TECHNISCHE UNIVERSITÄT DRESDEN

Curriculum master's program Nanobiophysics
Molecular Biophysics

biotec nanobiophysics Master of Science

Title of module	responsible	SWS	type of course	title of lecture (teacher)	Examination	ECTS points
1st semester						
Introductory modules - obligatory						
Fundamentals of Biophysics	Guck	2	lecture	Biophysical Chemistry (Fischer-Friedrich)	written exam (90 min) 40%	
	Fischer-Friedrich	2	lecture	Biophysical Methods (Schlierf)	presentation 40%	
	Schlierf	2	seminar			
		1	lab classes		lab protocol 20%	10
	Pisabarro	2	lecture	Structural and Computational Biology	presentation 25%	
Structural and Computational Biology		2	seminar	(Pisabarro)	written exam (90 min) 75%	4
Introduction to Biochemistry and Molecular Cell	Stewart	2	lecture	Introduction to Biochemistry (Stewart, Groß)	oral exam (20 min) 40%	10 (over 2
Biology		2	lab classes		lab protocol 20%	semester)
Elements of Nanobiotechnology	Cuniberti	2	lecture	Introduction to Nanobiotechnology	oral exam (20 min) 50%	
		1	lab classes	(Cuniberti, Opitz)	lab protocol 15%	
		2	seminar	New Developments in Nanotechnology (Die	presentation 35%	6
Concepts of Molecular Modelling	Cuniberti	2	lecture	Concepts of Molecular Modelling	oral exam (20 min) OR	
		2	exercise	(Cuniberti)	written exam (90 min) 50%	
		2	lab classes		and project 50%	6
		26				
2nd semester						
Core modules - obligatory						
Introduction to Biochemistry and Molecular Cell	Stewart/	2	lecture	Introduction to Molecular Cell Biology	oral exam (20 min) 40%	10 (over 2
Biology	Alberti	2	exercise	(Alberti)		semester)
	Braun	2	lecture	Microsystems and Bioinspired Structures	oral exam (20 min) 85%	
Microsystems and Bioinspired Structures		2	lab classes	(Braun)	lab protocol 15%	5
Advanced Biophysics	Grill	2	lecture	Theoretical Biophysics (Grill, Jülicher)	oral exam (20 min) 40%	12 (over 2
		2	exercise			semester
Applied Nanotechnology	Büchner	2	lecture	Biological Nanomachines (Diez)	presentation 50%	
		2	seminar			
		2	lecture	Molecular Nanostructures (Büchner)	oral exam (20 min) 50%	7
Nanostructured Materials	Cuniberti	2	lecture	Nanostructured Materials (Cuniberti)	oral exam (20 min) OR	
		2	exercise		written exam (90 min) 50%	
		2	lab classes		and project 50%	6
		24				

3rd semester						
Core modules - obligatory						
Advanced Biophysics	Grill	**2**	lab classes	Scanning Probe Techniques (Büchner/Eng)	2 lab protocols 20%	12 (over 2 semester)
		2	lab classes	Single Molecule Optics (Diez)		
		2	lecture	Biological Hydrodynamics (Grill)	oral exam (20 min) 40%	
		2	exercise			
Lab Rotation Biophysics	Guck	**6**	lab classes	Lab Rotation Biophysics	lab protocol	6
Lab Rotation Nanophysics	Cuniberti	**6**	lab classes	Lab Rotation Nanophysics	lab protocol	6
Lab Rotation Choice	Guck	**6**	lab classes	Lab Rotation Choice	lab protocol	6
Specialization module - choose 2 topics among:					2 oral exams of 20 min, each 50%	6
Applied Bioinformatics	Schroeder	2	lecture			
Biofunctionalised Surfaces	Hintze	2	lecture			
Bio-image analysis, bio-statistics, programming and machine learning for computational biology	Haase	2	lecture			
Biological Thermodynamics	Fahmy	2	lecture			
Biomedical Tissue Engineering	Corbeil	2	lecture			
Bionics	Gude et al.	2	lecture			
Cellular Machines: Molecular Motors	Diez	2	lecture			
Current topics in Materials Science	Cuniberti	2	seminar			
Developmental Biology	Brand	2	lecture			
Diffraction Methods	Braun	2	lecture			
Electromechanical Networks	Marschner	2	lecture			
Environmental Nanotechology	Cuniberti	2	lecture			
Genomes and Evolution	Stewart	2	lecture			
Integrated Circuits for Broadband Optical Communications	Ellinger	3	lecture			
Introduction to Proteomics	Alberti	2	lecture			
Magnetism on the Nanoscale	Büchner	2	lecture			
Materials for Nanoelectronics and Printing Technology	Richter	4	lecture			
Mathematical Biology	Deutsch	2	lecture			
Microprocessors in the lab - A hands on approach for non IT specialists	Braun/Kirchner	2	seminar			
Molecular Electronics	Cuniberti/Moresc	2	lecture			
Nanooptics	Eng	2	lecture			
Nanotechnology	Eng	2	lecture			
Physical Characterization of Organic and Organic-Inorganic Thin Films	Zschech	2	lecture			
Protein Engineering	Alberti	2	lecture			
Public and Economic Aspects of Bioengineering	Schmieder-Galfe/Sternecke	2	lecture			
Stem Cell Engineering	Anastassiadis	2	lecture			
Stochastic Processes	Friedrich	2	lecture			
		1	tutorial			
Surface Chemistry	Werner	2	lecture			
		30				
4th semester						
Masters Thesis						30
				Total ECTS:		**120**