

Special Regulation for Master Degree Courses in Faculty 06 Joint Attachment 2: Module descriptions „Mind, Brain and Behavior“ Version 1 of November 4, 2020	04.02.2021	7.36.06 Nr. 5	S. 1
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Please note that only the German version of the modules is official and legally binding. The English version is for informative purposes only.

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Overview of modules in M.Sc. Mind, Brain and Behavior

Modulnummer	Modulbezeichnung	Modulart
MBB-MA-KM-1	Practical Training	Core module (13 CP)
MBB-MA-KM-2	Research Practice	Core module (9 CP)
MBB-MA-THM-1	Visual Perception of Color and Materials	Theory module (6 CP)
MBB-MA-THM-2	Perception and Action	Theory module (6 CP)
MBB-MA-THM-3	Visual Cognition and Object Perception	Theory module (6 CP)
MBB-MA-THM-4	Current Topics in Cognition and Development	Theory module (6 CP)
MBB-MA-AM-1	Programming	Application module (8 CP)
MBB-MA-AM-2	Capturing and Emulating the World	Application module (8 CP)
MBB-MA-AM-3	Computational Modelling	Application module (8 CP)
MBB-MA-AM-4	Imaging and Recording Brain Activity	Application module (8 CP)
MBB-MA-AM-5	Measuring Human Behavior	Application module (8 CP)
MBB-MA-REF-1	Elective Module 1	Elective module (6 CP)
MBB-MA-REF-2	Elective Module 2	Elective module (6 CP)
MBB-MA-TM	Master Thesis Module	Thesis module (30 CP)

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MBB-MA-KM-1	Practical Training		13 CP
Core module	FB 06 / Psychologie / Studiendekanat		3. semester
	first offered in WS 2023/24		
Learning Outcomes: The students <ul style="list-style-type: none"> familiarize with professional activities in fields related to Behavioral Science and Cognitive Neuroscience gain experience and practical training in fields related to Behavioral Science and Cognitive Neuroscience combine their acquired skills with practical on-the-job training receive an orientation for their personal career planning 			
Content: Practical training in selected professional fields related to Mind, Brain, and Behavior			
Frequency and Duration: annually			
Module Coordinator: Studiendekanat			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	
Practical training	360	30	
Total:	390		
Prerequisites for Examination: None			
Module final examination: <ul style="list-style-type: none"> Term paper (5 pages) The module is not graded but evaluated with passed/failed 			
Language of instruction and examination: English			
Notes: Module information and literature: see semester notice / Dates: see course catalog.			

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MBB-MA-KM-2	Research Practice		9 CP
Core module	FB 06 / Psychologie / Studiendekanat		3. Semester
	first offered in WS 2023/24		
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> • gain practical experience in empirical data collection and scientific work in the context of ongoing research projects in the departments • gain knowledge and skills about the steps involved in experimental science • learn to apply a particular set of methodical procedures • learn to evaluate and document recorded data • learn to present, interpret and discuss scientific findings • are able to choose a topic for the Master thesis 			
<p>Content: Research projects in the field of</p> <ul style="list-style-type: none"> • Experimental psychology (Prof. für Allgemeine Psychologie, Kurt-Koffka-Professur für Experimentelle Psychologie) • Perception and action (Prof. für Allgemeine Psychologie und Wahrnehmung und Handlung) • Visual Neuroscience (Prof. für Allgemeine Psychologie und Visuelle Neurowissenschaften) • Developmental Psychology (Prof. für Entwicklungspsychologie) • other related topics (e.g., movement sciences, computer science) 			
Frequency and Duration: annually, 2 Semester, Seminar 1 WS or SS, Seminar 2 WS or SS			
Module Coordinator: Studiendekanat			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction	Contact hours	Preparation, exercises and follow-up work	Project
Seminar	30	60	0
Project	0	0	180
Total:	270		
Prerequisites for Examination: Participation in 1 research project of a department (conception, planning, implementation)			

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Module final examination:

- Term paper (5 pages) or presentation (20-40 minutes) about 1 research project at the teacher's discretion, will be determined at the beginning of the course
- The module is not graded but evaluated with passed/failed

