Handbook of modules

for the

Research Master programme

Neurocognitive Psychology

Date: July, 2023

Introduction:

The Handbook of modules lists all modules of the MSc programme *Neurocognitive Psychology*.

The research-oriented study programme lasts two years or four semesters during which a total of 120 CP must be achieved. It is composed of four parts. The general part contains five mandatory modules comprising 45 CP. The specialized part contains 10 modules from which students are free to choose at least three with a total of 24 CP. Two additional modules with a total of 12 CP ensure a recognition of a study period abroad. The programme further includes 12 CP for an external internship lasting 360 hours and 30 CP for completing the Master's thesis with the accompanying Master's colloquium. Another 9 CP must be acquired via a practical research project. The research components can be carried out in one of the Psychology labs at the University of Oldenburg or an external research group. The programme is designed in a modular fashion. The study structure offers increased flexibility to the students in the second half of their studies.

Please be aware that we strongly advise to attend at least one of the five modules psy170: Neurophysiology, psy270: fMRI Data Analysis, psy220: Human Computer Interaction, psy280: Transcranial Brain Stimulation, and psy290: Ambulatory Assessment in Psychology! Knowledge of either EEG, fMRI, TBS, or MEG data analysis, or knowledge of HCI or ambulatory assessment methods is essential for most practical projects and Master's theses offered in the Department of Psychology.

Work with patients or experimental data acquisition with participants generally require a very good command of German! Non-mandatory classes from clinicians are (partly) given in German. You can take German courses as your Minor.

Overview:

The Master's programme *Neurocognitive Psychology* has the following structure:

General part (mandatory):   **45 CP**

    psy111 / psy112   Research methods I & II   2x 6 CP
    psy125   Neuropsychological Diagnostics   6 CP
    psy126   Test Theory and Test Construction   6 CP
    psy130   Communication of scientific results   6 CP
    psy141   Minor   6 CP
    psy240   Computation in Neuroscience   9 CP

Specialized part (choose 24 CP; taking psy170, psy270, psy220, psy280 or psy290 is strongly recommended):   **24 CP**

    psy150   Clinical Psychology (partly in German)   9 CP
    psy170   Neurophysiology   6 CP
    psy181   Neurocognition   6 CP
    psy190   Sex and Cognition   6 CP
    psy201   Neuropsychology (partly in German)   6 CP
    psy210   Applied Cognitive Psychology   6 CP
    psy220   Human Computer Interaction   6 CP
    psy270   Functional MRI Data Analysis   9 CP
    psy280   Transcranial Brain Stimulation   6 CP
    psy285 / psy286   Study Abroad I / II - Psychology/Neuroscience   2x 6 CP[1]
    psy290   Ambulatory Assessment in Psychology   6 CP

Practical part (mandatory):   **51 CP**

    psy251   Internship or lab visit   12 CP
    psy260   Practical project   9 CP[2]
    mam   Master's thesis (27 CP) and Master's colloquium (3 CP)   30 CP

Total: **120 CP**

[1] Achievements from a study abroad can be recognized in these modules if the achievements are from the field of psychology or neuroscience at Master's level and the contents do not overlap with other elective or mandatory modules.

[2] Chose from Applied Neurocognitive Psychology, Biological Psychology, Psychological Methods and Statistics, Experimental Psychology, Neuropsychology, Ambulatory Assessment

Restriction in participant numbers apply for each elective module. There is no guarantee that students can take all modules of their choice.

Module structure Research Master Neurocognitive Psychology (valid from winter term 2023)

NEUROCOGNITIVE PSYCHOLOGY

First semester	Second semester	Semester break	Third semester	Fourth semester

First semester

psy111
Research Methods I - Statistical Modeling - 1 & 2
6 CP

psy125
Neuropsychological Diagnostics - 1 & 2
6 CP

psy240 Computation in Neuroscience – 1 & 2, 3 CP

psy130
Communication of Scientific Results – 1 & 2[1]
6 CP

Choose from:
psy150 Clinical Psychology - 1, 6 CP
psy170 Neurophysiology - 1 & 2, 3 CP
psy201 Neuropsychology[2] - 1 & 3[3], 3 CP or 6 CP

Admission Requirement, Introductory Course Statistics, Bridging Course etc.

Second semester

psy112
Research Methods II - Statistical Learning - 1 & 2
6 CP

psy126
Test Theory and Test Construction - 1 & 2
6 CP

psy240
Computation in Neuroscience – 3, 4 & 5
6 CP

Continue:
psy150 Clinical Psychology - 2[3], 3 CP
psy170 Neurophysiology - 3, 3 CP
psy201 Neuropsychology[2] - 2, 3 CP

Choose from:
psy210 Applied Cogn. Psych. - 1, 3 CP
psy220 HCI - 1 & 2, 6 CP
psy270 fMRI Data Analysis[4], 9 CP
psy280 TBS - 1 & 2, 6 CP
psy290 Ambulat. Assess. - 1 & 2, 6 CP

Semester break

Mobility window for

psy251
Internship
12 CP

12 CP = 360h, may be split, e.g., 150h + 210h or 180h + 180h; At least 210h to be performed externally. Should be planned to start in the third week after the lecture period ends, in order to not collide with exams.

Third semester

psy141
Minor[5]
6 CP *(or 2x 3CP)*

psy260
Practical Project[6]
9 CP

Continue:
psy150 Clinical Psychology - 1, 6 CP *(if not studied in 1st sem.)*
psy210 Applied Cognitive Psychology - 2, 3 CP

Choose from:
psy181 Neurocognition - 1, 3 CP
psy190 Sex and Cognition - 1 & 2, 6 CP

Optional mobility window to study abroad: Elective modules for recognition **psy285/psy286** Study Abroad - Psychology/Neuroscience, 2x 6 CP

Fourth semester

mam
Master's Thesis and Colloquium
30 CP

Continue:
psy181 Neurocognition - 2, 3 CP

21 CP compulsory, max. 15 CP elective	18 CP compulsory, max. 39 CP elective	12 CP compulsory	15 CP compulsory, max. 18 CP elective	30 CP compulsory., max. 3 CP elective

General part: Compulsory modules, 45 CP in total
Practical part: Research modules & Internship, 51 CP in total
Specialized part: Electives & methods, choose 24 CP in total[7]

120 CP in four semesters

This plan is a suggestion how to arrange your modules. You are free to study the modules or parts of the modules earlier or later than suggested. You should aim to study 30 +/- 3 credit points per semester. 1 CP equals to 30 hours of work including preparation outside class.

1: psy130 part 2 can be taken during winter and/or summer term.
2: psy201 part 1 is mandatory; choose between part 2 and 3.
3: psy150 part 2, psy201 part 3: These are (partly) taught in German, accompanying English material is provided.
4: psy270 is blocked over 7 weeks in the first half of the term.
5: psy141: Choose Master classes of your interest, inside or outside the Department of Psychology.

6: psy260: Prior completion of psy240 required. Plan for a workload of ~20h/week for 3 months.
7: A combination of more than 24 CP would be reduced to 24 CP to calculate the grade. Choose at least 1 method course (highlighted in green). *For further information, check the module descriptions in the module handbook!*

Learning outcomes and competencies Research Master Neurocognitive Psychology

			expert neuropsychological / neurophysiological knowledge	interdisciplinary kowledge & thinking	experimental methods	statistics & scientific programming	data presentation & discussion	independent research	scientific literature	scientific English / writing	ethical evaluation / good scientific practice / professional behaviour	critical & analytical thinking	scientific communication skills	knowledge transfer	group work	project & time management
valid from study year 2023/24			skills / competencies													
modules (mandatory / elective)	psy111	Research Methods - Statistical Modeling		++		++	++	+	+		++	++	++		+	
	psy112	Research Methods - Statistical Learning		++		++	++	+	+		++	++	++		+	
	psy125	Neuropsychological Diagnostics	+	+							+	+				
	psy126	Test Theory and Test Construction		+							+	+				
	psy130	Communucation of Scientific Results					++		++	++			++		+	
	psy141	Minor		++												
	psy150	Clinical Psychology	++		+		+		+			+		+	+	
	psy170	Neurophysiology	++		++	++					++				+	+
	psy181	Neurocognition	++	++			++		++			+			+	
	psy190	Sex and Cognition	++	+			++		++			+	++		+	+
	psy201	Neuropsychology	++	+	++		+		++			+	+			
	psy210	Applied Cognitive Psychology	++	+	+				+		+	+	+	+		
	psy220	Human Computer Interaction	++	++	+	++						+	+	+	+	+
	psy240	Computation in Neuroscience	+		+	++						+		+	+	
	psy251	Internship	++	+	+						++			++		+
	psy260	Practical Project			++	+	++	+	+		+		+	+	+	++
	psy270	Funtional MRI Data Analysis			++	++	+								++	
	psy280	Transcranial Brain Stimulation	++		++	+			+		+					
	psy285/286	Study Abroad - Psychology/Neuroscience	depends on the chosen module													
	psy290	Ambulatory Assessment	++	+	++	++					+	+				+
	Mam	Master's thesis			++	+	+	++	+	++	+	+	+	+		++

