

Modulhandbuch

M. Sc. Cognitive Science

Module Handbook MASTER “COGNITIVE SCIENCE”

Module: Biostatistics 3

Preparatory Course II. Academic English 5

Module: Introduction to Cognitive Science..... 7

Module: Basic Methods (Course: Experimental Psychology Lab) 9

Module: Basic Methods (Course:Logic)..... 11

Module: Basic methods (Course: Functional Neuroanatomy)..... 13

Module: Basic Methods (Course: Neural Networks)..... 15

Module: Topic Selection I..... 17

Module: Advanced methods 21

Module: Topic Selection II..... 25

Module: Further Specialization 29

Module: Interdisciplinary Research Module 31

Module: Proposal Master Thesis..... 33

Module: Master Thesis Cognitive Science..... 36

Modulhandbuch

M. Sc. Cognitive Science

Preparatory Courses (no credits; arranged before the official start of the lectures)

- Preparatory Course I. Biostatistics
- Preparatory Course II. Academic English

Program (credits)

Sem.	Module	CP
1.	A1. Introduction to Cognitive Science (lecture and seminar)	6
	B1. Basic Methods (3-6 CP each) ^a	10-12
	<ul style="list-style-type: none"> • Experimental Psychology Lab • Logic • Neural networks • Functional Neuroanatomy 	
	C1. Topics Selection I (3-6 CP each) ^b	12-14
		30/60
2.	B2. Advanced Methods (5-9 CP each) ^c	11-18
	<ul style="list-style-type: none"> • Theory formation and Conceptual Analysis • Advanced Analysis of Language and Logic • Behavior studies • Computational Modeling • Molecular Imaging • EEG-training • fMRI-training 	
	C2. Topics Selection II (3-6 CP each) ^d	12-19
		60/60
3.	F3. Further Specialization Module	10-12
	I3. Interdisciplinary Research Module	9-11
	P3. Proposal Master Thesis	9
		90/120
4.	M4. Master Thesis (27 from 30) and Oral Examination of the Master Thesis (3 CP from 30)	30
		120/120

^a The B1.Basic Methods module provides all students with knowledge of the basic methods involved in the MA program. Students participate in 3 courses (one course should be passed during their B.A. education)

^b Students can choose max. 6 CP in one topic area and together with module C2, the students have to complete at least one course of each topic.

^c Students choose (at least) 2 courses in B2.Advanced Methods.

^d Students choose the courses in C2 such that together with C1, they complete at least one course of each topic. They should earn 60 CP in the first year (missing credits can be earned in this module).

Modulhandbuch

M. Sc. Cognitive Science

Preparatory Courses

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Biostatistics					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
PC – 1B	90	--	Wintersemester	Each Wintersemester	2 weeks
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture or Seminar		30 hours	60 hours	20 max.
2	Competences / Kompetenzen				
	<input type="checkbox"/> Fachkompetenzen: Students will learn about the statistical methods most commonly used by researchers in the life sciences				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Students will be encouraged to work in small groups to learn problem solving in a group.				
	<input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: Application of statistical methods to data and evaluation of the validity of these methods when applied by others.				
	<input type="checkbox"/> Individual Competences / Selbstkompetenzen: The content of this course helps the students to design, analyze and interpret their own experiments.				
3	Content / Inhalte				
	This course will cover the basic statistical methods used by researchers in the life				

Modulhandbuch

M. Sc. Cognitive Science

	sciences to collect, summarize, analyze, and draw conclusions from data. The topics include descriptive statistics, univariate statistical tests, and experimental design
4	<p>Teaching Methods / Lehrformen</p> <p>Biostatistics will be taught in lectures with homework assignments. The course will be offered as an intensive two-week class before the start of the winter semester.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Graded homework assignment.</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>The module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Sen Cheng</p>
11	<p>Further Information</p> <p>This module is required for all students entering the MSc Cognitive Science who have not already taken classes with equivalent content during their previous studies. The class will be offered before the beginning of the regular classes in the winter semester. Students will not earn credits for the MSc Cognitive Science in this module.</p>

Modulhandbuch

M. Sc. Cognitive Science

Preparatory Course II. Academic English

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module:					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
	60	---	Wintersemester	Each Wintersemester	Intensive 2-week class
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Seminar		30	30	20 max.
2	Competences / Kompetenzen				
	<input type="checkbox"/> Course Competences / Fachkompetenzen: Students learn how to explain, demonstrate and discuss the contents of their field of study in English.				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Communication and presentation in English; discussion with other students and scientists in English, working together with other students, development of an intercultural sensitivity				
	<input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: Verbal - reading comprehension; writing of abstracts, if requested: writing of applications				
	<input type="checkbox"/> Individual Competences / Selbstkompetenzen: The course enables the students to present their work in English, to communicate with other scientists and to strengthen their self-confidence by improving their language				

Modulhandbuch

M. Sc. Cognitive Science

	skills
3	<p>Content / Inhalte</p> <p>This course prepares the students to demonstrate their work in English – in different ways and situations. The focus is on speaking and writing scientific English.</p>
4	<p>Teaching Methods / Lehrformen</p> <p>The course will be offered as an intensive two-week class before the start of the winter semester. It will be facilitated by means of E-learning.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>Certificate of competence in English, e.g. TOEFL 550 (schriftlich)</p>
6	<p>Assessment / Prüfungsformen</p> <p>daily homework</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Albert Newen</p>
11	<p>Further Information</p> <p>Students will not earn credits for the MSc Cognitive Science in this module.</p>