Language of instruction and examination: English

Notes: Module information and literature: see semester notice / Dates: see course catalogue

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MBB-MA-THM-1	Visual Perception of Color and Materials		6 CP
Theory module	FB 06 / Psychologie / Abt. Allgemeine Psychologie		1. Semester
	first offered in WS 2022/23		
Learning Outcomes: The students <ul style="list-style-type: none"> • deepen their knowledge about human perception • gain fundamental knowledge about research questions and topics in color- and material perception • gain an overview of techniques used to measure and study color- and material perception • will be able to critically discuss past and current research on color- and material perception 			
Content: <ul style="list-style-type: none"> • fundamentals in color and material perception • various techniques (e.g. psychophysics, neuroimaging, modelling, machine learning) to study color and material perception • recent developments in the fields of color and material perception 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Prof. für Allgemeine Psychologie / Prof. für Allgemeine Psychologie und Visuelle Neurowissenschaften			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	
Seminar S1 – Color science: theory and practice	30	60	
Seminar S2 – Material perception	30	60	
Total:	180		
Prerequisites for Examination: <ul style="list-style-type: none"> • Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), group work (30-40 minutes), term paper (5 pages) 			

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<p>Module final examination:</p> <ul style="list-style-type: none"> • Written exam (90-120 minutes), oral exam (20-40 minutes), or term paper (10-16 pages)
<p>Language of instruction and examination: English</p>
<p>Notes: Module information and literature: see semester notice / Dates: see course catalogue. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.</p>

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MBB-MA-THM-2	Perception and Action	6 CP
Theory module	FB 06 / Psychologie / Abt. Allgemeine Psychologie und Abt. Entwicklungspsychologie	1. Semester
	first offered in WS 2022/23	
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> • gain knowledge on the theoretical basis of the interplay of perception and action • understand space perception for action • acquire knowledge about typical experimental paradigms and methods to study the interplay of perception and action • study the characteristics of different goal-directed movements and their application in psychological research • gain knowledge about theories and current debates on the development of perception and action • acquire knowledge about experimental designs and methods of infant research • gain knowledge about theories on action planning • study the role of motor development in children' object perception • acquire knowledge about theories on perception-action coupling in children with motor impairments 		
<p>Content:</p> <ul style="list-style-type: none"> • models of perception and action • prediction in perception and action • spatial reference frames • eye movements • reaching and grasping in infants and adults • acting in real and virtual environments • predictive abilities in early childhood • visual-spatial abilities during infancy • changes in action planning during childhood • motor development 		
<p>Frequency and Duration: annually, S1 WS or SS, S2 WS or SS</p>		
<p>Module Coordinator: Prof. für Allgemeine Psychologie mdS Wahrnehmung und Handlung / Prof. für Entwicklungspsychologie</p>		
<p>Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior</p>		
<p>Prerequisites for Participation: None</p>		

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Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work
Seminar S1 – Space perception and action	30	60
Seminar S2 – Development of perception and action	30	60
Total:	180	
Prerequisites for Examination:		
<ul style="list-style-type: none"> Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages) 		
Module final examination:		
<ul style="list-style-type: none"> Written exam (90-120 minutes), oral exam (20-40 minutes), or term paper (10-16 pages) 		
Language of instruction and examination: English		
<p>Notes: Module information and literature: see semester notice / Dates: see course catalogue. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.</p>		

