neu340 - Invertebrate Neuroscience

Module label: Invertebrate Neuroscience
Module code: neu340
Credit points: 6.0 KP
Workload: 180 h

(1 SWS Seminar (SE) Total workload 45h: 15h contact / 30h background literature reading, preparation for short tests and results presentation 3 SWS Supervised exercise (UE) Total workload 135h: 70h contact / 65h data analysis and preparation of portfolio assignments)

Used in course of study:
- Master's Programme Biology > Background Modules
- Master's Programme Neuroscience > Background Modules

Contact person:
- Module responsibility: Jutta Kretzberg
- Authorized examiners: Jutta Kretzberg

Entry requirements:
- attendance in pre-meeting

Skills to be acquired in this module:
++ Neurosci. knowlg.
++ Expt. Methods
+ Scient. Literature
+ Social skills
+ Maths/Stats/Progr.
+ Data present./disc.
+ Scientific English
+ Ethics

Upon successful completion of this course, students
- have knowledge on invertebrate neuronal systems in comparison to vertebrate systems
- have discussed an overview of experimental and theoretical methods of invertebrate neuroscience
- have acquired first practical skills in intracellular recordings from invertebrate neurons
- have acquired basic skills in data analysis
- have acquired an intuitive understanding of membrane potential and action potential generation based on computer simulations

Module contents:
The background module Neurophysiology consists of three weeks of seminar and hands-on lab exercises on intracellular recordings from leech neurons, as well as computer simulations to study the basis of membrane potential and action potential generation. The seminar covers the following topics:
- Invertebrate neuronal systems in comparison to vertebrate systems
- Ion channels, membrane potential and action potential generation
- Introduction to electrophysiological methods
- Introduction to data analysis methods

In the practical exercises, portfolio assignments will be performed on:
- Qualitative electrophysiological classification of different cell types in the leech nervous system
- Quantitative analysis (stimulus - response relationship) of at least one cell type
- Action potential generation: Comparison of model simulations and experiments

Module level:
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Modulart:
- je nach Studiengang Pflicht oder Wahlpflicht

Lern-Lehrform / Type of program:
- basic knowledge of neurobiology, basic MATLAB programming skills

Vorkenntnisse / Previous knowledge:
- basic knowledge of neurobiology, basic MATLAB programming skills

Examination:
Time of examination: during the course (summer term, second half)
Type of examination: Portfolio consisting of short tests and short reports. In addition, mandatory but ungraded: seminar presentation

Course type:
Seminar

Comment:
SWS: 2.00
Frequency: SuSe or WiSe
Workload attendance: 28 h

Reader’s advisory:
Course scripts and mandatory scientific literature (3 review articles) discussed in the seminar will be available in Stud.IP
Background and seminar literature will be available in Stud.IP

Links:
- Language of instruction: English
- Duration (semesters): 1 Semester
- Module frequency: annually, summer term, second half
- Module capacity: 12

This module provides the background for neu345 "Neural Computation in invertebrate systems"
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<td>SuSe or WiSe</td>
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**Total time of attendance for the module**

56 h