Modulhandbuch

M. Sc. Cognitive Science

1st Semester

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Introduction to Cognitive Science					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
A1– ICS	180 hours	6	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and Seminar		60	120	20 max.
2	<p>Competences / Kompetenzen</p> <p><input type="checkbox"/> Course Competences / Fachkompetenzen:</p> <p>The students are introduced to the various disciplines, goals and methods that make up cognitive science through a historic and systematic overview of the field. Some core research topics are presented from the different paradigms constituting cognitive science.</p> <p><input type="checkbox"/> Social Competences / Sozialkompetenzen:</p> <p>Learning in groups (Lecture)</p> <p>Collaborating in groups (Seminar)</p> <p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>The module presents and discusses the core methods employed in the field of cognitive science.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>Independent acquisition of knowledge with the help of different media</p> <p>Time management</p>				

Modulhandbuch

M. Sc. Cognitive Science

	Self-positioning in a group
3	<p>Content / Inhalte</p> <p>Cognitive science is the interdisciplinary study of cognition in living and complex mechanical systems. Cognition includes mental states and processes such as thinking, reasoning, language understanding, communication, perception, learning, memory, consciousness, emotions, etc. This introductory lecture is intended to provide students with an overview of central paradigms and methods of the relevant disciplines, such as psychology, philosophy, computational modeling and neuroscience. These will then be dealt with (and applied) more extensively in the relevant seminars. One focus of the lectures will also be the introduction to the conceptual foundations for cognitive science, i.e. the conception of cognition as information processing, and the development that this young interdisciplinary project has undergone over the last 50 years. That is, in a first part the lecture will include a presentation of the continuities and discontinuities, beginning with the classical computer model of the mind, differences between symbolic and connectionist mental architectures, the impact of developmental systems theory and the importance of an embodied and embedded cognitive science as well as dynamic system theory. Furthermore, it is intended to provide an introduction to some current research issues in Cognitive Science concerning e.g. perception, action, memory, learning and reasoning from different research paradigms by which they are investigated. Thus, the inherently interdisciplinary nature of the subject is presented and reflected in the course. In the <i>complementary seminar</i> the students will study a selection of the relevant original background literature underlying the lecture.</p>
4	<p>Teaching Methods / Lehrformen</p> <p>The lecture focuses on the presentation and discussion of the central topics. The seminar consists of student presentations and discussions of the original texts in relation to the lecture.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Written exam in the lecture and oral presentation in the seminar</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>

Modulhandbuch

M. Sc. Cognitive Science

8	Role of the Module / Verwendung des Moduls (in anderen Studiengängen)
10	Person Responsible/Modulverantwortlicher Prof. Dr. Tobias Schlicht
11	Further Information

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Basic Methods (Course: Experimental Psychology Lab)					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
B1	90 hours	3	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Seminar		30 hours	60 hours	20 max.
2	Competences / Kompetenzen				
	Competences / Kompetenzen <input type="checkbox"/> Fachkompetenzen: Students will learn about all stages of a psychological experiment. <input type="checkbox"/> Social Competences / Sozialkompetenzen: Students will work in small groups to learn problem solving in a group.				

Modulhandbuch

M. Sc. Cognitive Science

	<p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: Design, performing, analysis and interpretation of a psychological experiment.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen: The content of this course enables the student to know the methodological constraints of experiments and to conduct their own experiments.</p>
3	<p>Content / Inhalte</p> <p>Students gain first-hand experience in all stages of a psychological experiment. Starting with an empirical question, students will design, perform, analyze and interpret a psychological experiment</p>
4	<p>Teaching Methods / Lehrformen</p> <p>Students will be expected to conduct their work independently guided by an experienced researcher.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>Module PC – 1B or an equivalent class from previous studies.</p>
6	<p>Assessment / Prüfungsformen</p> <p>Project report</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>The module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Lars Kuchinke</p>
11	<p>Further Information</p> <p>This course introduces one of four basic methods.</p>

Modulhandbuch

M. Sc. Cognitive Science

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Basic Methods (Course:Logic)					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
B1	120 hours	4	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		45	75	20 max.
2	<p>Competences / Kompetenzen</p> <p><input type="checkbox"/> Course Competences / Fachkompetenzen:</p> <p>The students obtain an overview of classical logic and gain insight into problems from philosophical logic and some bridges from logic to cognition. They acquire basic competences in the formal analysis of the notions of, for example, inference, belief, and knowledge.</p> <p><input type="checkbox"/> Social Competences / Sozialkompetenzen:</p> <p>The students will learn to work on exercises from logic, ideally in small study groups which support and stimulate discussion and co-operation.</p> <p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>The seminars or lectures of this module will convey to the students a number of important informal and formal methods, including conceptual analysis as applied in philosophy, the formal reconstruction of part of natural language discourse, inductive definitions, truth tables, the axiomatic method, natural deduction, the methods of direct and indirect proof, and the application of so-called possible worlds models. The competences will be carefully motivated, explained, and will be practically developed by means of exercises.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p>				

