Course Title: Neural Function II – Analyzing the Neural Underpinning of Behavior – from structure to function to behavior

Identification number	**Workload**	**Credit points**	**Frequency of occurrence**	**Duration**
M-Neuro-AM	360 h	12 CP	Summer term, 2nd half	7 weeks

	Type of lessons	**Contact times**	**Self-study times**	**Intended group size**
1	a) Lectures b) Practical/Lab c) Seminar	a) 16 h b) 100 h c) 10 h	a) 44 h b) 160 h c) 30 h	a) max 3 b) max 2 c) max 3

2 **Aims of the module and acquired skills**

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 **Contents of the module**

- 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/Learning Methods**

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

5 **Requirements for Participation**

Enrollment in the Master's degree course "Experimental and Clinical Neurosciences" at the University of Cologne

Additional academic requirements

Previous attendance of the lecture module "Neural Basis of Motor Behavior in Animals (N)"

6	**Type of module 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	**Requirement for the allocation of credits** Regular and active participation Each examination part at least “sufficient” (see appendix of the examination regulations for details)
8	**Compatibility with other Curricula** None
9	**Significance of the module mark for the overall grade** In the Master´s degree course “Experimental and Clinical Neurosciences”: 12% 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	**Additional Information** **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. **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 practica/research as a main component. More details will be given at the beginning of the module.