## Module description

Module title					Abbreviation
Optical Properties of Semiconductor Nanostructures					11-HNS-Int-201-m01
Module coordinator				Module offered by	
Managing Director of the Institute of Ap			pplied Physics Faculty of Physics and Astronomy		
ECTS Method of grading		Only after succ. compl. of module(s)			
6 numerical grade					
Duration Module level		Other prerequisites			
1 semester gra		graduate			
Contents					
Semiconductor Nanostructures are frequently referred to as 'artificial materials'. In contrast to atoms, molecules or macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored via chan- ging their size. The lecture addresses technological challenges in the preparation of semiconductor nanostruc- tures of varying dimensions (2D, 1D, oD). It provides the basic theoretical concepts to describe their properties, with a focus on optical properties and light-matter coupling. Moreover, it discusses the challenges and concepts of novel optoelectronic and quantum photonic devices based on such nanostructures, including building blocks for quantum communication and quantum computing architectures <b>Intended learning outcomes</b> Familiarity with the fundamental properties of semiconductor nanostructures as well as with their theoretical foundations. Knowledge of the technological methods to fabricate such structures, and of their applications to					
novel photonic devices.					
LOUISES (type, number of weekly contact hours, language — if other than German)         V(a) + D(c)					
V (3) + K (1) Module taught in: English					
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)					
<ul> <li>a) written examination (approx. 90 to 120 minutes) or</li> <li>b) oral examination of one candidate each (approx. 30 minutes) or</li> <li>c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or</li> <li>d) project report (approx. 8 to 10 pages) or</li> <li>e) presentation/talk (approx. 30 minutes).</li> <li>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.</li> <li>Language of assessment: English</li> <li>Assessment offered: In the semester in which the course is offered and in the subsequent semester</li> </ul>					
Allocation of places					
Additional information					
Workload					
180 h					
Teaching cycle					
<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)					
Module appears in					

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Master's degree (1 major) Physics International (2020) Master's degree (1 major) Quantum Engineering (2020) exchange program Physics (2023) Master's degree (1 major) Quantum Engineering (2024) Master's degree (1 major) Physics International (2024)

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