Modulhandbuch

M. Sc. Cognitive Science

	Students will sharpen their analytic competences by working on exercises from logic and they will practice seminar presentations and/or the writing of essays. For the latter purpose, they will rehearse the reading of standard textbooks and recent research papers.
3	Content / Inhalte Logic is the theory of valid inference and as such it is of fundamental importance for our understanding of information processing and cognition. It brings together problems and methods from philosophy, linguistics, knowledge representation, and other neighbouring disciplines. The module will provide both basic knowledge of classical logics as well as essentials of philosophical logic. The presentation of classical logic comprises the formal languages of propositional and first-order logic and their elementary model theory and proof theory. As a result the module deals with problems ranging from how to characterize valid arguments and logical inferences to the definition and role of the notion of knowledge. Moreover, the discussion of the role of logic in cognition will be characterized.
4	Teaching Methods / Lehrformen The courses are organized as online-courses (introduction to classical logic) or lectures that are always accompanied by a one hour optional tutorial (which may be an online tutorial). In the tutorial weekly exercises are presented in detail and questions of the students about the whole material are discussed and answered in detail. The standard course will be a logic-online course that is established in Bochum since 3 years (used every semester).
5	Attendance requirements / Teilnahmevoraussetzungen None
6	Assessment / Prüfungsformen Weekly exercises and written exams
7	Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten Frequent attendance, active participation, successful completion of the assessments
8	Role of the Module / Verwendung des Moduls (in anderen Studiengängen) The Module will also be offered in the Master „Philosophy“
10	Person Responsible/Modulverantwortlicher

Modulhandbuch

M. Sc. Cognitive Science

	Prof. Dr. Heinrich Wansing
11	<p>Further Information</p> <p>This course introduces one of four basic methods. Given our acceptance conditions for M.A. students, we expect the students to have studied one basic method during the B.A.. Thus, they have to participate in the remaining three courses presenting basic methods to complete this module.</p>

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Basic methods (Course: Functional Neuroanatomy)					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
B1	90 hours	3	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		30	60	20 max.
2	Competences / Kompetenzen				
	<p><input type="checkbox"/> Course Competences / Fachkompetenzen:</p> <p>The students learn about the newest techniques available to study memory function, as well as the advantages and short-coming of these techniques</p> <p><input type="checkbox"/> Social Competences / Sozialkompetenzen:</p> <p>The students will learn to present scientific publications in front of an audience and will be given the tools for a more critical evaluation of this material.</p> <p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>This seminar is interdisciplinary, e.g. it involves behavioral, molecular and imaging techniques.</p>				

Modulhandbuch

M. Sc. Cognitive Science

	<p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>The theoretical background of different techniques will be given to students to allow for a more critical reading of the material available and a more personal interpretation of published data.</p>
3	<p>Content / Inhalte</p> <p>This seminar is methodology-oriented. It focuses on the latest generation of behavioural, molecular and imaging techniques developed: inducible and region-specific brain mutagenesis; molecular brain imaging based on the detection of immediate-early genes (by immunocytochemistry and in-situ hybridization); diffusion tensor imaging; optogenetics (light-activated channels) and behavioural translational paradigms (standard human tasks adapted to animals). These methods, which go beyond the spatial and temporal resolution of standard techniques, led to important new findings in memory research, for example through the study of the functional segregation of the medial temporal lobe (MTL), a structure altered in aging and amnesic patients, but can also be applied to all fields of research. Background on each technique is provided during the class, advantages and limits of these new techniques are contrasted with those of standard techniques. An example of how each technique is given through the presentation of one related scientific article (journal club) and a 'hands-on' introduction is given for some of the techniques.</p>
4	<p>Teaching Methods / Lehrformen</p> <p>Each session (2 hours) involves a '1 hour' Lecture, given by the lecturer who introduces the theoretical background of a given technique and a '1 hour' presentation by a student that will discuss, together with the audience, a paper that illustrates the technique presented by the lecturer, and give his/her own interpretation of the data.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Short 5 min. quiz, oral presentation, final exam</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>

Modulhandbuch

M. Sc. Cognitive Science

8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>The Module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Magdalena Sauvage</p>
11	<p>Further Information</p> <p>This course introduces one of four basic methods. Given our acceptance conditions for M.A. students, we expect the students to have studied one basic method during the B.A.. Thus, they have to participate in the remaining three courses presenting basic methods to complete this module.</p>

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Basic Methods (Course: Neural Networks)					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
B1	150 hours	5	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		60	90	20 max.
2	<p>Competences / Kompetenzen</p> <p><input type="checkbox"/> Course Competences / Fachkompetenzen:</p> <p>Theoretical understanding of feedforward neural networks, practical skills in computer implementations</p> <p><input type="checkbox"/> Social Competences / Sozialkompetenzen:</p> <p>Each student must present the results of one exercise for a group.</p>				

Modulhandbuch

M. Sc. Cognitive Science

	<p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>The course introduces the basic mathematical methods that are underlying computational modeling using feedforward neural networks. This includes training in computer programming.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>Programming selected routines in C++, gaining a theoretical understanding of feedforward Neural Networks</p>
3	<p>Content / Inhalte</p> <p>This lecture presents standard algorithms and new developments of feedforward Artificial Neural Networks, their functioning, application domains, and connections to more conventional mathematical methods. Examples show the potential and limitations of the methods. Supervised as well as unsupervised learning methods are introduced. In detail: 1) Introduction, some biological facts, 2) Mathematical foundations: probability theory and partial derivatives, 3) One layer networks and linear discriminants, 4) Multilayer networks and error backpropagation, 5) Universality of two-layer networks, 6) Radial basis of function networks, 7) Neuronal maps: Kohonen network, Growing Neural Gas, 8) Optimization methods.</p>
4	<p>Teaching Methods / Lehrformen</p> <p>Lecture plus exercises.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Solving the exercises and presenting one of the solutions</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>The Module will also be offered in the M.Sc. Angewandte Neuroinformatik</p>
10	<p>Person Responsible/Modulverantwortlicher</p>

