

Subdivided Module Catalogue for the Subject

FOKUS Physics - Nanostructuring Technology

as a Master's with 1 major with the degree "Master of Science" (120 ECTS credits)

Examination regulations version: 2010 Responsible: Faculty of Physics and Astronomy

JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record 88|eo6|-|-|H|2010



Course of Studies - Contents and Objectives

The FOKUS master study program is a special course, which provides on the one hand short time study (only 8 semesters in a consecutive Bachelor and Master program) and on the other hand puts significant emphasis on early integration of research activities. This Master study program is embedded an financed through the »Elitenetzwerk Bayern« (ENB). The master course is especially preparing the students for their later scientific work in the field of Nanostructuring Technology. Qualified graduates may pursue doctoral work (degree Dr. rer. nat. or Dr.-Engineer) at doctorate-granting institutions. The goal of the studies is it to mediate special knowledge on the most important subsections of the Nanostructuring technology and to make the students familiar with the methods of engineering scientific and physical thinking and working. By training of analytic thinking abilities the students acquire the ability to deal later with the various fields of applications and to compile the special knowledge obtained within the Bachelor programme. During the Master thesis the student should independently work on a new thematic and temporally limited experimental or theoretical engineering-scientific task in the field of nanostructuring technology using well-known procedures and scientific criteria.

Abbreviations used

Course types: \mathbf{E} = field trip, \mathbf{K} = colloquium, \mathbf{O} = conversatorium, \mathbf{P} = placement/lab course, \mathbf{R} = project, \mathbf{S} = seminar, \mathbf{T} = tutorial, $\ddot{\mathbf{U}}$ = exercise, \mathbf{V} = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASPO2007

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

21-Sep-2010 (2010-62)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

The subject is divided into

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11-MOE-og2-mo1 Opto-electronic Material Properties 5 NUM 116 11-OHL-og2-mo1 Organic Semiconductor 5 NUM 134 11-A2-081-mo1 Electronics 6 NUM 12 11-A2-081-mo1 Electronics 6 NUM 15 11-ASI-og2-mo1 Reproducing Sensors in Infrared 3 NUM 15 11-ASI-og2-mo1 Applied Superconduction 6 NUM 17 11-EBV-og2-mo1 Principles of Image Processing 3 NUM 23 11-EPP-og2-mo1 Introduction to Plasmaphysics 6 NUM 25 11-HE-og2-mo1 Introductor Lasers - Principles and Current Research 6 NUM 105 11-LVW-og2-mo1 Introduction to LabVIEW 6 NUM 105 11-LVW-og2-mo1 Introduction Caser Senteris 3 NUM 106 11-LVW-og2-mo1 Internedynamics and Economics 6 NUM 116 11-NDC-og2-mo1 Popied Superconduction 6 NUM 116 <t< td=""><td>Applied Physics and Met</td><td>rology (10 ECTS credits)</td><td></td><td></td><td></td></t<>	Applied Physics and Met	rology (10 ECTS credits)							
11·OHL-092·m01Organic Semiconductor5NUM13411·A2·081·m01Electronics6NUM1211·ASI-092·m01Reproducing Sensors in Infrared3NUM1511·ASL-092·m01Applied Superconduction6NUM1711·EBV-092·m01Principles of Image Processing3NUM2111·EPT-092·m01Principles of Energy Technologies6NUM2311·EPP-092·m01Introduction to Plasmaphysics6NUM2511·HLF-092·m01Semiconductor Lasers · Principles and Current Research6NUM9911·KVM-092·m01Principles of Classification of Patterns3NUM10511·LW-092·m01Introduction to LabVIEW6NUM11111·TDO-092·m01Intermodynamics and Economics6NUM168Solid State Physics and Nummer (a termine for effects)11·MOE-092·m01Opto-electronic Material Properties5NUM11611·ASL-092·m01Applied Superconduction6NUM1711·HLF-092·m01Semiconductor Physics and Current Research6NUM1911·ASL-092·m01Applied Superconductor Physics6NUM1311·FK2-092·m01Semiconductor Physics 28NUM2711·FK5-092·m01Solid State Physics 28NUM2711·FK5-092·m01Solid State Spectroscopy6NUM3111·FK2-092·m01Solid State Spectroscopy6NUM31 <td>11-MOE-092-m01</td> <td>Opto-electronic Material Properties</td> <td>5</td> <td>NUM</td> <td>116</td>	11-MOE-092-m01	Opto-electronic Material Properties	5	NUM	116				
11-A2-081-m01Electronics66NUM1211-ASI-092-m01Reproducing Sensors in Infrared3NUM1511-ASL-092-m01Applied Superconduction66NUM1711-EBV-092-m01Principles of Image Processing3NUM2111-ENT-092-m01Principles of Energy Technologies66NUM2311-EPP-092-m01Introduction to Plasmaphysics66NUM2511-HLF-092-m01Semiconductor Lasers - Principles and Current Research66NUM9911-KVM-092-m01Principles of Classification of Patterns33NUM10511-LVW-092-m01Introduction to LabVIEW66NUM11111-DO-092-m01Interduction to CLASVIEW66NUM168Solid State Physics and Economics5NUM11611-ASL-092-m01Opto-electronic Material Properties5NUM11711-HLF-092-m01Semiconductor Lasers - Principles and Current Research66NUM9911-ASL-092-m01Applied Superconduction66NUM11711-HLF-092-m01Semiconductor Physics66NUM13111-FK2-092-m01Solid State Physics 288NUM2711-FK5-092-m01Solid State Physics 28NUM2711-FK5-092-m01Solid State Spectroscopy66NUM3111-FKT-092-m01Solid State Spectroscopy66NUM3111-FK1-092-m01Semiconductor Physics66 <t< td=""><td>11-OHL-092-m01</td><td>Organic Semiconductor</td><td>5</td><td>NUM</td><td>134</td></t<>	11-OHL-092-m01	Organic Semiconductor	5	NUM	134				
11-ASI-092-m01Reproducing Sensors in Infrared3NUM1511-ASI-092-m01Applied Superconduction6NUM1711-EBV-092-m01Principles of Image Processing3NUM2111-EDT-092-m01Principles of Energy Technologies6NUM2311-EPP-092-m01Introduction to Plasmaphysics6NUM2511-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-KVM-092-m01Principles of Classification of Patterns3NUM10511-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Introduction to LabVIEW6NUM168Solid State Physics and Economics5NUM11611-ASL-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Semiconductor Lasers - Principles and Current Research6NUM1311-FK2-092-m01Solid State Physics 28NUM1211-FKS-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKS-092-m01Solid State Spectroscopy6NUM3111-FKS-092-m01Solid State Spectroscopy6NUM3111-FKS-092-m01 <td>11-A2-081-m01</td> <td>Electronics</td> <td>6</td> <td>NUM</td> <td>12</td>	11-A2-081-m01	Electronics	6	NUM	12				
11-ASL-092-m01Applied Superconduction6NUM1711-EBV-092-m01Principles of Image Processing3NUM2111-ENT-092-m01Principles of Energy Technologies6NUM2311-EPP-092-m01Introduction to Plasmaphysics6NUM2511-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-KVM-092-m01Principles of Classification of Patterns3NUM10511-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Thermodynamics and Economics66NUM168Solid State Physics and Current Research6NUM168Solid State Physics and Economics5NUM11611-MOE-092-m01Opto-electronic Material Properties5NUM11711-MLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Superconduction6NUM1311-FK2-092-m01Solid State Physics 28NUM1211-FKS-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Solid State Spectroscopy6NUM3111-FKT-092-m01Semiconductor Physics6NUM3111-FKT-092-m01Semiconductor Physics6NUM3111-FKT-092-m01Solid State Spectroscopy6	11-ASI-092-m01	Reproducing Sensors in Infrared	3	NUM	15				
11-EBV-092-m01Principles of Image Processing3NUM21111-ENT-092-m01Principles of Energy Technologies6NUM23111-EPP-092-m01Introduction to Plasmaphysics6NUM25111-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-KVM-092-m01Principles of Classification of Patterns3NUM105111-LVW-092-m01Introduction to LabVIEW6NUM111111-D0-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Vertern Research6NUM11611-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM19911-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM13111-FK2-092-m01Solid State Physics 28NUM2711-FK2-092-m01Solid State Physics 28NUM2711-FK2-092-m01Solid State Physics 26NUM2711-FK5-092-m01Solid State Spectroscopy6NUM2711-FK7-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM3111-FK7-092-m01Semiconductor Physics6NUM31	11-ASL-092-m01	Applied Superconduction	6	NUM	17				
11-ENT-092-m01Principles of Energy Technologies6NUM2311-EPP-092-m01Introduction to Plasmaphysics6NUM9911-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-KVM-092-m01Principles of Classification of Patterns3NUM10511-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Economics5NUM11611-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM19911-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM19111-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Physics 28NUM2911-FKS-092-m01Solid State Spectroscopy6NUM3111-FKS-092-m01Solid State Spectroscopy6NUM3111-FKT-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM31 <td>11-EBV-092-m01</td> <td>Principles of Image Processing</td> <td>3</td> <td>NUM</td> <td>21</td>	11-EBV-092-m01	Principles of Image Processing	3	NUM	21				
11-EPP-092-m01Introduction to Plasmaphysics6NUM2511-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-KVM-092-m01Principles of Classification of Patterns3NUM10511-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Termodynamics and Economics6NUM11611-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM9911-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Physics 26NUM2911-FKS-092-m01Solid State Spectroscopy6NUM3111-FKT-092-m01Semiconductor Physics6NUM3111-FKT-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM31	11-ENT-092-m01	Principles of Energy Technologies	6	NUM	23				
11-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-KVM-092-m01Principles of Classification of Patterns3NUM10511-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Turrent (a ECTS credits)11-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM3111-FKS-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM31	11-EPP-092-m01	Introduction to Plasmaphysics	6	NUM	25				
11-KVM-092-m01Principles of Classification of Patterns3NUM10511-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Turners (to ECTS credits)11-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKS-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM31	11-HLF-092-m01	Semiconductor Lasers - Principles and Current Research	6	NUM	99				
11-LVW-092-m01Introduction to LabVIEW6NUM11111-TDO-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Numers (to ECTS credits)11-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Fransport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-KVM-092-m01	Principles of Classification of Patterns	3	NUM	105				
11-TDO-092-m01Thermodynamics and Economics6NUM168Solid State Physics and Structures (to ECTS credits)11-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Semiconductor Physics6NUM3111-HLP-092-m01Semiconductor Physics6NUM31	11-LVW-092-m01	Introduction to LabVIEW	6	NUM	111				
Solid State Physics and Nanostructures (10 ECTS credits)11-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-TDO-092-m01	Thermodynamics and Economics	6	NUM	168				
11-MOE-092-m01Opto-electronic Material Properties5NUM11611-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	Solid State Physics and I	Aanostructures (10 ECTS credits)							
11-ASL-092-m01Applied Superconduction6NUM1711-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-MOE-092-m01	Opto-electronic Material Properties	5	NUM	116				
11-HLF-092-m01Semiconductor Lasers - Principles and Current Research6NUM9911-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-ASL-092-m01	Applied Superconduction	6	NUM	17				
11-AHL-092-m01Applied Semiconductor Physics6NUM1311-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-HLF-092-m01	Semiconductor Lasers - Principles and Current Research	6	NUM	99				
11-FK2-092-m01Solid State Physics 28NUM2711-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-AHL-092-m01	Applied Semiconductor Physics	6	NUM	13				
11-FKS-092-m01Solid State Spectroscopy6NUM2911-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-FK2-092-m01	Solid State Physics 2	8	NUM	27				
11-FKT-092-m01Transport Phenomena in Solids6NUM3111-HLP-092-m01Semiconductor Physics6NUM101	11-FKS-092-m01	Solid State Spectroscopy	6	NUM	29				
11-HLP-092-mo1 Semiconductor Physics 6 NUM 101	11-FKT-092-m01	Transport Phenomena in Solids	6	NUM	31				
	11-HLP-092-m01	Semiconductor Physics	6	NUM	101				

11-HNS-092-m01	Semiconductor Nanostructures	6	NUM	103				
	Lithography in Semiconductor Technology and Theory of Quan-		NULINA					
11-LHQ-092-m01	tum Transport	6	NUM	107				
11-MAG-092-m01	Magnetism	6	NUM	113				
11-MST-092-m01	Magnetism and Spin Transport	6	NUM	119				
11-NAN-092-m01	Nanoanalytics	6	NUM	121				
11-NDS-092-m01	Low-Dimensional Structures	4	NUM	123				
11-NEL-092-m01	Nanoelectronics	6	NUM	125				
11-NOP-092-m01	Nano-Optics	4	NUM	132				
11-QM2-092-m01	Quantum Mechanics II	8	NUM	142				
11-QPM-092-m01	Quantum Phenomena in electronic correlated Materials	6	NUM	144				
11-QVTP-092-m01	Many Body Quantum Theory	8	NUM	146				
11-RMS-092-m01	Relativistic Effects in Mesoscopic Systems	5	NUM	148				
11-TFK-092-m01	Theoretical Solid State Physics	8	NUM	170				
11-TSL-092-m01	Theory of Superconduction	5	NUM	172				
Complex Systems, Quan	tum Control and Biophysics (10 ECTS credits)			,				
11-NOP-092-m01	Nano-Optics	4	NUM	132				
11-BMT-092-m01	Biophysical Measurement Technology in Medical Science	6	NUM	19				
11-LMB-092-m01	Laboratory and Measurement Technology in Biophysics	6	NUM	109				
11-PKS-092-m01	Physics of Complex Systems	6	NUM	138				
11-QIC-092-m01	Quantum Information and Quantum Computing	5	NUM	140				
11-SDC-092-m01	Statistics, Data Analysis and Computer Physics	4	NUM	150				
Other Modules Specialis	ation (10 ECTS credits)			,				
11-SF-4E-072-m01	Module Type 4E Special Training Experimental Physics	4	NUM	152				
	Module Type 4I Special Training Interdisciplinary Research	,	NILIAA	450				
11-SF-4I-072-m01	Fields	4	NUM	153				
11-SF-4T-072-m01	Module Type 4T Special Training Theoretical Physics	4	NUM	155				
11-SF-5E-072-m01	Module Type 5E Special Training Experimental Physics	5	NUM	156				
	Module Type 5I Special Training Interdisciplinary Research	_	NULIAA					
11-51-51-072-11101	Fields	5	NUM	157				
11-SF-5T-072-m01	Module Type 5T Special Training Theoretical Physics	5	NUM	159				
11-SF-6E-072-m01	Module Type 6E Special Training Experimental Physics	6	NUM	160				
11-SE-6L-072-m01	Module Type 6I Special Training Interdisciplinary Research	6	NILIM	161				
11-31-01-072-11101	Fields	0	NOM	101				
11-SF-6T-072-m01	Module Type 6T Special Training Theoretical Physics	6	NUM	163				
11-SF-8E-072-m01	Module Type 8E Special Training Experimental Physics	8	NUM	164				
11-SE-81-072-m01	Module Type 8I Special Training Interdisciplinary Research	8	NIIM	165				
11-51-61-072-11101	Fields	0	NOM	105				
11-SF-8T-072-m01	Module Type 8T Special Training Theoretical Physics	8	NUM	167				
11-SF-4N-072-m01	Module Type 4N Special Training Nanostructure Technology	4	NUM	154				
11-SF-5N-072-m01	Module Type 5N Special Training Nanostructure Technology	5	NUM	158				
11-SF-6N-072-m01	Module Type 6N Special Training Nanostructure Technology	6	NUM	162				
11-SF-8N-072-m01	Module Type 8N Special Training Nanostructure Technology	8	NUM	166				
Research Modules Nanostructure Technology (16 ECTS credits)								
11-FM-VK8E-072-m01	FOKUS Research Module Type VK8E Experimental Physics	8	NUM	49				

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ring Technology (2010)	cord Master (120 ECTS) FOKUS Physik - Nanostrukturtechnik - 2010	

11-FM-VK8I-072-m01	FOKUS Research Module Type VK8I Interdisciplinary Research		NUM	51			
44 EM \/KQT 070 mod	Fields		NUINA				
11-FM-VK81-0/2-M01	FORUS Research Module Type VK81 Theoretical Physics	8		55			
11-FM-VK9E-072-M01		9	NUM	57			
11-FM-VK9I-072-m01	FORUS Research Module Type VK9I Interdisciplinary Research Fields	9	NUM	59			
11-FM-VK9T-072-m01	FOKUS Research Module Type VK9T Theoretical Physics	9	NUM	63			
11-FM-VK10E-072-m01	FOKUS Research Module Type VK10E Experimental Physics	10	NUM	33			
11-FM-VK10l-072-m01	FOKUS Research Module Type VK10I Interdisciplinary Research Fields	10	NUM	35			
11-FM-VK10T-072-m01	FOKUS Research Module Type VK10T Theoretical Physics	10	NUM	39			
11-FM-VK12E-072-m01	FOKUS Research Module Type VK12E Experimental Physics	12	NUM	41			
11-FM-VK12I-072-m01	FOKUS Research Module Type VK12I Interdisciplinary Research Fields	12	NUM	43			
11-FM-VK12T-072-m01	FOKUS Research Module Type VK12T Theoretical Physics	12	NUM	47			
11-FM-VMK12E-072-m01	FOKUS Research Module Type VMK12E Experimental Physics	12	NUM	65			
11-FM-VMK12I-072-m01	FOKUS Research Module Type VMK12I Interdisciplinary Rese- arch Fields	12	NUM	67			
11-FM-VMK12T-072-m01	FOKUS Research Module Type VKM12T Theoretical Physics	12	NUM	71			
11-FM-VMK13E-072-m01	FOKUS Research Module Type VMK13E Experimental Physics	13	NUM	73			
11-FM-VMK13I-072-m01	FOKUS Research Module Type VMK13I Interdisciplinary Rese- arch Fields	13	NUM	75			
11-FM-VMK13T-072-m01	FOKUS Research Module Type VKM13T Theoretical Physics	13	NUM	79			
11-FM-VMK14E-072-m01	FOKUS Research Module Type VMK14E Experimental Physics	14	NUM	81			
11-FM-VMK1/1-072-m01	FOKUS Research Module Type VMK14I Interdisciplinary Rese-	17	NUM	82			
11-110-1101	arch Fields	14	NOM	05			
11-FM-VMK14T-072-m01	FOKUS Research Module Type VKM14T Theoretical Physics	14	NUM	87			
11-FM-VMK16E-072-m01	FOKUS Research Module Type VMK16E Experimental Physics	16	NUM	89			
11-FM-VMK16I-072-m01	FOKUS Research Module Type VMK16I Interdisciplinary Rese- arch Fields	16	NUM	91			
11-FM-VMK16T-072-m01	FOKUS Research Module Type VKM16T Theoretical Physics	16	NUM	95			
11-FM-VK8N-072-m01	FOKUS Research Module Type VK8N	8	NUM	53			
11-FM-VK9N-072-m01	FOKUS Research Module Type VK9N	9	NUM	61			
11-FM-VK10N-072-m01	FOKUS Research Module Type VK10N Nanostructure Technolo- gy	10	NUM	37			
11-FM-VK12N-072-m01	FOKUS Research Module Type VK12N Nanostructure Technolo- gy	12	NUM	45			
11-FM-VMK12N-072-m01	FOKUS Research Module Type VMK12N Nanostructure Techno-	12	NUM	69			
11-FM-VMK13N-072-m01	FOKUS Research Module Type VMK13N Nanostructure Techno-		NUM	77			
11-FM-VMK14N-072-m01	FOKUS Research Module Type VMK14N Nanostructure Techno-	14	NUM	85			
11-FM-VMK16N-072-m01	FOKUS Research Module Type VMK16N Nanostructure Techno-	16	NUM	93			
Compulsory Electives Non-technical (6 ECTS credits)							

