Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Module description

Module title					Abbreviation
Principles of quantum mechanics and spectroscopy					08-PC1-072-m01
Module coordinator				Module offered by	
lecture Spektro Spectro	r of lect oskopie oscopy)	ture "Grundlagen der Qua " (Principles of Quantum	antenmechanik and Mechanics and	Institute of Physical	and Theoretical Chemistry
ECTS Method of grading		Only after succ. compl. of module(s)			
8	nume	rical grade			
Duration Module level		Module level	Other prerequisites		
1 semester		undergraduate			
Contents					
This module introduces students to the fundamental principles of quantum mechanics. It analyses molecules on the basis of the following models: particle in a box, harmonic oscillator and rigid rotor. As regards spectroscopy, the module focuses on vibrational spectroscopy, angular momentum quantisation, microwave spectroscopy and UV-VIS spectroscopy. In addition, the module discusses linear operators, eigenvalue problems, matrix represen- tation, differential equations, Fourier transform and orthogonal functions as mathematical bases of the topics li- sted above.					
Intended learning outcomes					
Students are able to explain key models of quantum mechanics and to apply them to molecules. They are able to describe different spectroscopic methods. In addition, students know how to apply the mathematical bases of quantum mechanics.					
Courses (type, number of weekly contact hours, language — if other than German)					
V + \ddot{U} + V + \ddot{U} (no information on SWS (weekly contact hours) and course language available)					
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) 1 to 3 written examinations (1 written examination: 90 minutes; 2 written examinations: 60 or 90 minutes each; 3 written examinations: 60 minutes each) or b) oral examination in groups (groups of 2, approx. 30 minutes)					
Allocation of places					
Additional information					
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor's degree (1 major) Chemistry (2007) Bachelor's degree (1 major) Chemistry (2008) Bachelor's degree (1 major) Mathematics (2008) Bachelor's degree (1 major) Mathematics (2007)					
JMU Würzburg • generated 18.04.2025 • Module data record 106008					