Modulhandbuch

M. Sc. Cognitive Science

	PD Dr. Rolf P. Würtz
11	<p>Further Information</p> <p>This course introduces one of four basic methods. Given our acceptance conditions for M.A. students, we expect the students to have studied one basic method during the B.A.. Thus, they have to participate in the remaining three courses presenting basic methods to complete this module.</p>

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Topic Selection I					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
C1-TSI	360-420	12-14	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	3 Lectures and/or Seminars		105-120	255-300	20 max.
2	Competences / Kompetenzen				
	<input type="checkbox"/> Course Competences / Fachkompetenzen: The students learn how to study four topics (social cognition and meta-science, memory and learning, perception and action, and language, logic and categories) from different methodological perspectives (philosophy, psychology, computational modeling, and neuroscience)				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Learning in groups (Lecture) Participating in group discussions and giving a presentation for an audience of MA				

Modulhandbuch

M. Sc. Cognitive Science

	<p>students (Seminar)</p> <p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>Each of the courses in this module introduces one or two methodological approaches to the topic in great detail. Students select three courses out of eight. In the end of the first year they should have chosen the courses in the module Topic Selection I and Topic Selection II in such a way that they are familiar with all the methodological approaches. Each course in the module Topic Selection I provides the student with basic knowledge of the topic of interest and makes them familiar with at least one methodological approach.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>Students study scientific texts and research papers in an independent manner. They learn how to give an oral presentation and/or write extended summaries or essays.</p>
<p>3</p>	<p>Content / Inhalte</p> <p>In this module students are made familiar with different methodological approaches to the following topics: (i) Social Cognition and Meta-Science, (ii) Memory and Learning, (iii) Perception and Action, and (iv) Language, Logic and Categories.</p> <p>(i) Social Cognition and Meta-Science:</p> <p>This course studies the cognitive processes that are constitutive for social interaction, i.e. the understanding of members of the same species (with a focus on humans but including animal studies). It focuses not only on cognitive abilities such as attention, imitation, social perception, emotion and memory, but also on theory of mind-abilities and associated disorders such as autism. Students are encouraged to combine different interdisciplinary approaches to social cognition, e.g. philosophical theories of understanding others (theory-theory/simulation theory/interaction theory etc.), the discussion of psychological paradigms and computational models of social cognition as well as the research of underlying neural correlates like mirror neuron mechanism, theory of mind-mechanism etc. In this module there are also offered courses that reflect on the methodological status of cognitive science and its role for the society (e.g. neuroethics).</p> <p>(ii) Memory and Learning</p> <p>Learning and memory describes the cognitive processes which are involved in the acquisition, consolidation and retrieval of information. These processes can range from simple stimulus response associations to complex, consciously aware episodic autobiographical memories. Depending on the specific type of learning and memory addressed the cognitive processes and the underlying neuronal substrates differ. The</p>

Modulhandbuch

M. Sc. Cognitive Science

	<p>module will cover different forms of learning (e.g. classical conditioning instrumental learning, procedural learning, and declarative/episodic/explicit memories) as well as different ways to study these processes. Philosophical approaches, experimental studies with healthy participants, patient studies, studies in experimental animals, and computational approaches will be the focus in the different seminars and lectures on this topic.</p> <p>(iii) Perception and Action</p> <p>This course focuses on asymmetries of cognition and behavior. One of the most fundamental, yet least understood, principles of our brain is its asymmetrical nature. This left-right difference defines the way we perceive a multitude of stimuli, the way we process language, emotion, space, and objects and the principles with we translate our thoughts into actions. One of the fundamental aims of this course is to combine the wet world of neurobiology with the dry world of experimental psychology. Thus, lateralized differences of perception, cognition, and action will be seen as emerging properties of asymmetrical cellular events that were studied in animal models.</p> <p>(iv) Language, Logic & Categories</p> <p>This course presents interdisciplinary investigations of language logic and categories. This includes philosophy of language, formal semantics as well as the empirical studies of language. The research involves formal analysis of natural language (generalized quantifiers, dynamic logic, discourse representation theory, etc.), studies of compositionality as well as basic issues regarding the pragmatics, syntax, and phonology of language. Furthermore, the module deals with the neuropsychological foundation of linguistic processing and the use of categories in humans and animals. Further issues are the nature of meaning, context-dependence, and discourse effects, implicatures, modularity vs. embodiment. The subtopic logic discusses inductive and abductive reasoning. Reasoning in natural language (generalized quantifiers, dynamic logic, discourse representation theory, etc.) will also be an issue.</p>
<p>4</p>	<p>Teaching Methods / Lehrformen</p> <p>The courses are organized as seminars or lectures. The lectures focus on the presentation and discussion of the central topics. The seminars consist of student presentations and discussions of the original texts in relation to the lecture.</p>
<p>5</p>	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
<p>6</p>	<p>Assessment / Prüfungsformen</p>

