

module code /  
module title

## MN-CN / Cognitive Neuroscience

date / version of the module  
description

20.03.2023

1 INFORMATION ON THE MODULE		
1a	module code	MN-CN
1b	module title (German title)	
1c	module title (English title)	Cognitive Neuroscience
1d	credit points	9
1e	responsible for the module	Prof. Dr. Thorsten Fehr
1f	type of module	elective module
1g	programs using the module	M.Sc. Neurosciences
1h	organizational unit offering the module	Center for Cognitive Sciences ZKW / FB11
1i	content-related prior knowledge or skills	Knowledge about basic statistical methods is recommended
1j	learning contents	<p><u>Seminar:</u></p> <ul style="list-style-type: none"> <li>• Introduction to structural and functional Neuroimaging (fMRI, CT, SPECT, PET, fNIRS)</li> <li>• Introduction to Biosignalanalysis (EEG/MEG)</li> <li>• Experimental design and data analyses in fMRI and EEG</li> <li>• ERPs, Frequency analyses, source analyses, fMRI-constrained source analysis</li> <li>• Voxel density and individuality analyses</li> </ul>

		<ul style="list-style-type: none"><li>• Introduction to paper and protocol writing and scientific illustration</li><li>• Basic programming and data structuring for analyses</li><li>• Handling covariates and psychological testing</li></ul> <p><u>Practical work:</u></p> <ul style="list-style-type: none"><li>• Experimental design programming, optimization and appliance</li><li>• EEG-laboratory setup and EEG-data measurement</li><li>• MRI-laboratory setup and (f)MRI-data measurement</li></ul>																																																								
1k	learning outcomes/ competencies/ targeted competencies	<p>Students can...</p> <ul style="list-style-type: none"><li>• optimize experimental designs for EEG and fMRI studies</li><li>• measure and handle EEG- and fMRI-data measurements</li><li>• apply advanced EEG- and fMRI-data analyses strategies</li><li>• write neuroscientific protocols and papers</li></ul>																																																								
1l	calculation of student workload (part a: calculation of presence time and working hours)	<p><b>The total amount of the presence time and working hours of the module has to be calculated additionally in the detailed calculation a) to c).</b></p> <p><b>a) detailed calculation:</b> <b>SWS / presence time/working hours in each course of the module</b></p> <table><tr><td><input type="checkbox"/></td><td></td><td>lecture(s) with</td><td></td><td>SWS/ contact hours</td><td></td><td>hours of presence time</td></tr><tr><td><input checked="" type="checkbox"/></td><td>1</td><td>seminar(s) with</td><td>5</td><td>SWS/ contact hours</td><td>70</td><td>hours of presence time</td></tr><tr><td><input type="checkbox"/></td><td></td><td>exercise(s) with</td><td></td><td>SWS/ contact hours</td><td></td><td>hours of presence time</td></tr><tr><td><input type="checkbox"/></td><td></td><td>internship(s) with</td><td></td><td>sum of working hours</td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td><td>seminar(s) with</td><td></td><td>SWS/ contact hours</td><td></td><td>total hours of presence time</td></tr><tr><td><input checked="" type="checkbox"/></td><td>1</td><td>laboratory/laboratories with</td><td>3</td><td>SWS/ contact hours</td><td>42</td><td>total hours of presence time</td></tr><tr><td><input type="checkbox"/></td><td></td><td>tutorial(s) with</td><td></td><td>SWS/ contact hours</td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td></td><td>excursion(s) with</td><td></td><td>SWS contact hours in total</td><td></td><td>working hours</td></tr></table>	<input type="checkbox"/>		lecture(s) with		SWS/ contact hours		hours of presence time	<input checked="" type="checkbox"/>	1	seminar(s) with	5	SWS/ contact hours	70	hours of presence time	<input type="checkbox"/>		exercise(s) with		SWS/ contact hours		hours of presence time	<input type="checkbox"/>		internship(s) with		sum of working hours			<input type="checkbox"/>		seminar(s) with		SWS/ contact hours		total hours of presence time	<input checked="" type="checkbox"/>	1	laboratory/laboratories with	3	SWS/ contact hours	42	total hours of presence time	<input type="checkbox"/>		tutorial(s) with		SWS/ contact hours			<input type="checkbox"/>		excursion(s) with		SWS contact hours in total		working hours
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		<input type="checkbox"/> other form of course (e.g. block seminar), namely this:  <div> <div>with</div> <div>SWS / with totally</div> <div>contact hours</div> <div> <input type="checkbox"/> presence time <input type="checkbox"/> working hours </div> </div> = sum of presence time and working hours: 112 hours
	calculation of student workload (part b: preparation time and follow-up work/self-study)	<b>b) working hours for preparation/follow-up work of the course(s) and/or self-study</b> = sum of working hours: 128 hours
	calculation of student workload (part c: exam preparation etc.)	<b>c) exam preparation (incl. examination)</b> = sum of working hours: 30 hours
	calculation of student workload (total amount of hours including a) - c))	<b>Total amount of the presence time and working hours a) to c):</b> 270 hours
1m	description of possible optional courses in the module	<u>Can a student choose between different courses within the module?</u> NO <u>Short description of selection option</u>  Klicken Sie hier, um Text einzugeben.
1n	language(s) of instruction	<input type="checkbox"/> German <input checked="" type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> French <input type="checkbox"/> Other, namely this: Klicken Sie hier, um Text einzugeben.
1o	frequency	(regular cycle module is offered) e.g.: winter semester, yearly or summer semester, yearly or each semester summer semester yearly Klicken Sie hier, um Text einzugeben.
1p	duration	one semester module The main part of the module is a block course of four weeks, with preparatory/ follow-up-work throughout the whole semester
1q	Literature (optional)	Klicken Sie hier, um Text einzugeben.

