# Animal Physiology for Non-Biologists

<table>
<thead>
<tr>
<th>Code</th>
<th>8207970539</th>
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<tr>
<td>ECTS credits</td>
<td>6</td>
</tr>
<tr>
<td>Attendance time</td>
<td>4</td>
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<td>Language of instruction</td>
<td>German, English</td>
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<tr>
<td>Duration</td>
<td>1 Semester</td>
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<td>Cycle</td>
<td>each Summer Semester</td>
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<tr>
<td>Coordinator</td>
<td>Prof. Dr. Harald Wolf</td>
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<td>Instructor(s)</td>
<td>Prof. Dr. Harald Wolf, Dr. Tamás Röszer, Prof. Dr. Maja Vujic</td>
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<td>Allocation of study programmes</td>
<td>Computer Science BSc, application subject Biology; Computer Science MSc, application subject Biology; Mathematics BSc (subsidary subject Biology); Mathematics MSc (subsidary subject Biology)</td>
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<td>Recommended prerequisites</td>
<td>Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program. Contentually: Module Basics in Biology for Computer Science and Mathematics [Grundlagen der Biologie für Informatik und Mathematik].</td>
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| Learning objectives | Students who have successfully completed this module  
  • have good knowledge of neuro-, sensory-, muscle and metabolic physiology, including endocrinology and immune defense.  
  • have good knowledge concerning circulation, respiration, osmoregulation and excretion, homeostasis, temperature regulation, defense mechanisms (immune system) and hormones.  
  • know the structure and function of important cell types in the muscular and nervous system. |
• have well-founded basic knowledge of important sensory systems, the sensory and motor control by the nervous system, the function of muscles and other effector organs.
• have basic knowledge of the developing processes in the nervous system.
• are confident with the muscle and nervous system in vertebrates and selected invertebrates.

Syllabus
This module covers the following subject-specific contents:
• Structure of nerve cell and glia, function of cell types
• Structure of the nervous system, network concept, brain
• Development of nervous system and cell junctions
• Bases of (nerve) cell function: membrane potential, action potential, synaptic transmission
• Major sensory systems and their functional bases: olfaction, mechanosensory properties including hearing, visual systems
• Muscle cell and musculature, motor control and control circuits (closed loop)
• Basic principles and metabolic processes of respiration, excretion, osmoregulation, ion regulation, muscle biochemistry, digestion, thermoregulation
• Homeostasis
• Defense mechanisms (immune system), hormones

Literature
• Wehner, R., Gehring, W.: Zoologie, Stuttgart, Thieme-Verlag
• Eckert, R., Randall, D.: Tierphysiologie, Stuttgart, Thieme-Verlag
• Schmidt, R. F., Thews, G.: Physiologie des Menschen, Springer-Verlag
• Murphy, K.: Immunobiology

Teaching and learning methods
• Animal Physiology [Tierphysiologie] (lecture), 4 credit hours [SWS], 6 credit points [LP] (two contentual parts, each 3 credit points: metabolic physiology, neurobiology)

Workload
Attendance: 60 h
Private study: 120 h
Sum: 180 h

Assessment
Two examination alternatives: Either two written module part exams about the two lecture parts, or an oral exam about the entire lecture.

Grading procedure
The grade is determined from the results of the written module part exams, weighed by credit points, or it is determined from the result of the oral module exam.

Basis for
Further modules in biology