

Module title		Abbreviation
Theoretical Elementary Particle Physics		11-TEP-Int-201-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)
8	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
1. Fundamental Forces and Particles 2. Groups and Symmetries 3. Quark Model of Hadrons 4. Parton Model and Deep Inelastic Scattering 5. Basics of Quantum Field Theory 6. Gauge Theories 7. Spontaneous Symmetry Breaking 8. Electro-Weak Standard Model 9. Quantum Chromo Dynamics 10. Extensions of the Standard Model		
Intended learning outcomes		
Familiarity with the mathematical methods of elementary particle physics. Understanding of the structure of the standard model and its construction from symmetry principles and experimental observations. Knowledge of the calculational methods for scattering and decay processes, tests of the standard models and there are limitations. Familiarity with the basics of extended theories.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (4) + R (2) Module taught in: 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)		
a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: English Assessment offered: In the semester in which the course is offered and in the subsequent semester		
Allocation of places		
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Additional information		
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Workload		
240 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Physics International (2020)

exchange program Physics (2023)

Master's degree (1 major) Physics International (2024)