

Module title		Abbreviation
Statistical Mechanics, Thermodynamics and Electrodynamics		11-STE-092-m01
Module coordinator		Module offered by
Managing Director of the Institute of Theoretical Physics and Astrophysics		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	10-M1-PHY and 10-M2-PHY or 10-M1-NST and 10-M2-NST
Contents		
Principles of Statistical Physics: Ideal systems. Thermodynamics: Quantum statistics, systems of interacting particles, critical phenomena, Maxwell equations, electrostatics, magnetostatics, Maxwell equations in matter, dynamics of electromagnetic fields. Special relativity.		
Intended learning outcomes		
The students have advanced knowledge of the methods of Theoretical Physics. They know the principles of electrodynamics, thermodynamics and statistical mechanics. They are familiar with the corresponding calculation methods and are able to independently apply them to the description and solution of problems in this area.		
Courses (type, number of weekly contact hours, language — if other than German)		
Statistische Mechanik und Thermodynamik (Statistical Mechanics and Thermodynamics): V (4 weekly contact hours) + Ü (2 weekly contact hours), once a year (winter semester) Theoretische Elektrodynamik (Theoretical Electrodynamics): 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 (Statistische Mechanik und Thermodynamik (Statistical Mechanics and Thermodynamics)): written examination (approx. 120 minutes). Topics covered in lectures and exercises in part 2 (Theoretische Elektrodynamik (Theoretical Electrodynamics)): 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. Students are highly recommended to attend both courses Statistische Mechanik und Thermodynamik (Statistical Mechanics and Thermodynamics) and Theoretische Elektrodynamik (Theoretical Electrodynamics). 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) 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)