

<b>Module Name</b> Neural Function II – Analyzing the Neural Underpinning of Behavior – from structure to function to behavior						
<b>Type of Module</b> ○ Advanced Module				<b>Module Code</b> Neural Function II		
<b>Identification Number</b> MN-B-SM (N 4)	<b>Workload</b> 360 h	<b>Credit Points</b> 12 CP	<b>Term</b> 2 <sup>nd</sup> term of studying	<b>Offered Every</b> summer term	<b>Start</b> summer term only	<b>Duration</b> 7 weeks
<b>1</b>	<b>Course Types</b> a) Lectures b) Practical/Lab c) Seminar		<b>Contact Time</b> 16 h 100 h 10 h	<b>Private Study</b> 44 h 160 h 30 h	<b>Planned Group Size*</b> max. 8 max. 2 (4x2) max. 8	
<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>• have acquired detailed knowledge about concepts and experimental approaches in the analysis of behavior and its neural basis</li> <li>• are 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>• are able to independently design and perform small scientific projects related to topics of the module.</li> <li>• are able to analyze data, e.g. by using the programming language Matlab, the Spike2 software package or software for anatomical analysis.</li> <li>• have learned how 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>• are able to transfer skills acquired in this module to other fields of biology.</li> </ul>					
<b>3</b>	<b>Module Content</b> Analyzing motor behavior of animals while aiming at elucidating its neural basis asks for conceptual and methodological competences of researchers. With a combined use of lectures, seminars and experimental work along the research lines of the contributing labs and PIs, this module will focus on introducing students to designing experimental programs based on conceptual and methodological needs in the field of neuroethological research. <ul style="list-style-type: none"> <li>• Analysis of motor behavior in arthropods (e.g. cockroach, locust, fruit fly and stick insect)</li> <li>• Techniques in monitoring and recording motor behavior in insects</li> <li>• Behavioral and electrophysiological analysis of neuronal network performance</li> <li>• Staining techniques for neurons and microscopy</li> <li>• Data analysis with Matlab</li> </ul>					
<b>4</b>	<b>Teaching Methods</b> Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form					

5	<p><b>Prerequisites (for the Module)</b></p> <p>Enrollment in the Master's degree course "Biological Sciences" or in the Master's degree course "Experimental and Clinical Neurosciences"</p> <p><b>Additional academic requirements</b></p> <p>Previous attendance of the subject module "Neural Function I - Neural Basis of Motor Behavior in Animals (MN-B-SM [N 1])" or "Neurobiology in <i>Drosophila</i> (MN-B-SM [N 2])" or the tutorial module "Neuroscience (MN-B-N 3)"</p>
6	<p><b>Type of Examination</b></p> <p>The final examination consists of two parts: oral presentation (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 at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p><b>Compatibility with other Curricula*</b></p> <p>Elective module in the Master's degree course "Experimental and Clinical Neurosciences"</p>
9	<p><b>Proportion of Final Grade</b></p> <p>In the Master's degree course "Biological Sciences": 12 % of the overall grade (see also appendix of the examination regulations)</p>
10	<p><b>Module Coordinator</b></p> <p>Prof. Dr. Ansgar Büschges, phone 470-2607, e-mail: ansgar.bueschges@uni-koeln.de</p>
11	<p><b>Further Information</b></p> <p><b>Subject module</b> of the Master's degree course "Biological Sciences", <b>Specialization:</b> (N) Neurobiology: Genes, Circuits, and Behavior</p> <p><b>Participating faculty:</b> Prof. Dr. A. Büschges, Dr. N. Deisig, Dr. G. di Cristina, Dr. E.A. Gorostiza, Dr. M. Gruhn, Prof. Dr. M. Nawrot, Prof. Dr. T. Korotkova (MedF), Dr. G. Gatto (MedF), guests</p> <p><b>Literature:</b> Information about textbooks and other reading material will be given on the ILIAS representation of the course (<a href="https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html">https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html</a>)</p> <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</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> May 22, 2023 at 9:00 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 or written examination:</b> July 13, 2023, second/supplementary examination August 22, 2023; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

\* 6 students from the Master 's degree course "Biological Sciences"and 2 students from the Master's degree course "Experimental and Clinical Neurosciences"