Module Name
Neural Function II – Analyzing the Neural Underpinning of Behavior – from structure to function to behavior

Type of Module	**Module Code**
o Advanced Module	Neural Function II

Identification Number	**Workload**	**Credit Points**	**Term**	**Offered Every**	**Start**	**Duration**
MN-B-SM (N 4)	360 h	12 CP	2nd term of studying	Summer term	summer term only	7 weeks

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size***
	a) Lectures	16 h	44 h	max. 10
	b) Practical/Lab	100 h	160 h	max. 2
	c) Seminar	10 h	30 h	max. 10

2 Module Objectives and Skills to be Acquired

Students who successfully completed this module

- have acquired detailed knowledge about concepts and experimental approaches in the analysis of analyzing behavior and its neural basis
- are trained in preparations and techniques to study neural network function, and rhythmic motor behavior in different model systems (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, e.g. using the programming language Matlab, the Spike2 software package or software for anatomical analysis
- 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 Module Content

- Analysis of motor behavior in arthropods (e.g. cockroach, fruit fly and stick insect)
- Behavioral and electrophysiological analysis of neuronal network performance
- Techniques in monitoring and recording motor behavior in insects
- Staining techniques for neurons and microscopy
- Data analysis with Matlab

4 Teaching Methods

Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form

5	**Prerequisites (for the Module)** Enrollment in the Master´s degree course "Biological Sciences" or in the Master´s degree course "Experimental and Clinical Neurosciences" **Additional academic requirements** Previous attendance of the lecture module "Neural Basis of Motor Behavior in Animals (N)"
6	**Type of Examination** 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)
7	**Credits Awarded** Regular and active participation Each examination part at least "sufficient" (see appendix of the examination regulations for details)
8	**Compatibility with other Curricula*** Elective module in the Master´s degree course "Experimental and Clinical Neurosciences"
9	**Proportion of Final Grade** In the Master´s degree course "Biological Sciences": 15 % of the overall grade (see also appendix of the examination regulations)
10	**Module Coordinator** Prof.Dr. Ansgar Büschges, phone 470-2607, e-mail: ansgar.bueschges@uni-koeln.de
11	**Further Information** **Subject module** of the Master´s degree course "Biological Sciences", **Specialization:** (N) Neurobiology: Genes, Circuits, and Behavior **Participating faculty**: Prof. Dr. A. Büschges, Dr. N. Deisig, Dr. G. di Cristina, Dr. E.A. Gorostiza, Dr. M. Gruhn, Dr. G. Lundkvist, Prof. Dr. M. Nawrot **Literature:** Information about textbooks and other reading material will be given on the ILIAS representation of the course (https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html) **General time schedule:** 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 **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. **Introduction to the module:** May 23, 2022 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. **Oral examination:** July 15, 2022, second/supplementary examination August 23, 2022; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.

*7 students from the Master´s degree course "Biological Sciences" and 3 students from the Master´s degree course "Experimental and Clinical Neurosciences"