Class schedule winter term 23/24

Veranstaltungs-Stundenplan - Department für Psychologie - Neurocognitive Psychology - Master-Studiengang - Wintersemester 2023/2024

relevant for new students,
individual schedule depends on choice of elective modules and groups

	Montag Monday	Dienstag Tuesday	Mittwoch Wednesday	Donnerstag Thursday	Freitag Friday
08:00 – 09:00	6.02.150_1L Neurobiological basis of psychiatric disorders and psychopharmacological intervention	6.02.111_1L Multivariate statistics I	6.02.201_1 Clinical Neuropsychology	6.02.150_1L Neurobiological basis of psychiatric disorders and psychopharmacological intervention	6.02.260_Pappl Practical project - Angewandte Neurokognitive Psychologie
09:00					6.02.141_2 Hands-on fMRI data analysis with SPM12
10:00 – 11:00	6.02.mam_coll_am Masters colloquium Ambulatory Assessment / 6.02.mam_coll_bi Masters colloquium Biological Psychology / 6.02.mam_coll_ex Masters colloquium Experimental Psychology / 6.02.mam_coll_ne Masters colloquium Neuropsychology	6.02.111_1T Multivariate statistics I (Tutorial) / 6.02.181_1L Introduction to cognitive neuroscience	6.02.130_1_Gr1 Communication of scientific results - group1 / 6.02.130_1_Gr2 Communication of scientific results - group 2	6.02.190_1 Introduction to the study of sex differences / 6.02.190_2 Sex, brain and behavior / 6.02.mam_coll_stat Masters colloquium Psychological Methods and Statistics	6.02.125_S_group1 Neuropsychological Diagnostics / 6.02.125_S_group2 Neuropsychological Diagnostics
12:00 – 13:00	6.02.260_Pbio project - Biologische Psychologie / 6.02.260_Pexp project - Allgemeine Psychologie / 6.02.260_Pneuro Practical project - Neuropsychologie / 6.02.260_Pstat_a Practical project - Methodical and Statistics Assessment	6.02.190_1 Introduction to the study of sex differences / 6.02.190_2 Sex, brain and behavior / 6.02.240_1 Introduction to scientific programming I	6.02.111_2_Gr1 analysis methods with R - group 1	6.02.125_1 Neuropsychological assessment and diagnostics / 6.02.mam_coll_appl Masters colloquium Applied Neurocognitive Psychology	6.02.001 Introductory Course Statistics
14:00 – 15:00	6.02.170_1 Neurophysiology and Neuroanatomy / 6.02.170_2_Gr1 EEG recording and analysis concepts (group 1) / 6.02.170_2_Gr3 EEG recording and analysis concepts (group 3)	6.02.240_3 Scientific Programming I		6.02.181_1S Introduction to cognitive neuroscience	
16:00 – 17:00	6.02.170_2_Gr2 EEG recording and analysis concepts (group 2) / 6.02.170_2_Gr4 EEG recording and analysis concepts (group 4)		6.02.111_2_Gr2 analysis methods with R - group 2 / 6.02.150_1S Clinical case-based seminar	6.02.130_2 Psychological colloquium	
18:00 – 19:00			6.02.210_2 (Neuro) Cognitive Psychology in the wild II	6.02.201_3 Funktionale Neuroanatomie Teil II: die Demenzen	

Mastermodule

psy111 - Research methods I - Statistical Modeling

Module label	Research methods I - Statistical Modeling
Modulkürzel	psy111
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Hildebrandt, Andrea (Module responsibility) Hildebrandt, Andrea (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	**Goals of module:** After completion of this module, students will have basic knowledge in managing and understanding quantitative data and conducting a wide variety of multivariate statistical analyses. They can apply the statistical methodology in terms of good scientific practice and interpret, evaluate and synthesize empirical results in basic and applied research contexts. Students will be aware of statistical misconceptions and they can overcome them. **Competencies:** ++ interdisciplinary kowledge & thinking ++ statistics & scientific programming ++ data presentation & discussion + independent research + scientific literature ++ ethics / good scientific practice / professional behavior ++ critical & analytical thinking ++ scientific communication skills + group work
Module contents	**Part 1: Multivariate statistical modeling** • Graphical representation of multivariate data • The Generalized Linear Modeling (GLM) framework • Multiple and moderated linear regression with quantitative and qualitative predictors • Logistic regression models • Multilevel regression (Generalized Linear Mixed Effects Modeling – GLMM) • Non-linear regression models (Polynomial regression, regression splines and local regression) • Path modeling • Factor analysis (exploratory & confirmatory) • Structural equation modeling (SEM; linear and non-linear) **Part 2: Multivariate statistical modeling with R (seminar)** • Data examples and applications of GLM, GLMM, polynomial, spline and local regression, path modeling, factor analyses and SEM
Literaturempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	The module will start every winter term.
Module capacity	unlimited
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	Parts 1: lecture; Parts 2: seminar; additional tutorials are offered.
Vorkenntnisse / Previous knowledge	Solid knowledge in basic statistics; otherwise please attend Introductory Course Statistics

Examination	Prüfungszeiten	Type of examination

Examination	Prüfungszeiten	Type of examination
Final exam of module	end of winter term	The module will be tested with a written exam.
		Required active participation for gaining credits: attendance of at least 70% in the seminar (will be checked in StudIP)

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Seminar		2	WiSe	28
Tutorial	statistics		WiSe	0
Präsenzzeit Modul insgesamt				56 h

psy112 - Research methods II - Statistical Learning

Module label	Research methods II - Statistical Learning
Modulkürzel	psy112
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Hildebrandt, Andrea (Module responsibility) Hildebrandt, Andrea (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	**Goals of module:** Building upon the basic knowledge in multivariate statistical modeling covered in psy111, after completion of this module students will know how to deal with big data to address empirical questions in neurocognitive psychology. They will be able to solve prediction and classification problems to the realm of basic and applied statistical/machine learning purposes. Furthermore, students will understand the specifics of applied research and the statistical modeling of noisy, longitudinal data. **Competencies:** ++ interdisciplinary kowledge & thinking ++ statistics & scientific programming ++ data presentation & discussion + independent research + scientific literature ++ ethics / good scientific practice / professional behavior ++ critical & analytical thinking ++ scientific communication skills + group work
Module contents	**Part 1: Statistical / machine learning methods** • Supervised and unsupervised statistical learning and prediction • Resampling methods • Regularized regression • Linear and quadatic discriminant analysis • Naive Bayes algorithm • Tree-based methods • Support vector machines • The basics of neural networks • Principal component regression • Clustering methods **Part 2: Statistical / machine learning methods with R (voluntary seminar)** • Data examples and applications of the basic machine learning methods covered in the lecture **Part 3: Evaluation research (seminar)** • Paradigms and methods in applied evaluation research (quantitative, mixed-methods) • Types of studies and designs in evaluation research (experimental, quasi-experimental, (multiple) time series, etc.) • Multivariate statistical modeling of change over time and group differences in change • Specific statistical tools for sampling and matching (e.g., Propensity score matching) • Basics of causality theory and the estimation of average and conditional effects in EffectLiteR • Research synthesis and meta-analysis
Literaturempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	The module will start every summer term.
Module capacity	unlimited
Modullevel / module level	MM (Mastermodul / Master module)

Modulart / typ of module		Pflicht / Mandatory		
Lehr-/Lernform / Teaching/Learning method		Part 1: lecture; Parts 2 and 3: seminars; additional tutorials are offered.		
Vorkenntnisse / Previous knowledge		psy 111 Research methods I – Statistical Modeling		

Examination	Prüfungszeiten	Type of examination
Final exam of module	end of summer term	The module will be tested with an oral exam (25 min).
		Required active participation for gaining credits: attendance of at least 70% in the mandatory seminar (will be checked in StudIP)

