

Neural Function II: Neurons, Networks and Behavior						
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration	
MN-B-SM (N 3)	360 h	12 CP	1 st or 2 nd term of studying	Summer term, 2 nd half	7 weeks	
1	Type of lessons		Contact times	Self-study times	Intended group size*	
	a) Lectures		20 h	40 h	max. 14	
	b) Practical/Lab		100 h	160 h	max. 2	
	c) Seminar		10 h	30 h	max. 14	
2	Aims of the module and acquired skills					
	Students who successfully completed this module ...					
	<ul style="list-style-type: none"> • have acquired detailed knowledge about concepts and experimental approaches in the analysis of neuronal networks • are trained in preparations and intracellular and/or extracellular recording techniques to study neural network functions, and rhythmic motor behavior in different model systems, from invertebrates to vertebrates (see contents of the module). • are able to independently design and perform small scientific projects related to topics of the module. • have applied data analyses using the high level programming language Matlab and/or the Spike2 software package. • 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. • are able to transfer skills acquired in this module to other fields of biology. 					
3	Contents of the module					
	<ul style="list-style-type: none"> • Analysis of rhythmic motor behavior in lamprey, crustaceans (stomatogastric nervous system and swimmeret system), and insects (drosophila and stick insect) • Electrophysiological and pharmacological analysis of neuronal networks • Functional properties of neuronal networks and generation of rhythmic activity • Different extracellular and intracellular recording techniques of neuronal activity • Techniques in recording motor behavior in insects • Staining techniques for neurons and microscopy • Data analysis with Matlab 					
4	Teaching/Learning methods					
	<ul style="list-style-type: none"> • Lectures; Practical/Lab (Project work); Seminar; Computer modeling; Guidance to independent research; Training on presentation techniques in oral and written form 					

Neural Function II: Neurons, Networks and Behavior (MN-B-SM [N 3]) continued

5	<p>Requirements for participation</p> <p>Enrollment in the Master´s degree course "Biological Sciences" or in the Master´s degree course "Klinische und Experimentelle Neurowissenschaften"</p> <p>Participation in the module Neural Function I: From Experiments to Analysis. In cases of doubt, please contact PD Dr. Joachim Schmidt (joachim.schmidtuni-koeln.de).</p>
6	<p>Type of module examinations</p> <p>The final examination consists of two parts: 30 min oral examination about topics of the lectures and the practical/lab part (70 % of the total module mark) and oral presentation (30 % of the total module mark)</p>
7	<p>Requisites for the allocation of credits</p> <p>Regular and active participation; Passed seminar paper; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p>Compatibility with other Curricula*</p> <p>Elective module in the Master´s degree course "Klinische und Experimentelle Neurowissenschaften"</p>
9	<p>Significance of the module mark for the overall grade</p> <p>In the Master´s degree course "Biological Sciences": 15 % of the overall grade (see also appendix of the examination regulations)</p>
10	<p>Module coordinator</p> <p>Prof. Dr. Ansgar Büschges, phone 470-2607, e-mail: ansgar.bueschges@uni-koeln.de</p>
11	<p>Additional information</p> <p>Subject module of the Master´s degree course "Biological Sciences", Focus of research: (N) Neurobiology</p> <p>Participating faculty: Prof. Dr. A. Büschges, Dr. T. Bockemühl, Dr. M. Gruhn, Dr. C. Guschlbauer, Prof. Dr. M. Nawrot, PD Dr. J. Schmidt, Dr. C. Wellmann</p> <p>Literature:</p> <ul style="list-style-type: none"> • Literature will be delivered in the course <p>General time schedule: Week 1-6 (Mon.-Fri.): Lectures, practical/lab, analysis of self-acquired data with Matlab, and preparation of oral project presentation (held at the end of week 6) as well as writing seminar paper; Week 7 (Mon.-Fri): Preparation for the oral examination</p> <p>Note: 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>Introduction to the module: June 04, 2018 at 9:00 a.m., Cologne Biocenter, room 1.007 (first floor)</p> <p>Oral examination: July 20, 2018; more details will be given at the beginning of the module</p>

* 8 students from the Master´s degree course "Biological Sciences" and 6 students from the Master´s degree course "Klinische und Experimentelle Neurowissenschaften".