Modulhandbuch

M. Sc. Cognitive Science

	Written exam, oral presentation (20 min.), or a short presentation (10 min.) and writing an essay
7	Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten Frequent attendance, active participation, successful completion of the assessments
8	Role of the Module / Verwendung des Moduls (in anderen Studiengängen) Some courses of this module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience
10	Person Responsible/Modulverantwortlicher Prof. Dr. Albert Newen and Prof. Dr. Onur Güntürkün
11	Further Information

Modulhandbuch

M. Sc. Cognitive Science

2nd Semester

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Advanced methods					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
B2-AM	240-360	8-12	Summersem.	Each Summersemester (and some in the winter semester)	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lectures and/or Seminars with exercises		60-120	180-240	20 max.
2	Competences / Kompetenzen				
	<input type="checkbox"/> Course Competences / Fachkompetenzen: The students acquire an advanced understanding of the central perspectives encountered in the first semester and become increasingly familiar with the different techniques they employ. They will study two different methodology courses very intensively.				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Advanced learning in groups (Lecture) Advanced group discussions about the strengths and weaknesses of particular approaches and/or techniques Giving a professional presentation for an audience of MA students (Seminar)				
	<input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: Each of the courses in this module allows students to become more proficient with one				

Modulhandbuch

M. Sc. Cognitive Science

	<p>of the central methodological perspectives.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>Students learn how to assess scientific texts and search for relevant research papers in an independent manner. They learn how to present and argue for their views, and how to deal with criticism in a constructive way.</p>
<p>3</p>	<p>Content / Inhalte</p> <p>This module provides the students with the opportunity to further specialize in one of the methodologies encountered in the first semester. Students choose 2 out of the following courses (which will be adapted to the state of the art in research methods):</p> <p>(i) Theory formation and conceptual analysis</p> <p>Content:</p> <p>Students are introduced in the systematic development of general theories for one research area. The construction of these theories is often deeply inspired by philosophical theory formation. In this course students are intensely studying review papers of a research area that present recent theories as well as overviews of the most important empirical findings. Then it will be systematically worked out which phenomena are still in need of an adequate assessment, with an eye on the advantages and disadvantages of recent theorizing in this area. Students have to think about the constraints for a new theory, and are encouraged to develop and play with a new explanations of the phenomena under discussion.</p> <p>(ii) Advanced Analysis of Language and Logic</p> <p>Content/Inhalt:</p> <p>On important method in cognitive science is formal semantics and advanced logic. On the basis of the already acquired basic logic (see basic methods), students learn central tools of advanced logic (predicate calculus, methods from model theory and structural proof theory, modal logic, possible world semantics etc.). These tools will be studied either by analyzing the formal semantics and pragmatics of natural and formal languages (e.g. generalized quantifiers, dynamic logic, discourse representation theory, etc) or by studying relevant systems of philosophical and non-classical logic (epistemic logic, deontic logic, paraconsistent logic etc.).</p> <p>(iii) Behavior Studies</p> <p>The students acquire hands-on-science knowledge in different areas of cognitive neuroscience. For this purpose we will introduce various exercises with area-specific</p>

Modulhandbuch

M. Sc. Cognitive Science

experiments and specific methods of brain research: e.g. behavioral methods, lesion studies, patient studies, EEG, single cell recording, molecular imaging, functional imaging (fMRI), and neuronal network modeling. After completion of the course the students are familiar with these methods and able to apply them independently. Furthermore by means of discussing current publications the students generalize and further deepen their knowledge on these methods.

(iv) Computational Modeling

The students learn to deal intensely with computational modeling by applying modern programming methods to model neural processes. One area of application of advanced programming is "Vision and Memory". Furthermore, students can learn more deeply about neural dynamics (spiking mechanism etc.) as they program their own neuron model.

(v) Molecular Imaging

Students will be given hands on-training on designing experimental protocols for molecular imaging. They will learn how to section brains, and detect memory-induced activity on those sections by immunocytochemistry or in-situ hybridization, using immediate-early genes products (mRNA or protein) as reporters of cell activation. They also will learn how to acquire pictures using bright-field or fluorescent microscopy, how to quantify the signal detected and how to analyse the data.

(vi) EEG-training

In this seminar, most of the well-known event related components in EEG will be presented and discussed. Furthermore, the experimental setup to elicit these components will be presented. Special techniques of the analysis of these components will also be discussed. Beside these theoretical background, a practical part is included to gain insight in the acquisition and analysis of EEG data. The course is organized as a seminar. Beside the talks given by the students, practical application of the methods will be explored using a standard paradigm. Additionally the acquired data will be analyzed during the seminar.

