Module variant: Advanced Neurobiology and Behavior valid until WS24/25

Module: Hearing and Communication Alternative I	
University/Department/Teaching Unit: Freie Universität Berlin/Department of Biology, Chemistry, Pharmacy/Biology	
Module coordinator: Ursula Koch, Thorsten Becker	
Prerequisites: none	
Learning objectives: Students will acquire in-depth knowledge on the neural basis of hearing and communication in animals. Students will be able to understand key techniques in neuroscience research, present and critically discuss the results. They will learn to independently address experimental questions on this topic, plan experimental procedures and quantitatively analyse the acquired data. They will obtain skills in orally presenting and writing about the current scientific questions in neuroscience.	
Content: During the course, students will learn the fundamentals on hearing and communication in animals. The students will get an overview of how the brain analysis sounds and how communication is performed in animals. The students will get an overview on how the mammalian brain processes sound and how animals use vocal communication to interact. Basic questions on hearing and communication in mice will be experimentally assessed with state-of-the-art methods including video and audio monitoring of acoustic behaviour. Quantitative analysis of the acquired data will be performed with data analysis software. In parallel, structure and function of neural circuits in the mouse brain will be analysed using electrophysiology and/or immunohistochemistry in combination with confocal microscopy. In the seminar, current literature on hearing and communication in animals will be presented and discussed. One focus will be various dysfunctions of hearing and communication in humans.	

Modes of instruction	**Contact hours** (hours per week during the semester)	**Types of active participation**	**Workload** (in hours)	
Lecture (V)	2	–	Class attendance (lecture) Preparation, before and after (lecture)	30 30
Seminar (S)	1	Presentation and discussion	Class attendance (seminar) Preparation, before and after (seminar)	15 30
Safety Lab (sP)	5	Carrying out and documenting lab experiments	Class attendance (safety lab) Preparation, before and after (safety lab) Exam preparation and exam	75 40 80

Module assessment	Written exam (60 minutes), wholly or partially in multiple-choice format; can also be carried out electronically or written report on research results (approx. 10 pages) or examination colloquium (approx. 20 minutes)	
Language	English	
Regular attendance required	Seminar and safety lab: yes, lecture: attendance recommended	
Total workload	300 hours	10 credit points
Duration	one semester	
Frequency	irregular	
Applicability	Master's degree program M.Sc. Biology	

Utilization in the following specializations (decision by the examining board):

Biodiversity, Evolution and Ecology	x
Genetics and Genomics	x
Microbiology	
Molecular- and Cellular Biology	x
Molecular Plant Sciences	
Neurobiology	x
Biology	x