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41-IK-NW1-072-m01	Basic module: Competence for Acquiring Information - for stu-		B/NB	174				
	Cocond modulo: Competence for Acquiring Information for							
41-IK-NW2-072-m01		2	NUM	177				
	students of natural sciences							
42-ENO-IK-072-m01	Intercultural Competence (English, Advanced Level)	3	NUM	180				
42-ENO-LK-072-m01	Cultural Studies (English, Advanced Level)	3	NUM	182				
42-ENO-PR-072-m01	Advanced English Final Exam	2	NUM	188				
42-ENO-NW1-072-m01	English for the Natural Sciences 1 (Advanced Level)	4	NUM	184				
42-ENO-NW2-072-m01	English for the Natural Sciences 2 (Advanced Level)	4	NUM	186				
42-FRO-GW1-072-m01	French for the Humanities 1 (Advanced Level)	4	NUM	189				
42-FRO-GW2-072-m01	French for the Humanities 2 (Advanced Level)	4	NUM	191				
42-FRO-IK-072-m01	Intercultural Competence (French, Advanced Level)	3	NUM	193				
42-FRO-LK-072-m01	42-FRO-LK-072-mo1 Intercultural Competence (French, Advanced Level)		NUM	195				
42-FRO-PR-072-m01	42-FRO-PR-072-mo1 Advanced French Final Exam		NUM	197				
42-FRO-W1-072-m01	French for Business 1 (Advanced Level)	4	NUM	198				
42-FRO-W2-072-m01	French for Business 2 (Advanced Level)	4	NUM	200				
42-SPO-GW1-072-m01	Spanish for the Humanities 1 (Advanced Level)	4	NUM	202				
42-SPO-GW2-072-m01	Spanish for the Humanities 2 (Advanced Level)	4	NUM	204				
42-SPO-IK-072-m01	Intercultural Competence (Spanish, Advanced Level)	3	NUM	206				
42-SPO-LK-072-m01	Cultural Studies (Spanish, Advanced Level)	3	NUM	208				
42-SPO-PR-072-m01	Advanced Spanish Final Exam	2	NUM	210				
42-SPO-W1-072-m01	Spanish for Business 1 (Advanced Level)	4	NUM	211				
42-SPO-W2-072-m01	Spanish for Business 2 (Advanced Level)	4	NUM	213				
	Information Literacy for Students of the Natural Sciences (Ba-		D /ND	475				
41-11-1101-11101	sic Level)	2		1/5				
41-IK-NW2-101-m01	Information Literacy for Students of the Natural Sciences (Ad-	2	R/NR	178				
41 11 11 11 101 1101	vanced Level)			1/0				
Thesis (30 ECTS credits)	Thesis (30 ECTS credits)							
11-MA-NF-072-m01	Master Thesis FOKUS Nanostructuring Technology	30	NUM	115				

Module title					Abbreviation		
Nanomatrix Biomedical Materials (Master)					03-NM-BW-MA-072-m01		
Module	e coord	inator		Module offered by			
chairpe gree pr	erson o ogramr	f examination committee ne Human-Computer Inte	of the Master's de- raction	Faculty of Medicine			
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)			
6	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
Fundan nics an turing t	nentals d phot echnol	and specific knowledge onics and biophysical ap ogies and components a	for engineering work plications as well as nd system developm	in the application ar the technology focus ent, especially in the	reas power engineering, electro- ses materials science, nanostruc- e area of biomedical materials.		
Intende	ed lear	ning outcomes					
Studen neering	ts have g work,	e developed an advanced with a particular focus or	knowledge in at leas biomedical materia	st one application are ls.	ea or technology focus of engi-		
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)		
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)		
Method ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina [.] a bonus)	tion offered — if not every seme-		
a) writt date ea	en exai ich or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	e appea	urs in					
Master	's degr	ee (1 major) Nanostructur	e Technology (2010)				
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)			
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)						

Module title Abbreviation						
Nanomatrix Biocompatible Structuring Technologies (Master)					07-NM-BS-MA-072-m01	
Module coordinator Module offered by						
Dean of	f Studie	es Biologie (Biology)		Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Fundan enginee science biocom	nentals ering, e e, nano patible	as well as specific know lectronics and photonics -structuring technologies structuring technologies	ledge and skills for e s, and biophysical ap s and components an s.	ngineering work in t olications and the te d system developme	he application directions power echnology fields of materials ent, in particular in the area of	
Intende	ed leari	ning outcomes	,			
Studen fields o	ts have f engin	e acquired advanced kno eering work, in particula	wledge and skills in c r in the area of biocor	one or more applicat npatible structuring	ion directions or technology technologies.	
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	in)	
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)	
Methoo ster, in	l of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exai ch or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor) oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Master	s degr	ee (1 major) Nanostructui	re Technology (2010)			
Master	s degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Fechnology (2010)		
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title				Abbreviation		
Nanomatrix Inorganic Materials Chemistry (Master)			stry (Master)		08-NM-AW-MA-072-m01	
Module	e coord	inator		Module offered by		
Dean o Pharma	f Studio acy)	es Chemie and Pharmazie	e (Chemistry and	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Fundar engine science organic	nentals ering, e e, nano c mater	as well as specific know electronics and photonics -structuring technologies ials chemistry.	ledge and skills for e and biophysical app and components an	ngineering work in tl olications and the teo d system developme	ne application directions power chnology fields of materials ent, in particular in the area of in-	
Intende	ed lear	ning outcomes				
Studen fields c	ts have of engin	e developed advanced kn eering work, in particula	owledge and skills ir r in the area of inorga	n one or more applica nic materials chemis	ation directions or technology stry.	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)	
V + R (r	no infor	mation on SWS (weekly c	contact hours) and co	urse language availa	able)	
Metho ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exa ach or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regu	lations for teaching-o	legree programmes)		
Module	e appea	urs in				
Master	's degr	ee (1 major) Nanostructur	e Technology (2010)			
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title Abbreviation					Abbreviation	
Nanoparticle Synthesis and Structuring Technologies (Master)				ter)	08-NM-NS-MA-072-m01	
Module	e coord	inator		Module offered by		
Dean o Pharma	f Studio acy)	es Chemie and Pharmazie	e (Chemistry and	Chair of Chemical T	echnology of Material Synthesis	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Fundan engine science noparti	nentals ering, e e, nano cle syn	as well as specific know electronics and photonics -structuring technologies thesis and structuring te	ledge and skills for e and biophysical app and components an chnologies.	ngineering work in t plications and the tee d system developme	he application directions power chnology fields of materials ent, in particular in the area of na-	
Intende	ed lear	ning outcomes				
Studen fields o	ts have of engin	e developed advanced kn leering work, in particula	owledge and skills ir r in the area of nanop	n one or more application one or more application of the synthesis and	ation directions or technology d structuring technologies.	
Course	s (type	, number of weekly conta	ct hours, language —	- if other than Germa	n)	
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)	
Methoo ster, in	d of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exa ach or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Master	's degr	ee (1 major) Nanostructur	re Technology (2010)			
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title Abbreviation				Abbreviation		
Electronics					11-A2-081-m01	
Module	coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts					
Principl technol	les of p logy.	assive and active electro	nic components and	their application in a	analogous and digital circuit	
Intende	ed learr	ning outcomes				
The stu circuit t	dents l echnol	nave knowledge of the pr logy.	actical setup of elect	ronic circuits from th	e field of analogous and digital	
Courses	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V + Ü (n	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)	
Method ster, inf	l of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
written	examir	nation (approx. 90 minut	es)			
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPO I (examination regu	lations for teaching-o	legree programmes)		
				<u> </u>		
Module	appea	irs in				
Bachelo	or' degi	ree (1 major) Physics (200	09)			
Bachelo	Bachelor' degree (1 major) Physics (2008)					
Master'	Master's degree (1 major) Physics (2010)					
Master'	Master's degree (1 major) Nanostructure Technology (2010)					
Master'	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)					
Master'	s degre	ee (1 major) FOKUS Physi	cs (2010)			
Bachelo	or's deg	gree (1 major, 1 minor) Ph	ysics (Minor, 2008)			
No fina	No final examination Special study offering (2010)					

Module	Module title Abbreviation					
Applie	Applied Semiconductor Physics 11-AHL-092-m01					
Module	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
6 Duration 1 seme Seme Conten The lect compo Intendo The stu phonor ties. The the sol miliar v ding of electro patt, Bai injectico of sem compo Course	Instruction Instruction of the service of					
R + V (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Metho ster, in	d of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English						
Allocation of places						
Additional information						

Workload

Teaching cycle

--

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Module title					Abbreviation	
Reproc	Reproducing Sensors in Infrared11-ASI-092-m01					
Modul	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of A	Applied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
3	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	undergraduate	Certain prerequisite	s must be met to qu	alify for admission to	o as-
			sessment. The lectu	rer will inform stude	nts about the respe	ctive details
			at the beginning of t	the course. Registrat	ion for the course w	ill be con-
			sidered a declaratio	n of will to seek adm	nission to assessme	nt. If stu-
			dents have obtained	d the qualification fo	r admission to asse	ssment over
			the course of the se	mester, the lecturer	will put their registra	ation for as-
			sessment into effect	t. Students who mee	t all prerequisites w	ill be admit-
			ted to assessment i	n the current or in th	e subsequent seme	ster. For as-
			sessment at a later	date, students will h	ave to obtain the qu	alification for
			admission to assess	sment anew.		
Conter	nts					
range of up to n from b sical o types of of neur	of infrar nicrowa odies w ptics of of senso rophysi	ed ranges from the visi ives and radiowaves with with ambient temperatur this spectral range and ors (bolometer, quantur ological aspects.	ble spectrum, where th th artificial emitters. Th re in the infrared spect discusses: Peculiariti n well, superlattice) as	ne Sun is dominating nere is distinct and s rum. The lecture pro- es of infrared camera well as the evaluati	; as the natural sour ometimes domination vides an introduction as and thermal imag on of such sensors of	ce of light, ng emission n to the phy- ges, different on the basis
Intend	ed lear	ning outcomes				
The stu techno	udents l ologies a	have specific and advar and detector structures	nced knowledge in the as well as their applica	field of infrared spec ation areas.	ctral imaging. They k	know various
Course	es (type	, number of weekly con	tact hours, language –	- if other than Germa	n)	
V + R (I	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Metho	d of ass	sessment (type, scope,	language — if other th	an German, examina	tion offered — if not	every seme-
ster, in	formati	on on whether module	can be chosen to earn	a bonus)		every serife
a) writh groups project (appro Assess and wi examir Langua	a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.					
Allocat	tion of r	nlaces	0			
Additional information						
Workload						
Teachi	Teaching cycle					
Master's w ring Techn	vith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	n. reg. data re- turtechnik - 2010	page 15 / 214

Module appears in

Bachelor' degree (1 major) Physics (2010)

Bachelor' degree (1 major) Physics (2012)

Master's degree (1 major) Physics (2010)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Applied Superconduction 11-ASL-092-mo1 Module coordinator Module offered by Managing Director of the Institute of Applied 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 must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment at a later date, students will have to obtain the qualification for admission to assessment at a later date, students will have to obtain the qualification for admission to assessment anew. Contents Physical principles of superconductivity. Application in energy engineering. Instrumental developments. Methods of materials sciences for the calculation of temperature profiles in superconductors. Intended learning outcomes The students have a basic understanding of superconductivity as a macroscopic quantum phenomenon. They are able to discuss questions on superconductivity in a scientific manner and to critically question developments of energy technology. Furthermore, they can deal with practical mathematical questions.					
Module coordinator Module offered by Managing Director of the Institute of Applied 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 graduate Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment. Seessment at a later date, students will have to obtain the qualification for admission to assessment. The subsequent semester. Methods of materials sciences for the calculation of temperature profiles in superconductors. Intended learning outcomes Intended learning outcomes The students have a basic understanding of superconductivity as a macroscopic quantum phenomenon. They are able to evaluate the contributions of materials sciences to the development of superconductivity. They are able to discuss questions on superconductivity in a scientific manner and to critically question developments of energy technology. Furthermore, they can deal with practical mathematical questions.					
Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy ECTS Method of grading Only after succ. compl. of module(s) 6 num=rical grade Duration Module level Other prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment at a later date, students will have to obtain the qualification for admission to assessment. For assessment at a later date, students will have to obtain the qualification of materials sciences for the calculation of temperature profiles in superconductors. Physical principles of superconductivity. Application in energy engineering. Instrumental developments. Methods of materials sciences for the calculation of superconductors. Intended learning outcomes The students have a basic understanding of superconductivity as a macroscopic quantum phenomenon. They are able to discuss questions on superconductivity in a scientific manner and to critically question developments of energy technology. Furthermore, they can deal with practical mathematical questions.					
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Courses (type, number of weekly contact hours, language — if other than German)					
R + V (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 seme- ster, information on whether module can be chosen to earn a bonus)					
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (ap- prox. 30 minutes) Assessment offered: once a year, winter semester Language of assessment: German, English					
Allocation of places					
Additional information					
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor' degree (1 major) Physics (2010)					
Master's with 1 major FOKUS Physics - Nanostructu- ring Technology (2010) JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re- cord Master (120 ECTS) FOKUS Physik - Nanostrukturtechnik - 2010 page 17 / 214					

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Nanostructure Technology (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010)

Biophysical Measurement Technology in Medical Science 11-BMT-092-m01 Module coordinator Module offered by Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy ECTS Method of grading Only after succ. compl. of module(s) 6 numerical grade					
Module coordinator Module offered by Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy ECTS Method of grading Only after succ. compl. of module(s) 6 numerical grade					
Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy ECTS Method of grading Only after succ. compl. of module(s) 6 numerical grade					
ECTS Method of grading Only after succ. compl. of module(s) 6 numerical grade					
6 numerical grade					
Duration Module level Other prerequisites					
1 semester graduate Certain prerequisites must be met to qualify for admission to as-					
sessment. The lecturer will inform students about the respective details					
at the beginning of the course. Registration for the course will be con-					
sidered a declaration of will to seek admission to assessment. If stu-					
dents have obtained the qualification for admission to assessment over					
the course of the semester, the lecturer will put their registration for as-					
sessment into effect. Students who meet all prerequisites will be admit-					
ted to assessment in the current of in the subsequent semester. For as-					
admission to accossment anow					
Contents					
The lecture covers the physical principles of imaging techniques and their application in Biomedicine. The main					
copics are conventional X-ray technique, computer tomography, imaging techniques of nuclear medicine, ultra-					
image processing.					
Intended learning outcomes					
The students know the physical principles of imaging techniques and their application in Biomedicine. They un-					
derstand the principles of image generation and are able to explain different techniques and interpret simple					
mages.					
Courses (type, number of weekly contact hours, language — if other than German)					
R + V (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 seme- ster, information on whether module can be chosen to earn a bonus)					
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in					
groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c)					
project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation					
(approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment					
and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and					
examination regulations) 2009.					
Language of assessment: German, English					
Allocation of places					
Additional information					
Workload					
Teaching cycle					

Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2010)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Functional Materials (2012)

Module	ule title Abbreviation			Abbreviation				
Princip	Principles of Image Processing 11-EBV-092-m01							
Module coordinator				Module offered by				
Manag	aging Director of the Institute of Applied Physics Faculty of Physics and Astronomy				nd Astronomy			
ECTS	Metho	od of grading	Only after succ. compl. of module(s)					
3	nume	rical grade						
Duratio	on	Module level	Other prerequisites					
1 seme	1 semester undergraduate Certain prerequisites must be met to qualify for admission to as				alify for admission to as-			
sessment. The lecturer		rer will inform stude	nts about the respective details					
at the beginning of the course. Regi			the course. Registrat	ration for the course will be con-				
sidered a declaration of will to seek admission to assessmer				ission to assessment. If stu-				
dents have obtained the qualification for admission to			r admission to assessment over					
			the course of the se	mester, the lecturer v	will put their registration for as-			
			ted to accossment into effect	t. Students who mee	t all prerequisites will be admit-			
			soccmont at a lator	data, students will b	e subsequent semester. For as-			
			admission to assess	sment anew				
Conton	+-							
Conten			in the second		tion True dimension 15 1			
transfo tic imaged trackin	rm. His ge reco g). Thre	to image processing. Pict togram equalisation (e.g gnition: Segmentation, c ee-dimensional images.	ures as two-dimensio g. image brightening) lassification. Technol	nal signals; digitalis and pixel connectivit logical image genera	ty (e.g. noise reduction). Automa- tion. Applications (e.g. motion			
Intended learning outcomes								
The students have specific and advanced knowledge in the field of image processing. They know the principles								
and theory of signal processing for images and have corresponding knowledge of image generation. They are ab- le to independently work with literature, they understand the characteristics of image processing with commerci- al software and are able to process images for the analysis of experiments with imaging measuring methods.								
Course	s (type	, number of weekly conta	act hours, language –	- if other than Germa	n)			
V + R (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language availa	able)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)								
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English								
Allocation of places								
Additional information								
Workload								
Teachi	ng cvcl	e						
	<u> </u>	-						
L								
Master's w ring Techno	ith 1 majo blogy (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg ● ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- page 21 / 214 urtechnik - 2010			