(vii) fMRI-training

In this seminar and also in the practical course, students will learn to develop a scientific question that can be investigated using functional magnetic resonance imaging. After setting up a real fMRI experiment they will acquire the data and analyse these data. They will learn the basic technical knowledge of this method and also the usage of a standard software package (SPM) that is used for the analysis of fMRI data.: seminar and practical planning of an fMRI experiment. Additionally acquisition of data, analysis of these data and presentation of the self-acquired and analysed data in

Modulhandbuch

M. Sc. Cognitive Science

	a short scientific talk
4	Teaching Methods / Lehrformen The courses are organized as seminars or lectures. The lectures focus on the presentation and discussion of advanced methodologies in philosophy, psychology, computational modeling, or neuroscience. The seminars consist of student presentations on specific problems related to the lecture, which serve as a basis for further discussion.
5	Attendance requirements / Teilnahmevoraussetzungen None
6	Assessment / Prüfungsformen Written exam, oral presentation (20 min.), or a short presentation (10 min.) and writing an essay
7	Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten Frequent attendance, active participation, successful completion of the assessments
8	Role of the Module / Verwendung des Moduls (in anderen Studiengängen) Some courses of this module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience or in the M.A. philosophy.
10	Person Responsible/Modulverantwortlicher Prof. Dr. Magdalena Sauvage, Prof. Dr. Boris Suchan and Prof. Dr. Heinrich Wansing
11	Further Information

Study Program / Studiengang: M.Sc. Cognitive Science

Field/Bereich: Cognitive Science

Modulhandbuch

M. Sc. Cognitive Science

Module: Topic Selection II					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
C2-TSII	360-570	12-19	Summersem.	Each Summersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		120- 180	240-390	20 max.
2	<p>Competences / Kompetenzen</p> <p><input type="checkbox"/> Course Competences / Fachkompetenzen:</p> <p>The students acquire advanced knowledge of the four topics (social cognition & meta-science, memory and learning, perception and action, and language, logic and categories) and how they are studied from different methodological perspectives (philosophy, psychology, computational modeling, en neuroscience)</p> <p><input type="checkbox"/> Social Competences / Sozialkompetenzen:</p> <p>Advanced learning in groups (Lecture)</p> <p>Advanced group discussions about the specific problems one encounters when studying the topic of interest.</p> <p>Giving a professional presentation for an audience of MA students (Seminar)</p> <p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>Each of the courses in this module provides students with advanced knowledge of the topic of interest. Students select five courses out of eight. In the end of the first year they should have chosen the courses in the module Topic Selection I and Topic Selection II in such a way that they are familiar with all the methodological approaches.</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>Students learn to search for relevant literature in an independent manner. They learn how to synthesize current debates and critically evaluate current scientific theories.</p>				
3	<p>Content / Inhalte</p> <p>In this module students have the opportunity to develop their level of expertise with</p>				

Modulhandbuch

M. Sc. Cognitive Science

<p>respect to the following topics: (i) Social Cognition & Meta-Science, (ii) Memory and Learning, (iii) Perception and Action, and (iv) Language, Logic and Categories.</p> <p>(i) Social Cognition and Meta-Science</p> <p>This course studies the cognitive processes that are constitutive for social interaction, i.e. the understanding of members of the same species (with a focus on humans but including animal studies). It focuses not only on cognitive abilities such as attention, imitation, social perception, emotion and memory, but also on theory of mind-abilities and associated disorders such as autism. Students are encouraged to combine different interdisciplinary approaches to social cognition, e.g. philosophical theories of understanding others (theory-theory/simulation theory/interaction theory etc.), the discussion of psychological paradigms and computational models of social cognition as well as the research of underlying neural correlates like mirror neuron mechanism, theory of mind-mechanism etc. In this module there are also offered courses that reflect on the methodological status of cognitive science and its role for the society (e.g. neuroethics).</p> <p>(ii) Memory and Learning</p> <p>Learning and memory describes the cognitive processes which are involved in the acquisition, consolidation and retrieval of information. These processes can range from simple stimulus response associations to complex, consciously aware episodic autobiographical memories. Depending on the specific type of learning and memory addressed the cognitive processes and the underlying neuronal substrates differ. The module will cover different forms of learning (e.g. classical conditioning instrumental learning, procedural learning, and declarative/episodic/explicit memories) as well as different ways to study these processes. Philosophical approaches, experimental studies with healthy participants, patient studies, studies in experimental animals, and computational approaches will be the focus in the different seminars and lectures on this topic.</p> <p>(iii) Perception and Action</p> <p>This course focuses on asymmetries of cognition and behavior. One of the most fundamental, yet least understood, principles of our brain is its asymmetrical nature. This left-right difference defines the way we perceive a multitude of stimuli, the way we process language, emotion, space, and objects and the principles with we translate our thoughts into actions. One of the fundamental aims of this course is to combine the wet world of neurobiology with the dry world of experimental psychology. Thus, lateralized differences of perception, cognition, and action will be seen as emerging properties of asymmetrical cellular events that were studied in animal models.</p>
--

Modulhandbuch

M. Sc. Cognitive Science

	<p>(iv) Language, Logic & Categories</p> <p>This course presents interdisciplinary investigations of language logic and categories. This includes philosophy of language, formal semantics as well as empirical studies of language. The research involves formal analysis of natural language (generalized quantifiers, dynamic logic, discourse representation theory, etc.), studies of compositionality as well as basic issues regarding the pragmatics, syntax, and phonology of language. Furthermore, the module deals with the neuropsychological foundation of linguistic processing and the use of categories in humans and animals. Further issues are the nature of meaning, context-dependence, and discourse effects, implicatures, modularity vs. embodiment. The logic component includes the discussion of inductive and abductive reasoning. Reasoning in natural language will also be an issue.</p>
4	<p>Teaching Methods / Lehrformen</p> <p>The courses are organized as seminars or lectures. The lectures focus on the presentation and discussion of specific problems related to the topic of interest. The seminars consist of student presentations, which serve as a basis for further discussion.</p> <p>Students can be rewarded with credits for a proven participation in a workshop or a lecture series (up to max. 2 CP).</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Written exam, oral presentation (20 min.), or a short presentation (10 min.) and writing an essay</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>Some courses of this module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience and in the M.A. "Philosophy"</p>
10	<p>Person Responsible/Modulverantwortlicher</p>