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MBB-MA-THM-3	Visual Cognition and Object Perception	6 CP
Theory module	FB 06 / Psychologie / Abt. Allgemeine Psychologie	1. Semester
	first offered in WS 2022/23	
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> • gain knowledge about the interplay between perceptual processes and cognition, with a focus on objects and their properties • learn how to dissect behavioral tasks to identify distinct computational challenges and their associated processes in the human perceptual and cognitive systems • understand the historical context of current controversies in object perception and cognition • gain knowledge about the primary methods used to probe attention, working memory and perceptual process associated with objects • understand how computational models can formalize psychological theories of object-related perceptual and cognitive processes 		
<p>Content:</p> <ul style="list-style-type: none"> • pre-attentive perceptual processes involved in identifying and tracking objects and their properties • visual search, attentional selection and saliency • processing capacity limitations and their impact on human task performance • visual working memory: theory and experiments • objects as a psychological construct: historical and contemporary perspectives in infants and adults • theories and computational models of object recognition • grouping, occlusion and object permanence • implicit and explicit physical reasoning • numerosity, number sense and statistical representations 		
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS		
Module Coordinator: Kurt-Koffka-Prof. für Experimentelle Psychologie		
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior		
Prerequisites for Participation: None		
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work

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Seminar S1 – Visual object perception	30	60
Seminar S2 – Visual cognition	30	60
Total:	180	
Prerequisites for Examination: <ul style="list-style-type: none"> Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages) 		
Module final examination: <ul style="list-style-type: none"> Written exam (90-120 minutes), oral exam (20-40 minutes), or term paper (10-16 pages) 		
Language of instruction and examination: English		
Notes: Module information and literature: see semester notice / Dates: see course catalog. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.		

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MBB-MA-THM-4	Current Topics in Cognition and Development		6 CP
Theory module	FB 06 / Psychologie / Abt. Allgemeine Psychologie und Abt. Entwicklungspsychologie		1.-2. Semester
	first offered in WS 2022/23		
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> gain insight into current research topics in experimental and developmental psychology (e.g., color and material perception, perception and action, development of face processing, motor cognition, music perception) deepen their knowledge about theories and current debates in perception, cognition and the development of perception, cognition and action deepen their knowledge about experimental paradigms and methods to study perception, cognition and the development of perception, cognition and action 			
<p>Content:</p> <ul style="list-style-type: none"> recent developments in the fields of perception, cognition and developmental psychology different research topics from the fields of perception, cognition and developmental psychology with a focus on new findings and current debates (e.g., color and material perception, perception and action, development of face processing, motor cognition, music perception) 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Prof. für Allgemeine Psychologie / Prof. für Entwicklungspsychologie			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	
Colloquium 1 – Current topics in perception and cognition	30	60	
Colloquium 2 – Development of perception, cognition, and action	30	60	
Total:	180		
Prerequisites for Examination:			

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<ul style="list-style-type: none"> • Regular attendance
Module Examination: <ul style="list-style-type: none"> • No final examination, the module is not graded
Language of instruction and examination: English
Notes: Module information and literature: see semester notice / Dates: see course catalogue. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.

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MBB-MA-AM-1	Programming		8 CP
Application module	FB 06 / Psychologie / Abt. Allgemeine Psychologie		1.-2. Semester
	first offered in WS 2022/23		
Learning Outcomes: The students <ul style="list-style-type: none"> • learn basic concepts of programming with Matlab • learn how to work with arrays and matrices • learn how to work with external data files and how to plot data • gain experience in how to use basics of logical operations, control-flow and debugging • learn to program psychological experiments 			
Content: <ul style="list-style-type: none"> • basic concepts of programming • introduction to Matlab environment • introduction to basic functions in Matlab • transforming experimental designs into programming code • hands-on practice of the theoretical concepts (see above) • introduction to Matlab-Psychtoolbox 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Prof. für Allgemeine Psychologie mdS Wahrnehmung und Handlung			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	Project
Seminar S1 – Matlab I	30	60	30
Seminar S2 – Matlab II	30	60	30
Total:	240		
Prerequisites for Examination: <ul style="list-style-type: none"> • Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages) 			

