## neu340 - Invertebrate Neuroscience

<table>
<thead>
<tr>
<th>Module label</th>
<th>Invertebrate Neuroscience</th>
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<tbody>
<tr>
<td>Module code</td>
<td>neu340</td>
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<tr>
<td>Credit points</td>
<td>6.0 KP</td>
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<tr>
<td>Workload</td>
<td>180 h</td>
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(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

### 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): annually, summer term, second half
- Module frequency: 1 Semester
- Module capacity: 12
  - this module provides the background for neu345 "Neural Computation in invertebrate systems"

### Modulart
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### Lern-/Lehrform / Type of program
- je nach Studiengang Pflicht oder Wahlpflicht

### 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
<table>
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<th>SWS</th>
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<tr>
<td>Exercises</td>
<td></td>
<td>2.00</td>
<td>SuSe or WiSe</td>
<td>28 h</td>
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**Total time of attendance for the module**

56 h