Modulhandbuch

M. Sc. Cognitive Science

	Prof. Dr. Oliver Wolf, Prof. Dr. Onur Güntürkün, Prof. Dr. Markus Werning
11	Further Information

Modulhandbuch

M. Sc. Cognitive Science

3rd Semester

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Further Specialization					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
F3-FS	270-360	9-12	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		90-120	180-240	20 max.
2	<p>Competences / Kompetenzen</p> <p><input type="checkbox"/> Course Competences / Fachkompetenzen:</p> <p>Students acquire advanced knowledge of and become familiar with the state of the art in a specific area of research that they can choose. This specialization involves one dominant method (see I3-IR).</p> <p><input type="checkbox"/> Social Competences / Sozialkompetenzen:</p> <p>Advanced learning in groups (Lecture)</p> <p>Advanced group discussions about the specific problems one encounters when studying the topic of interest.</p> <p>Giving a professional presentation for an audience of MA students (Seminar)</p> <p><input type="checkbox"/> Methodological Competences / Methodische Kompetenzen:</p> <p>Students learn how to critically evaluate empirical and theoretical papers on the topic of interest and write referee reports (reviews).</p> <p><input type="checkbox"/> Individual Competences / Selbstkompetenzen:</p> <p>Students learn to search for relevant literature in an independent manner. They learn</p>				

Modulhandbuch

M. Sc. Cognitive Science

	how to synthesize current debates and critically evaluate current scientific theories.
3	<p>Content / Inhalte</p> <p>This module allows the student to participate in additional seminars for further specialization in the direction of the main topic and method of their MA thesis. Students choose two or three courses in the main academic discipline they aim to write the master thesis (i.e. either philosophy, behavioral psychology, computational modeling or neuroscience).</p>
4	<p>Teaching Methods / Lehrformen</p> <p>The courses are organized as seminars or lectures. The lectures focus on the presentation and discussion of specific problems related to the topic of interest. The seminars consist of student presentations, which serve as a basis for further discussion.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Written exam, oral presentation (20 min.), or a short presentation (10 min.) and writing an essay</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>Some courses of this module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience and the M.A. Philosophy.</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Albert Newen</p>
11	<p>Further Information</p>

Modulhandbuch

M. Sc. Cognitive Science

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Interdisciplinary Research Module					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
I3-IR	240-330	8-11	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen 2 Courses: Lecture and/or Seminar and/or Workshop Participation		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
			60-75	180-255	20 max.
2	Competences / Kompetenzen				
	<input type="checkbox"/> Course Competences / Fachkompetenzen: Students develop skills in interdisciplinary research and problem solving and become acquainted with listening to high-level research talks of invited researchers during lecture series or workshops				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Advanced group discussions about interdisciplinary problems with people with different scientific backgrounds Learning to collaborate with people with different scientific backgrounds				
	<input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: Students gain proficiency in interdisciplinary integration and develop a broader perspective on the problem under consideration				
	<input type="checkbox"/> Individual Competences / Selbstkompetenzen: Students learn to situate their research among different academic disciplines, and address complex topics from multiple perspectives.				
3	Content / Inhalte				
	The main aim of this module is to provide the student with at least one additional				

Modulhandbuch

M. Sc. Cognitive Science

	<p>method and techniques to deal with complex research problems during two required courses. Students choose at least one additional methodological perspective that complements the specialization chosen in Module F3-FS (and therefore outside their primary area of specialization).</p> <p>. Therefore these courses will be in one area which is not the area of specialization, i.e. philosophy, computational modelling, behavioral psychology, neurosciences;</p> <p>Students can be rewarded with credits for a proven participation in a workshop or a lecture series (up to max. 2 CP).</p>
4	<p>Teaching Methods / Lehrformen</p> <p>The courses are organized as seminars or lectures. The lectures focus on the presentation and discussion of specific problems related to the topic of interest. The seminars consist of student presentations, which serve as a basis for further discussion.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>For the two required courses: Written exam, oral presentation (20 min.), or a short presentation (10 min.) and writing an essay.</p> <p>For additional credits: proven participation in listening to a series of lectures in cognitive science or participation in a workshop on cognitive science (up to max. 2 CP; no grades for this part)</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>Frequent attendance, active participation, successful completion of the assessments</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p> <p>Some psychological courses of the module will also be offered in the M.Sc. Psychology and Cognitive Neuroscience and some philosophical courses in the module will be also offerend in the M.A. philosophy.</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Albert Newen</p>

Modulhandbuch

M. Sc. Cognitive Science

11	Further Information
----	---------------------

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Proposal Master Thesis					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
P3-PM	270	9	Wintersemester	Each Wintersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		0	270	2
2	Competences / Kompetenzen				
	<input type="checkbox"/> Course Competences / Fachkompetenzen: Students demonstrate the ability to write a research proposal that meets the criteria formulated below.				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Working under supervision				
	<input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: Students learn how to write and communicate a research proposal in written English				
	<input type="checkbox"/> Individual Competences / Selbstkompetenzen: Students write an individual research proposal that allows them to undertake				

