanten Entwicklung und stark zunehmenden alltäglichen Anwendung von Systemen der Künstlichen Intelligenz (KI) ergeben. Dabei werden wir unter anderem die folgenden Themen behandeln: Was ist KI, wie funktioniert sie und was kann sie schon? Welche Risiken und Chancen ergeben sich aus ihrer Anwendung? Führt der Einsatz von KI zum „Ende der Arbeit“ – und welche Fragen der sozialen Gerechtigkeit ergeben sich daraus? Kann aus KI eine Superintelligenz entstehen, die eine existenziellen Bedrohung für uns darstellt – und mit welchen politischen Maßnahmen ließe sich das verhindern? Können KI-Systeme auch Geist und Bewusstsein entwickeln – und kann vielleicht sogar unser eigener Geist „digitalisiert“ werden? Welche Bedeutung haben KI-Systeme im Bildungsbereich und für unser Verständnis von geistiger Urheberschaft? Und werden sich auch unsere persönlichen Beziehungen durch die zunehmende Interaktion mit Chatbots und Robotern verändern?

Dozent : Horvath, Joachim

Sprechstunde : nach Vereinbarung

Prüfungsformen : Hausarbeit oder mündliche Prüfung

D1

Free Selection

SEMINAR

EINFÜHRUNG IN DIE PHILOSOPHIE DES GEISTES (030004)

PROF. DR. TOBIAS SCHLICHT

TERM:	Summer 2026
MEETING TIME:	Friday, 10 – 12 (First Meeting: 17.04.2026)
ROOM:	HGA 20
CP:	tba

Language of Instruction: German

Ziel der Vorlesung ist es, grundlegende Begriffe und Methoden der Philosophie des Geistes zu vermitteln und deren Bedeutung für Kognitionswissenschaft, Psychologie und Neurowissenschaften verständlich zu machen. Die Vorlesungen bieten einen systematischen Überblick über zentrale Positionen zum Verhältnis von Geist, Gehirn und Körper wie Dualismus, Materialismus und Funktionalismus. Im Zentrum stehen aber auch Begriffe wie Bewusstsein und Qualia, Intentionalität, mentale Verursachung und soziale Kognition sowie Fragen zum Geist bei Tieren und künstlichen intelligenten Systemen. Dabei werden die Studierenden auch mit einflussreichen Gedankenexperimenten vertraut gemacht und lernen anhand historischer Texte und zeitgenössischer Beispiele philosophische Argumente kritisch zu bewerten.

Als begleitende Lektüre empfohlen: Ian Ravenscroft (2005): Philosophie des Geistes. Eine Einführung. Stuttgart: Reclam

SECOND YEAR PROGRAM

I. Interdisciplinary Research Module

Choosing a course from C1 - C4 as a substitute for I1 - I4 is only possible if the substitute course is closely connected to your master thesis project.

Please notice that one and the same course can only be accepted as part of a single Module. It is prohibited to use the same course for two different Modules.

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 held in English.

I1

I1. Cognitive Philosophy

COLLOQUIUM
LOGIC AND EPISTEMOLOGY (030101)
PROF. DR. HEINRICH WANSING

TERM:	Summer 2026
MEETING TIME:	Thursday, 16 – 18 (First Meeting: 16.04.2026)
ROOM:	GA 03/46
CP:	3 or 6

In this research-oriented colloquium, students will have an opportunity to present a paper on a topic of their choice from philosophical logic or epistemology. This paper may or may not be related to an MA thesis.

Some background knowledge in analytic epistemology and philosophical logic is required. In addition to presentations by students, there will be talks by guests and invited speakers.

CP can be earned by giving a presentation or summarizing a talk of the colloquium or a chosen journal article in a short essay.