Module appears in

Bachelor' degree (1 major) Physics (2010)

Bachelor' degree (1 major) Physics (2012)

Master's degree (1 major) Physics (2010)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Module	Module title Abbre			Abbreviation			
Principles of Energy Technologies 11-ENT-092-mo1							
Module coordinator				Module offered by	by		
Managing Director of the Institute of Applied			Applied Physics	Faculty of Physics and Astronomy			
ECTS Method of grading Only after s			Only after succ. con	npl. of module(s)			
6 numerical grade							
Duration Module level Other prerequisites							
1 semester graduate Certa			Certain prerequisite	s must be met to qua	alify for admission to as-		
		sessment. The lectu	sessment. The lecturer will inform students about the respective details				
			at the beginning of t	the course. Registrat	ion for the course will be con-		
			sidered a declaratio	n of will to seek adm	nission to assessment. If stu-		
			dents have obtained	d the qualification fo	r admission to assessment over		
			the course of the se	mester, the lecturer	will put their registration for as-		
			sessment into effect	t. Students who mee	t all prerequisites will be admit-		
			ted to assessment i	n the current or in th	e subsequent semester. For as-		
			sessment at a later	date, students will h	ave to obtain the qualification for		
			admission to assess	sment anew.			
Conten	Its						
ting materials, selective layers, highly activated carbons). The course is especially suitable for teaching degree students. Energy conservation via thermal insulation. Thermodynamic energy efficiency. Fossil fired energy con- verters. Nuclear power plants. Hydroelectricity. Wind turbines. Photovoltaics. Solar thermal: Heat. Solar thermal: Electricity. Biomass. Geothermal energy. Energy storage. Energy transport							
Intend	ed lear	ning outcomes					
The stu port an	idents id stora	know the principles of a ge. They understand th	different methods of en le structures of corresp	ergy technology, esp onding installations	pecially energy conversion, trans- and are able to compare them.		
Course	s (type	, number of weekly con	tact hours, language –	- if other than Germa	n)		
R + V (r	no infor	mation on SWS (weekly	y contact hours) and co	ourse language avail	able)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)							
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English							
Allocation of places							
Additional information							
Workload							
Teaching cycle							
_							
Master's w ring Techno	ith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostruki	n. reg. data re- page 23 / 214 turtechnik - 2010		

Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2010)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Functional Materials (2012)

Module	Module title Abbreviation		Abbreviation			
Introduction to Plasmaphysics 11-EPP-092-m01						
Module coordinator				Module offered by		
Managing Director of the Institute of Theoretical Phy and Astrophysics			eoretical Physics	Faculty of Physics and Astronomy		
ECTS	ECTS Method of grading Only after succ. compl. of module(s)					
6	nume	rical grade		-		
Duratio	Duration Module level Other prerequisites					
1 semestergraduateCertain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective dereat the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment the course of the semester, the lecturer will put their registration for				alify for admission to as- nts about the respective details ion for the course will be con- nission to assessment. If stu- r admission to assessment over will put their registration for as-		
sessment into effect. Students who meet all prerequisites will be adm ted to assessment in the current or in the subsequent semester. For a sessment at a later date, students will have to obtain the qualification admission to assessment anew				t all prerequisites will be admit- e subsequent semester. For as- ave to obtain the qualification for		
Conten	ts					
Plasma Astrophysics: Dynamics of charged particles in electric and magnetic fields, Magnetohydrodynamics, Transport equations for energetic particles, Properties of magnetic turbulence, Propagation of solar particles wi- thin the solar wind, Particle acceleration via shock waves and via interaction with plasma turbulence, Particle ac- celeration and transport in galaxies and other astrophysical objects, Cosmic radiation. Intended learning outcomes						
ma. They are able to solve basic problems of Plasma Physics and to apply this knowledge to Astrophysics.						
Courses (type, number of weekly contact hours, language — if other than German)						
V + R (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 seme- ster, information on whether module can be chosen to earn a bonus)						
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment						
and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.						
Language of assessment: German, English						
Allocation of places						
Additional information						
Worklo	ad					
Teaching cycle						

Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)

Module	dule title		Abbreviation					
Solid State Physics 2 11-FK2-092-m01								
Module coordinator				Module offered by	/			
Managing Director of the Institute of Ap		Applied Physics	Physics Faculty of Physics and Astronomy					
ECTS Method of grading 0			Only after succ. con	Only after succ. compl. of module(s)				
8 numerical grade								
Duratio	on	Module level Other prerequisites						
1 semester graduate Certain prerequisites must be met to qualify for adm			alify for admission to as-					
			sessment. The lectu	irer will inform stude	nts about the respective deta	ails		
			at the beginning of the course. Registration for the course will be con-					
			sidered a declaratio	dents have obtained the qualification for admission to assessment over				
			dents have obtained	Jenus have obtained the qualification for admission to assessment over				
			the course of the se	he course of the semester, the lecturer will put their registration for as-				
			tod to accossment i	n the current or in the	a subsequent semester. For			
			sessment at a later	date, students will b	ave to obtain the qualification	as- on for		
			admission to assess	cment anew	ave to obtain the qualificatio	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Cantan								
Conten			· · · · · · · · ·	1 .1 1				
Advanc	ced Sol del Die	Id-State Physics. Electr	ons in periodic potenti ferroelectrics. Semicon	al - the band structur ductors Magnetism	e. Dynamics in the semi-class	551- ex-		
citation	is and	optical properties [opti	onal]	ductors. Magnetism.	Superconductivity: coupied	CA		
Intended learning outcomes								
The students have specific and advanced knowledge in the field of Solid-State Physics. They are theoretically ab-								
le to specialise in a sub-discipline of Solid-State Physics.								
Course	s (type	, number of weekly cor	itact hours, language –	- if other than Germa	n)			
R + V (r	no infor	mation on SWS (weekl	y contact hours) and co	ourse language availa	able)			
Metho ster, in	d of ass formati	essment (type, scope, on on whether module	language — if other the can be chosen to earn	an German, examina a bonus)	tion offered — if not every se	eme-		
a) writt	en exai	mination (approx. 90 n	ninutes) or b) oral exam	ination of one candi	date each or oral examinatio	on in		
project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation								
(approx. 30 minutes)								
Assessment offered: When and how often assessment will be offered depends on the method of assessment								
and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and								
Language of assessment: German, English								
Allocation of places								
Additional information								
Workload								
Teaching cycle								
Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)				
Module appears in								
Master's w	ith 1 majo	r FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exam	n. reg. data re- page 27 /	/ 214		
ring Techno	ology (201	o)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010			



Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)

Modul	Module title Abbreviation							
Solid State Spectroscopy 11-FKS-092-m01								
Module coordinator			Module offered by					
Managing Director of the Institute of A		oplied Physics Faculty of Physics and Astronomy						
ECTS Method of grading			Only after succ. compl. of module(s)					
6	nume	rical grade						
Duratio	on	Module level	Other prerequisites					
1 semester graduate Certain prerequisites must be met to qualify for admission to as				as-				
			sessment. The lecturer will inform students about the respective details					
			at the beginning of the course. Registration for the course will be con-					
			sidered a declaratio	dered a declaration of will to seek admission to assessment. If stu-				
			dents have obtained	ts have obtained the qualification for admission to assessment over				
			the course of the se	mester, the lecturer	will put their registrat	tion for as-		
			sessment into effect	t. Students who mee	t all prerequisites wi	ll be admit-		
			ted to assessment i	n the current or in th	e subsequent semes	ter. For as-		
			sessment at a later	date, students will h	ave to obtain the qua	alification for		
			admission to assess	sment anew.				
Conter	its							
Single- spectro	and m	any-particle picture of ele X-ray spectroscopies.	ectrons in solids. Ligh	it-matter interaction.	. Optical spectroscop	y. Electron		
Intend	ed lear	ning outcomes						
The students have specific and advanced knowledge in the field of solid-state spectroscopy. They know different								
types of spectroscopy and their fields of application. They understand the theoretical principles and the current								
develo	pments	s in research.						
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)			
R + V (1	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)			
Metho ster, in	d of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-		
a) writt	en exa	mination (approx. 90 mir	utes) or b) oral exam	ination of one candi	date each or oral exa	imination in		
groups	(appro	x. 30 minutes per candid	late, for modules with	n less than 4 ECTS cr	edits approx. 20 min	utes) or c)		
project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation								
(approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment								
and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and								
examination regulations) 2009.								
Language of assessment: German, English								
Allocation of places								
Additional information								
Workload								
Teaching cycle								
Referre	ed to in	LPOI (examination regu	lations for teaching-o	legree programmes)				
Modul	a 20000	ars in						
Mactul	e appea		18411147/*	an event of Arrows				
master's w	ology (201	o)	JMU Wurzburg • ge cord Master (120 ECT	merated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	urtechnik - 2010	page 29 / 214		

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)

Module title				Abbreviation			
Transport Phenomena in Solids				11-FKT-092-m01			
Module coordinator				Module offered by			
Managing Director of the Institute of Theoretica and Astrophysics			Theoretical Physics	Faculty of Physics and Astronomy			
ECTS	Metho	od of grading	Only after succ. con	ompl. of module(s)			
6	nume	rical grade					
Duratio	Juration Module level Other prerequisites						
1 semester		graduate	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for				
			admission to assess	sment anew	ave to obtain the qu		
Contor	te						
T							
Transpo	ort pne	nomena in solids.					
Intende	ed lear	ning outcomes		a			
The stu	dents l	nave specific and advar	nced knowledge in the	field of transport ph	enomena in solids.		
Course	s (type	, number of weekly con	tact hours, language –	- if other than Germa	n)		
R + V (n	o infor	mation on SWS (weekly	contact hours) and co	ourse language availa	able)		
Methoo ster, in	d of ass formati	essment (type, scope, on on whether module	language — if other the can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English							
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachelor' degree (1 major) Physics (2010)							
Bachelor' degree (1 major) Physics (2012)							
Master's wi	ith 1 majo	FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exam	. reg. data re-	page 31 / 214	
ring Techno	ology (201	0)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010		

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title				Abbreviation		
FOKUS	S Resea	rch Module Type VK10E	Experimental Physics	5	11-FM-VK10E-072-m	101
Modu	Module coordinator			Module offered by		
chairperson of examination committee		e	Faculty of Physics a	and Astronomy		
ECTS	Metho	od of grading	Only after succ. cor	c. compl. of module(s)		
10	nume	rical grade				
Duration Module level Other prerec		Other prerequisites	requisites			
1 seme	ester	graduate				
Conte	nts					
Specific and advanced knowledge of independent scientific work in a current research area, especially in the dis- cipline of Experimental Physics, reproduction of knowledge, acquisition of social and methodological competen- cies. Application of the acquired professional knowledge and methods to new scientific questions in a mini rese- arch project (e.g. experiments, case studies etc.).						
Intend	ed lear	ning outcomes				
The students have special and advanced knowledge of independent scientific work in a current research area, especially in the specialist field of Experimental Physics, and are able to reproduce the acquired knowledge, to apply the acquired methods, to summarise a sub-area of the current research area in an oral presentation and to successfully implement the acquired knowledge and methods in a mini research project.						
Cours	es (type	, number of weekly con	tact hours, language –	– if other than Germa	ın)	
contact hours) + Ü/P (2 weekly contact hours), details on availability to be announced FOKUS Kompaktseminar Experimentelle Physik (FOKUS Block Taught Seminar Experimental Physics): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usual- ly held during semester break)						
Metho ster, ir	d of ass formati	sessment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	ition offered — if not	every seme-
 This module has the following assessment components 1. Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or oral examination of one candidate each or oral examination in groups (approx. 30 minutes) or project report (approx. 8 pages) 2. Seminar: talk (approx. 30 to 45 minutes) 						
Assessment components 1 and 2 will be offered in German or English. Students must register for assessment components 1 and 2 online (details to be announced). Details on when assessment components 1 and 2 will be offered to be announced. To pass this module, students must pass both assessment component 1 and assessment component 2						
Alloca	tion of r	places				
Additi	onal inf	ormation				
		-				
Workl	oad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master's v ring Techr	vith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan IS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 33 / 214



Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)

Module title					Abbreviation	
FOKU	S Resea	rch Module Type VK10I I	nterdisciplinary Rese	arch Fields	11-FM-VK10I-072-m	01
Module coordinator				Module offered by	by	
chairp	erson o	f examination committee	e	Faculty of Physics a	ind Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duration Module level Other prerec		Other prerequisites	uisites			
Conte	nts	graduate				
Specific and advanced knowledge of independent scientific work in a current research area, especially in an in- terdisciplinary subject, reproduction of knowledge, acquisition of social and methodological competencies. App- lication of the acquired professional knowledge and methods to new scientific questions in a mini research pro- ject (e.g. experiments, case studies etc.).						
Intend	led lear	ning outcomes				
The st espec the ac cessfu	udents ially in a quired r ılly impl	have special and advances an interdisciplinary spect nethods, to summarise a ement the acquired know	ed knowledge of inde ialist field, and are ab a sub-area of the curr wledge and methods	ependent scientific w le to reproduce the a ent research area in a in a mini research pr	vork in a current rese acquired knowledge an oral presentation oject.	earch area, , to apply and to suc-
Cours	es (type	, number of weekly cont	act hours, language –	- if other than Germa	ın)	
Fields FOKUS Fields minar Metho ster, i This n 1. Top tes) rep 2. Sen Assess Stude Detail): V (3 w 5 Kompa 5 Kompa 5 Kompa 6 Kompa (3 days) od of ass nformati nodule h ics cove or oral ort (app ninar: ta sment c nts mus s on wh	eekly contact nours) + U aktseminar Interdisziplin eekly contact hours), Ge), usually held during se sessment (type, scope, la ion on whether module of tas the following assessi- tered in lectures and exerce examination of one cand rox. 8 pages) lk (approx. 30 to 45 min omponents 1 and 2 will b t register for assessmen en assessment components	/P (2 weekly contact äre Fachgebiete (FOK erman or English, deta mester break) anguage — if other th can be chosen to earn ment components cises: written examina didate each or oral exa utes) be offered in German t components 1 and 2 ents 1 and 2 will be of	nours), details on av US Block Taught Sen ils on availability to an German, examina a bonus) ation (approx. 90 min amination in groups or English. conline (details to be fered to be announce	anability to be anno ninar Interdisciplina be announced (bloc tion offered — if not nutes) or talk (appro (approx. 30 minutes e announced). ed.	unced ry Research k taught se- every seme- x. 30 minu-) or project
To pass this module, students must pass both assessment component 1 and assessment component 2.						
Alloca	tion of _l	olaces				
Additi	onal inf	ormation				
			_			
Workl	oad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Maste	r's degr	ee (1 major) FOKUS Phys	ics - Nanostructuring	Technology (2010)		
Master's ring Tech	with 1 majo nology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan 'S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 35 / 214



Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)
Modu	Module title				Abbreviation	
FOKUS Research Module Type VK10N Nanostructure Technology 11-FM-VK					11-FM-VK10N-072-n	101
Modu	le coord	inator		Module offered by		
chairperson of examination committee			e	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Durat	ion	Module level	Other prerequisites	i		
1 sem	ester	graduate				
Conte	nts					
Specifi field c tencie resear	Specific and advanced knowledge of independent scientific work in a current research area, especially in the field of nanostructure technology, reproduction of knowledge, acquisition of social and methodological compe- tencies. Application of the acquired professional knowledge and methods to new scientific questions in a mini research project (e.g. experiments, case studies etc.).					
Intend	led lear	ning outcomes				
The st espec the ac cessfu	udents ially in t quired r ılly impl	have special and advan he field of nanostructur nethods, to summarise ement the acquired kno	ced knowledge of inde e technology, and are a sub-area of the curre wledge and methods	ependent scientific w able to reproduce th ent research area in in a mini research pr	vork in a current rese le acquired knowled an oral presentation roject.	arch area, ge, to apply and to suc-
Cours	es (type	, number of weekly con	act hours, language –	- if other than Germa	in)	
weekl FOKUS weekl days),	y contac 5 Kompa y contac usually	t hours) + Ü/P (2 weekl aktseminar Nanostruktu t hours), German or Eng held during semester b accompany (type, scope	y contact hours), detai rtechnik (FOKUS Block glish, details on availa rreak) anguage — if other th	ils on availability to l Taught Seminar Na bility to be announce	be announced nostructure Technolo ed (block taught sem	ogy): S (2 1inar (3
ster, i	nformati	ion on whether module	can be chosen to earn	a bonus)		every serie
This n 1. Top tes) rep 2. Sen	nodule h ics cove or oral ort (app ninar: ta	as the following assess red in lectures and exer examination of one can rox. 8 pages) lk (approx. 30 to 45 mir	ment components rcises: written examina didate each or oral exa utes)	ation (approx. 90 min amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project
Asses Stude	sment c nts mus	omponents 1 and 2 will t register for assessmer	be offered in German at components 1 and 2	or English. online (details to be	e announced).	
Detail	s on wh	en assessment compon	ents 1 and 2 will be of	fered to be announc	ed.	
To pas	ss this m	nodule, students must p	ass both assessment	component 1 and as	sessment compone	nt 2.
Alloca	tion of _l	olaces				
Additi	onal inf	ormation				
Workl	oad					
			_			
Teach	ing cycl	e				
Refer	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Maste	r's degr	ee (1 major) FOKUS Phy	sics - Nanostructuring	Technology (2010)		
Master's ring Tech	with 1 majo nology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 37 / 214



