

Module title					Abbreviation
Scanning Probe Technologies 11-SPT-Int-201-m01					
Module coordinator				Module offered by	
Managing Director of the Institute of A		pplied Physics Faculty of Physics and Astronomy			
ECTS Method of grading		Only after succ. compl. of module(s)			
6	nume	rical grade			
Duration		Module level	Other prerequisites		
1 semester		graduate			
Contents					
Basic theoretical principles of scanning force, tunneling, and near-field optical microscopy; basic principles of surface science; tip-sample interactions; design principles and material considerations; fundamentals of control engineering; measurement modes, e.g., contact and non-contact, Kelvin probe, friction force microscopy, etc; basic principles of processing and presenting microcopy data; measurement techniques and their application: lock-in, phase-lock loop, etc.					
Intended learning outcomes					
Student acquires specific knowledge in scanning probe microscopy. He/she knows the basic theoretical princip- les, is aware of basic design principles, knows pros and cons of various materials, and is familiar of measure- ment modes, contrast mechanisms, and their application. He/she is aware of recent development in the field.					
Courses (type, number of weekly contact hours, language — if other than German)					
V (3) + R (1) 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 mi- nutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (ap- prox. 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 in- stead 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 exami- nation date at the latest. Language of assessment: English					
Allocation of places					
Additional information					
Workload					
180 h					
Teaching cycle					
Teaching cycle: every year, after announcement					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Physics International (2020)					
exchange program Physics (2023)					
master's degree (1 major) Physics international (2024)					
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