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<p>Module final examination:</p> <ul style="list-style-type: none"> • Written exam (90-120 minutes), term paper (10-16 pages), or individual/group project work (60 hours; e.g., solving programming tasks)
<p>Language of instruction and examination: English</p>
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MBB-MA-AM-2	Capturing and Emulating the World		8 CP
Application module	FB 06 / Psychologie / Abt. Allgemeine Psychologie		2.-3. Semester
	first offered in WS 2022/23		
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> • learn about recent advances in computer graphics (CG) and virtual reality (VR) research • understand how problems can be expressed in programming code • study how motion capture and VR are used as a tool in psychological research • acquire a working knowledge of CG software for stimulus generation • understand the core concepts of 3D modelling, lighting design, material editing, and rendering • learn to use stimuli and program a first VR experiment 			
<p>Content:</p> <ul style="list-style-type: none"> • fundamental knowledge about CG and VR research in Psychology • basic programming • 3D modelling and stimulus generation • scene conceptualization in real and virtual worlds • real and virtual photography, videography and content editing workflows • design and creation of a first VR experiment 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Kurt-Koffka-Prof. für Experimentelle Psychologie / Prof. für Allgemeine Psychologie mdS Wahrnehmung und Handlung			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	Project
Seminar S1 – Computer graphics, CG	30	60	30
Seminar S2 – Virtual reality, VR	30	60	30
Total:	240		

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<p>Prerequisites for Examination:</p> <ul style="list-style-type: none"> • Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages)
<p>Module final examination:</p> <ul style="list-style-type: none"> • Written exam (90-120 minutes), term paper (10-16 pages), or individual/group project work (60 hours; e.g., designing a VR experiment).
<p>Language of instruction and examination: English</p>
<p>Notes: Module information and literature: see semester notice / Dates: see course catalogue. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.</p>

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MBB-MA-AM-3	Computational Modelling		8 CP
Application module	FB 06 / Psychologie / Abt. Allgemeine Psychologie		2.-3. Semester
	first offered in WS 2023/24		
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> gain fundamental knowledge about how computational modelling provides insights into mind, brain and behavior gain practical experience in developing and testing computational models of behavioral data learn a variety of modelling approaches and their relative strengths and weakness learn to program computational models in software frameworks used by researchers 			
<p>Content:</p> <ul style="list-style-type: none"> studies exemplifying different modelling approaches in the literature application of computational modelling methods to real data supervised and unsupervised machine learning methods Bayesian approaches deep neural networks: training and testing model and data visualization methods 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Kurt-Koffka-Prof. für Experimentelle Psychologie			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: For participation, students have to have completed AM-1 Programming or provide evidence of experience with Matlab programming (e.g., module(s) with at least 6 CP).			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	Project
Seminar S1 – Introduction to computational modelling	30	60	30
Seminar S2 – Deep learning	30	60	30
Total:	240		
Prerequisites for Examination:			

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<ul style="list-style-type: none"> Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages)
<p>Module final examination:</p> <ul style="list-style-type: none"> Written exam (90-120 minutes), term paper (10-16 pages), or individual/group project work (60 hours; e.g., training and testing a mathematical model).
<p>Language of instruction and examination: English</p>
<p>Notes: Module information and literature: see semester notice / Dates: see course catalogue. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.</p>

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MBB-MA-AM-4	Imaging and Recording Brain Activity		8 CP
Application module	FB 06 / Psychologie / Abt. Allgemeine Psychologie		2.-3. Semester
	first offered in WS 2022/23		
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> • know advantages and disadvantages of different neuroimaging methods • acquire knowledge about the theoretical basis of electrophysiological recordings (EEG) in humans • acquire knowledge about the theoretical basis of (functional) magnetic resonance imaging (fMRI) • learn how to design an fMRI experiment • learn how to record brain activity in the EEG lab • learn how to conduct brain scans using an MR scanner • acquire knowledge about different types of artefacts • learn how to analyze and interpret EEG and fMRI data 			
<p>Content:</p> <ul style="list-style-type: none"> • foundations of electroencephalography and of fMRI • event-related potentials in perception, action and cognition • hands-on EEG recording & fMRI data collection • data pre-processing (e.g. artefact reduction, data cleaning, data filtering) • statistical data analyses (e.g. ERP amplitude and latency, GLM, ROI analysis, MVPA) • plotting data and interpreting spatial maps 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Prof. für Allgemeine Psychologie mdS Wahrnehmung und Handlung / Prof. für Allgemeine Psychologie und Visuelle Neurowissenschaften			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: None			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	Project
Seminar S1 – Electroencephalography, EEG	30	60	30
Seminar S2 – Functional magnetic resonance imaging, fMRI	30	60	30