Module title				Abbreviation		
FOKUS	FOKUS Research Module Type VK10T Theoretical Physics 11-FM-VK10T-072-m01					101
Modul	e coord	inator		Module offered by		
chairp	airperson of examination committee Faculty of Physic			Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
10	nume	rical grade				
Durati	on	Module level	Other prerequisites	•		
Conto		glauuale				
Specific and advanced knowledge of independent scientific work in a current research area, especially in the dis- cipline of Theoretical Physics, reproduction of knowledge, acquisition of social and methodological competen- cies. Application of the acquired professional knowledge and methods to new scientific questions in a mini rese- arch project (e.g. experiments, case studies etc.).						
Intend	ed lear	ning outcomes				
The stu especi ply the succes	udents l ally in t acquir ssfully in	have special and advar he specialist field of Th ed methods, to summa nplement the acquirec	nced knowledge of inde neoretical Physics, and rise a sub-area of the o l knowledge and metho	ependent scientific v are able to reproduc current research area ods in a mini researc	vork in a current rese te the acquired know t in an oral presentat h project.	arch area, /ledge, to ap- tion and to
Course	es (type	, number of weekly cor	itact hours, language –	– if other than Germa	ın)	
contac FOKUS contac ly held	t hours) Kompa t hours) during) + Ü/P (2 weekly conta ktseminar Theoretisch), German or English, d semester break)	e Physik (FOKUS Block etails on availability to	vailability to be anno Taught Seminar The be announced (bloc	oretical Physics): S (k taught seminar (3	(2 weekly days), usual-
ster, ir	d of ass formati	on on whether module	can be chosen to earn	an German, examina a bonus)	ition offered — if not	every seme-
This m 1. Topi tes) repo 2. Sem	odule h ics cove or oral ort (appi iinar: ta	as the following asses red in lectures and exe examination of one car rox. 8 pages) lk (approx. 30 to 45 mi	sment components ercises: written examina ndidate each or oral ex nutes)	ation (approx. 90 mi amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project
Assess Studer Details To pas	sment c nts mus s on who s this m	omponents 1 and 2 wil t register for assessme en assessment compo- nodule, students must	l be offered in German nt components 1 and 2 nents 1 and 2 will be of pass both assessment	or English. online (details to be fered to be announc component 1 and as	e announced). ed. sessment compone	nt 2.
Alloca	tion of p	olaces	·	•	·	
Additi	onal inf	ormation				
Workle	oad					
Teachi	ing cycl	e				
Referr	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	Module appears in					
Maste	r's degr	ee (1 major) FOKUS Phy	vsics - Nanostructuring	Technology (2010)		
Master's v ring Techn	vith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exar IS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 39 / 214



Module title				Abbreviation			
FOKUS Research Module Type VK12E Experimental Physics				11-FM-VK12E-072-m	101		
Modul	e coord	inator		Module offered by	Module offered by		
chairp	erson o	f examination committ	ee	Faculty of Physics and Astronomy			
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)			
12	nume	rical grade					
Duratio	on	Module level	Other prerequisites	6			
1 seme	ester	graduate					
Conter	its						
Specifi	ic and a	dvanced knowledge of	findependent scientifi	c work in a current re	search area, especia	ally in the dis-	
cipline cies A	of Expe nnlicati	on of the acquired pro	oduction of knowledge fessional knowledge a	e, acquisition of socia nd methods to new s	ai and methodologic	al competen- n a mini rese-	
arch pi	roject (e	e.g. experiments, case	studies etc.).		destions i		
Intend	ed lear	ning outcomes					
The stu	udents l	nave special and adva	nced knowledge of ind	ependent scientific v	vork in a current rese	earch area,	
especi	ally in t	he specialist field of Ex	perimental Physics, ar	nd are able to reprod	uce the acquired kno	owledge, to	
apply t	he acquestully in	uired methods, to sum	marise a sub-area of th	le current research a	rea in an oral presen h project	tation and to	
Course	c (type	number of weekly cor	tact hours language -	- if other than Germa			
FORUS	Einfüh	rungsmodul Experimer	talla Physik (EOKUS In	troductory Modulo Ex	un) xnorimontal Physics)	V(i)	
contac	t hours) + Ü/P (2 weekly conta	act hours), details on a	vailability to be anno	ounced	. V (4 WEEKIY	
FOKUS	Kompa	ktseminar Experiment	elle Physik (FOKUS Blo	ck Taught Seminar E	xperimental Physics)): S (2 weekly	
contac	t hours)), German or English, d	etails on availability to	be announced (bloo	ck taught seminar (3	days), usual-	
ly nela	auring	semester break)		C			
ster. in	d of ass formati	on on whether module	canguage — if other the can be chosen to earn	an German, examina La bonus)	ition offered — if not	every seme-	
This m	odule h	as the following asses	sment components				
1. Topi	cs cove	red in lectures and exe	ercises: written examin	ation (approx. 90 mi	nutes) or talk (appro	x. 30 minu-	
tes)	or oral	examination of one car	ndidate each or oral ex	amination in groups	(approx. 30 minutes) or project	
repo	inar• ta	'ox. 8 pages) Ik (approx-20 to 45 mi	nutes)				
2.5011	mar. ta		hutes)				
Assess	ment c	omponents 1 and 2 wil	l be offered in German	or English.			
Details	its mus	en assessment compo	nt components 1 and 2 nents 1 and 2	fered to be announc	e announced). ed.		
To pas	s this m	odule, students must	pass both assessment	component 1 and as	sessment compone	nt 2.	
Allocat	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modul	Module appears in						
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master's u	ith 1 maio	FOKUS Physics - Nanostructu	IMII Würzburg ● g	enerated 26-Aug-2024 • exer	n reg data re-	nage (1 / 21)	
ring Techn	ology (201	o)	cord Master (120 EC	rs) FOKUS Physik - Nanostruk	turtechnik - 2010	puse 41 / 214	



Module title				Abbreviation		
FOKUS	FOKUS Research Module Type VK12I Interdisciplinary Research Fields				11-FM-VK12I-072-m01	
Modul	e coord	inator		Module offered by	<u>I</u>	
chairp	erson o	f examination committe	e	Faculty of Physics and Astronomy		
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
12	nume	rical grade				
Duratio	on	Module level	Other prerequisites	;		
1 seme	ester	graduate				
Conter	nts					
Specifi terdisc	ic and a iplinary	dvanced knowledge of subject, reproduction	independent scientific of knowledge, acquisi	c work in a current re tion of social and me	search area, especially ethodological competer	/ in an in- ncies. App-
iect (e.	n of the g. exne	riments, case studies e	knowledge and metho (tc.)	as to new scientific (questions in a mini rese	earcn pro-
Intend	ed lear	ning outcomes				
The stu	Idents	have special and advar		enendent scientific v	vork in a current resear	rch area
especi the acc cessfu	ally in a quired r lly impl	in interdisciplinary spe- nethods, to summarise ement the acquired kno	cialist field, and are ab a sub-area of the curr owledge and methods	ole to reproduce the ent research area in in a mini research p	acquired knowledge, to an oral presentation an roject.	apply ad to suc-
Course	es (type	, number of weekly con	tact hours, language –	- if other than Germa	an)	
FOKUS Fields) FOKUS Fields) minar	Einfüh : V (4 w Kompa : S (2 w (3 davs)	rungsmodul Interdiszip eekly contact hours) + ktseminar Interdiszipli eekly contact hours), G , usually held during so	linäre Fachgebiete (FO Ü/P (2 weekly contact näre Fachgebiete (FOK erman or English, deta emester break)	KUS Introductory Mo hours), details on av US Block Taught Ser ills on availability to	odule Interdisciplinary F ailability to be announ ninar Interdisciplinary F be announced (block t	Research Iced Research taught se-
Metho	d of ass	sessment (type, scope,	language — if other th	an German, examina	ation offered — if not ev	very seme-
ster, m				a Donus)		
1. Topi tes) repo 2. Sem	odule n cs cove or oral ort (appi inar: ta	red in lectures and exe examination of one can rox. 8 pages) lk (approx. 30 to 45 min	rcises: written examina didate each or oral exa nutes)	ation (approx. 90 mi amination in groups	nutes) or talk (approx. <u>;</u> (approx. 30 minutes) o	30 minu-)r project
Assess Studer Details	sment c nts mus s on who s this m	omponents 1 and 2 will t register for assessme en assessment compor	be offered in German at components 1 and 2 tents 1 and 2 will be of bass both assessment	or English. online (details to be fered to be announc	e announced). ed.	2
	tion of r	laces		component i and as		2.
Allocal						
∆dditi/	nal inf	ormation				
Auunn						
Workle						
WOIKI	Jau					
 T h		-				
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	Module appears in					
master	s degr	ee (1 major) FUKUS Phy	sics - Nanostructuring	rechnology (2010)		
Master's w ring Techn	vith 1 major ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exar S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 43 / 214



Module title /				Abbreviation		
FOKUS	FOKUS Research Module Type VK12N Nanostructure Technology 11-FM-VK12N-072-m01					101
Modu	le coord	inator		Module offered by		
chairp	erson o	f examination committe	e	Faculty of Physics a	ind Astronomy	
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)		
12	nume	rical grade				
Durati	on	Module level	Other prerequisites	5		
1 sem	ester	graduate				
Conte	nts					
Specif field o tencie resear	ic and a f nanos s. Appli ch proje	idvanced knowledge of tructure technology, rep cation of the acquired p ect (e.g. experiments, ca	independent scientific production of knowled rofessional knowledg use studies etc.).	c work in a current re ge, acquisition of soo e and methods to ne	search area, especia cial and methodolog w scientific questior	ally in the ical compe- ns in a mini
Intend	led lear	ning outcomes				
The st espec the ac cessfu	udents ially in t quired r ılly impl	have special and advan he field of nanostructur nethods, to summarise ement the acquired kno	ced knowledge of inde e technology, and are a sub-area of the curre wledge and methods	ependent scientific w able to reproduce th ent research area in a in a mini research pr	vork in a current rese e acquired knowled an oral presentation oject.	arch area, ge, to apply and to suc-
Cours	es (type	, number of weekly con	tact hours, language –	- if other than Germa	ın)	
weekl FOKUS weekl days),	y contac 6 Kompa y contac usually	t hours) + Ü/P (2 weekl aktseminar Nanostruktu t hours), German or Eng held during semester b	y contact hours), detai rtechnik (FOKUS Block glish, details on availa preak)	ils on availability to k Taught Seminar Na bility to be announce	be announced nostructure Technolo ed (block taught sen	ogy): S (2 ninar (3
ster, i	nformat	ion on whether module	can be chosen to earn	a bonus)	lition onered — If not	every seme-
This m 1. Top tes) repo 2. Sen	iodule h ics cove or oral ort (app ninar: ta	as the following assess red in lectures and exer examination of one can rox. 8 pages) lk (approx. 30 to 45 mir	ment components rcises: written examina didate each or oral exa nutes)	ation (approx. 90 min amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project
Asses Stude Detail	sment c nts mus s on wh	omponents 1 and 2 will t register for assessmer en assessment compon	be offered in German at components 1 and 2 ents 1 and 2 will be of	or English. online (details to be fered to be announce	e announced). ed.	
	tion of	nodule, students must p	ass both assessment	component 1 and as	sessment compone	nt 2.
Additi	onal inf	ormation				
Workl	oad					
Teach		e	_			
Poferred to in LPO L (examination regulations for teaching degree programmer)						
	Referred to in LPOT (examination regulations for teaching-degree programmes)					
Modu						
Maste	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)					
Master's	with 1 majo	r FOKUS Physics - Nanostructu-	JMU Würzburg • g	enerated 26-Aug-2024 • exan	n. reg. data re-	page 45 / 214
ring lechi	10logy (201	0)	cord Master (120 ECT	5) FUKUS Physik - Nanostruk	turtechnik - 2010	



Module title A state of the sta				Abbreviation		
FOKUS Res	FOKUS Research Module Type VK12T Theoretical Physics 11-FM-VK12T-072-mo1					
Module co	ordinator		Module offered by	Module offered by		
chairperso	n of examination committe	e	Faculty of Physics a	ind Astronomy		
ECTS Me	thod of grading	Only after succ. cor	npl. of module(s)			
12 NU	merical grade					
Duration	Module level	Other prerequisites	6			
1 semester	graduate					
Contents						
cipline of Theoretical Physics, reproduction of knowledge, acquisition of social and methodological competen- cies. Application of the acquired professional knowledge and methods to new scientific questions in a mini rese- arch project (e.g. experiments, case studies etc.).						
Intended le	earning outcomes					
The studen especially ply the acq successful	ts have special and advar in the specialist field of Th uired methods, to summa ly implement the acquired	ced knowledge of ind eoretical Physics, and rise a sub-area of the knowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini researc	vork in a current rese e the acquired know in an oral presentat h project.	earch area, /ledge, to ap- ion and to	
Courses (ty	/pe, number of weekly con	tact hours, language -	– if other than Germa	ın)		
contact hou FOKUS Kon contact hou ly held dur	urs) + Ü/P (2 weekly conta npaktseminar Theoretisch urs), German or English, d ing semester break)	ct hours), details on a e Physik (FOKUS Block etails on availability to	vailability to be anno Taught Seminar The be announced (bloc	unced oretical Physics): S (k taught seminar (3	(2 weekly days), usual-	
Method of ster, inform	assessment (type, scope, nation on whether module	language — if other th can be chosen to earn	an German, examina 1 a bonus)	tion offered — if not	every seme-	
This modul 1. Topics co tes) or or report (a 2. Seminar	le has the following assess overed in lectures and exe ral examination of one car pprox. 8 pages) : talk (approx. 30 to 45 min	sment components rcises: written examin didate each or oral ex nutes)	ation (approx. 90 mi amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project	
Assessmer Students m Details on To pass thi	nt components 1 and 2 will nust register for assessme when assessment compor s module, students must (be offered in German nt components 1 and 2 nents 1 and 2 will be of pass both assessment	or English. 2 online (details to be fered to be announc 2 component 1 and as	e announced). ed. sessment componen	nt 2.	
Allocation	of places			<u> </u>		
Additional	information					
Workload						
Teaching c	vcle					
Peferred to in LPO L (examination regulations for teaching degree programmer)						
Reference to in LPOT (examination regulations for leaching-degree programmes)						
 Module appears in						
Master's de	egree (1 major) FOKUS Phy	sics - Nanostructuring	Technology (2010)			
Master's with 1 n	najor FOKUS Physics - Nanostructu-	JMU Würzburg • g	enerated 26-Aug-2024 • exan	n. reg. data re-	page 47 / 214	



Module title A A A A A A A A A A A A A A A A A A A				Abbreviation		
FOKUS Research Module Type VK8E Experimental Physics 11-FM-VK8E-072-m01				01		
Modul	e coord	inator		Module offered by	<u> </u>	
chairp	erson o	f examination committe	e	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)		
8	nume	rical grade				
Durati	on	Module level	Other prerequisites	6		
1 seme	ester	graduate				
Conter	nts					
Specif	ic and a	dvanced knowledge of	independent scientifie	c work in a current re	search area, especia	ally in the dis-
cies. A	pplicati	on of the acquired prof	essional knowledge a	nd methods to new s	cientific questions i	n a mini rese-
arch p	roject (e	e.g. experiments, case s	tudies etc.).			
Intend	ed learı	ning outcomes				
The stu	udents l	nave special and advan	ced knowledge of inde	ependent scientific w	vork in a current rese	earch area,
especi	ally in t	he specialist field of Ex	perimental Physics, ar	nd are able to reprod	uce the acquired know	owledge, to
succes	sfullv ir	nplement the acquired	knowledge and metho	ods in a mini research	h proiect.	tation and to
Course	es (type	number of weekly con	tact hours, language -	- if other than Germa	in)	
FOKUS	Einfüh	rungsmodul Experimen	telle Physik (FOKUS In	troductory Module Ex	(perimental Physics)	: V (2 weekly
contac	t hours)) + Ü/P (1 weekly contac	ct hour), details on ava	ailability to be annou	nced	、 ,
FOKUS	Kompa	ktseminar Experimente	lle Physik (FOKUS Blo	ck Taught Seminar E	xperimental Physics)): S (2 weekly
lv held	during	semester break)	etails on availability to	be announced (bloc	.k laught seminar (3	uays), usual-
Metho	d of ass	essment (type, scope,	 language — if other th	an German. examina	ition offered — if not	everv seme-
ster, ir	ıformati	on on whether module	can be chosen to earn	a bonus)		,
This m	odule h	as the following assess	ment components			
1. Topi	cs cove	red in lectures and exer	rcises: written examination	ation (approx. 90 mi	nutes) or talk (appro	x. 30 minu-
repo	or orar o ort (appi	ox. 8 pages)	uluale each of oral ex-	ammation in groups	(approx. 30 minutes) of project
2. Sem	inar: ta	lk (approx. 30 to 45 mir	utes)			
Δςςρςα	ment c	omponents 1 and 2 will	he offered in German	or English		
Studer	nts mus	t register for assessmer	nt components 1 and 2	online (details to be	e announced).	
Details	s on whe	en assessment compon	ents 1 and 2 will be of	fered to be announc	ed.	
lo pas	s this m	iodule, students must p	bass both assessment	component 1 and as	sessment compone	nt 2.
Alloca	tion of p	Diaces				
Additio	onal info	ormation				
Workle	bad					
 Taaahi		-	_			
Teaching cycle						
 Doform						
Reierr	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Master	Module appears in Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)					
music	Juczn			(2010)		
Master's w ring Techn	ith 1 majoi ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan IS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 49 / 214