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Seminar	R seminar voluntary	2	SoSe	28
Tutorial	statistics		SoSe	0
Präsenzzeit Modul insgesamt				56 h

psy125 - Neuropsychological Diagnostics

Modulbezeichnung	Neuropsychological Diagnostics
Modulkürzel	psy125
Kreditpunkte	6 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Roheger, Mandy (Modulverantwortung) Roheger, Mandy (Prüfungsberechtigt) Hildebrandt, Andrea (Prüfungsberechtigt) Kranczioch, Cornelia (Prüfungsberechtigt) Debener, Stefan (Modulberatung)
Teilnahmevoraussetzungen	
Kompetenzziele	**Goals of module:** Students will acquire specific knowledge about (neuro-)psychological assessment and will be trained to utilize this knowledge within a research context and in applied settings. Students will learn how to analyze clinical cases ("case conceptualization"), how to plan and conduct the information assessment phase, how to record and summarize collected data and how to integrate information in order to draw conclusions about the case given specific diagnostic strategies. Finally, students will learn about the requirements of assessment report generation in written an oral form given a specific applied context. Ethical guidelines and quality norms will be an implicit topic in all courses in the module. **Competencies:** + Neuropsychological / neurophysiological knowledge for clinical assessments + interdisciplinary knowledge & thinking + ethics / good scientific practice / professional behavior + critical & analytical thinking
Modulinhalte	**Part 1: Introduction to neuropsychological diagnostics (lecture): winter** • Psychological assessment as a decision process – descriptive and prescriptive models • Assessment methods, their construction and design, quality criteria • The logic of decision making in the assessment process • Classificatory decisions • Psychometrics to single cases • Examples of diagnostics processes in different clinical populations • Focus areas on different cognitive domains, their underlying models, respective possible impairments and possibilities for neuropsychological assessment • Reasoning for the applications of neuropsychological tests • Summarizing results and writing reports **Part 2: Applied Neuropsychological Diagnostics (seminar): winter** • Case conceptualization (neuropsychology and clinical psychology) • Formulating hypotheses • Selecting assessment procedures and planning administration • specific knowledge on neuropsychological testing • exercises in neuropsychological testing / practicing tests • Evaluating the application of assessment procedures • Analyzing, summarizing and visualizing results • Integrating results based on the decision rules • Writing a psychological/assessment report

Literaturempfehlungen	Will be specified in the courses.
Links	
Unterrichtssprache	Englisch
Dauer in Semestern	1 Semester
Angebotsrhythmus Modul	The module will start every winter term.
Aufnahmekapazität Modul	unbegrenzt
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture; Part 2: seminar
Vorkenntnisse / Previous knowledge	

Prüfung	Prüfungszeiten	Prüfungsform
Gesamtmodul	Parts of the practical exercise need to be completed and handed in at specific dates during winter term.	The module will be tested by a practical exercise: assessment report. The report can be written in English or German. Required active participation for gaining credits: • attendance of at least 70% in the seminars.

Lehrveranstaltungsform	Kommentar	SWS	Angebotsrhythmus	Workload Präsenz
Vorlesung		2	WiSe	28
Seminar		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

Modulbezeichnung	Test Theory and Test Construction
Modulkürzel	psy126
Kreditpunkte	6 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Hildebrandt, Andrea (Modulverantwortung) Hildebrandt, Andrea (Prüfungsberechtigt) Hellmann, Andreas (Prüfungsberechtigt) Debener, Stefan (Modulberatung)
Teilnahmevoraussetzungen	
Kompetenzziele	**Goals of module:** Students will acquire specific knowledge of modern test theory and test construction and will be trained to apply this knowledge in the context of test development and test adaptation. They will reflect on the differences between traditional and modern test theory and their use in the domain of applied psychometrics and the systematic design of interview and observation methods. Finally, students will learn about the requirements for writing test construction and/or adaptation reports. Ethical guidelines in psychometrics and quality standards will be implicit topics throughout the module. **Competencies:** + research methods and psychometric knowledge + interdisciplinary kowledge & thinking + ethics / good scientific practice / professional behavior + critical & analytical thinking
Modulinhalte	**Part 1: Test Theory and Test Construction (lecture): summer** • Classical test theory • Generalizability theory • Latent-State and Trait theory • Latent variable models for different types of item responses • Measurement invariance across groups and time • Network modeling and machine learning in psychometrics • Preference modeling for constructing faking-resistant questionnaires and tests **Part 2: Test Analysis Applied (seminar): summer** • Test adaptation conceptualization • Test data processing • Item mining and analysis • Test analysis report writing
Literaturempfehlungen	Will be specified in the courses.
Links	
Unterrichtssprache	Englisch
Dauer in Semestern	1 Semester
Angebotsrhythmus Modul	The module will start every summer term.
Aufnahmekapazität Modul	unbegrenzt
Modullevel / module level	MM (Mastermodul / Master module)

Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture; Part 2: seminar Lectures and seminars will alternate to intermingle theoretic and applied contents.
Vorkenntnisse / Previous knowledge	You should know basic statistical concepts and multivariate statistics as they are covered in the introductory course statistics and in Research Methods I.

Prüfung	Prüfungszeiten	Prüfungsform
Gesamtmodul	Parts of the practical exam need to be completed and handed in at specific dates during the summer term.	The module will be tested by a portfolio: test adaptation report of 5 pages text + figures + script Required active participation for gaining credits: • attendance of at least 70% in the seminar.

Lehrveranstaltungsform	Kommentar	SWS	Angebotsrhythmus	Workload Präsenz
Vorlesung		2	SoSe	28
Seminar		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

psy130 - Communication of scientific results

Module label	Communication of scientific results
Modulkürzel	psy130
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Herrmann, Christoph Siegfried (Module responsibility)
	Herrmann, Christoph Siegfried (Prüfungsberechtigt)
	Strüber, Daniel (Prüfungsberechtigt)
	Roheger, Mandy (Prüfungsberechtigt)
	Boetzel, Cindy (Prüfungsberechtigt)
	Strüber, Daniel (Module counselling)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	

Goals of module:
Students will acquire specific knowledge about the presentation of scientific results both orally and in writing. Students will learn modern techniques for presentation, literature research and writing skills. They will also be taught about arguing scientifically.

Competencies:
++ data presentation & discussion
++ scientific literature
++ scientific English / writing
++ scientific communication skills
+ group work

Module contents	

Part 1: Communication of scientific results (seminar)
Literature search
Presentation skills
Writing skills

Part 2: Psychological colloquium
Experienced scientists from various psychological disciplines will be giving talks about their experimental results. Speakers will be invited also from other universities. Students are encouraged to discuss the results with the experts and to make suggestions on whom to invite

Literaturempfehlungen	- Sternberg, Robert (2000) Guide to Publishing in Psychology Journals, Cambridge University Press
Links	
Language of instruction	English
Duration (semesters)	1-2 Semester
Module frequency	Part 1 will be offered every winter term. Part 2 will be offered every semester.
Module capacity	unlimited
Reference text	Students can chose whether they want to attend the colloquium in the first, second or both semesters.
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	Communication of scientific results: seminar; Psychological colloquium: colloquium
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module	during winter term	Oral presentation
		Required active participation for gaining credits: 70% attendance of the seminar and at least 8

Examination	Prüfungszeiten	Type of examination
		colloquia (will be checked in StudIP) and active discussion in at least 1 colloqium.

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar		2	WiSe	28
Colloquium		2	SoSe und WiSe	28
Präsenzzeit Modul insgesamt				56 h

psy141 - Minor

Module label	Minor
Modulkürzel	psy141
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Rieger, Jochem (Module counselling)
	Bleichner, Kerstin (Module counselling)
	Rieger, Jochem (Prüfungsberechtigt)
	Gießing, Carsten (Prüfungsberechtigt)
	Puschmann, Sebastian (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.

Skills to be acquired in this module

Goals of module:
Students will gain an overview of non-psychological topics related to cognitive neuroscience and neuropsychology. They will see how psychological theories apply in other fields. Students can strengthen their own professional profile. Students may also broaden their psychological knowledge or language skills.

Competencies:

Module contents

To complement the core of the study programme in a meaningful way, students can take Master modules and courses from the fields

• Biology
• Neurosciences
• Computer Science
• Physics
• Mathematics
• Pedagogy
• Philosophy
• related fields
• Psychology (additional elective module (NOT psy170, psy220, psy270, psy280, psy290) or from another study programme)

Students whose first language is not German, may take German classes.

Upon approval, German-speaking students can attend a career-relevant language course (i.e. necessary for internship, practical project or Master's thesis).

Students can take the academic writing course 'English for University Studies: 5. Writing and Reading pb337' from the language center. Other English classes cannot be taken as Minor.

A list of already approved courses/modules can be found on our website.

You can take other courses/modules if they fulfil the following requirements:

- Master level (other than language courses)
- may be ungraded, but need proof of competence (e.g. a pass/fail exam)

Note that Minor courses/modules must not repeat contents of mandatory modules or taken elective modules of the programme.

We recommend taking modules/courses that strengthen your own professional profile.

Literaturempfehlungen	
Links	List of approved courses/modules and approval form: https://uol.de/en/psychology/master/course-overview/ -> Supporting documents
Languages of instruction	English, German
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Reference text	PLEASE NOTE:

If you want to take a module/course which is not listed in the list of approved courses/modules, please check thoroughly whether the course/module fulfils the requirements listed under 'module contents' before you start the course/module. The requirements for the minor module are also described in the subject specific amendments to the general examination regulations (fachspez. Anlage).

In cases of doubt, the programme coordinator can advise you.

Recognition procedure:

- Certificates of completion of approved courses/modules (see list of approved courses) have to be sent directly to the examinations office.
- Certificates of completion for courses/modules without former approval have to be sent to the head of the examinations committee together with the approval form and a course/module description.

If you want to take an additional elective module for your Minor (taking only a part of an elective module is not possible), you need to inform the contact person for the respective module in writing BEFORE the start of the module. If your request is NOT rejected in written form within 4 weeks, the module counts as approved for the Minor and the course credits will be automatically entered for your Minor. You will receive a pass/fail for this module. You CANNOT use it afterwards as a normal elective module. You can also NOT rededicate an elective that you have already started as your Minor.