I1

I1. Cognitive Philosophy

COLLOQUIUM

PHILOSOPHY MEETS COGNITIVE SCIENCE: MEMORY AND LANGUAGE (030106)

PROF. DR. MARKUS WERNING

TERM:	Summer 2026
MEETING TIME:	Tuesday, 12 – 14 (First Meeting: 14.04.2026)
ROOM:	GA 04/187
CP:	3 or 6

In cooperation with the Center for Philosophy of Memory (Grenoble) and the NYCU Philosophy Department (Taipeh)

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. To receive credits, students will be given the (assisted) opportunity to present projects of their own.

This semester the sessions of the research colloquium will alternate in a bi-weekly rhythm between the topics “Memory” and “Language & Cognition”. A detailed schedule will be published in due course at https://www.ruhr-uni-bochum.de/phil-lang/colloquium.html . Talks will be held either online via Zoom or in person.

Assessment:

Students can receive either 3 CP by giving a presentation or 6 CP by giving a presentation and writing an essay.

I1

I1. Cognitive Philosophy

COLLOQUIUM

RESEARCH COLLOQUIUM "REPRESENTATIONS IN BRAINS, MINDS, AND AI" (030112)

PROF. DR. TOBIAS SCHLICHT, DR. KRZYSZTOF DOLEGA

TERM:	Summer 2026
MEETING TIME:	Wednesday, 18 – 20 (First Meeting: 15.04.2026)
ROOM:	online via Zoom (inclusive. Moodle Course)
CP:	3 or 6

Mental Representations are the central theoretical posit in cognitive science and psychology. On the one hand, we attribute beliefs and desires as well as perceptual states to ourselves and others every day, partly to make sense of our behavior. These can be considered personal-level representations, some of which we are often even conscious of. Beliefs can be directed at the world (I believe that Bochum is beautiful) or can be about things that do not even exist (I believe that Santa brings presents). Sorry, spoiler. On the other hand, scientists regularly posit mental and neural representations in the brain and postulate that brain processes are about or stand in for things in the world. The Nobel Prize in Medicine was awarded twice for work in this area, to David Hubel and Torsten Wiesel in 1981 for their research on information processing in the brain, and in 2014 to Maybrit and Edvard Moser together with John O'Keefe for their discovery of place cells in the brain, considered a kind of neural GPS system that keeps track of the animal's location. These are just two examples for what may be called subpersonal representations. More recently, philosophers and scientists have started discussing the existence and nature of representations in artificial systems like Large Language Models (LLMs).

Yet, these concepts of representations are still poorly understood and raise many questions. How should we think of these entities? What is their place in nature? Are they observable, or at least assessable and manipulable using the research methods available in the cognitive sciences? Can LLMs teach us anything about the nature of mental representations in humans?

This research-oriented colloquium will be devoted to such questions and will take place entirely online on zoom as we will be reading and discussing very recent texts on the topic that represent the state-of-the-art of philosophical research on representations, which is not restricted to mental representations, but also involves neural representations and representations in artificial systems. The seminar sessions will involve talks by the philosophers and scientists themselves, and we expect students to join the session prepared with their questions to the authors, and thus having read the text carefully beforehand. This is a unique opportunity to engage with state-of-the-art research and we welcome all interested students. A background and some familiarity with Philosophy of Mind and/or Cognitive Science is desirable.

Preparatory Reading:

Krzysztof Dolega, Tobias Schlicht (2022) Mental Content. In: B. Young, C. D. Jennings (Eds.), Mind, Cognition, and Neuroscience. A philosophical introduction. London: Routledge. (available in the accompanying Moodle Course)

David Pitt (2020) Mental representation. In: Stanford Encyclopedia of Philosophy https://plato.stanford.edu/entries/mental-representation/.

I2

I2. Cognitive Psychology

COLLOQUIUM

RESEARCH COLLOQUIUM IN COGNITIVE PSYCHOLOGY AND PSYCHONEUROENDOCRINOLOGY (118913)

PROF. DR. OLIVER T. WOLF

TERM:	Summer 2026
MEETING TIME:	Tuesday, 16 – 18
ROOM:	IB 6/127
CP:	3

Research talks on current topics in the areas of Cognitive Psychology and Psychoneuroendocrinology will be given by members from the department. In addition, external invited guests will present their latest findings. A timetable will be posted on the homepage of the department at the beginning of the semester.

