

Module title		Abbreviation
Classical Physics (Mechanics, Thermodynamics, Waves, Oscillations, Electricity, Magnetism and Optics)		11-KP-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)
16	numerical grade	--
Duration	Module level	Other prerequisites
2 semester	undergraduate	Bridge course Mathematische Rechenmethoden der Physik (Mathematical Methods of Physics) for first-semester students.
Contents		
Physical laws of mechanics, thermodynamics, vibrations, waves, science of electricity, magnetism, electromagnetic vibrations and waves, radiation and wave optics. Time, room and motion. Physical values. Force and motion. Interactions and central forces. General relativity. Mechanics of rigid bodies. Friction. Vibration and waves. Non-linearity and chaos. Mechanics of non-rigid bodies. Gasses. Thermodynamics. Electrostatics. Electric current. Mechanisms of conduction. Magnetostatics. Electromagnetic induction. Maxwell equations. Science of alternating current. Electromagnetic waves. Geometric optics. Wave optics.		
Intended learning outcomes		
The students understand the basic principles and connections of mechanics, thermodynamics, vibrations, waves, science of electricity, magnetism, electromagnetic vibrations and waves, radiation and wave optics. They are able to apply mathematical methods to the formulation of physical contexts and autonomously apply their knowledge to the solution of mathematical-physical tasks.		
Courses (type, number of weekly contact hours, language — if other than German)		
Klassische Physik 1 (Mechanik, Wellen, Wärme) (Classical Physics 1 (Mechanics, Waves, Heat)): V (4 weekly contact hours) + Ü (2 weekly contact hours), once a year (winter semester) Klassische Physik 2 (Elektromagnetismus, Optik) (Classical Physics 2 (Electromagnetism, Optics)): V (4 weekly contact hours) + Ü (2 weekly contact hours), once a year (summer semester)		
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"> Topics covered in lectures and exercises in part 1 (Klassische Physik 1 (Classical Physics 1)): written examination (approx. 120 minutes). Topics covered in lectures and exercises in part 2 (Klassische Physik 2 (Classical Physics 2)): written examination (approx. 120 minutes). Topics covered in lectures and exercises in parts 1 and 2: oral examination of one candidate each (approx. 30 minutes, usually chosen) or written examination (approx. 120 minutes). <p>Assessment component 3 will be offered in German; English if agreed upon with examiner(s). Successful completion of approx. 50% of practice work each is a prerequisite for admission to assessment components 1 and 2. To qualify for admission to assessment component 3, students must pass assessment component 1 and/or 2. Students are highly recommended to attend both courses Klassische Physik 1 (Classical Physics 1) and Klassische Physik 2 (Classical Physics 2). The topics discussed in these two courses will be covered in assessment component 3. Students must register for assessment components 1 through 3 online (details to be announced). To pass this module, students must first pass assessment component 1 or 2 and must then pass assessment component 3. The grade achieved in assessment component 1 or 2 (whichever is better) and the grade achieved in assessment component 3 will each count 50% towards the overall grade awarded for the module.</p>		
Allocation of places		
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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Mathematics (2012)
 Bachelor' degree (1 major) Mathematics (2013)
 Bachelor' degree (1 major) Physics (2010)
 Bachelor' degree (1 major) Physics (2012)
 Bachelor' degree (1 major) Nanostructure Technology (2010)
 Bachelor' degree (1 major) Nanostructure Technology (2012)
 Bachelor' degree (1 major) Mathematical Physics (2009)
 Bachelor' degree (1 major) Mathematical Physics (2012)
 Bachelor' degree (1 major) Computational Mathematics (2012)
 Bachelor' degree (1 major) Computational Mathematics (2013)
 Bachelor's degree (1 major, 1 minor) Physics (Minor, 2010)
 No final examination Special study offering (2010)