<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tr>
<td>Theoretical Physics 1 and 2 for Pre Service Teachers - Fundamentals</td>
<td>11-L-T12-152-m01</td>
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**Module coordinator**
Managing Director of the Institute of Theoretical Physics and Astrophysics

**Module offered by**
Faculty of Physics and Astronomy

**ECTS** | **Method of grading** | **Only after succ. compl. of module(s)** |
---|---|---|
4 | numerical grade | -- |

**Duration** | **Module level** | **Other prerequisites** |
---|---|---|
2 semester | undergraduate | -- |

**Contents**
Basic physical laws and elementary methods of theoretical physics.
Quantum Mechanics: Schrödinger equation, one-dimensional quantum mechanics, quantum mechanics Abstract (operator formalism), angular momentum, spin.
Electrodynamics: Maxwell equations, electrostatics, magnetostatics, dynamic electromagnetic fields, Special Theory of Relativity.
Thermodynamics: Heat, entropy, thermal equilibrium, measured variables, efficiency, Thermodynamic potentials, phase transitions.

**Intended learning outcomes**
The students know the basic principles, contexts and elementary methods of Theoretical Physics, theoretical mechanics, quantum mechanics, thermodynamics, electrodynamics and Statistical Physics. They are able to discuss the acquired theoretical concepts and to attribute them to bigger physical contexts.

**Courses**
(type, number of weekly contact hours, language — if other than German)
V (4) + V (4)
Module taught in: Ü: German or English

**Method of assessment**
(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
oral examination of one candidate each (approx. 30 minutes)
Language of assessment: German and/or English

**Allocation of places**
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**Additional information**
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**Referred to in LPO I**
(examination regulations for teaching-degree programmes)
§ 77 I Nr. 1 c)

**Module appears in**
First state examination for the teaching degree Gymnasium Physics (2015)