Cognitive Science students can achieve 3 CP graded in this colloquium.

https://www.cog.psy.ruhr-uni-bochum.de/cog/teaching/colloquium/index.html.en

I3

I3. Computational Modeling

LECTURE & EXERCISE

COMPUTATIONAL NEUROSCIENCE: SINGLE-NEURON MODELS (211039)

PROF. DR. ROBERT SCHMIDT,
SHOTO YAMADA, M.SC., SIMON NAGEL, M.SC.

TERM:	Summer 2026
LECTURE:	Friday, 08.30 – 10.00 (First Meeting: 17.04.2026)
ROOM:	IC 04/109
EXERCISE:	Friday, 10.00 – 12.00 (First Meeting: 17.04.2026)
ROOM:	IC 04/109
CP:	6

If this course is used for module AM4, it cannot be used for module I3.

This module starts with a primer on neuroscience and the role of computational neuroscience. The next part of the module covers biologically-grounded models of single neurons, including leaky-integrate-and-fire and conductance-based neurons, but also more abstract models of neural activity and spike trains. You will learn how these different computational models describe and simplify the underlying biological processes to a different degree. We will examine in detail how these different neuron models can be used in numerical simulations to address research questions on computation in single neurons and circuits. In the exercises accompanying the lectures you will gain hands-on experience in implementing the different neuron models in Python, running numerical simulations, and performing calculations related to analytical solutions of the model equations and biophysics. The focus is on single neuron models, but we will also make use of available software (e.g. NEST Desktop) to examine how single neuron models can be integrated into simulations of neural networks. While the emphasis throughout the module is on methodological issues, how models can be built, tested and validated at each level, we will also draw connections to specific brain regions to motivate and illustrate the models.

Learning Outcomes:

- apply techniques from computational neuroscience to simulate neural activity
- become familiar with different types of single neuron models, their mathematical description, and their different levels of biological abstraction
- acquire skills in modelling neurons, synapses and circuits and connect these models to biology and computation
- understanding of the biological basis for computation in neurons

Assessment: Oral exam (15-45 minutes) or written exam at the end of the semester (120 min). Please register for the course in ecampus, too.

Requirements: Programming in Python, mathematical knowledge (linear algebra and calculus) and an interest in neurobiology

Literature:

Gerstner, W., Kistler, W. M., Naud, R., & Paninski, L. (2014). Neuronal dynamics: From single neurons to networks and models of cognition . Cambridge University Press.
Dayan, P., & Abbott, L. F. (2005). Theoretical neuroscience: computational and mathematical modeling of neural systems . MIT press.

I3

I3. Computational Modeling

LECTURE & EXERCISE

MATHEMATICS FOR MODELING AND DATA ANALYSIS (211047)

PROF. DR. LAURENZ WISKOTT

TERM:	Summer 2026
EXERCISE:	Thursday 9 – 10.30: self-study time without teacher (First Meeting: 23.04.2026)
TUTORIAL:	Thursday 10.30 – 12.00 (First Meeting: 23.04.2026)
LECTURE:	Thursday 12.30 – 14.00 (First Meeting: 16.04.2026)
ROOM:	NB 3/57
CP:	6

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

This course covers some mathematical methods that are relevant for modeling and data analysis. Particular emphasis is put on an intuitive understanding as is required for a creative command of mathematics. The following topics are covered:

- Functions and how to visualize them
- Vector spaces
- Matrices as transformations
- Systems of linear differential equations
- Qualitative analysis of nonlinear differential equations
- Bayesian theory
- Markov chains

Teaching format:

One unit consists of a lecture of 90 min, self-study time over the week, group work on exercises without teacher for 90 min the week after the lecture, discussion of exercises and general Q&A session with teacher for 90 min right after, followed by the lecture of the next unit.

Enrollment: To enroll in this course with me, you just have to enroll in the Moodle course and participate.
Note by program coordination: Please also register in ecampus.

