Module variant to: Topics in Neurobiology and Behavior

Module: The Development and Structure of the Nervous System Alternative II	
University/Department/Teaching Unit: Freie Universität Berlin/Department of Biology, Chemistry, Pharmacy/Biology	
Module coordinator: Prof. Dr. Mathias Wernet	
Prerequisites: none	
Learning objectives: Upon completion of this module, students will have acquired basic knowledge covering the most important methods in modern Neurobiology in genetic model organisms. Successful students will acquire skills covering several synergistic areas: (i) in modern neuroanatomy supported by molecular-genetic methods (including fluorescent and confocal microscopy), (ii) in the visualization of neuronal development in vivo, and (iii) in performing behavior experiments in combination with molecular genetic tools for manipulating specific neurons in the living aninmal. Students will be able to understand seminal publications in the field and to discuss them critically.	
Content: During the 3-week practical course, the students will learn cutting-edge techniques for the investigation of key concepts in the synergistic field of neurodevelopment (from molecules to dynamic processes in the establishment of robust circuitry) and structure (neuroanatomy using modern tools), across genetic model organisms (mouse, zebrafisch, fly, worm). A lecture series is part of the practical course, covering current topics relating to neurodevelopment, neuroanatomy and behavior (embryology, pattern formation in neural circuits, axon pathfinding, synaptogenesis, connectomics, neuroethology). Specific papers will be discussed. Every student will present one research publication in form of an oral presentation (Referat).	

Modes of instruction	**Contact hours** (hours per week during the semester)	**Types of active participation**	**Work load** (in hours)	
Lecture (V)	2	–	Class attendance (lecture) Preparation, before and after (lecture)	30 15
Seminar (S)	1	Preparation of scientific work relevant to the presentation, participation in the discussion and question sections	Class attendance (seminar) Preparation, before and after (seminar) Exam preparation and exam	15 15 75
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: yes, lecture: attendance recommended		
Total workload		150 hours		5 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	
Genetics and Genomics	
Microbiology	
Molecular- and Cellular Biology	x
Molecular Plant Sciences	
Neurobiology	x
Biology	x