

Module title		Abbreviation
Modern Physics and General Concepts		11-P-MPR-092-m01
Module coordinator		Module offered by
Managing Director of the Institute of Applied Physics		Faculty of Physics and Astronomy
ECTS	Method of grading	Only after succ. compl. of module(s)
11	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	11-P-E; 11-P-MP1
Contents		
<p>Basics of Solid-State Physics; Nuclear Physics, Elementary Particle Physics and Astrophysics; introduction of important concepts and applications of Physics; interconnections between the physical subdisciplines (and partly with other Natural Sciences); aspects of the history of ideas of important concepts and their controversies (e.g. atomism, determinism); Applied and Technical Physics: Physics and information/communication technology; rules and process technology, sensors; medical technology; climate and weather; Biophysics; ecology; energy; celestial mechanics, satellites, GPS; measuring devices; electrical light sources; displays</p>		
Intended learning outcomes		
<p>The students have structured knowledge of the aforementioned terms. Their understanding of important shared concepts enables them to connect different subdisciplines of Physics, they know the similarities and differences of different usage contexts and therefore have in-depth knowledge of these concepts; they understand complex systems of nature and engineering and are able to connect their own physical knowledge in a synergetic manner by analysing the solutions to selected, complex problems.</p>		
Courses (type, number of weekly contact hours, language – if other than German)		
<p>Moderne Physik (Modern Physics): V (2 weekly contact hours) + Ü (1 weekly contact hour), once a year (winter semester) Gebietsübergreifende Konzepte (General Concepts): V (1 weekly contact hour) + Ü (2 weekly contact hours), once a year (winter semester) Begleitseminar (vertiefend) (Accompanying Seminar for Advanced Students): S (2 weekly contact hours), once a year (winter semester)</p>		
Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)		
<p>This module has the following assessment components</p> <ol style="list-style-type: none"> 1. Topics covered in lectures and exercises in part 1 (Moderne Physik/ Modern Physics): written examination (approx. 90 minutes, usually chosen) or oral examination of one candidate each (approx. 20 minutes) 2. Topics covered in lectures and exercises in part 2 (Gebietsübergreifende Konzepte (Interdisciplinary Aspects)): written examination (approx. 90 minutes, usually chosen) or oral examination of one candidate each (approx. 20 minutes) 3. Seminar: written examination (approx. 45 minutes) or term paper (approx. 8 pages) or presentation (approx. 30 minutes) or oral examination (approx. 30 minutes) <p>Students must register for assessment components 1 through 3 online (details to be announced). To pass this module, students must pass each of the assessment components 1 through 3.</p>		
Allocation of places		
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Additional information		
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Workload		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 53 (1) 1. a) Physik Mechanik, Wärmelehre, Elektrizitätslehre, Optik, der speziellen Relativitätstheorie		

§ 53 (1) 1. b) Physik Aufbau der Materie

Module appears in

First state examination for the teaching degree Realschule Physics (2009)