

Module title		Abbreviation
Field Theory in Solid State Physics		11-FTFK-161-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		
<p>This will usually be a course on quantum many particle physics using the method of functional integration. An outline could be:</p> <ol style="list-style-type: none"> 1. Coherent states and review of second quantization 2. The functional integral formalism at finite temperatures T 3. Perturbation theory at $T=0$ 4. Order parameters and broken symmetry 5. Green's functions 6. The Landau theory of Fermi liquids 7. Further developments 		
Intended learning outcomes		
The students are enabled to apply the modern methods of path and functional integrals to quantum many-particle systems. These methods complement the traditional methods of Green's functions and Feynman diagrams.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (4) + R (2) Module taught in: 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)		
<p>written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral examination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or presentation/talk (approx. 30 minutes).</p> <p>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.</p> <p>Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English</p>		
Allocation of places		
--		
Additional information		
--		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
--		
Module appears in		
<p>Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Physics (2016) Master's degree (1 major) Mathematical Physics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)</p>		

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)
Master's degree (1 major) Computational Mathematics (2019)
Master's degree (1 major) Mathematics (2019)