Bachelor level courses are NOT acceptable. Note that Bachelor level courses can be listed in some Master programmes (e.g. Master of Education). This does not qualify a Bachelor level course for the Minor module.

It is your responsibility to ask the teacher whether you can take part in a course/module.

Please be aware that you can only use 6 credits for the module psy141 Minor. If you take more Minor courses/modules, these credits cannot be used for your degree. You can still ask the teacher to sign an attendance certificate (download https://uol.de/en/psychology/master/course-overview**) or module examination form (**https://uol.de/en/course-of-study/exams/neurocognitive-psychology-master-545**) which is**

sufficient for later applications to prove that you took the additional course/module.

Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	Lectures and seminars (depends on the chosen modules)
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module		If grades are earned in the minor, those are counted as pass/fail. Certificates for grades can be separately requested from the examination office.

Form of instruction	VA-Auswahl
SWS	4
Frequency	SoSe oder WiSe
Workload Präsenzzeit	56 h

psy150 - Clinical Psychology

Module label	Clinical Psychology
Modulkürzel	psy150
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Thiel, Christiane Margarete (Module responsibility) Thiel, Christiane Margarete (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	**Goals of the Module:** Students acquire scientifically sound, critical thinking regarding the genesis and psychopharmacological treatment of various mental illnesses; decision making based on the medical guidelines and evidence-based practice. **Competencies:** ++ Neuropsychological / neurophysiological knowledge + experimental methods + data presentation & discussion + scientific literature + critical & analytical thinking + knowledge transfer + group work
Module contents	The first part of the module provides students with a theoretical and practical background on neurobiological and neurochemical bases of psychiatric disorders and pharmacological interventions. This will be complemented by psychiatric interviews in simulated patients focussing on psychopathological assessment. In the second part, the students will learn to plan and assess the effectiveness of psychological interventions for selected disorders. **Part 1: Neurobiological basis of psychiatric disorders and pharmacological intervention (lecture and seminar): winter** Basics of neurotransmitter systems and psychopharmacology Substance Abuse (e.g. psychostimulants, hallucinogenics) Depression Anxiety Disorders Alzheimer's Disease Schizophrenia psychopathological assessment The seminar (voluntary) will be given in German as clinicians and patient actors are involved. **Part 2: Psychological interventions within the framework of evidence-based medicine (2 seminars, one partly in German): summer** Both seminars focus on concepts of evidence based treatment one with application to acquired dysfunctions of the brain, the other to selected psychiatric disorders.
Literaturempfehlungen	• Meyer, J.S. & Qenzer, L.F. (2018) Psychopharmacology: Drugs, the Brain and Behaviour. Sunderland, MA: Sinauer Associates. (part 1) • Kring, A.M, Johnson, S.L., Davison, G.C., & Neale, J.M., (2012) Abnormal Psychology. John Wiley & Sons (12th ed) (introductory literature) • Selected papers (part 2)
Links	
Languages of instruction	English, German

Duration (semesters)	2 Semester
Module frequency	Part 1 will be offered every winter term, part 2 every summer term.
Module capacity	unlimited
Reference text	Please note: Parts of this module that teach clinical contents will be taught in German (partly with accompanying English materials). All mandatory parts are taught in English. German knowledge is not necessary to successfully complete the module.
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture and seminar: part 2: seminar
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module	mid-February	The module will be tested with a written exam (2 h) on the contents of the lecture in part 1. Required active participation for gaining credits: 1 presentation participation in discussions on other presentations attendance of at least 70% in both seminars in part 2 (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Seminar		4	SoSe und WiSe	56
Präsenzzeit Modul insgesamt				84 h

psy170 - Neurophysiology

Module label	Neurophysiology
Modulkürzel	psy170
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Debener, Stefan (Module responsibility) Debener, Stefan (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.

Skills to be acquired in this module

Goals of module:
Students will understand the basic concepts of biomedical signal processing. They will use EEG analysis tools interactively and independently and will understand the complete chain of EEG analysis steps, from data import to the illustration of results. They will be able to use open source tools for EEG analysis and apply theoretical knowledge to practical problems of physiology.

Competencies:
++ Neuropsychological / neurophysiological knowledge
++ experimental methods
++ statistics & scientific programming
++ ethics / good scientific practice / professional behavior
+ group work
+ project & time management

Module contents

Students will acquire specific knowledge about neurophysiology and neuroanatomy, learn the fundamental concepts of multi-channel EEG analysis, and acquire hands-on skills in recording EEG data and using EEGLAB, an open-source software toolbox for advanced EEG analysis.

Part 1: Neurophysiology and neuroanatomy (lecture): winter
Neurophysiology, EEG, EMG, ECG
Neuroanatomy
Time-domain and frequency-domain analysis methods

Part 2: EEG recording and analysis (seminar): winter
In small groups under supervision of the lecturer, all students will record EEG data of their fellow students and will serve as participants for their classmates.
Recording and analysis of biomedical signals
Averaging, filtering, signal-to-noise
Topographical EEG analysis

Part 3: EEG analysis with Matlab (seminar): summer
EEGLAB file I/O, data structure and scripting
Preprocessing, artefact rejection and artefact correction
Statistical decomposition
Event-related potentials, topographical mapping and power spectra
Illustration of results
Literatur

Literaturempfehlungen

- Kandel et al. (2000). Principles of Neural Science, McGraw-Hill
- Luck, S.J. (2005). An Introduction to the ERP Technique, The MIT Press
- Van Drongelen, W. (2006). Signal Processing for Neuroscientists, Academic Press

Links

Language of instruction	English

Duration (semesters)	2 Semester
Module frequency	The module will start every winter term.
Module capacity	18 (The lecture is not restricted.)
Reference text	PLEASE NOTE: We strongly recommend to take either psy170, psy270, psy280, or psy220 to gain methodological competencies (EEG, fMRI, TBS, HCI) that are needed for most practical projects and Master's theses!
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture; Part 2 and 3: seminars
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module	exam period at the end of the summer term	The module will be tested with a written exam of 2 h duration. Required active participation for gaining credits: recording of electroencephalographic data attendance of at least 70% in the seminars (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture	2 semester hours per week in first half of the winter term.	1	WiSe	14
Seminar	2 semester hours per week in second half of the winter term. 2 semester hours per week in summer term.	3	SoSe und WiSe	42
Präsenzzeit Modul insgesamt				56 h

psy181 - Neurocognition

Module label	Neurocognition
Modulkürzel	psy181
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Thiel, Christiane Margarete (Module responsibility)
	Thiel, Christiane Margarete (Prüfungsberechtigt)
	Rosemann, Stephanie (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	

Goals of module:
Students should be able to recognize and critically evaluate the value of considering neuroscience in the study of psychological topics.

Competencies:
++ neuropsychological / neurophysiological knowledge
++ interdisciplinary kowledge & thinking
++ data presentation & discussion
++ scientific literature
+ scientific communication skills
+ group work

Module contents	

Students will first acquire a general understanding of the brain mechanisms of different cognitive functions and the methods used to study these functions. They will then apply this knowledge by discussing current research topics (part 1). Knowledge will be transferred to the relation between the development of the human brain and the cognitive processes it supports (part 2).

Part 1: Introduction to cognitive neuroscience (lecture and seminar): winter
Brain and cognition, methods of cognitive neuroscience
Attention, learning and memory
Emotional and social behaviour
Language, executive functions

Part 2: Neurocognitive development (seminar): summer
Brain development and cortical plasticity
Effects of early-life stress on brain development
Development of object recognition, social cognition, memory, and executive functions

Literaturempfehlungen	

- Ward (2019) The Student's Guide to Cognitive Neuroscience, Psychology Press
- Nelson, Haan & Thomas (2006) Neuroscience of Cognitive Development: The Role of Experience and the Developing Brain, Wiley & Sons
- Johnson (2011) Developmental Cognitive Neuroscience, 3rd ed., Wiley-Blackwell.

Links	
Language of instruction	English
Duration (semesters)	2 Semester
Module frequency	Part 1 will be offered every winter term, part 2 every summer term.
Module capacity	20 (Part 1 (lecture and seminar) are unrestricted, part 2 is restricted to 20 students.)
Modullevel / module level	MM (Mastermodul / Master module)

Modulart / typ of module	Wahlpflicht / Elective		
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture and seminar; Part 2: seminar		
Vorkenntnisse / Previous knowledge			

Examination	Prüfungszeiten	Type of examination
Final exam of module	mid-February	The module will be tested with a written exam of 2 h duration on the contents of part 1.
		Required active participation for gaining credits: 1 presentation participation in discussions on other presentations attendance of at least 70% in all seminars (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1	WiSe	14
Seminar		3	SoSe und WiSe	42
Präsenzzeit Modul insgesamt				56 h

psy190 - Sex and Cognition

Module label	Sex and Cognition
Modulkürzel	psy190
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Strüber, Daniel (Module responsibility) Strüber, Daniel (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology. Neuroscience students can take part on request.
Skills to be acquired in this module	

Goals of module:
Students will acquire specific knowledge about sex differences in cognitive abilities and social behaviours. They will be able to understand the interrelated impact of social and biological influences on the brain's control of the (sex-specific) behaviours. Students should be able to critically evaluate behavioural sex differences from different perspectives and to reflect on possible implications for society.