1r	more information on the module ( <i>optional</i> )	
<b>2 INFORMATION ON THE MODULE EXAMINATION</b> (see also AT Art. 5 section 8)		
2a	type of examination	X module exam; i.e. exam with only one component (MP) <input type="checkbox"/> combination exam, i.e. exam with several components (administered by instructors) (KP) <input type="checkbox"/> partial exam; i.e. exam with several components (administered by registrar) (TP)
2b	exam components or prerequisites ( <i>type, number</i> )	<p> <i>PL</i> = graded component of the examination  <i>SL</i> = ungraded component of the examination, coursework  <i>PVL</i> = prerequisite of the examination (see AT Art. 5 Section 10)         </p> <p> <input checked="" type="checkbox"/> PL   1      <input type="checkbox"/> SL   0      <input type="checkbox"/> PVL   justification         </p> <p>If necessary, further explanations:</p> <p>Klicken Sie hier, um Text einzugeben.</p>
2c	Give this information for combination examinations only: Weights (in percentage) of component grades	<p>PL 1:</p> <p>PL 2: Klicken Sie hier, um Text einzugeben.</p> <p>PL 3: Klicken Sie hier, um Text einzugeben.</p> <p>PL 4: Klicken Sie hier, um Text einzugeben.</p> <p>If necessary, further comments:</p> <p>Klicken Sie hier, um Text einzugeben.</p>
2d	form of examination (see AT BPO/AT MPO Art. 8, 9 and 10)	<div> <input type="checkbox"/> Assignment           <input type="checkbox"/> Oral examination (single)           <input type="checkbox"/> Presentation, oral         </div> <div> <input type="checkbox"/> Written examination           <input type="checkbox"/> Group examination, oral           <input type="checkbox"/> Presentation and written assignment         </div> <div> <input type="checkbox"/> Portfolio           <input checked="" type="checkbox"/> Project report           <input type="checkbox"/> Bachelor Thesis         </div> <div> <input type="checkbox"/> Internship report           <input type="checkbox"/> Colloquium           <input type="checkbox"/> Master Thesis         </div> <p><input type="checkbox"/> Other (concrete definition is given in the examination regulations):</p> <p>Klicken Sie hier, um Text einzugeben.</p>
2e	language(s) of instruction	<div> <input type="checkbox"/> German           <input checked="" type="checkbox"/> English           <input type="checkbox"/> Spanish           <input type="checkbox"/> French         </div> <p><input type="checkbox"/> Other, namely this:</p> <p>Klicken Sie hier, um Text einzugeben.</p>