Module title					Abbreviation	
FOKU	FOKUS Research Module Type VK8I Interdisciplinary Research Fields 11-FM-VK8I-072-m01					1
Modu	le coord	inator		Module offered by		
chairp	erson o	f examination committee	tion committee Faculty of Physics and Astronomy			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
8	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 Sem	nts	graduate				
Specification specification lication ject (et	fic and a ciplinary n of the .g. expe	dvanced knowledge of in v subject, reproduction o acquired professional k riments, case studies et	ndependent scientific f knowledge, acquisit nowledge and metho c.).	c work in a current re tion of social and me ds to new scientific o	search area, especia ethodological compe questions in a mini re	lly in an in- tencies. App- esearch pro-
Intend	led lear	ning outcomes				
The st espec the ac cessfu	udents l ially in a quired r ılly impl	nave special and advanc In interdisciplinary speci nethods, to summarise a ement the acquired know	ed knowledge of inde alist field, and are ab a sub-area of the curre vledge and methods	ependent scientific w le to reproduce the a ent research area in in a mini research pr	vork in a current rese acquired knowledge, an oral presentation roject.	arch area, to apply and to suc-
Cours	es (type	, number of weekly conta	act hours, language –	- if other than Germa	ın)	
Fields FOKUS Fields minar Metho ster, in This m): V (2 w 5 Kompa): S (2 w (3 days) od of ass nformati nodule h ics cove	eekly contact hours) + Ü ktseminar Interdisziplin eekly contact hours), Ge u usually held during ser eessment (type, scope, la on on whether module c as the following assessr red in lectures and exerc	/P (1 weekly contact H äre Fachgebiete (FOK rman or English, deta nester break) anguage — if other the an be chosen to earn nent components	nour), details on ava US Block Taught Ser ils on availability to an German, examina a bonus)	ilability to be annour ninar Interdisciplinar be announced (block ution offered — if not	nced y Research k taught se- every seme-
2. Sen Asses Stude Detail	or oral ort (appl ninar: ta sment c nts mus s on who	examination of one cand ox. 8 pages) lk (approx. 30 to 45 minu omponents 1 and 2 will k t register for assessment en assessment compone nodule, students must pa	idate each or oral exa utes) be offered in German t components 1 and 2 ents 1 and 2 will be of ass both assessment	or English. online (details to be fered to be announc component 1 and as	e announced). ed. sessment componer) or project
Alloca	tion of r	places		<u> </u>	<u></u>	
	onal inf	ormation				
Work						
WORK	uau		-			
	ing and	_	-			
reach	ing cycl	e				
 D-f				d `````````````````````````````		
Referr	ed to in	LPOI (examination regu	ilations for teaching-	degree programmes)		
Modu	r's door	IIS IN	ice Nanastrusturin-	Tachnology (ages)		
maste	ı s aegr			rechnology (2010)		
Master's ring Techi	with 1 major nology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 51 / 214



Module title				Abbreviation		
FOKUS	FOKUS Research Module Type VK8N 11-FM-VK8N-072-mo1				01	
Modul	e coord	inator		Module offered by	<u> </u>	
chairp	erson o	f examination committ	ee	Faculty of Physics and Astronomy		
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)	,	
8	nume	rical grade				
Durati	on	Module level	Other prerequisites	5		
1 seme	ester	graduate				
Conte	nts					
Specific and advanced knowledge of independent scientific work in a current research area, especially in the field of nanostructure technology, reproduction of knowledge, acquisition of social and methodological competencies. Application of the acquired professional knowledge and methods to new scientific questions in a mini research project (e.g. experiments, case studies etc.).						
Intend	ed lear	ning outcomes				
The sto especi the acc cessfu	udents l ally in t quired r lly impl	have special and advar he field of nanostructu nethods, to summarise ement the acquired kn	nced knowledge of inde re technology, and are a sub-area of the curr owledge and methods	ependent scientific w able to reproduce th ent research area in a in a mini research pr	vork in a current rese le acquired knowled an oral presentation roject.	arch area, ge, to apply and to suc-
Course	es (type	, number of weekly cor	itact hours, language –	– if other than Germa	n)	
weekly FOKUS weekly days),	weekly contact hours) + Ü/P (1 weekly contact hour), details on availability to be announced FOKUS Kompaktseminar Nanostrukturtechnik (FOKUS Block Taught Seminar Nanostructure Technology): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break)					
Metho ster, ir	d of ass formati	essment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina 1 a bonus)	ition offered — if not	every seme-
This m 1. Topi tes) repo 2. Sem	odule h ics cove or oral ort (appl iinar: ta	as the following asses red in lectures and exe examination of one car rox. 8 pages) lk (approx. 30 to 45 mi	sment components ercises: written examina ndidate each or oral ex nutes)	ation (approx. 90 min amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project
Assess Studer Details	sment c nts mus s on who s this m	omponents 1 and 2 wil t register for assessme en assessment compo podulo, students must	l be offered in German nt components 1 and 2 nents 1 and 2 will be of	or English. online (details to be fered to be announce component 1 and as	e announced). ed.	nta
	tion of			component 1 anu dS	sessment componen	it ∠ .
Additi	onal inf	ormation				
Auun						
WOIKU	Jau					
Teach	n <i>a</i>	•				
Teaching cycle						
Referr	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	Module appears in					
maste	r s degr	ee (1 major) FUKUS Phy	isics - Nanostructuring	recnnology (2010)		
Master's v ring Techn	vith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan IS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 53 / 214



Module title				Abbreviation			
FOKUS	FOKUS Research Module Type VK8T Theoretical Physics 11-FM-VK8T-072-m01					01	
Modul	e coord	inator		Module offered by			
chairp	erson o	f examination committ	ee	Faculty of Physics a	and Astronomy		
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)			
8	nume	rical grade					
Durati	on	Module level	Other prerequisites	5			
1 seme	ester	graduate					
Conter	its						
Specific and advanced knowledge of independent scientific work in a current research area, especially in the dis- cipline of Theoretical Physics, reproduction of knowledge, acquisition of social and methodological competen- cies. Application of the acquired professional knowledge and methods to new scientific questions in a mini rese- arch project (e.g. experiments, case studies etc.).							
Intend	ed lear	ning outcomes					
The stu especi ply the succes	udents ally in t acquir sfully in	nave special and advan he specialist field of Th ed methods, to summa nplement the acquirec	nced knowledge of ind neoretical Physics, and rise a sub-area of the knowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini researc	work in a current rese the acquired know a in an oral presentat h project.	arch area, /ledge, to ap- tion and to	
Course	es (type	, number of weekly cor	itact hours, language -	– if other than Germa	an)		
contac FOKUS contac ly held	t hours) Kompa t hours) during) + Ü/P (1 weekly conta ktseminar Theoretisch , German or English, d semester break)	ct hour), details on ava e Physik (FOKUS Block etails on availability to	ailability to be annou Taught Seminar The be announced (bloc	nced oretical Physics): S (k taught seminar (3	(2 weekly days), usual-	
Metho ster, ir	d of ass Iformati	essment (type, scope, on on whether module	language — if other th can be chosen to earr	an German, examina 1 a bonus)	ition offered — if not	every seme-	
This m 1. Topi tes) repc 2. Sem	odule h cs cove or oral ort (app inar: ta	as the following asses red in lectures and exe examination of one car ox. 8 pages) lk (approx. 30 to 45 mi	sment components orcises: written examin odidate each or oral ex nutes)	ation (approx. 90 mi amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project	
Assess Studer Details To pas	sment c nts mus s on who s this m	omponents 1 and 2 wil t register for assessme en assessment compo- odule, students must	l be offered in German nt components 1 and 2 nents 1 and 2 will be of pass both assessment	or English. 2 online (details to be fered to be announc component 1 and as	e announced). ed. seessment compone	nt 2.	
Alloca	tion of r	olaces		1			
Additi	onal inf	ormation					
Workle							
	<u> </u>						
Teachi	ng cycl	٩					
acili							
Doform	ad to in	IDOL (ovamination to	gulations for toaching	dagraa programmaa			
Referre	Referred to in LPU I (examination regulations for teaching-degree programmes)						
Modul							
Maste	Module appears in Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master's w ring Techn	vith 1 majo ology (201	FOKUS Physics - Nanostructu- b)	JMU Würzburg • g cord Master (120 EC	enerated 26-Aug-2024 • exar IS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 55 / 214	



Module title				Abbreviation			
FOKUS Research Module Type VK9E Experimental Physics 11-FM-VK9E-072-m01				01			
Modul	e coord	inator		Module offered by	Module offered by		
chairp	erson o	f examination committ	ee	Faculty of Physics and Astronomy			
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)			
9	nume	rical grade					
Duratio	on	Module level	Other prerequisites	5			
1 seme	ester	graduate					
Conter	nts						
Specifi cipline	Specific and advanced knowledge of independent scientific work in a current research area, especially in the dis- cipline of Experimental Physics, reproduction of knowledge, acquisition of social and methodological competen-						
cies. A	pplicati	on of the acquired pro	fessional knowledge a	nd methods to new s	cientific questions in	n a mini rese-	
arch pi	roject (e	e.g. experiments, case	studies etc.).				
Intend	ed lear	ning outcomes					
The stu	udents l	have special and advar	nced knowledge of inde	ependent scientific w	vork in a current rese	earch area,	
apply t	the acqu	uired methods, to sum	marise a sub-area of th	le current research a	rea in an oral presen	tation and to	
succes	sfully i	nplement the acquired	knowledge and metho	ods in a mini researc	h project.		
Course	s (type	, number of weekly cor	itact hours, language –	– if other than Germa	ın)		
FOKUS	Einfüh	rungsmodul Experimer	itelle Physik (FOKUS In	troductory Module Ex	xperimental Physics)	: V (3 weekly	
contac	t hours)) + Ü/P (1 weekly conta	ct hour), details on ava	ailability to be annou	nced	C (a una alulu	
contac	Kompa t hours), German or English, d	elle Physik (FORUS Blo etails on availability to	be announced (bloc	xperimental Physics) k taught seminar (3	davs), usual-	
ly held	during	semester break)			in taught seminar ()	uuys), usuut	
Metho	d of ass	sessment (type, scope,	language — if other th	an German, examina	ition offered — if not	every seme-	
ster, in	formati	on on whether module	can be chosen to earn	ı a bonus)			
This m	odule h	as the following asses	sment components				
1. Topi	cs cove	red in lectures and exe	rcises: written examination	ation (approx. 90 mi	nutes) or talk (appro	x. 30 minu-	
repo	or oral	rox. 8 pages)	Iuluale each of oral ex-	ammation in groups	(approx. 30 minutes) of project	
2. Sem	inar: ta	lk (approx. 30 to 45 mi	nutes)				
Accord	monte	omponents 4 and a wil	he offered in Corman	or English			
Studer	nts mus	t register for assessme	nt components 1 and 2	on English. 2 online (details to be	e announced).		
Details	on wh	en assessment compoi	nents 1 and 2 will be of	fered to be announc	ed.		
To pas	s this m	odule, students must	pass both assessment	component 1 and as	sessment componer	nt 2.	
Allocat	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
Teachi	Teaching cycle						
Referre	ed to in	LPOI (examination re	gulations for teaching-	degree programmes)			
Modul	Module appears in						
Master	's degr	ee (1 major) FOKUS Phy	vsics - Nanostructuring	Technology (2010)			
Master's w	ith 1 maio	r FOKUS Physics - Nanostructu- T	IMII Würzhurσ● σ	enerated 26-Aug-2024 • exam	n. reg. data re-	page 57 / 214	
ring Techn	ology (201	o)	cord Master (120 ECT	IS) FOKUS Physik - Nanostruk	turtechnik - 2010	F=02 J/ 7 214	



Module title				Abbreviation		
FOKUS Research Module Type VK9I Interdisciplinary Research Fields				11-FM-VK9I-072-mo	1	
Module coordinator			Module offered by			
chairp	erson o	f examination committe	e	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
9	nume	rical grade				
Durati	on	Module level	Other prerequisites			
Conte	nts	graduate				
Specif terdise licatio ject (e	ic and a ciplinary n of the .g. expe	dvanced knowledge of subject, reproduction acquired professional riments, case studies e	independent scientific of knowledge, acquisit knowledge and metho tc.).	c work in a current re tion of social and me ds to new scientific	search area, especia ethodological compe questions in a mini r	ally in an in- tencies. App- esearch pro-
Intend	led lear	ning outcomes				
The st espec the ac cessfu	udents l ially in a quired r ılly impl	nave special and advan In interdisciplinary spec nethods, to summarise ement the acquired kno	ced knowledge of inde cialist field, and are ab a sub-area of the curro owledge and methods	ependent scientific v ole to reproduce the a ent research area in in a mini research p	vork in a current rese acquired knowledge, an oral presentation roject.	arch area, , to apply and to suc-
Cours	es (type	, number of weekly con	tact hours, language –	- if other than Germa	an)	
Fields FOKUS Fields minar Metho ster, in): V (3 w 5 Kompa): S (2 w (3 days) od of ass nformati	eekly contact hours) + l ktseminar Interdiszipli eekly contact hours), G u usually held during se sessment (type, scope, on on whether module	Ü/P (1 weekly contact H näre Fachgebiete (FOK erman or English, deta emester break) language — if other th can be chosen to earn	nour), details on ava US Block Taught Ser hils on availability to an German, examina a bonus)	ilability to be annour ninar Interdisciplina be announced (bloc ntion offered — if not	nced ry Research k taught se- every seme-
This m 1. Top tes) repo 2. Sen Asses	odule h ics cove or oral ort (app ninar: ta sment c	as the following assess red in lectures and exe examination of one can 'ox. 8 pages) lk (approx. 30 to 45 mir omponents 1 and 2 will	sment components rcises: written examina didate each or oral exa nutes) be offered in German	ation (approx. 90 mi amination in groups or English.	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project
Stude Detail: To pas	nts mus s on wh ss this m	t register for assessmen en assessment compon nodule, students must p	nt components 1 and 2 ents 1 and 2 will be of bass both assessment	online (details to be fered to be announc component 1 and as	e announced). ed. sessment compone	nt 2.
Alloca	tion of j	olaces				
Additi	onal inf	ormation				
Workl	oad					
Teach	ing cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modu	Module appears in					
Maste	r's degr	ee (1 major) FOKUS Phy	sics - Nanostructuring	Technology (2010)		
Master's v ring Techr	with 1 majo 10logy (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • go cord Master (120 ECT	enerated 26-Aug-2024 • exar 'S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 59 / 214



Module title					Abbreviation		
FOKUS Research Module Type VK9N					11-FM-VK9N-072-m	01	
Module coordinator				Module offered by			
chairperson of examination committee			ee	Faculty of Physics a	and Astronomy		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)				
9	nume	rical grade					
Durati	on	Module level	Other prerequisites	5			
1 sem	ester	graduate					
Conte	nts						
field o tencie	f nanos f nanos s. Appli ch proje	dvanced knowledge of tructure technology, re cation of the acquired pet (e.g. experiments, c	independent scientific production of knowled professional knowledg ase studies etc.)	c work in a current re ge, acquisition of so e and methods to ne	search area, especia cial and methodolog w scientific questior	illy in the fical compe- is in a mini	
Intend	led lear	ning outcomes					
The st espec the ac cessfu	udents ially in t quired r Illy impl	have special and advar he field of nanostructu nethods, to summarise ement the acquired kn	nced knowledge of inder re technology, and are a sub-area of the curr owledge and methods	ependent scientific w able to reproduce th ent research area in in a mini research pr	vork in a current rese le acquired knowled an oral presentation roject.	earch area, ge, to apply and to suc-	
Cours	es (type	, number of weekly cor	tact hours, language –	– if other than Germa	n)		
weekl FOKUS weekl days), Metho ster, in	y contac 5 Kompa y contac usually od of ass nformati	it hours) + U/P (1 week iktseminar Nanostruktu it hours), German or En held during semester cessment (type, scope, on on whether module as the following asses	y contact hour), detail: urtechnik (FOKUS Block glish, details on availa break) language — if other th can be chosen to earn	s on availability to be Taught Seminar Na bility to be announce an German, examina a bonus)	e announced nostructure Technolo ed (block taught sem ition offered — if not	ogy): S (2 ninar (3 every seme-	
1. Top tes) repo 2. Sen	or oral or t (app ninar: ta	red in lectures and exe examination of one car rox. 8 pages) lk (approx. 30 to 45 mi omponents 1 and 2 wil	rcises: written examina ididate each or oral ex nutes) I be offered in German	ation (approx. 90 min amination in groups or English.	nutes) or talk (appro. (approx. 30 minutes	x. 30 minu-) or project	
Stude Detail To pag	nts mus s on wh ss this m	t register for assessme en assessment compo nodule, students must	nt components 1 and 2 nents 1 and 2 will be of pass both assessment	e online (details to be fered to be announc component 1 and as	e announced). ed. seessment compone	nt 2.	
Alloca	tion of I	olaces					
		-					
Additi	onal inf	ormation					
Workload							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Modu	le appea	urs in					
Maste	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master's v ring Techr	with 1 majo 10logy (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan IS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 61 / 214	



Module title					Abbreviation		
FOKUS	FOKUS Research Module Type VK9T Theoretical Physics 11-FM-VK9T-072-m01						
Module coordinator				Module offered by			
chairp	chairperson of examination committee		ee	Faculty of Physics a	and Astronomy		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)				
9	nume	rical grade					
Durati	on	Module level	Other prerequisites	5			
1 seme	ester	graduate					
Conte	nts						
Specif cipline cies. A arch p	ic and a of Theo pplicati roject (e	dvanced knowledge of pretical Physics, reproc on of the acquired pro e.g. experiments, case	findependent scientifi luction of knowledge, a fessional knowledge a studies etc.).	c work in a current re acquisition of social nd methods to new s	search area, especia and methodological scientific questions in	ally in the dis- competen- n a mini rese-	
Intend	ed lear	ning outcomes					
The stu especi ply the succes	udents l ally in t acquir ssfully in	have special and advan he specialist field of Th ed methods, to summa mplement the acquirec	nced knowledge of ind neoretical Physics, and rise a sub-area of the I knowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini researc	vork in a current rese the acquired know a in an oral presentat h project.	arch area, /ledge, to ap- ion and to	
Course	es (type	, number of weekly cor	itact hours, language -	– if other than Germa	an)		
contac FOKUS contac ly held	t hours) Kompa t hours) during) + Ü/P (1 weekly conta Iktseminar Theoretisch), German or English, d semester break)	ct hour), details on ava e Physik (FOKUS Block etails on availability to	ailability to be annou Taught Seminar The be announced (bloc	nced oretical Physics): S (ck taught seminar (3	(2 weekly days), usual-	
Metho ster, ir	d of ass formati	sessment (type, scope, on on whether module	language — if other th can be chosen to earr	an German, examina 1 a bonus)	ition offered — if not	every seme-	
This m 1. Topi tes) repo 2. Sem	odule h ics cove or oral ort (appi iinar: ta	as the following asses red in lectures and exe examination of one car rox. 8 pages) lk (approx. 30 to 45 mi	sment components ercises: written examin ndidate each or oral ex nutes)	ation (approx. 90 mi amination in groups	nutes) or talk (appro (approx. 30 minutes	x. 30 minu-) or project	
Assess Studer Details To pas	sment c nts mus s on who s this m	omponents 1 and 2 wil t register for assessme en assessment compo nodule, students must	l be offered in German nt components 1 and 2 nents 1 and 2 will be of pass both assessment	or English. 2 online (details to be fered to be announc 2 component 1 and as	e announced). ed. ssessment component	nt 2.	
Alloca	tion of r	places	<u> </u>				
Additi	onal inf	ormation					
Workle	oad						
Referred to in LPO L (examination regulations for teaching degree programmes)							
Modul	6 2nno2	ors in					
Maste	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master's v ring Techn	vith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 EC	enerated 26-Aug-2024 • exar TS) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 63 / 214	