Competencies:
++ neuropsychological / neurophysiological knowledge
+ interdisciplinary kowledge & thinking
++ data presentation & discussion
++ scientific literature
+ critical & analytical thinking
++ scientific communication skills
+ group work
+ project & time management

Inhalte

Module contents

Part 1: Introduction to the study of sex differences (lecture): winter
The measurement of sex differences
Sex differences in emotion
Sex differences in aggression
Sex differences in cognitive abilities
Hormones, sexual differentiation, and gender identity
Sex hormones and play preferences
Sex differences in hemispheric organization
Brain size and intelligence

Part 2: Sex, brain, and behaviour (seminar): winter
Sex differences in empathy
The extreme male brain theory of autism (S. Baron-Cohen)
Sex differences in neuropsychiatric disorders
Sex differences in stress response
Social implications of sex differences

Literaturempfehlungen

- Diane F. Halpern (2000) Sex Differences in Cognitive Abilities, Lawrence Erlbaum Associates
- Doreen Kimura (2000) Sex and Cognition, MIT Press
- Melissa Hines (2004) Brain Gender, Oxford University Press
- Richard A. Lippa (2005) Gender, Nature, and Nurture, Lawrence Erlbaum Associates

Links

Language of instruction		English		
Duration (semesters)		1 Semester		
Module frequency		The module will be offered every winter term.		
Module capacity		30		
Modullevel / module level		MM (Mastermodul / Master module)		
Modulart / typ of module		Wahlpflicht / Elective		
Lehr-/Lernform / Teaching/Learning method		Part 1: lecture; Part 2: seminar		
Vorkenntnisse / Previous knowledge				

Examination	Prüfungszeiten	Type of examination
Final exam of module	during winter term	oral presentation
		Required active participation for gaining credits: participation in discussions on other presentations attendance of at least 70% in the seminar (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Seminar		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

psy201 - Neuropsychology

Module label	Neuropsychology
Modulkürzel	psy201
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Debener, Stefan (Module responsibility) Debener, Stefan (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	**Goals of module:** Students will learn to understand changes in thinking and behaviour that may arise from brain dysfunctions (part 1, 3), acquire specific knowledge on cognitive rehabilitation (part 2), and learn to understand, communicate and evaluate progress in clinical practice and experimental research in neuropsychology (part 3). **Competencies:** ++ neuropsychological / neurophysiological knowledge + interdisciplinary kowledge & thinking ++ experimental methods + data presentation & discussion ++ scientific literature + critical & analytical thinking + scientific communication skills
Module contents	**Part 1: Introduction to Clinical Neuropsychology (lecture): winter** Cortical lobes (anatomy, functions, lesion symptoms, neuropsychological tests) Higher functions (learning & memory, language, emotion, spatial behavior attention) Plasticity and disorders (development, learning and reading disabilities, recovery) **Part 2: Cognitive Neurorehabilitation (seminar): summer** Behavioural and neuropsychological approaches neurofeedback in neurorehabilitation and ADHD memory rehabilitation effects of physical activity on cognition motor recovery **Part 3: Topics in Clinical Neuropsychology (seminar; taught partly in German): winter** Clinical neuroanatomy Neurodegenerative diseases Dementia Choose either part 2 or part 3!
Literaturempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1-2 Semester
Module frequency	The module will start every winter term.
Module capacity	30 (Part 3 is not restricted.)
Reference text	Part 1 (lecture) is mandatory. Choose either part 2 or part 3 (seminars). Note: The lecture of part 3 is given in German with accompanying English materials. Students who cannot follow a lecture in German are given priority in part 2.
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture; Part 2: seminar; Part 3: seminar

Vorkenntnisse / Previous knowledge

Examination	Prüfungszeiten	Type of examination
Final exam of module	exam period at the end of winter term	The module will be tested with a written exam of 2 h duration. Required active participation for gaining credits: presentation participation in discussions on other presentations attendance of at least 70% in the seminars (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Seminar		2	SoSe oder WiSe	28
Präsenzzeit Modul insgesamt				56 h

Examination	Prüfungszeiten	Type of examination

psy210 - Applied Cognitive Psychology

Module label	Applied Cognitive Psychology
Modulkürzel	psy210
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Rieger, Jochem (Module responsibility) Rieger, Jochem (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology. Neuroscience students can take part on request.
Skills to be acquired in this module	**Goals of the module:** Students will gain an overview of theories of (Neuro)Cognitive Psychology with potential for application. On completion of this module students should have a repertoire of cognitive psychology concepts relevant for real world situations, be able to transfer the learned theoretical concepts into practical contexts and evaluate potential issues arising in the process of translation. **Competencies:** ++ Neuropsychological / neurophysiological knowledge + interdisciplinary kowledge & thinking + experimental methods + scientific literature + ethics / good scientific practice / professional behavior + critical & analytical thinking + scientific communication skills + knowledge transfer
Module contents	The module will cover core concepts of cognitive psychology, their neuronal basis, basic knowledge of neuroimaging and data analysis techniques. Special emphasis will be put on research aiming at complex real-world settings and translation of basic science in to practice. Examples of successful transfers will be analyzed. The lecture provides the theoretical basis. In the seminar the material is consolidated by examples from the literature which will be presented, critically analyzed and discussed. **Part 1: (Neuro)Cognitive Psychology in the wild I (lecture): summer** • Neurocognitive Psychology with emphasis in real world context • Methodological considerations: Generalization, validity of theories and research methods • Information uptake and representation: Sensation, perception, categorization • Selection of information and capacity: Attention and memory enhancement and failure • Generation and communication: Language, reading, dyslexia • Pursuing goals: Thinking, problem solving and acting **Part 2: (Neuro)Cognitive Psychology in the wild II (seminar): winter** In the accompanying seminar we will work through recent examples in the literature for topics of the lecture. The goal is to apply novel knowledge from the lecture to understand and critically discuss actual research approaches.
Literaturempfehlungen	• Esgate, A. (2004) An Introduction to Applied Cognitive Psychology, Psychology Press • Sternberg, RJ and Sternberg, K. (2011) Cognitive Psychology, Wadsworth • Ward (2010) The Student's Guide to Cognitive Neuroscience, Psychology Press
Links	
Language of instruction	English
Duration (semesters)	2 Semester
Module frequency	Part 1 will be offered every summer term, part 2 every winter term.

Module capacity	30		
Modullevel / module level	MM (Mastermodul / Master module)		
Modulart / typ of module	Wahlpflicht / Elective		
Lehr-/Lernform / Teaching/Learning method	Part 1: 1 lecture (2 SWS); Part 2: 1 seminar (2 SWS)		
Vorkenntnisse / Previous knowledge			

Examination	Prüfungszeiten	Type of examination
Final exam of module	last class in summer term	The module will be evaluated with a written exam of 2 hours duration. Required active participation for gaining credits: 1-2 presentations participation in discussions on other presentations attendance of at least 70% in the seminar (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Seminar		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

psy220 - Human Computer Interaction

Module label	Human Computer Interaction
Modulkürzel	psy220
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Rieger, Jochem (Module responsibility) Rieger, Jochem (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology or other programs related to the field (e.g. neuroscience, computer science, physics etc.).
Skills to be acquired in this module	

Goals of module:
The goal of the module is to provide students with basic skills required to plan, implement and
evaluate brain computer interfaces as devices for human computer interaction. BCIs are an
ideal showcase as they fully span the interdisciplinary field of HCI design, implementation and
evaluation. Importantly, classical BCI-methods can be used for modern data-driven basic neuroscience.
The module is designed as an "enabler course", meaning that ideally students should be able to understand
and start independent studies into the BCI-methods. Therefore, it goes into depth instead of breadth. Good
programming skills and some active knowledge of high school maths is strongly advised to maximize the
learning outcome.

Competencies:
++ understanding of the foundations of statistical learning techniques
+ basics to understand technical time series processing and machine learning papers
++ interdisciplinary knowledge & thinking
+ experimental methods
++ statistics & scientific programming
+ critical & analytical thinking
+ scientific communication skills
+ knowledge transfer
+ group work
+ project & time management

Module contents

The module will introduce classic BCI paradigms and brain recoding techniques. However the main focus will
be on a deeper understanding of the most important signal processing, machine learning, and performance
evaluation techniques. The module combines a lecture on the theoretical foundations a seminar/hands on
course in which students learn to implement the BCI-processing steps on real neurophysiological data and
further elaborate specific subtopics.