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

- know the material covered in this course, see Content,
- do have an intuitive understanding of the basic concepts and can work with that,
- can communicate about all this in English.

Exam:

The course is concluded with an oral exam (possibly also a digital written exam, if there are many participants, as will be decided within the first two weeks). Registration for the exam with us happens at the end of the course.
You also need to register via ecampus. Details about this will be sent by the program coordination. There are no prerequisites for the exam, like 50% points in tutorials or the like.

I3

I3. Computational Modeling

LECTURE + EXERCISE

COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY (211049)

PROF. DR. RER. NAT. LAURENZ WISKOTT

TERM:	Summer 2026
EXERCISE:	Tuesday, 10.30 – 12 (First Meeting: 21.04.2026)
	(self-study time without teacher)
TUTORIAL:	Tuesday, 12.15– 13.45 (First Meeting: 21.04.2026)
LECTURE:	Tuesday, 14.15 – 15.45 (First Meeting: 14.04.2026)
ROOM:	NB 3/72
CP:	6

Condition for granting the credit points: Passing the exam.
Requirements: Basic knowledge of linear algebra and calculus.

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

This lecture covers basic neurobiology and models of selforganization in neural systems, in particular addressing

- Learning and self-organization
  - Hebbian Learning
  - Neural learning dynamics and constrained optimization
  - Dynamic field theory
- Vision
  - Receptive fields
  - Neural maps
- Hippocampus
  - Navigation
  - Episodic memory
  - Hopfield Network

Learning outcomes (Lernziele):
After the successful completion of this course the students

- know basic neurobiological facts about the visual system and the hippocampus,
- know a number of related models and methods in computational neuroscience,
- understand the mathematics of these methods,
- can communicate about all this in English.

Teaching format:
One unit consists of a lecture of 90 min, self-study time over the week, group work on exercises without teacher for 90 min the week after the lecture, discussion of exercises and general Q&A session with teacher for 90 min right after, followed by the lecture of the next unit.

(more information next page)

[COMPUTATIONAL NEUROSCIENCE: VISION AND MEMORY (211049), Prof. Dr. Laurenz Wiskott]

Enrollment:
To enroll in this course with me, you just have to enroll in the Moodle course and participate. (Note by program coordination: In addition, please register for the lecture in ecampus.)

Exam (Prüfungsformen): The course is concluded with an oral exam (possibly also a digital written exam, if there are many participants, as will be decided within the first two weeks).

Condition for granting the credit points: Passing the exam.

Requirements:
The mathematical level of the course is mixed but generally high. The tutorial is almost entirely mathematical. Mathematics required include calculus (functions, derivatives, integrals, differential equations, ...), linear algebra (vectors, matrices, inner product, orthogonal vectors, basis systems, ...), and a bit of probability theory (probabilities, probability densities, Bayes' theorem, ...).

Literature: Mostly lecture notes will be provided.

I3

I3. Computational Modeling

COLLOQUIUM
FORSCHUNGSKOLLOQUIUM COMPUTATIONALE NEUROLOGIE (200011)
JUN.-PROF. DR. MED. XENIA KOBELEVA

TERM:	Summer 2026
MEETING TIME:	Thursday, 16-18
ROOM:	partly Zoom, partly in building MB; OE Neurostimulation
CP:	tba

For registration, please write an e-Mail to Prof. Kobeleva: xenia.kobeleva@rub.de

I3

I3. Computational Modeling

SEMINAR

JOURNAL CLUB: LEARNING AND MEMORY (211125)

PROF. DR. SEN CHENG

TERM:	Summer 2026
MEETING TIME:	Tuesday, 12-14 (First Meeting: 14.04.2026)
ROOM:	NB 3/57 (online/ hybrid)
CP:	3

This course can be assigned to module I2, too.

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.