Module title					Abbreviation	
FOKUS Research Module Type VMK12E Experimental Physics 11-FM-VMK12E-072-m01						
Module coordinator				Module offered by		
chairperson of examination committee			Faculty of Physics a	nd Astronomy		
ECTS Method of grading			Only after succ. com	pl. of module(s)		
12	numer	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Specifi cipline cies. Ap arch pr	c and a of Expe pplicati oject (e	dvanced knowledge of in rimental Physics, reprod on of the acquired profes .g. experiments, case stu	dependent scientific uction of knowledge, ssional knowledge an udies etc.).	work in a current re , acquisition of socia ad methods to new s	search area, especially in the dis- Il and methodological competen- cientific questions in a mini rese-	
Intende	ed learr	ning outcomes				
The stu especia apply t succes FOKUS contact FOKUS contact ly held FOKUS	The students have special and advanced knowledge of independent scientific work in a current research area, especially in the specialist field of Experimental Physics, and are able to reproduce the acquired knowledge, to apply the acquired methods, to summarise a sub-area of the current research area in an oral presentation and to successfully implement the acquired knowledge and methods in a mini research project. Courses (type, number of weekly contact hours, language — if other than German) FOKUS Einführungsmodul Experimentelle Physik (FOKUS Introductory Module Experimental Physics): V (2 weekly contact hours) + Ü/P (1 weekly contact hour), details on availability to be announced FOKUS Kompaktseminar Experimentelle Physik (FOKUS Block Taught Seminar Experimental Physics): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break)					
weekly	contac	t hours), German or Engli	sh, details on availal	bility to be announce	ed (approx. 3 weeks, part time)	
Methor ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
 This module has the following assessment components 1. Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or oral examination of one candidate each or oral examination in groups (approx. 30 minutes) or project report (approx. 8 pages) 2. Seminar: talk (approx. 30 to 45 minutes) 3. Research project: project report (approx. 8 pages) 						
Assess Studen Details To pass	Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). Details on when assessment components 1 through 3 will be offered to be announced. To pass this module, students must pass each of the assessment components 1 through 3.					
Allocation of places						
Additional information						
Workload						
Teachi	Teaching cycle					
L						

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)

Module title					Abbreviation		
FOKUS	FOKUS Research Module Type VMK12I Interdisciplinary Research Fields 11-FM-VMK12I-072-m01						
Module coordinator				Module offered by	Module offered by		
chairperson of examination committee			Faculty of Physics a	nd Astronomy			
ECTS Method of grading Only after succ. compl. of module(s)							
12	numer	ical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	Its						
Specifi discipli licatior ject (e.;	c and a inary su n of the g. expe	dvanced knowledge of in Ibjects, reproduction of k acquired professional kr riments, case studies etc	dependent scientific nowledge, acquisitic nowledge and methor .).	work in a current rea on of social and meth ds to new scientific c	search area, especially in inter- nodological competencies. App- questions in a mini research pro-		
Intende	ed learn	ning outcomes					
The stu especia acquire cessful	Idents h ally in ir ed meth lly imple	nave special and advance nterdisciplinary specialis ods, to summarise a sub ement the acquired know	ed knowledge of inde t fields, and are able p-area of the current r vledge and methods	pendent scientific w to reproduce the acc research area in an o in a mini research pr	vork in a current research area, quired knowledge, to apply the ral presentation and to suc- oject.		
Course	s (type,	number of weekly conta	ct hours, language –	- if other than Germa	n)		
FORUS Einfuhrungsmodul interdisziplinare Fachgebiete (FORUS introductory Module interdisciplinary Research Fields): V (2 weekly contact hours) + Ü/P (1 weekly contact hour), details on availability to be announced FORUS Kompaktseminar Interdisziplinäre Fachgebiete (FORUS Block Taught Seminar Interdisciplinary Research Fields): S (2 weekly contact hours), German or English, details on availability to be announced (block taught se- minar (3 days), usually held during semester break) FORUS Miniforschungsprojekt Interdisziplinäre Fachgebiete (FORUS Mini Research Project Interdisciplinary Re- search Fields): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks, part time)							
Metho ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
 This module has the following assessment components 1. Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or oral examination of one candidate each or oral examination in groups (approx. 30 minutes) or project report (approx. 8 pages) 2. Seminar: talk (approx. 30 to 45 minutes) 3. Research project: project report (approx. 8 pages) 							
Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). Details on when assessment components 1 through 3 will be offered to be announced. To pass this module, students must pass each of the assessment components 1 through 3.							
Additional information							
Workload							
Teachi	Teaching cycle						

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)

Module title					Abbreviation			
FOKUS	FOKUS Research Module Type VMK12N Nanostructure Technology 11-FM-VMK12N-072-m01							
Module coordinator			Module offered by					
chairperson of examination committee				Faculty of Physics and Astronomy				
ECTS	Metho	od of grading	Only after succ. compl. of module(s)					
12	nume	rical grade						
Durati	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Specif field o tencies resear	Contents Specific and advanced knowledge of independent scientific work in a current research area, especially in the field of nanostructure technology, reproduction of knowledge, acquisition of social and methodological competencies. Application of the acquired professional knowledge and methods to new scientific questions in a mini							
Intend	ed learı	ning outcomes						
The stu especi the act cessfu	udents l ially in t quired r Illy impl	nave special and advance he field of nanostructure nethods, to summarise a ement the acquired know	ed knowledge of inde technology, and are sub-area of the curre /ledge and methods	pendent scientific w able to reproduce th ent research area in a in a mini research pr	vork in a current rese e acquired knowledg an oral presentation oject.	arch area, ge, to apply and to suc-		
Course	es (type	, number of weekly conta	ct hours, language –	if other than Germa	n)			
weekly FOKUS weekly days), FOKUS (2 wee Metho ster, ir This m	y contac Kompa y contac usually Minifor kly cont of of ass nformati	t hours) + U/P (1 weekly of ktseminar Nanostrukturt t hours), German or Engli held during semester bro schungsprojekt Nanostru cact hours), German or Er sessment (type, scope, la on on whether module ca as the following assessm red in lectures and exerc	contact hour), details echnik (FOKUS Block ish, details on availa eak) ukturtechnik (FOKUS glish, details on ava nguage — if other tha an be chosen to earn nent components ises: written examina	on availability to be Taught Seminar Nai bility to be announce Mini Research Proje ilability to be announ an German, examina a bonus)	e announced nostructure Technolo ed (block taught sem ct Nanostructure Tec nced (approx. 3 week tion offered — if not	ogy): S (2 ninar (3 hnology): P ks, part time) every seme-		
 Topics covered in fectures and exercises: written examination (approx. 90 minutes) of talk (approx. 30 minutes) or project tes) or oral examination of one candidate each or oral examination in groups (approx. 30 minutes) or project report (approx. 8 pages) Seminar: talk (approx. 30 to 45 minutes) Research project: project report (approx. 8 pages) Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). 								
To pas	s this m	odule, students must pa	ss each of the asses	sment components 1	through 3.			
Alloca	tion of p	olaces						
Additional information								
Workload								
Teaching cycle								
 Referred to in LPO I (examination regulations for teaching-degree programmes)								
 Master's v ring Techn	vith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge cord Master (120 ECT	nerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 69 / 214		

Module appears in

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)

Module title					Abbreviation		
FOKUS	FOKUS Research Module Type VKM12T Theoretical Physics 11-FM-VMK12T-072-m01						
Module coordinator			Module offered by				
chairperson of examination committee			ee	Faculty of Physics a	ind Astronomy		
ECTS	Method of grading Only after succ. compl. of module(s)						
12	nume	rical grade					
Durati	on	Module level	Other prerequisites	5			
1 seme	ester	graduate					
Conte	nts						
Specif cipline cies. A arch p	ic and a e of Theo oplicati roject (e	dvanced knowledge of pretical Physics, reprod on of the acquired prof e.g. experiments, case s	independent scientific uction of knowledge, a essional knowledge an studies etc.).	c work in a current re acquisition of social a nd methods to new s	search area, especia and methodological cientific questions in	ally in the dis- competen- n a mini rese-	
Intend	ed lear	ning outcomes					
The st espect ply the succes	udents l ially in t acquir ssfully in	nave special and advar he specialist field of Th ed methods, to summa nplement the acquired	nced knowledge of inde eoretical Physics, and rise a sub-area of the o knowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini researc	vork in a current rese e the acquired know i in an oral presentat h project.	arch area, /ledge, to ap- :ion and to	
Course	es (type	, number of weekly con	tact hours, language –	– if other than Germa	ın)		
 Contact hours) + Ü/P (1 weekly contact hour), details on availability to be announced FOKUS Kompaktseminar Theoretische Physik (FOKUS Block Taught Seminar Theoretical Physics): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break) FOKUS Miniforschungsprojekt Theoretische Physik (FOKUS Mini Research Project Theoretical Physics): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks, part time) Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module can be chosen to earn a bonus) This module has the following assessment components Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or project report (approx. 8 pages) Seminar: talk (approx. 30 to 45 minutes) Research project: project report (approx. 8 pages) 							
Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). Details on when assessment components 1 through 3 will be offered to be announced. To pass this module, students must pass each of the assessment components 1 through 3.							
Alloca	tion of _l	olaces					
Additional information							
Workload							
Teaching cycle							
Referr	ed to in	LPOI (examination reg	gulations for teaching-	degree programmes)			
Master's v	vith 1 majo	FOKUS Physics - Nanostructu-	JMU Würzburg • g	enerated 26-Aug-2024 • exam	n. reg. data re-	page 71 / 214	
ing recili	1010gy (201	0)	CUIU Master (120 ECT	S) TOROS ETIYSIK - Natiostfuk	uncernink * 2010		

Module appears in

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)
Module title				Abbreviation			
FOKUS	6 Resea	rch Module Type VMK13E	Experimental Physic	CS	11-FM-VMK13E-072-m01		
Modul	e coord	inator		Module offered by			
chairp	erson o	f examination committee		Faculty of Physics a	ind Astronomy		
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)			
13	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Specif cipline cies. A arch p	ic and a e of Expe opplicati roject (e	dvanced knowledge of ir erimental Physics, reprod on of the acquired profes e.g. experiments, case stu	ndependent scientific luction of knowledge ssional knowledge ar udies etc.).	t work in a current re , acquisition of socia nd methods to new s	search area, especially in the d al and methodological compete cientific questions in a mini res		
Intend	ed lear	ning outcomes					
The str especi apply succes	udents l ally in t the acqu ssfully in	have special and advance he specialist field of Expe uired methods, to summa nplement the acquired k	ed knowledge of inde erimental Physics, an arise a sub-area of th nowledge and metho	ependent scientific w ad are able to reprod e current research a ods in a mini researc	vork in a current research area, uce the acquired knowledge, to rea in an oral presentation and h project.		
Course	es (type	, number of weekly conta	ct hours, language –	- if other than Germa	in)		
 FOKUS Einführungsmodul Experimentelle Physik (FOKUS Introductory Module Experimental Physics): V (3 weekly contact hours) + Ü/P (1 weekly contact hour), details on availability to be announced FOKUS Kompaktseminar Experimentelle Physik (FOKUS Block Taught Seminar Experimental Physics): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break) FOKUS Miniforschungsprojekt Experimentelle Physik (FOKUS Mini Research Project Experimental Physics): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks, part time) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) This module has the following assessment components 1. Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or oral examination of one candidate each or oral examination in groups (approx. 30 minutes) or project report (approx. 8 pages) 2. Seminar: talk (approx. 30 to 45 minutes) 3. Research project: project report (approx. 8 pages) Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). 							
Alloca	tion of p	olaces		·	5 5		
Additi	onal inf	ormation					
Workl	oad						
Teach	ing cycl	e					
 Referr	ed to in	LPO I (examination regu	lations for teaching-o	degree programmes)			
Master's v ring Techr	vith 1 major	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 FCT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010		

Module title			Abbreviation		
FOKUS	Resear	rch Module Type VMK13I	Interdisciplinary Res	search Fields	11-FM-VMK13I-072-m01
Module	e coord	inator		Module offered by	
chairpe	erson of	f examination committee		Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
13	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	lts				
Specifi discipli licatior ject (e.	c and a inary su n of the g. expe	dvanced knowledge of in Ibjects, reproduction of k acquired professional kr riments, case studies etc	dependent scientific nowledge, acquisitic nowledge and method).	work in a current re on of social and meth ds to new scientific o	search area, especially in inter- nodological competencies. App- questions in a mini research pro-
Intende	ed learr	ning outcomes			
The stu especia acquire cessful	Idents H ally in in ed meth lly imple	nave special and advance nterdisciplinary specialis lods, to summarise a sub ement the acquired know	ed knowledge of inde t fields, and are able p-area of the current r /ledge and methods i	ependent scientific w to reproduce the acc research area in an o in a mini research pr	ork in a current research area, quired knowledge, to apply the ral presentation and to suc- oject.
Course	s (type,	, number of weekly conta	ct hours, language —	- if other than Germa	n)
Fields): FOKUS Fields): minar (FOKUS search weeks,	FOKUS Einführungsmodul Interdisziplinäre Fachgebiete (FOKUS Introductory Module Interdisciplinary Research Fields): V (3 weekly contact hours) + Ü/P (1 weekly contact hour), details on availability to be announced FOKUS Kompaktseminar Interdisziplinäre Fachgebiete (FOKUS Block Taught Seminar Interdisciplinary Research Fields): S (2 weekly contact hours), German or English, details on availability to be announced (block taught se- minar (3 days), usually held during semester break) FOKUS Miniforschungsprojekt Interdisziplinäre Fachgebiete (FOKUS Mini Research Project Interdisciplinary Re- search Fields): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks. part time)				
Methor ster, in	d of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
This mo 1. Topio tes) repo 2. Sem 3. Rese	odule h cs cove or oral e rt (appr inar: ta earch pr	as the following assessm red in lectures and exerc examination of one candi rox. 8 pages) lk (approx. 30 to 45 minu oject: project report (app	nent components ises: written examina idate each or oral exa tes) irox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx. 30 minu- (approx. 30 minutes) or project
Assess Studen Details To pass	ment co its must on whe s this m	omponents 1 through 3 w t register for assessment en assessment compone odule, students must pa	rill be offered in Germ components 1 throug nts 1 through 3 will b ss each of the asses	nan or English. gh 3 online (details t e offered to be anno sment components a	o be announced). unced. . through 3.
Allocat	ion of p	olaces			
Additio	onal info	ormation			
Worklo	ad				
Teachi	ng cycl	9			
			-		

Module appears in

Module title				Abbreviation			
FOKUS	Resea	rch Module Type VMK13N	Nanostructure Tech	nology	11-FM-VMK13N-072-m01		
Modul	e coord	inator		Module offered by			
chairp	erson o	f examination committee		Faculty of Physics a	ind Astronomy		
ECTS	Metho	od of grading	Only after succ. con	fter succ. compl. of module(s)			
13	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Specif field o tencies resear	ic and a f nanos s. Appli ch proje	dvanced knowledge of ir tructure technology, repr cation of the acquired pr ect (e.g. experiments, cas	ndependent scientific oduction of knowledg ofessional knowledg e studies etc.).	work in a current re ge, acquisition of soc e and methods to ne	search area, especially in the cial and methodological compe- w scientific questions in a mini		
Intend	ed lear	ning outcomes					
The stu especi the acc cessfu	udents l ally in t quired r lly impl	nave special and advance he field of nanostructure nethods, to summarise a ement the acquired know	ed knowledge of inde technology, and are sub-area of the curre vledge and methods	ependent scientific w able to reproduce th ent research area in a in a mini research pr	vork in a current research area, e acquired knowledge, to apply an oral presentation and to suc- oject.		
Course	es (type	, number of weekly conta	ct hours, language –	- if other than Germa	ın)		
weekly FOKUS weekly days), FOKUS (2 wee	v contac Kompa v contac usually Minifo kly con	t hours) + U/P (1 weekly ktseminar Nanostrukturt t hours), German or Engli held during semester bro rschungsprojekt Nanostru tact hours), German or Er	contact hour), details echnik (FOKUS Block ish, details on availa eak) ukturtechnik (FOKUS nglish, details on ava	s on availability to be Taught Seminar Nai bility to be announce Mini Research Proje ilability to be annou	e announced nostructure Technology): S (2 ed (block taught seminar (3 ct Nanostructure Technology): P nced (approx. 3 weeks, part time) tion offered if not even some		
Metho ster, ir	d of ass Iformati	s essment (type, scope, la on on whether module ca	nguage — if other the an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
This m 1. Topi tes) repc 2. Sem 3. Rese	odule h cs cove or oral ort (appr inar: ta earch pr	as the following assessn red in lectures and exerc examination of one cand rox. 8 pages) lk (approx. 30 to 45 minu roject: project report (app	nent components ises: written examina idate each or oral exa ites) prox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx. 30 minu- (approx. 30 minutes) or project		
Assess Studer Details To pas	sment c nts mus s on who s this m	omponents 1 through 3 w t register for assessment en assessment compone odule, students must pa	vill be offered in Gern components 1 throug nts 1 through 3 will b ss each of the asses	nan or English. gh 3 online (details t e offered to be anno sment components 1	o be announced). unced. 1 through 3.		
Alloca	tion of p	olaces					
Additi	onal inf	ormation					
Workle	oad						
Teachi	ng cycl	e					
Referre	ea to in	LPUI (examination regu	lations for teaching-	aegree programmes)			
 Master's w ring Techn	vith 1 major	r FOKUS Physics - Nanostructu-	JMU Würzburg ● ge cord Master (120 FCT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	n. reg. data re- page 77 / 214 turtechnik - 2010		