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Total:	240
Prerequisites for Examination:	
<ul style="list-style-type: none"> Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages) 	
Module final examination:	
<ul style="list-style-type: none"> Written exam (90-120 minutes), term paper (10-16 pages), or individual/group project work (60 hours; e.g., collecting and analyzing imaging data) 	
Language of instruction and examination: English	
<p>Notes: Module information and literature: see semester notice / Dates: see course catalog. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.</p>	

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MBB-MA-AM-5	Measuring Human Behavior		8 CP
Application module	FB 06 / Psychologie / Abt. Allgemeine Psychologie		2.-3. Semester
	first offered in WS 2023/24		
<p>Learning Outcomes: The students</p> <ul style="list-style-type: none"> familiarize with different eye and body movement tracking techniques learn how to use tracking equipment and record eye and body movements use relevant programs to analyze and visualize eye and body movement data and interpret the results understand the value of eye and body movement data for human performance, perceptual functions, pathological situations, as well as associated practical implications 			
<p>Content:</p> <ul style="list-style-type: none"> basic concepts of movement tracking introduction to basic principles of kinematics implications of eye and body movement tracking and analysis for human performance, perception and pathology (e.g., training, rehabilitation, video games) introduction to eye and body movement tracking systems (e.g., Optotrak) hands-on practice of the theoretical concepts (see above) design and implementation of eye and body movement tracking experiments (e.g., reaching/grasping, standing, walking...) analysis and visualization of collected data by using relevant analysis programs 			
Frequency and Duration: annually, S1 WS or SS, S2 WS or SS			
Module Coordinator: Prof. für Allgemeine Psychologie mdS Wahrnehmung und Handlung / Prof. für Allgemeine Psychologie			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: For participation, students have to have completed AM-1 Programming or provide evidence of experience with Matlab programming (e.g., module(s) with at least 6 CP).			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	Project
Seminar S1 – Body movement analysis	30	60	30
Seminar S2 – Eye movements	30	60	30

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Please note that only the German version of the modules is official and legally binding. The English version is for informative purposes only.

Total:	240
Prerequisites for Examination: <ul style="list-style-type: none"> Regular attendance and a combination of a maximum of 2 of the following examination types, to be determined by the teacher at the beginning of each seminar: presentation (20-40 minutes), term paper (5 pages) 	
Module final examination: <ul style="list-style-type: none"> Written exam (90-120 minutes), term paper (10-16 pages), or individual/group project work (60 hours; e.g., collecting and analyzing behavioral data). 	
Language of instruction and examination: English	
Notes: Module information and literature: see semester notice / Dates: see course catalogue. Capacity of this module is 30 students. If demands exceed this capacity, the decision will be made by drawing lots.	

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MBB-MA-TM	Master Thesis Module		30 CP
Thesis Module	FB 06 / Psychologie / Alle Abteilungen		4. Semester
	first offered in WS 2023/24		
Learning Outcomes: The students <ul style="list-style-type: none"> gain profound knowledge about empirical data collection and scientific work learn scientific argumentation learn to reflect the contents of the Master program learn to conduct, analyze and write down a research project 			
Content: <ul style="list-style-type: none"> Work independently on a research project Collect and analyze empirical data within a time of 150 days Complete a written thesis on the research project 			
Frequency and Duration: annually			
Module Coordinator: Alle departments			
Applies to the Study Programs: M.Sc. Mind, Brain, and Behavior			
Prerequisites for Participation: Registration to 1 core module, 4 theory modules, and 3 application modules			
Forms of Instruction:	Contact hours	Preparation, exercises and follow-up work	
Master thesis	100	800	
Total:	900		
Prerequisites for Examination: Participation in 2 research projects of a department			
Module final examination: <ul style="list-style-type: none"> Complete and submit the master thesis in due time (50-80 pages) 			
Language of instruction and examination: English			
Notes: Module information and literature: see semester notice / Dates: see course catalogue			