Assessment: presentation in class

Prerequisites: advanced knowledge of learning and memory

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

Capacity: max. 15 students

Enrollment: eCampus

Literature: journal articles to be selected by students in consultation with the instructor

Contact: Prof. Sen Cheng, NB 3/33, sen.cheng@rub.de
Office hours: Thursdays 14:00-15:00

14

I4. Cognitive Neuroscience

COLLOQUIUM

COLLOQUIUM: NEURAL BASIS OF LEARNING (118923)

PROF. DR. JONAS ROSE, DR. JESÚS BALLESTEROS CARRASCO

TERM:	Summer 2026
MEETING TIME:	Friday, 12 – 14 (First meeting: 17.04.2026)
ROOM:	GA 04/187
CP:	3

A broad range of current research topics in cognitive neuroscience will be covered by internal and external speakers. Our focus lies in a mechanistic understanding of crucial processes that in turn form the basis of higher cognition.

Students receive 3 CP graded for meeting the requirements of mandatory attendance and submitting an essay.

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

https://www.ngl.psy.ruhr-uni-bochum.de/ngl/

14

I4. Cognitive Neuroscience

COLLOQUIUM

BIOPSYCHOLOGY RESEARCH COLLOQUIUM (118914)

PROF. DR. PHIL. DR. H.C. ONUR GÜNTÜRKÜN

TERM:	Summer 2026
MEETING TIME:	Monday, 13 – 15 (First meeting: 13.04.2026)
ROOM:	IB 6/127
CP:	3

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-uni-bochum.de/.

14

I4. Cognitive Neuroscience

COLLOQUIUM

RESEARCH COLLOQUIUM NEUROPSYCHOLOGY (118912)

PROF. DR. NIKOLAI AXMACHER

TERM:	Summer 2026
MEETING TIME:	Thursday, 14 – 16 (First Meeting: 16.04.2026)
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: http://www.ruhr-uni-bochum.de/neuropsy/.

An important aim of this course, and basis for successful participation and grading, is a regular and active participation in the scientific discourse.

14

I4. Cognitive Neuroscience

COLLOQUIUM

RESEARCH COLLOQUIUM PREDICTIVE COGNITION (118930)

PROF. DR. HELEN BLANK

TERM:	Summer 2026
MEETING TIME:	Friday, 10 – 12 (First meeting: 17.04.2026)
ROOM:	IB 6/127.
CP:	tba

This colloquium offers a forum for students and researchers in psychology and cognitive neuroscience to present and discuss ongoing work related to predictive cognition. Sessions include structured presentations, critical discussion of current literature, and contributions from internal and occasional external speakers. Active participation is expected, either through presenting one's own work or engaging constructively with the work of others. Bachelor's and Master's students may use the course to present their thesis projects, while PhD students and postdocs can present empirical or theoretical research for feedback.

I4

I4. Cognitive Neuroscience

COLLOQUIUM

RESEARCH COLLOQUIUM PREDICTIVE BRAIN (118919)

PROF. DR. LUCIA MELLONI, LARA BRÄUCHLE, M.SC.

TERM:	Summer 2026
MEETING TIME:	Thursday, 14 – 16
ROOM:	MB 7 seminar room 159 (hybrid format)
CP:	tba

This colloquium provides a structured academic forum for students, postdoctoral researchers, and early career investigators affiliated with the Predictive Brain Lab to present, discuss, and critically engage with ongoing scientific work in the field of cognitive neuroscience and psychology. The course is designed to support Bachelor, Master, PhD students, and researchers as they develop and refine their research projects, including thesis work and scientific publications. Participants will present their empirical or theoretical research for peer and faculty feedback, discuss foundational and cutting-edge scientific literature related to predictive processing, brain function, and cognition, develop scientific communication skills through structured presentations and critical dialogue, and engage in interdisciplinary discussions to integrate psychological theory with neuroscience, philosophy of mind, and computational modeling. The colloquium also features presentations by national and internationally renowned guest speakers, offering participants exposure to a broad range of perspectives and expertise. This course fosters a collaborative and intellectually rigorous environment that supports the development of high-quality scientific research. Attendance and active participation are required, and all participants are expected to contribute to the academic discourse, whether by presenting their own work or by constructively engaging with the work of others.