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)

Module title					Abbreviation		
FOKUS	FOKUS Research Module Type VKM13T Theoretical Physics						
Modul	e coord	inator		Module offered by			
chairpe	erson o	f examination committee		Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)			
13	nume	rical grade					
Duration Module level Other prerequisites							
Conter	Contents						
Specifi cipline cies. A arch pr	c and a of Theo pplicati oject (e	dvanced knowledge of ir pretical Physics, reproduc on of the acquired profes e.g. experiments, case stu	ndependent scientific ction of knowledge, a ssional knowledge ar udies etc.).	work in a current re acquisition of social a ad methods to new s	search area, especia and methodological c cientific questions in	lly in the dis- competen- a mini rese-	
Intend	ed learı	ning outcomes					
The stu especi ply the succes	idents I ally in t acquir sfully ir	nave special and advance he specialist field of Thec ed methods, to summaris nplement the acquired k	ed knowledge of inde oretical Physics, and se a sub-area of the c nowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini researcl	ork in a current resea e the acquired know in an oral presentati h project.	arch area, ledge, to ap- ion and to	
Course	s (type)	, number of weekly conta	ct hours, language –	- if other than Germa	n)		
contac FOKUS contac ly held FOKUS kly con	t hours) Kompa t hours) during Minifor tact ho) + Ü/P (1 weekly contact ktseminar Theoretische I), German or English, det semester break) rschungsprojekt Theoreti urs), German or English,	hour), details on ava Physik (FOKUS Block ails on availability to sche Physik (FOKUS details on availability	ilability to be annou Taught Seminar The be announced (bloc Mini Research Projec y to be announced (a	nced oretical Physics): S (2 k taught seminar (3 o t Theoretical Physics approx. 3 weeks, part	2 weekly days), usual- s): P (2 wee- t time)	
Metho ster, in	d of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-	
This m 1. Topi tes) repo 2. Sem 3. Rese	odule h cs cove or oral o rt (appi inar: ta earch pr	as the following assessm red in lectures and exerc examination of one candi rox. 8 pages) lk (approx. 30 to 45 minu roject: project report (app	nent components ises: written examina idate each or oral exa ites) prox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx (approx. 30 minutes)	<. 30 minu-) or project	
Assess Studer Details To pas	ment contracts mus on who s this m	omponents 1 through 3 w t register for assessment en assessment compone iodule, students must pa	vill be offered in Gern components 1 throug nts 1 through 3 will b ss each of the asses	nan or English. gh 3 online (details t e offered to be anno sment components 1	o be announced). unced. 1 through 3.		
Allocat	ion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
 Teachi	ng cycl	e					
 Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)			
 Master's w	ith 1 major	r FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	n. reg. data re-	page 79 / 214	

Module title					Abbreviation		
FOKUS	Resear	ch Module Type VMK14E	Experimental Physic	CS	11-FM-VMK14E-072-	m01	
Modul	e coord	inator		Module offered by			
chairp	erson of	examination committee		Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. con	after succ. compl. of module(s)			
14	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
Specifi cipline cies. A arch p	ic and a of Expe pplicati roject (e	dvanced knowledge of ir erimental Physics, reprod on of the acquired profes .g. experiments, case stu	dependent scientific uction of knowledge ssional knowledge ar udies etc.).	work in a current re , acquisition of socia ad methods to new s	search area, especia Il and methodologica cientific questions in	lly in the dis- al competen- a mini rese-	
Intend	ed learr	ning outcomes					
The stu especi apply t succes	udents ł ally in t he acqu sfully ir	have special and advance he specialist field of Expe uired methods, to summa nplement the acquired k	ed knowledge of inde erimental Physics, an arise a sub-area of th nowledge and metho	pendent scientific w d are able to reprod e current research ar ds in a mini researcl	rork in a current resea uce the acquired kno rea in an oral present n project.	arch area, wledge, to tation and to	
Course	es (type	number of weekly conta	ct hours, language –	if other than Germa	n)		
contac FOKUS contac ly held FOKUS weekly Metho	t hours) Kompa t hours) during Minifor contac d of ass	+ U/P (2 weekly contact ktseminar Experimentell , German or English, det semester break) schungsprojekt Experim t hours), German or Engli essment (type, scope, la	hours), details on av e Physik (FOKUS Bloc ails on availability to entelle Physik (FOKU ish, details on availa nguage — if other tha	ailability to be anno k Taught Seminar Ex be announced (bloc S Mini Research Proj bility to be announce an German, examina	unced (perimental Physics): k taught seminar (3 o ect Experimental Phy ed (approx. 3 weeks, tion offered — if not	: S (2 weekly days), usual- /sics): P (2 part time) every seme-	
ster, in	iformati	on on whether module ca	an be chosen to earn	a bonus)		every serie	
This m 1. Topi tes) 2. Sem 3. Rese	odule h cs cove or oral o ort (appr inar: ta earch pr	as the following assessm red in lectures and exerc examination of one candi ox. 8 pages) lk (approx. 30 to 45 minu oject: project report (app	nent components ises: written examina idate each or oral exa tes) prox. 8 pages)	ation (approx. 90 mir amination in groups	nutes) or talk (approx (approx. 30 minutes)	<. 30 minu-) or project	
Assess Studer Details To pas	sment co nts mus s on whe s this m	omponents 1 through 3 w t register for assessment en assessment compone odule, students must pa	rill be offered in Germ components 1 throug nts 1 through 3 will b ss each of the asses	nan or English. gh 3 online (details t e offered to be anno sment components 1	o be announced). unced. . through 3.		
Alloca	tion of p	olaces					
Additio	onal info	ormation					
Worklo	ad						
Teachi	ng cycl	9					
 Referre	ed to in	LPOI (examination regu	lations for teaching-o	legree programmes)			
Master's w ring Techn	vith 1 major ology (2010	FOKUS Physics - Nanostructu-	JMU Würzburg ● ge cord Master (120 FCT	nerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- curtechnik - 2010	page 81 / 214	

Module title			Abbreviation		
FOKUS Research Module Type VMK14	I Interdisciplinary Res	search Fields	11-FM-VMK14I-072-m01		
Module coordinator		Module offered by			
chairperson of examination committe	2	Faculty of Physics a	nd Astronomy		
ECTS Method of grading	Only after succ. con	npl. of module(s)			
14 numerical grade					
Duration Module level	Other prerequisites				
1 semester graduate					
Contents	_				
Specific and advanced knowledge of i disciplinary subjects, reproduction of lication of the acquired professional k ject (e.g. experiments, case studies et	Specific and advanced knowledge of independent scientific work in a current research area, especially in inter- disciplinary subjects, reproduction of knowledge, acquisition of social and methodological competencies. App- lication of the acquired professional knowledge and methods to new scientific questions in a mini research pro- ject (e.g. experiments, case studies etc.).				
Intended learning outcomes					
The students have special and advance especially in interdisciplinary speciali acquired methods, to summarise a su cessfully implement the acquired kno	ed knowledge of inde st fields, and are able b-area of the current r wledge and methods	ependent scientific w to reproduce the ac research area in an o in a mini research pr	vork in a current research area, quired knowledge, to apply the ral presentation and to suc- oject.		
Courses (type, number of weekly cont	act hours, language –	- if other than Germa	n)		
FOKUS Einführungsmodul Interdisziplinäre Fachgebiete (FOKUS Introductory Module Interdisciplinary Research Fields): V (3 weekly contact hours) + Ü/P (2 weekly contact hours), details on availability to be announced FOKUS Kompaktseminar Interdisziplinäre Fachgebiete (FOKUS Block Taught Seminar Interdisciplinary Research Fields): S (2 weekly contact hours), German or English, details on availability to be announced (block taught se- minar (3 days), usually held during semester break) FOKUS Miniforschungsprojekt Interdisziplinäre Fachgebiete (FOKUS Mini Research Project Interdisciplinary Re- search Fields): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks. part time)					
Method of assessment (type, scope, l ster, information on whether module of	anguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
 This module has the following assess 1. Topics covered in lectures and exertes) or oral examination of one canoreport (approx. 8 pages) 2. Seminar: talk (approx. 30 to 45 min 3. Research project: project report (approx. 4 protect) 	ment components cises: written examina lidate each or oral exa utes) prox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx. 30 minu- (approx. 30 minutes) or project		
Assessment components 1 through 3 Students must register for assessmen Details on when assessment compone To pass this module, students must p Allocation of places	Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). Details on when assessment components 1 through 3 will be offered to be announced. To pass this module, students must pass each of the assessment components 1 through 3.				
Additional information					
Workload					
WUIKUdu					
leacning cycle					

Module appears in

Module title				Abbreviation		
FOKUS	6 Resea	ch Module Type VMK14N	I Nanostructure Tech	nology	11-FM-VMK14N-072-	-m01
Modul	e coord	inator		Module offered by		
chairp	erson of	f examination committee		Faculty of Physics a	ind Astronomy	
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
14	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 Seme	nts	graduate				
Specif field o tencies resear	ic and a f nanost s. Applic ch proje	dvanced knowledge of ir tructure technology, repre- cation of the acquired pre- ect (e.g. experiments, cas	dependent scientific oduction of knowledg ofessional knowledg e studies etc.).	work in a current re ge, acquisition of soc e and methods to ne	search area, especia cial and methodolog w scientific question	lly in the ical compe- is in a mini
Intend	ed learr	ning outcomes				
The stu especi the acc cessfu	udents ł ally in t quired n lly imple	nave special and advance he field of nanostructure nethods, to summarise a ement the acquired know	ed knowledge of inde technology, and are sub-area of the curre /ledge and methods	ependent scientific w able to reproduce th ent research area in a in a mini research pr	vork in a current rese e acquired knowledg an oral presentation oject.	arch area, ge, to apply and to suc-
Course	es (type,	, number of weekly conta	ct hours, language –	- if other than Germa	ın)	
weekly FOKUS days), FOKUS (2 wee Metho ster, ir This m 1. Topi	v contac Kompa v contac usually Minifor kly cont d of ass nformati odule h ics cove	t hours) + U/P (2 weekly ktseminar Nanostrukturt t hours), German or Engli held during semester bro schungsprojekt Nanostru act hours), German or Er eessment (type, scope, la on on whether module ca as the following assessm red in lectures and exerc	contact hours), detai echnik (FOKUS Block ish, details on availa eak) ukturtechnik (FOKUS nglish, details on ava nguage — if other the an be chosen to earn nent components	ls on availability to b Taught Seminar Nai bility to be announce Mini Research Proje ilability to be announ an German, examina a bonus)	be announced nostructure Technolo ed (block taught sem ct Nanostructure Tec nced (approx. 3 weel ition offered — if not	ogy): S (2 iinar (3 hnology): P ks, part time) every seme- x. 30 minu-
tes) repc 2. Sem 3. Rese	or oral (ort (appr iinar: ta earch pr	examination of one candi ox. 8 pages) lk (approx. 30 to 45 minu oject: project report (app	idate each or oral exa tes) irox. 8 pages) vill be offered in Gern	amination in groups	(approx. 30 minutes)) or project
Studer Details To pas	nts mus s on whe	t register for assessment en assessment compone iodule, students must pa	components 1 through nts 1 through 3 will b ss each of the asses	gh 3 online (details t e offered to be anno sment components 1	o be announced). unced. ı through 3.	
Alloca	tion of p	olaces				
Additio	onal info	ormation				
Worklo	oad					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)		
 Master's w ring Techn	vith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	1. reg. data re- turtechnik - 2010	page 85 / 214

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)

Module title					Abbreviation	
FOKUS	Resear	rch Module Type VKM14T	Theoretical Physics		11-FM-VMK14T-072-m0	01
Modul	e coord	inator		Module offered by		
chairpe	erson o	f examination committee		Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
14	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	1 semester graduate					
Specifi cipline cies. A arch pr	c and a of Theo pplicati oject (e	dvanced knowledge of ir pretical Physics, reproduc on of the acquired profes e.g. experiments, case stu	ndependent scientific ction of knowledge, a ssional knowledge ar udies etc.).	work in a current re equisition of social a nd methods to new s	search area, especially and methodological co cientific questions in a	/ in the dis- mpeten- 1 mini rese-
Intend	ed learı	ning outcomes				
The stu especi ply the succes	idents I ally in t acquire sfully ir	nave special and advance he specialist field of Theo ed methods, to summaris nplement the acquired k	ed knowledge of inde pretical Physics, and se a sub-area of the c nowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini researcl	ork in a current researd e the acquired knowled in an oral presentation n project.	ch area, dge, to ap- n and to
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)	
contac FOKUS contac ly held FOKUS kly con	t hours) Kompa t hours) during Minifor tact ho d of ass) + Ü/P (2 weekly contact ktseminar Theoretische I), German or English, det semester break) rschungsprojekt Theoreti urs), German or English, sessment (type, scope, la	hours), details on av Physik (FOKUS Block ails on availability to sche Physik (FOKUS I details on availability nguage — if other tha	vailability to be anno Taught Seminar The be announced (bloc Mini Research Projec y to be announced (a an German, examina	unced oretical Physics): S (2 v k taught seminar (3 da t Theoretical Physics): approx. 3 weeks, part ti tion offered — if not ev	weekly iys), usual- P (2 wee- ime) very seme-
ster, in	formati	on on whether module ca	an be chosen to earn	a bonus)		
This m 1. Topi tes) repo 2. Sem 3. Rese	odule h cs cove or oral o rt (appi inar: ta earch pr	as the following assessm red in lectures and exerc examination of one candi rox. 8 pages) lk (approx. 30 to 45 minu oject: project report (app	nent components ises: written examina idate each or oral exa tes) prox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx. <u>3</u> (approx. 30 minutes) o	30 minu- Ir project
Assess Studer Details	ment contractions in the second se Second second s Second second s Second second s	omponents 1 through 3 w t register for assessment en assessment compone	fill be offered in Germ components 1 throug nts 1 through 3 will b	nan or English. gh 3 online (details t e offered to be anno sment components 1	o be announced). unced. through a	
Allocat	ion of r	blaces				
	nal inf	ormation				
Worklo	ad					
 Teachi	Teaching cycle					
Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)		
Master's w	ith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exan	n. reg. data re-	page 87 / 214

Module title					Abbreviation		
FOKUS	Resear	ch Module Type VMK16E	Experimental Physic	CS	11-FM-VMK16E-072-mo)1	
Modul	e coord	inator		Module offered by			
chairp	erson o	examination committee		Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. con	y after succ. compl. of module(s)			
16	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
Specifi cipline cies. A arch pi	ic and a of Expe pplicati roject (e	dvanced knowledge of ir erimental Physics, reprod on of the acquired profes .g. experiments, case stu	Idependent scientific uction of knowledge ssional knowledge ar Idies etc.).	c work in a current re , acquisition of socia nd methods to new s	search area, especially Il and methodological c cientific questions in a	in the dis- competen- mini rese-	
Intend	ed learı	ning outcomes					
The stu especi apply t succes	udents I ally in t the acqu sfully in	have special and advance he specialist field of Expe uired methods, to summa nplement the acquired k	ed knowledge of inde erimental Physics, an arise a sub-area of th nowledge and metho	ependent scientific w Id are able to reprod e current research a Ids in a mini research	rork in a current researc uce the acquired knowle rea in an oral presentati n project.	h area, edge, to ion and to	
Course	es (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)		
contac FOKUS contac ly held FOKUS weekly Metho	t hours) Kompa t hours) during Minifor contac d of ass	+ Û/P (2 weekly contact ktseminar Experimentell German or English, det semester break) schungsprojekt Experime t hours), German or Engli essment (type, scope, la	hours), details on av e Physik (FOKUS Bloc ails on availability to entelle Physik (FOKU ish, details on availa nguage — if other tha	vailability to be anno ck Taught Seminar Ex be announced (bloc S Mini Research Proj bility to be announce an German, examina	unced kperimental Physics): S k taught seminar (3 day ect Experimental Physic ed (approx. 3 weeks, pa tion offered — if not eve	(2 weekly ys), usual- cs): P (2 urt time) ery seme-	
ster, in	iformati	on on whether module ca	an be chosen to earn	a bonus)		ery seme-	
This m 1. Topi tes) 2. Sem 3. Rese	odule h cs cove or oral o ort (appu inar: ta earch pr	as the following assessm red in lectures and exerc examination of one candi ox. 8 pages) lk (approx. 30 to 45 minu oject: project report (app	nent components ises: written examina idate each or oral exa tes) prox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx. 3 (approx. 30 minutes) or	30 minu- 7 project	
Assess Studer Details To pas	sment conts mus s on who s this m	omponents 1 through 3 w t register for assessment en assessment compone odule, students must pa	vill be offered in Gern components 1 throug nts 1 through 3 will b ss each of the asses	nan or English. gh 3 online (details t e offered to be anno sment components a	o be announced). unced. through 3.		
Allocat	tion of p	olaces					
Additio	onal inf	ormation					
Worklo	bad						
Teachi	ng cycl	9					
 Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)			
 Master's w ring Techn	vith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg ● ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- pa	age 89 / 214	