Modulhandbuch

M. Sc. Cognitive Science

	independent research
3	<p>Content / Inhalte</p> <p>Students write a research proposal on a topic in Cognitive Science on the basis of a thorough literature study. The proposal contains a research plan in which (1) the theoretical relevance of the topic is substantiated and the research questions and hypotheses are clearly formulated, (2) the research methods and procedures are described, and (3) a time schedule for conducting the master thesis in the fourth semester is proposed. In case the third semester will be a visiting semester at an external university (optional) this module still has to be completed. In exceptional cases when the master thesis (4th semester) is conducted outside the Ruhr-University Bochum, the student provides additional information on (a) the type of organization or institute, (b) the supervision provided at the external location, and (c) the facilities available to conduct the research. Such a plan needs written approval by the local supervisor in Bochum.</p>
4	<p>Teaching Methods / Lehrformen</p> <p>Regular individual meetings. The process of writing a proposal for the MA thesis is mentored by one (or two) senior staff members with ample international expertise on the topic of choice.</p>
5	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
6	<p>Assessment / Prüfungsformen</p> <p>Writing a MA thesis proposal.</p>
7	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>The supervisor of the thesis will evaluate the proposal, using the categories 'approved', 'clarification needed', or 'revision needed'. In the last case, the student revises the proposal until approval from the supervisor is obtained.</p>
8	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p>
10	<p>Person Responsible/Modulverantwortlicher</p> <p>Prof. Dr. Tobias Schlicht</p>

Modulhandbuch

M. Sc. Cognitive Science

11	Further Information
-----------	----------------------------

Modulhandbuch

M. Sc. Cognitive Science

4th Semester

Study Program / Studiengang: M.Sc. Cognitive Science					
Field/Bereich: Cognitive Science					
Module: Master Thesis Cognitive Science					
Number	Workload	Credits	Study Semester	Frequency / Häufigkeit des Angebots	Duration / Dauer
M4–MT	900	30	Summersem.	Each Summersemester	1 Semester
1	Course Type / Lehrveranstaltungen		Contact hours / Kontaktzeit	Self Study / Selbststudium	Geplante Gruppengröße
	Lecture and/or Seminar		0	900	20 max.
2	Competences / Kompetenzen				
	<input type="checkbox"/> Course Competences / Fachkompetenzen: Students demonstrate their ability to undertake independent theoretical and/or empirical research, under supervision.				
	<input type="checkbox"/> Social Competences / Sozialkompetenzen: Working under supervision; dependent on the thesis: working with experimental subjects				
	<input type="checkbox"/> Methodological Competences / Methodische Kompetenzen: The MA thesis is a demonstration of the student's ability to address a significant research question, to critically analyse theories and relevant literature, to conduct independent empirical investigation using established research methods and to present the findings in an academic form.				
	<input type="checkbox"/> Individual Competences / Selbstkompetenzen: Students are capable of either writing a high-level theoretical thesis or they are capable of conducting an experiment and demonstrate proficiency in designing a new experiment, planning, data collection, analysis and interpretation, and finally reporting the research results in the format of a MA thesis or journal article.				

Modulhandbuch

M. Sc. Cognitive Science

<p>3</p>	<p>Content / Inhalte</p> <p>The main purpose of the MA thesis is to demonstrate that the student is able to undertake independent research, under supervision. Since the MA Cognitive Science is a research degree, the thesis must have a substantial research component. Furthermore, it must be written in English and completed under the guidance of a supervisor. The thesis should also be of such quality and scope that excerpts of it warrant publication in the form of a peer-reviewed scientific journal paper (or constitutes a part of such a paper). This implies that the thesis must be an original contribution that is well-organized and expressed in clear English language. Completing a master thesis helps students interested in an academic career prepare for a PhD study or other research opportunities by enhancing their skills necessary for academic publication.</p>
<p>4</p>	<p>Teaching Methods / Lehrformen</p> <p>Regular supervision including e.g. presentation of provisional results in a colloquium. The process of writing the MA thesis is mentored by one or two senior staff members with ample international expertise on the topic of choice.</p>
<p>5</p>	<p>Attendance requirements / Teilnahmevoraussetzungen</p> <p>None</p>
<p>6</p>	<p>Assessment / Prüfungsformen</p> <p>Writing a MA-thesis and passing an oral exam (defence of the MA-thesis)</p>
<p>7</p>	<p>Assessment Prerequisites / Voraussetzungen für die Vergabe von Kreditpunkten</p> <p>The MA thesis has to fulfill the usual standards of a research-oriented master program. It will be reviewed and evaluated by the thesis supervisor and a second referee. The thesis has to be completed according to the rules of the “Prüfungsordnung”.</p> <p>The MA thesis in this research oriented master program is reviewed and evaluated according to generally acknowledged scientific criteria and expects a high level of originality. Furthermore, the usual criteria are depending on the kind of project, e.g. (a) clarity of presentation, (b) original theoretical contributions, (c) adequacy of the empirical study according to design and analyses, (d) novelty of the data, (e) quality of the discussion and interpretation of the results.</p>
<p>8</p>	<p>Role of the Module / Verwendung des Moduls (in anderen Studiengängen)</p>

Modulhandbuch

M. Sc. Cognitive Science

10	Person Responsible/Modulverantwortlicher Prof. Dr. Albert Newen and Prof. Dr. Onur Güntürkün
11	Further Information