Part 1: HCI and BCI Lecture: (Lecture on methodological foundations of BCI): summer

Part 2: Hands on BCI implementation (practical seminar): summer
Topics covered:

- A brief history of BCIs and examples of HCI control and basic neuroscience using BCI
- techniques.
- Data preprocessing (e.g. filtering, projection techniques) and common artifacts and
- artifact treatment)
- Feature generation (e.g. fourier transform, spectral estimation techniques, principle
- components)
- Machine learning for classification and regression (e.g. model parameter optimization in
- multivariate regression)
- Evaluation (e.g. measures of model quality, cross validation to test model generalization,
- permutation tests)

Where possible the lecture provides mathematical backgrounds of the data analysis techniques.
The practical seminar implements BCI techniques on a real data set and further elaborates
specific topics in seminar form.

Literaturempfehlungen

There is no required textbook. The lecture slides and notes should be sufficient. However some
resources from which they were developed on are given below:

General tutorial text providing and overview and accompanying python code on github:

Holdgraf, Christopher R., Jochem W. Rieger, Cristiano Micheli, Stephanie Martin, Robert T. Knight, and Frederic E. Theunissen. 2017. "Encoding and Decoding Models in Cognitive Electrophysiology." Frontiers in Systems Neuroscience 11. https://doi.org/10.3389/fnsys.2017.00061. (open access)

Signal processing:

Semmlow, J. L. (2008). Biosignal and medical image processing. CRC press. Basis of most of the signal processing section. Has some matlab code.

PCA & SVD

Shlens, Jonathon. 2014. "A Tutorial on Principal Component Analysis." ArXiv:1404.1100 [Cs, Stat], April. http://arxiv.org/abs/1404.1100. Great accessible tutorial on PCA

Unsupervised feature Learning and deep learning tutorial:

http://deeplearning.stanford.edu/tutorial/ Basis of the multivariate machine learning techniques. Has some matlab code.

General texts:

Machine learning and AI:

Hastie, Tibshirani, and Friedman. The elements of statistical learning. Covers a wide range of machine learning topics. Free online.

Russell and Norvig. Artificial Intelligence: A Modern Approach. A comprehensive reference BCI

Dornhege et al. (2007) Toward Brain Machine Interfacing, The MIT-Press. A collection of essays on BCI related topics.

Additional literature and material will be provided on the course website.

Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	The module will be offered every summer term.
Module capacity	15
Reference text	We strongly recommend to take either psy170, psy270, psy280, or psy220 to gain methodological competencies (EEG, fMRI, TBS, HCI) that are needed for most practical projects and Master's theses!
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture; Part 2: practical seminar
Vorkenntnisse / Previous knowledge	Basic programming skills, some high-school level maths

Examination	Prüfungszeiten	Type of examination
Final exam of module	last lecture in summer term	The module will be evaluated with an oral exam (max. 20 min).
		Required active participation for gaining credits: 1-2 presentations max. 24 programming exercises in the seminar participation in discussions on other presentations attendance of at least 70% in the seminar (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Seminar		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

psy240 - Computation in Neuroscience

Module label	Computation in Neuroscience
Modulkürzel	psy240
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Stecher, Heiko (Module responsibility) Stecher, Heiko (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	

Goals of module:
Students will acquire scientific programming skills as well as specific knowledge of computational methods in neuroscience and cognition. They will learn to judge the appropriateness and complexity of computational problems and solutions.

Competencies:
+ Neuropsychological / neurophysiological knowledge
+ experimental methods
++ statistics & scientific programming
+ critical & analytical thinking
+ knowledge transfer
+ group work

Module contents

Part 1: Introduction to scientific programming I (lecture): winter
Basic data types and structures
Flow control (conditions, loops, errors)
Testing and debugging
Functions

Part 2: Introduction to scientific programming II (lecture): summer
Complex data structures

EEG processing
Frequency analysis methods

Introduction to toolboxes

Part 3: Scientific programming I (excercise): winter
Implementation of examples from part 1

Part 4: Scientific programming II (exercise): summer
Implementation of examples from part 2

Part 5: Computer-controlled experimentation (seminar): summer
Computer hardware basics
Scripting and programming experiments
Combining stimulus delivery with EEG, Eyetracking, etc.
Temporal precision

Literaturempfehlungen

- Mathworks (2009): MATLAB online documentation
- Wallisch P., et al. (2009): MATLAB for Neuroscientists: An Introduction to Scientific Computing in MATLAB. Elsevier/Academic

Links

Language of instruction	English

Duration (semesters)	2 Semester
Module frequency	The module will start every winter term.
Module capacity	unlimited
Reference text	**Important note:** **Passing the exam of psy240 is mandatory for starting a Practical Project (psy260) and the Master's thesis.**
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	Part 1 and 2: lectures; Part 3 and 4: excercises; Part 5: seminar; additional tutorials
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module	exam period at the end of the summer term	In a 120-minute written exam the participants will have to program MATLAB-scripts for a selection of neuroscientific data-analysis problems, demonstrating their skills in the different topics. The scripts and comments will be written on university-provided laptops and handed in via email or USB-drive. Students need to hand in 1-2 programming tasks in the exercises to be allowed to take part in the exam. Required active participation for gaining credits: script for the presentation of experimental stimuli in part 5 attendance of at least 70% in the seminar 'Presentation', part 5 (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture	2h/week in winter and summer term	4	SoSe und WiSe	56
Seminar		2	SoSe	28
Exercises	1h/week in winter and summer term	2	SoSe und WiSe	28
Tutorial	voluntary		SoSe und WiSe	0
Präsenzzeit Modul insgesamt				112 h

psy251 - Internship

Module label	Internship
Modulkürzel	psy251
Credit points	12.0 KP
Workload	360 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Kranczioch-Debener, Cornelia (Module responsibility) Kranczioch-Debener, Cornelia (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	**Goals of module:** Students will obtain direct experience in the field of psychology. This includes being involved in the provision of psychological or neuropsychological services in real-life situations, such as neuropsychological testing or counselling in a hospital or mental health clinic, or conducting and contributing to psychological research. The internship should be chosen by the student such that it can provide a meaningful educational opportunity that will help students to decide on their preferred area of work. **Competencies:** ++ expert neuropsychological/neurophysiological knowledge + interdisciplinary knowledge & thinking + experimental methods ++ ethics / good scientific practice / professional behavior ++ knowledge transfer + project & time management
Module contents	The students will work in a field of psychology of personal choice. The student will get to know and participate in the daily work routines of a psychologist.
Literaturempfehlungen	
Links	Information on internships and necessary forms: https://uol.de/en/psychology/master/course-overview/
Languages of instruction	English, German
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Reference text	The internship lasts 360 hours (9-10 weeks). It can be performed at 2 different institutions with a minimum duration of 150 hours (4 weeks) for each part. A part of your internship (maximally 150 hours) can be performed internally in the Department of Psychology. Internal internships cannot be performed in the same lab in which you will perform / have performed your Practical Project psy260! Your supervisor must be a psychologist. If your supervisor is NOT a psychologist, please contact us for approval BEFORE you start your internship. Please note that details are regulated in the exam regulations. A blank internship certificate and the report form can be found on the programme website. To generate ideas, a folder with information on internships that other students have performed is available in the office of Dr. Cornelia Kranczioch. Topics for projects will be presented in a colloquium at the end of the summer term.
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	internship at (external) institution
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module	Individual; 2-3 possibilities per semester to present	The students have to hand in a written report (2-3

	the internship to other students	pages) and give a short presentation about their internship. They have to show a certificate from the institution at which they performed the internship. The internship is evaluated as pass/fail.
Form of instruction	Practical training	
SWS		
Frequency	SoSe oder WiSe	
Workload Präsenzzeit	0 h *(* *360 hours presence at internship institution* *)*	

psy260 - Practical project

Module label	Practical project
Modulkürzel	psy260
Credit points	9.0 KP
Workload	270 h (attendance in the lab and accompanying seminars as necessary for your project (~ 200h))
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Debener, Stefan (Module responsibility) Herrmann, Christoph Siegfried (Module responsibility) Hildebrandt, Andrea (Module responsibility) Puschmann, Sebastian (Module responsibility) Rieger, Jochem (Module responsibility) Roheger, Mandy (Module responsibility) Al-Zubaidi, Arkan (Prüfungsberechtigt) Bleichner, Martin Georg (Prüfungsberechtigt) Debener, Stefan (Prüfungsberechtigt) Gießing, Carsten (Prüfungsberechtigt) Hellmann, Andreas (Prüfungsberechtigt) Herrmann, Christoph Siegfried (Prüfungsberechtigt) Hildebrandt, Andrea (Prüfungsberechtigt) Hildebrandt, Helmut (Prüfungsberechtigt) Kranczioch-Debener, Cornelia (Prüfungsberechtigt) Rieger, Jochem (Prüfungsberechtigt) Özyurt, Jale Nur (Prüfungsberechtigt) Stecher, Heiko (Prüfungsberechtigt) Strüber, Daniel (Prüfungsberechtigt) Thiel, Christiane Margarete (Prüfungsberechtigt) Puschmann, Sebastian (Prüfungsberechtigt) Jäger, Manuela (Prüfungsberechtigt) Vogeti, Sreekari (Prüfungsberechtigt) Roheger, Mandy (Prüfungsberechtigt) Rosemann, Stephanie (Prüfungsberechtigt) Daeglau, Mareike (Prüfungsberechtigt) Kristanto, Daniel (Prüfungsberechtigt) Boetzel, Cindy (Prüfungsberechtigt) Marek, Merle (Module counselling)
Further responsible persons	Upon approval by the examination committee other staff members (e.g. PhD students in the laboratories of the Department of Psychology) can act as examiners for psy260.
Prerequisites	

Enrolment in Master's programme Neurocognitive Psychology.
You can only start the practical project if you have passed the exam of psy240 (psy241) Computation in Neuroscience!
Priority is given to students with experience in methods used in the respective lab or students who have taken the respective teaching modules.

