

<b>Module Name</b> Neural Function II: Analyzing the Neural Underpinnings of Behavior – from Structure through Function to Behavior						
<b>Type of Module</b> ○ Advanced Module				<b>Module Code</b> Neural Function II		
<b>Identification Number</b>	<b>Workload</b>	<b>Credit Points</b>	<b>Term</b>	<b>Offered Every</b>	<b>Start</b>	<b>Duration</b>
MN-B-SM (N 4)	360 h	12 CP	2 <sup>nd</sup> term of studying	Summer term, 2 <sup>nd</sup> half	Summer term only	7 weeks
<b>1</b>	<b>Course Types</b>		<b>Contact Time</b>		<b>Private Study</b>	
	a) Lectures		16 h		44 h	
	b) Practical/Lab		100 h		160 h	
	c) Seminar		10 h		30 h	
<b>2</b>	<b>Module Objectives and Skills to be Acquired</b> Students who successfully completed this module <ul style="list-style-type: none"> <li>• Will be able to give detailed account about concepts and experimental approaches in the analysis of behavior and its neural basis</li> <li>• Will be able to perform preparations and techniques to study neural network function, and rhythmic motor behavior in different model systems (see contents of the module).</li> <li>• Will be able to independently design and perform small scientific projects related to topics of the module.</li> <li>• Will be able to analyze data, e.g. by using the programming language Matlab, the Spike2 software package or software for anatomical analysis.</li> <li>• Will be able to present research results in oral and written form and to critically discuss scientific publications related to the topic of the module on a professional level.</li> <li>• Will be able to transfer skills acquired in this module to other fields of biology.</li> </ul>					
<b>3</b>	<b>Module Content</b> <ul style="list-style-type: none"> <li>• Analysis of motor behavior in arthropods and vertebrates (e.g. cockroach, mouse, fruit fly and stick insect)</li> <li>• Techniques in monitoring and recording motor behavior in different insect model systems</li> <li>• Behavioral and electrophysiological analysis of neuronal network performance</li> <li>• Optogenetic approaches for electrophysiological research</li> <li>• Data analysis with Matlab</li> </ul>					
<b>4</b>	<b>Teaching Methods</b> <ul style="list-style-type: none"> <li>• Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form</li> </ul>					

5	<p><b>Prerequisites (for the Module)</b></p> <p>Enrollment in the Master of Science degree program “Neuroscience” or in the Master’s degree program “Experimental and Clinical Neuroscience”</p> <p><b>Additional academic requirements</b></p> <p>Previous attendance of the lecture module Neuroscience (winter term)</p>
6	<p><b>Type of Examination</b></p> <p>The final examination consists of two parts: Oral examination (20-30 min; 50 % of the total module mark), written report (50 % of the total module mark)</p>
7	<p><b>Credits Awarded</b></p> <p>Regular and active participation; Each examination part graded at least “satisfactory” (see appendix of the examination regulations for details)</p>
8	<p><b>Compatibility with other Curricula*</b></p> <p>Optional compulsory module in the Master’s degree program “Experimental and Clinical Neuroscience”</p>
9	<p><b>Proportion of Final Grade</b></p> <p>12.0 %</p>
10	<p><b>Module Coordinator</b></p> <p>Prof. Dr. Ansgar Büschges, phone 470 2607, e-mail: <a href="mailto:ansgar.bueschges@uni-koeln.de">ansgar.bueschges@uni-koeln.de</a></p>
11	<p><b>Further Information</b></p> <p><b>Participating faculty:</b> Prof. Dr. A. Büschges, Dr. G. di Cristina, Dr. E.A. Gorostiza, Dr. M. Gruhn, Prof. Dr. G. Gatto, Prof. Dr. M. Nawrot, guests</p> <p><b>Literature:</b></p> <ul style="list-style-type: none"> <li>• Information about textbooks and other reading material will be given on the ILIAS platform of the course</li> </ul> <p><b>General time schedule:</b> Week 1-6 (Mon.-Fri.): Lectures, practical/lab, analysis of self-acquired data, preparation of writing written report; Week 7 (Mon.-Fri.): Preparation for the oral presentation and completing of the written report</p> <p><b>Note:</b> The module contains hands-on laboratory work conducted individually and is taught in research laboratories. The module does not contain computer-based practicals/research as a main component.</p> <p><b>Introduction to the module:</b> June 08th, 2026 at 10:00 a.m., Cologne Biocenter, room 1.007 (first floor) or online (in this case, further information/link will be sent to your smail-Account); for preparation to the module before this introduction see ILIAS link under literature.</p> <p><b>Oral examination:</b> July 23, 2026, second/supplementary examination August 28, 2026; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>