Skills to be acquired in this module

Goals of module:

Students are able to critically review the scientific literature and current state of knowledge concerning a certain topic in the field of cognitive neuroscience or neuropsychology. Based on this, they are able to develop a specific research question and to design an adequate experiment, acquire data and conduct appropriate statistical analyses, building on previously gained competencies in relevant research methods, computer programming and statistical methods. They know how to critically discuss the results of their study in context of the current literature and how to present their findings at a scientific poster symposium.

Competencies:
++ experimental methods
+ statistics & scientific programming
++ data presentation & discussion
+ independent research
+ scientific literature
+ ethics / good scientific practice / professional behavior
+ scientific communication skills
+ knowledge transfer
+ group work
++ project & time management

Module contents

- The students develop an empirical investigation, carry it out and analyse the results.
- The students present and discuss their project in respect to recent literature in regular meetings and in a poster symposium.
- Students can develop an experimental design for a follow-up study which could potentially be the topic of their Master's thesis.
- As part of the practical project, students should participate in studies of other practical projects!

Literaturempfehlungen	
Links	https://uol.de/en/psychology/master/course-overview/
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	The module will be offered every winter term.
Module capacity	unlimited
Reference text	Topics for projects will be presented in a colloquium at the end of the summer term.
	Students can chose to perform the practical work in either of the research groups of the Department of Psychology. External projects are possible upon approval (information and approval form can be found on the programme website).
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	practical work and regular seminar meetings in the group where the project is performed
Vorkenntnisse / Previous knowledge	PLEASE NOTE:
	Knowledge of either EEG, fMRI, TBS, or MEG data analysis, or knowledge of HCI or ambulatory assessment methods is essential for most projects offered in the Department of Psychology. We strongly recommend to take either psy170: Neurophysiology, psy270: fMRI Data Analysis, psy280: Transcranial Brain Stimulation, psy220: Human Computer Interaction, or psy290: Ambulatory Assessment prior to the practical project.
	It is expected that students have basic knowledge of Matlab programming before starting the practical project. This is proven by having passed the exam in Computation in Neuroscience.

Examination	Prüfungszeiten	Type of examination
Final exam of module	usually end of April	Poster presentation in a student symposium (30% of the grade) and daily project work (70% of the grade).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar	Please select the group in which you perform your practical project.	2	WiSe	28
Practical training	attendance as necessary for your project (~ 200h)		WiSe	0
Präsenzzeit Modul insgesamt				28 h

Examination	Prüfungszeiten	Type of examination
Final exam of module	usually end of April	Poster presentation in a student symposium (30% of the grade) and daily project work (70% of the grade).

psy270 - Functional MRI Data Analysis

Module label	Functional MRI Data Analysis
Modulkürzel	psy270
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	- Master's Programme Biology (Master) > Background Modules - Master's Programme Neurocognitive Psychology (Master) > Mastermodule - Master's Programme Neuroscience (Master) > Background Modules
Zuständige Personen	Gießing, Carsten (Module responsibility) Gießing, Carsten (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.
Skills to be acquired in this module	**Goals of module:** Students will learn the basics about planning and performing a neuroimaging study. They will focus on the statistical and methodological background of functional neuroimaging data analysis and analyse a sample functional MRI data set. **Competencies:** ++ experimental methods ++ statistics & scientific programming + data presentation & discussion ++ group work
Module contents	**Theoretical knowledge on functional MRI data analysis** **Planning, performance and analysis of functional neuroimaging studies using MATLAB-based software** **Hands-on fMRI data analysis with SPM**
Literaturempfehlungen	- Frackowiak RSJ, Friston KJ, Frith C, Dolan R, Price CJ, Zeki S, Ashburner J, and Penny WD (2003). Human Brain Function. Academic Press, 2nd edition. San Diego, USA. - Huettel, SA, Song, AW, & McCarthy, G (2009). Functional Magnetic Resonance Imaging (2nd Edition). Sinauer Associates. Sunderland, MA, USA. - Poldrack RA, Mumford JA, & Nichols TE (2011). Handbook of Functional MRI Data Analysis. Cambridge University Press. New York, USA.
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	The module will be offered every summer term.
Module capacity	15 (The remaining places are reserved for Biology and Neuroscience students.)
Reference text	Since the module is primarily offered for the Master's programme Biology it has to be offered as a blocked course. Please contact us if you are interested in the module but have problems with interfering other courses. PLEASE NOTE: We strongly recommend to take either psy170, psy270, psy280, or psy220 to gain methodological competencies (EEG, fMRI, TBS, HCI) that are needed for most practical projects and Master's theses!
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	blocked course with lecture, interactive seminar and exercise parts
Vorkenntnisse / Previous knowledge	Students need to have solid statistical knowledge as taught in the Introductory Course Statistics and in

Research Methods.

Examination	Prüfungszeiten	Type of examination
Final exam of module	end of summer term	Oral or written examination
		Required active participation for gaining credits: 1-2 presentations participation in discussions on other presentations attendance of at least 70% in the seminars and exercises (will be checked in StudIP).
Form of instruction	Seminar	
SWS	1	
Frequency	SoSe	
Workload Präsenzzeit	14 h	

psy280 - Transcranial Brain Stimulation

Module label	Transcranial Brain Stimulation
Modulkürzel	psy280
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Herrmann, Christoph Siegfried (Module responsibility) Herrmann, Christoph Siegfried (Prüfungsberechtigt) Strüber, Daniel (Prüfungsberechtigt)
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology.

Skills to be acquired in this module

Goals of module:
Students will gain theoretical and practical knowledge on various non-invasive brain stimulation techniques.

Competencies:
++ Neuropsychological / neurophysiological knowledge
++ experimental methods
+ statistics & scientific programming
+ scientific literature
+ ethics / good scientific practice / professional behaviour

Module contents

In this module, we will introduce the theoretical concepts, neurophysiological underpinnings and neurocognitive as well as clinical applications of various non-invasive brain stimulation techniques such as transcranial magnetic stimulation (TMS), transcranial direct current stimulation (tDCS), transcranial alternating current stimulation (tACS), and transcranial random noise stimulation (tRNS). A focus will be tACS, because it is especially suited to modulate brain oscillations which have been shown to correlate with cognitive processes.

Part 1: Introduction to transcranial brain stimulation (lecture): summer

- Historical overview of brain stimulation
- Different techniques (TMS, tDCS, tACS, tRNS)
- Physiological mechanisms (entrainment, after-effects etc.)
- The use of transcranial brain stimulation in cognitive neuroscience - Experimental parameters (intensity, electrode montage, etc.)
- Pros and cons of TMS vs. tACS
- Technical aspects (artefact correction, modelling current flow, etc.)
- Safety issues
- Ethical considerations of brain stimulation

Part 2: Effects of tACS on physiology and cognition (seminar): summer

- Physiology of tACS (on-line and after-effects)
- Modulating cognitive functions (e.g. memory, attention, and perception)
- Clinical applications of tACS
- Hands-on experience in the lab

Literaturempfehlungen

- Miniussi et al. Transcranial brain stimulation, CRC Press, 2013.
- Kadosh. The stimulated brain, Academic Press, 2014.

Links

Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	The module will be offered every summer term.
Module capacity	10
Reference text	We strongly recommend to take either psy170, psy270, psy280, or psy220 to gain methodological competencies (EEG, fMRI, TBS, HCI) that are needed for most practical projects and Master's thesis!
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	Part 1: lecture; Part 2: seminar
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module	during summer term	Oral presentation in the seminar.
		Required active participation for gaining credits: attendance of at least 70% in the seminar (will be checked in StudIP).

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Seminar		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

psy285 - Study Abroad I - Psychology/Neuroscience

Module label	Study Abroad I - Psychology/Neuroscience
Modulkürzel	psy285
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Department of Psychology (Module responsibility)
	Bleichner, Kerstin (Module counselling)
	Kranczioch-Debener, Cornelia (Module counselling)
Further responsible persons	Courses taken abroad will be approved by the examinations committee.
Prerequisites	
Skills to be acquired in this module	
Module contents	
	Successfully completed study achievements at Master's level from a study abroad are recognised to the extent of 6 credit points, provided that they originate from the fields of psychology or neuroscience and do not have any significant overlaps in content with modules of the compulsory and elective subjects that have already been studied/are still to be studied.

Literaturempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	
Module capacity	unlimited
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module		according to the regulations of the respective foreign university
Form of instruction	VA-Auswahl (according to the regulations of the respective foreign university)	
SWS	4	
Frequency	SoSe oder WiSe	
Workload Präsenzzeit	56 h	

psy286 - Study Abroad II - Psychology/Neuroscience

Module label	Study Abroad II - Psychology/Neuroscience
Modulkürzel	psy286
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Department of Psychology (Module responsibility) Kranczioch-Debener, Cornelia (Module counselling) Bleichner, Kerstin (Module counselling)
Further responsible persons	Courses taken abroad will be approved by the examinations committee.
Prerequisites	
Skills to be acquired in this module	
Module contents	Successfully completed study achievements at Master's level from a study abroad are recognised to the extent of 6 credit points, provided that they originate from the fields of psychology or neuroscience and do not have any significant overlaps in content with modules ofthe compulsory and elective subjects that have already been studied/are still to be studied.
Literaturempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	
Module capacity	unlimited
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	
Vorkenntnisse / Previous knowledge	

Examination	Prüfungszeiten	Type of examination
Final exam of module		according to the regulations of the respective foreign university
Form of instruction	VA-Auswahl (according to the regulations of the respective foreign university)	
SWS	4	
Frequency	SoSe oder WiSe	
Workload Präsenzzeit	56 h	

Psy290 Ambulatory Assessment in Psychology

Modulbezeichnung	Ambulatory Assessment
Modulkürzel	Psy290
Kreditpunkte	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master Neurocognitive Psychology (Master) > Mastermodule
Zuständige Personen	Roheger, Mandy (Modulverantwortung) Roheger, Mandy (Prüfungsberechtigt) Bleichner, Martin (Prüfungsberechtigt)
Teilnahmevoraussetzungen	Enrolment in Master's programme Neurocognitive Psychology.
Kompetenzziele	**Goals of module:** Students will acquire specific knowledge about ambulatory assessment methods in psychological and public health research. They will know about the historical development of ambulatory assessment methods, the advantages and challenges of these methods and statistical methods for analyzing longitudinal data collected in ambulatory assessment research. Students will generate an own research idea and conduct their own study using ambulatory assessment tools such as e.g. mobile surveys or motion sensors. Students will be able to collect, analyze and present their data using ambulatory assessment tools. **Competencies:** ++ Neuropsychological / neurophysiological knowledge ++ experimental methods ++ statistics & scientific programming + interdisciplinary knowledge & thinking + ethics / good scientific practice / professional behavior + critical & analytical thinking + project & time management
Modulinhalte	**Part 1: Ambulatory Assessment in Psychology and Health Research (lecture): summer** • Definitions and historical overview of ambulatory assessment (AmbA) methods • Reasons to use AmbA methods • Introduction to different types of AmbA methods • Designing a study of daily life • Examples of usage of AmbA methods in different research fields and different research questions • Statistical analysis of longitudinal data **Part 2: Researching daily life (seminar): summer** • Formulating hypotheses • Selecting AmbA procedures and planning administration • Data collection • Evaluating the application of AmbA methods • Analyzing, summarizing and visualizing results
Literaturempfehlungen	• Researching Daily Life: A Guide to Experience Sampling and Daily Diary Methods by Paul J. Silvia, Katherine N. Cotter
Links	
Unterrichtssprache	Englisch
Dauer in Semestern	

Angebotsrhythmus Modul	The module will start every summer term.
Aufnahmekapazität Modul	
Hinweise	PLEASE NOTE: We strongly recommend to take either psy170, psy270, psy280, psy220 or psy290 to gain methodological competencies (EEG, fMRI, TBS, HCI, ambulatory assessment techniques) that are needed for most practical projects and Master's theses!
Modullevel / module level	MM (Mastermodul / Master module)
Modulart / typ of module	Wahlpflicht / Elective
Lehr-/Lernform / Teaching/Learning method	
Vorkenntnisse / Previous knowledge	

Prüfung	Prüfungszeiten	Prüfungsform
Gesamtmodul	Assignments will be collected during the term.	The module will be tested by a portfolio (consisting of 3 assignments): - A theoretical background of the planned study and the presentation of the hypothesis (text, max. 1 page) – due before starting data collection - A visualization of the study results – due after finishing data collection and analysis - A scientific abstract of the whole study at the end of the seminar – due at the end of the seminar Required active participation for gaining credits: • attendance of at least 70% in the seminars • recording of AmbA data

Lehrveranstaltungsform	Kommentar	SWS	Angebotsrhythmus	Workload Präsenz
Vorlesung		2	Summer term	28
Seminar		2	Summer term	28
Präsenzzeit Modul insgesamt				56

Abschlussmodul

mam - Master´s Degree Module

Module label	Master´s Degree Module
Modulkürzel	mam
Credit points	30.0 KP
Workload	900 h (attendance in the lab meetings: 28h (2 SWS); thesis work: 872 hours)
Verwendbarkeit des Moduls	• Master's Programme Neurocognitive Psychology (Master) > Abschlussmodul
Zuständige Personen	Al-Zubaidi, Arkan (Prüfungsberechtigt) Bleichner, Martin Georg (Prüfungsberechtigt) Debener, Stefan (Prüfungsberechtigt) Gießing, Carsten (Prüfungsberechtigt) Rieger, Jochem (Prüfungsberechtigt) Hellmann, Andreas (Prüfungsberechtigt) Herrmann, Christoph Siegfried (Prüfungsberechtigt) Hildebrandt, Andrea (Prüfungsberechtigt) Hildebrandt, Helmut (Prüfungsberechtigt) Kranczioch-Debener, Cornelia (Prüfungsberechtigt) Özyurt, Jale Nur (Prüfungsberechtigt) Stecher, Heiko (Prüfungsberechtigt) Strüber, Daniel (Prüfungsberechtigt) Thiel, Christiane Margarete (Prüfungsberechtigt) Puschmann, Sebastian (Prüfungsberechtigt) Vogeti, Sreekari (Prüfungsberechtigt) Jäger, Manuela (Prüfungsberechtigt) Rosemann, Stephanie (Prüfungsberechtigt) Roheger, Mandy (Prüfungsberechtigt) Daeglau, Mareike (Prüfungsberechtigt) Kristanto, Daniel (Prüfungsberechtigt) Boetzel, Cindy (Prüfungsberechtigt)
Further responsible persons	thesis supervisors; Upon approval by the examination committee other staff members (e.g. PhD students in the laboratories of the Department of Psychology) can act as examiners for mam.
Prerequisites	Enrolment in Master's programme Neurocognitive Psychology. Completion of at least 60 credit points in other modules including module psy240 (psy241) (Computation in Neuroscience). Assignment of a topic by thesis supervisor and official application with the examination office.
Skills to be acquired in this module	
	Goals of module: Students will demonstrate that they are able to perform a psychological or neuroscientific experiment and/or analyze data originating from such experiments by means of methods according to contemporary scientific standards. Metaanalyses are accepted if they were conducted by means of up to date tools for data extraction and analyses, according to best practices outlined in relevant community guidelines, such as for example

Cochrane. In addition, the students will demonstrate that they are acquainted with the necessary methods and can present their results orally and in written form.

Competencies:
++ experimental methods
+ statistics & scientific programming
+ data presentation & discussion
++ independent research
+ scientific literature
++ scientific English / writing
+ ethics / good scientific practice / professional behavior
+ critical & analytical thinking
+ scientific communication skills
+ knowledge transfer
++ project & time management

Module contents

Part 1: Master's thesis
The students work on a given topic in cognitive neuroscience using literature research and the appropriate experimental methods.

Part 2: Master's colloquium
The preparation of the thesis is accompanied by regular participation in the lab meetings of the groups in which the thesis is performed. Students present their study design at the beginning of their thesis preparation and their results towards the end. In addition, they listen to the presentations of the other lab members and students in the group.

Literaturempfehlungen

Links	Rules and guidelines for Master's theses are explained here: https://uol.de/en/psychology/master/course-overview/
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	irregular
Module capacity	unlimited
Reference text	If you want to do a Master's thesis outside the Department of Psychology, please follow the rules stated on the program website. We encourage students to use the LaTeX template provided on the course website.
Modullevel / module level	Abschlussmodul (Abschlussmodul / Conclude)
Modulart / typ of module	Pflicht / Mandatory
Lehr-/Lernform / Teaching/Learning method	individual thesis preparation with supervision
Vorkenntnisse / Previous knowledge	contact your supervisor for details

Examination	Prüfungszeiten	Type of examination
Final exam of module	individual appointments	The written thesis will be evaluated by the daily supervisor and an additional reviewer (second supervisor) (90%). The oral presentation and defence of the thesis results will be evaluated by both supervisors (10%).

Form of instruction	Seminar und Projekt
SWS	2
Frequency	SoSe und WiSe
Workload Präsenzzeit	28 h (*Attendance as required for your project and 2 hours per week for participating in the lab meetings.*)