Module title			Abbreviation		
FOKUS	Resear	rch Module Type VMK16I	Interdisciplinary Res	search Fields	11-FM-VMK16I-072-m01
Module	e coord	inator		Module offered by	
chairpe	erson of	f examination committee		Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
16	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Specifi discipli licatior ject (e.;	c and a inary su of the g. expe	dvanced knowledge of in ıbjects, reproduction of k acquired professional kr riments, case studies etc	dependent scientific nowledge, acquisitio nowledge and methor .).	work in a current re on of social and meth ds to new scientific o	search area, especially in inter- nodological competencies. App- questions in a mini research pro-
Intende	ed learr	ning outcomes			
The stu especia acquire cessful	Idents I ally in in ed meth lly imple	nave special and advance nterdisciplinary specialis nods, to summarise a sub ement the acquired know	ed knowledge of inde t fields, and are able p-area of the current r /ledge and methods	ependent scientific w to reproduce the ac- research area in an o in a mini research pr	rork in a current research area, quired knowledge, to apply the ral presentation and to suc- oject.
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)
FOKUS Fields): FOKUS Fields): minar (FOKUS search weeks,	FOKUS Einführungsmodul Interdisziplinäre Fachgebiete (FOKUS Introductory Module Interdisciplinary Research Fields): V (4 weekly contact hours) + Ü/P (2 weekly contact hours), details on availability to be announced FOKUS Kompaktseminar Interdisziplinäre Fachgebiete (FOKUS Block Taught Seminar Interdisciplinary Research Fields): S (2 weekly contact hours), German or English, details on availability to be announced (block taught se- minar (3 days), usually held during semester break) FOKUS Miniforschungsprojekt Interdisziplinäre Fachgebiete (FOKUS Mini Research Project Interdisciplinary Re- search Fields): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks_part time)				
Methor ster, in	d of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
This mo 1. Topio tes) repo 2. Sem 3. Rese	odule h cs cove or oral e rt (appr inar: ta earch pr	as the following assessm red in lectures and exerc examination of one candi rox. 8 pages) lk (approx. 30 to 45 minu roject: project report (app	nent components ises: written examina idate each or oral exa tes) irox. 8 pages)	ation (approx. 90 min amination in groups	nutes) or talk (approx. 30 minu- (approx. 30 minutes) or project
Assess Studen Details To pass	ment co its mus on who s this m	omponents 1 through 3 w t register for assessment en assessment compone odule, students must pa	vill be offered in Germ components 1 throug nts 1 through 3 will b ss each of the asses	nan or English. gh 3 online (details t e offered to be anno sment components 1	o be announced). unced. . through 3.
Allocat	ion of p	olaces			
Additio	onal info	ormation			
Worklo	ad				
Teachi	ng cycl	e			

Module appears in

Module title				Abbreviation			
FOKUS	6 Resea	rch Module Type VMK16N	Nanostructure Tech	nology	11-FM-VMK16N-072	-m01	
Modul	e coord	inator		Module offered by			
chairp	erson of	f examination committee		Faculty of Physics a	ind Astronomy		
ECTS	Metho	od of grading	Only after succ. con	Only after succ. compl. of module(s)			
16	nume	rical grade					
Durati	on	Module level	Other prerequisites				
Conte	nts	graduate					
Specif field o tencies resear	Specific and advanced knowledge of independent scientific work in a current research area, especially in the field of nanostructure technology, reproduction of knowledge, acquisition of social and methodological competencies. Application of the acquired professional knowledge and methods to new scientific questions in a mini						
Intend	ed learr	ning outcomes					
The stu especi the act cessfu	udents ł ally in t quired n lly imple	nave special and advance he field of nanostructure nethods, to summarise a ement the acquired know	ed knowledge of inde technology, and are sub-area of the curre vledge and methods	pendent scientific w able to reproduce th ent research area in a in a mini research pr	vork in a current rese e acquired knowledg an oral presentation oject.	arch area, ge, to apply and to suc-	
Course	es (type,	, number of weekly conta	ct hours, language –	- if other than Germa	ın)		
weekly FOKUS weekly days), FOKUS (2 wee Metho ster, ir This m 1. Topi	y contac Kompa y contac usually Minifor kly cont d of ass formati odule h	t hours) + Ü/P (2 weekly ktseminar Nanostrukturt t hours), German or Engli held during semester bro rschungsprojekt Nanostru tact hours), German or Er sessment (type, scope, la on on whether module ca as the following assessm red in lectures and exerc	contact hours), detai echnik (FOKUS Block ish, details on availa eak) ukturtechnik (FOKUS nglish, details on ava nguage — if other tha an be chosen to earn nent components ises: written examina	ls on availability to b Taught Seminar Nat bility to be announce Mini Research Proje ilability to be annou an German, examina a bonus)	be announced nostructure Technolo ed (block taught sem ct Nanostructure Tec nced (approx. 3 week tion offered — if not nutes) or talk (approx	ogy): S (2 hinar (3 hnology): P ks, part time) every seme- x. 30 minu-	
tes) repo 2. Sem 3. Reso Assess Studer Details	or oral e ort (appr linar: ta earch pr sment co nts mus s on whe	examination of one cand rox. 8 pages) lk (approx. 30 to 45 minu roject: project report (app omponents 1 through 3 w t register for assessment en assessment compone	idate each or oral exa ites) prox. 8 pages) vill be offered in Gern components 1 throug nts 1 through 3 will b	amination in groups nan or English. gh 3 online (details t e offered to be anno	(approx. 30 minutes) to be announced). unced.) or project	
To pas	s this m	odule, students must pa	ss each of the asses	sment components a	ı through 3.		
Alloca	tion of p	olaces					
Additi	onal info	ormation					
Workle	oad						
Teachi	ng cycl	e					
 Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)			
 Master's v	vith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exan	n. reg. data re- turtechnik - 2010	page 93 / 214	

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)

Module title					Abbreviation	
FOKUS	Resea	rch Module Type VKM16T	Theoretical Physics	i	11-FM-VMK16T-072-1	m01
Modul	e coord	inator		Module offered by		
chairp	erson o	f examination committee		Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
16	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
Conter	nts	graduate				
Specifi cipline cies. A arch pi	ic and a of Theo pplicati roject (e	dvanced knowledge of ir pretical Physics, reproduc on of the acquired profes e.g. experiments, case stu	dependent scientific ction of knowledge, a ssional knowledge ar udies etc.).	c work in a current re acquisition of social a nd methods to new s	search area, especia and methodological c cientific questions in	lly in the dis- competen- a mini rese-
Intend	ed lear	ning outcomes				
The stu especi ply the succes	udents l ally in t acquir sfully in	have special and advance he specialist field of Thec ed methods, to summaris nplement the acquired k	ed knowledge of inde pretical Physics, and se a sub-area of the c nowledge and metho	ependent scientific w are able to reproduc current research area ods in a mini research	vork in a current resea e the acquired know i in an oral presentati h project.	arch area, ledge, to ap- ion and to
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	ın)	
 FOKUS Einführungsmodul Theoretische Physik (FOKUS Introductory Module Theoretical Physics): V (4 weekly contact hours) + Ü/P (2 weekly contact hours), details on availability to be announced FOKUS Kompaktseminar Theoretische Physik (FOKUS Block Taught Seminar Theoretical Physics): S (2 weekly contact hours), German or English, details on availability to be announced (block taught seminar (3 days), usually held during semester break) FOKUS Miniforschungsprojekt Theoretische Physik (FOKUS Mini Research Project Theoretical Physics): P (2 weekly contact hours), German or English, details on availability to be announced (approx. 3 weeks, part time) Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus) This module has the following assessment components 1. Topics covered in lectures and exercises: written examination (approx. 90 minutes) or talk (approx. 30 minutes) or project report (approx. 8 pages) 2. Seminar: talk (approx. 3 to 45 minutes) 3. Research project: project report (approx. 8 pages) Assessment components 1 through 3 will be offered in German or English. Students must register for assessment components 1 through 3 online (details to be announced). Details on when assessment components 1 through 3 will be offered to be announced 					2 weekly 2 weekly days), usual- i): P (2 wee- : time) every seme- every seme- c. 30 minu- or project	
Allocat	tion of p	olaces				
Additio	onal inf	ormation				
Worklo	oad					
 Tee						
ieachi	ng cycl	e				
Referre	ed to in	LPOI (examination regu	lations for teaching-o	degree programmes)		
Master's w ring Techn	ith 1 major	r FOKUS Physics - Nanostructu-	JMU Würzburg • ge cord Master (120 FCT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 95 / 214

Module title					Abbreviation	
FOKUS Project Practical Course Nanostructuring Technolog				у	11-FPN-072-m01	
Module coordinator				Module offered by		
chairpe	erson o	f examination committee		Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Its					
Indepe perime	ndent v nts incl	vork on a current researc uding analysis and docu	h topic of nanostruct mentation of the resu	ure technology and i ults.	mplementation of scientific ex-	
Intend	ed learı	ning outcomes				
The stu and an	idents a alyse s	are able to independently cientific experiments and	/ work on a current re I to document the res	search area of nano: sults.	structure technology, to conduct	
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)	
P (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
Metho ster, in	d of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) proje ject	a) project report (approx. 20 pages) and b) talk (approx. 30 minutes) with discussion on topic researched in pro- ject					
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)						

Module title					Abbreviation	
Professional Specialization FOKUS Nanostructuring Techno				ology 1	11-FS-NF-072-m01	
Module	e coord	inator		Module offered by		
chairpe	erson o	f examination committee		Faculty of Physics a	nd Astronomy	
ECTS	ECTS Method of grading Only after succ. compl. of module(s)					
15	nume	rical grade				
Duratio	n	Module level	Other prerequisites	r prerequisites		
1 seme	ster	graduate				
Conten	ts					
Introdu techno mental	ction to logy wi topics	o current experimental, th th special relevance to th in a seminar presentatio	neoretical or enginee e planned topic of th n.	ring questions from a e Master's thesis. Si	a subdiscipline of nanostructure ummary of the required funda-	
Intende	ed lear	ning outcomes				
The stu neering topic of	dents l g subdi f the M	nave advanced scientific scipline of the current res aster's thesis and are abl	knowledge of the pri search on nanostruct le to summarise their	nciples of a current e ure technology with knowledge in an ora	experimental, theoretical or engi- special relevance to the intended al presentation.	
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)	
S (no ir	format	ion on SWS (weekly cont	act hours) and cours	e language available	e)	
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)						
talk (approx, 30 to 45 minutes) with discussion						
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Workload						
Referred to in LPO L (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)						

Module title					Abbreviation	
Semico	onducto	or Lasers - Principles and	Current Research		11-HLF-092-m01	
Module coordinator				Module offered by		
Managing Director of the Institute of Ap			oplied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Methe	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 semester graduate		Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.				
rent developments regarding components. The principles of lasers are described on the basis of a general laser model, which will then be extended to special aspects of semiconductor lasers. Basic concepts such as thres- hold condition, characteristic curve and laser efficiency are derived from coupled rate equations for charge car- riers and photons. Other topics of the lecture are optical processes in semiconductors, layer and ridge wavegui- des, laser resonators, mode selection, dynamic properties as well as technology for the generation of semicon- ductor lasers. The lecture closes with current topics of laser research such as quantum dot lasers, quantum cas- cade lasers, terahertz lasers or high-performance lasers. Intended learning outcomes The students have advanced knowledge of the principles of semiconductor-laser physics. They can apply their						
	age to	number of weekly contained	now the applications	if other than Germa	n)	
$R \pm V$ (r	o info	mation on SWS (weekly	contact hours) and co		able)	
Methor ster, in	Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)					
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English						
Allocation of places						
Additional information						
Workload						

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Nanostructure Technology (2012) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2012) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2012) Master's degree (1 major) FOKUS Physics (2012)

Module title				Abbreviation			
Semiconducto	or Physics		11-HLP-092-m01				
Module coordinator			Module offered by				
Managing Dir	ector of the Institute of	Applied Physics	Faculty of Physics a	nd Astronomy			
ECTS Meth	od of grading	Only after succ. con	npl. of module(s)	·			
6 nume	rical grade						
Duration	Module level	Other prerequisites					
1 semester	graduate	Certain prerequisite	s must be met to qua	alify for admission to as-			
		sessment. The lectu	sessment. The lecturer will inform students about the respective details				
at the beginning of the course. Registration for the cou				ion for the course will be con-			
sidered a declaration of will to seek admission to assess			ission to assessment. If stu-				
		dents have obtained	d the qualification fo	r admission to assessment ove			
		the course of the se	mester, the lecturer	will put their registration for as-			
		tod to accossment into enect	n the current or in th	e all prerequisites will be admit			
		sessment at a later	date students will h	ave to obtain the qualification t			
		admission to assess	sment anew.	ave to obtain the qualification i			
Contents							
Advanced exa	mination of crystal boy	ding and the electronic	c hand structure of s	omiconductors Ontical avaitati			
ons and their	coupling effects. Electi	ron-phonon coupling. To	emperature-depende	ent transport properties. Quanti			
sation effects	of semiconductors wit	h reduced dimensions.	(Semi-)magnetic ser	miconductors.			
Intended lear	ning outcomes						
The students	have specific and adva	nced knowledge in the	field of Semiconduc	tor Physics. They know the phy			
cal principles	of semiconductors and	l have gained an overvi	ew of the important	characteristics of semiconductor			
materials.							
Courses (type	Courses (type, number of weekly contact hours, language — if other than German)						
R + V (no info	rmation on SWS (week	y contact hours) and co	ourse language avail	able)			
Method of as ster, informat	sessment (type, scope, ion on whether module	language — if other the can be chosen to earn	an German, examina a bonus)	tion offered — if not every seme			
a) written exa	mination (approx. 90 n	ninutes) or b) oral exam	ination of one candi	date each or oral examination i			
groups (appro	ox. 30 minutes per cano	lidate, for modules with	n less than 4 ECTS cr	edits approx. 20 minutes) or c)			
(approx, 30 m	inutes)	, time to complete: 1 to	4 weeks) of d) prese	entation/seminar presentation			
Assessment of	offered: When and how	often assessment will l	be offered depends o	on the method of assessment			
and will be ar	nounced in due form ι	inder observance of Sec	ction 32 Subsection	3 ASPO (general academic and			
examination r	examination regulations) 2009.						
Language of assessment: German, English							
Allocation of	places						
Werkland							
WUIKIDAU							
Referred to in LFOT (examination regulations for teaching-degree programmes)							
Master's with 1 majo	r FOKUS Physics - Nanostructu-	JMU Würzburg • ge cord Master (120 FCT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- turtechnik - 2010			



Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Nanostructure Technology (2012) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2012)

Interview of Nanostructures Module coordinator Module offered by Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy CTS Method of grading Only after succ. compl. of module(s) Interview of Applied Physics Faculty of Physics and Astronomy Module level Only after succ. compl. of module(s) Interview of Applied Physics Compl. of module(s) Interview of Applied Physics Compl. of module(s) Interview of Applied Physics Compl. of module(s) Interview of Brading Only after succ. compl. of module(s) Interview of Module level Other prerequisites graduate Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment into effect. Students who meet all prerequisites will be admitted to assessment anew. Interview of the se					
Module coordinator Module offered by Anarging Director of the Institute of Applied Physics Faculty of Physics and Astronomy CTS Method of grading Only after succ. compl. of module(s) numerical grade Duration Module level Other prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment a dimission to assessment anew. ontents					
Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy CTS Method of grading Only after succ. compl. of module(s) numerical grade Duration Module level Other prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment at a later date, students will have to obtain the qualification for admission to assessment anew. ontents					
Method of grading Only after succ. compl. of module(s) numerical grade Duration Module level Other prerequisites semester graduate Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew. contents emiconductor nanostructures are frequently referred to as "artificial materials". In contrast to atoms, molecules r macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored by chaning their size. The lecture addresses technological challenges in the prenaration of semiconductor nanostructure semiconductor nanostructures and the semiconductor nanostructure addresses technological challenges in the prenaration of semiconductor nanostructures and the semiconductor nanostructures and the semiconductor nanostructure addresses technological challenges in the prenaration of semiconductor nanostructures and the semiconductor nanostructures and the semiconductor nanostructure nanostructures and the semiconductor nanostructure nanostructures and the semiconductor na					
numerical grade Duration Module level Other prerequisites semester graduate Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment admission to assessment anew. contents emiconductor nanostructures are frequently referred to as "artificial materials". In contrast to atoms, molecules r macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored by chaning their size. The lecture addresses technological challenges in the prenaration of semiconductor nanostructure and the subsequent is the prenaration of semiconductor nanostructures are frequently referred to as "artificial materials". In contrast to atoms, molecules r macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored by chaning their size. The lecture addresses technological challenges in the prenaration of semiconductor nanostructures					
Duration Module level Other prerequisites semester graduate Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew. ontents emiconductor nanostructures are frequently referred to as "artificial materials". In contrast to atoms, molecules r macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored by chan- ing their size. The lecture addresses technological challenges in the preparation of semiconductor nanostructor.					
semester graduate Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
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at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
sessment at a later date, students will have to obtain the qualification for admission to assessment anew.					
admission to assessment anew. Contents Semiconductor nanostructures are frequently referred to as "artificial materials". In contrast to atoms, molecules r macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored by chan- ing their size. The lecture addresses technological challenges in the preparation of semiconductor papostruc-					
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 by chan- ing their size. The lecture addresses technological challenges in the preparation of semiconductor papostruc-					
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 by chan- ing their size. The lecture addresses technological challenges in the preparation of semiconductor papostruc-					
r macroscopic crystals, their electronic, optical and magnetic properties can be systematically tailored by chan- ing their size. The lecture addresses technological challenges in the preparation of semiconductor papostruc-					
ing their size. The lecture addresses technological challenges in the preparation of semiconductor papostruc-					
ing the size in a forest of the size of the size the size the size of the size					
ures of varying dimensions (2D, 1D, 0D). It provides the basic theoretical concepts to describe their properties,					
f novel optoelectronic and quantum photonic devices based on such nanostructures, including building blocks					
or quantum communication and quantum computing architectures.					
ntended learning outcomes					
he students know the theoretical principles and characteristics of semiconductor nanostructures. They have					
nowledge of the technological methods to fabricate such structures, and of their applications to novel photonic					
evices. They are able to apply their knowledge to problems in this field of research.					
ourses (type, number of weekly contact hours, language — if other than German)					
+ V (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 seme- ter, information on whether module can be chosen to earn a bonus)					
) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in					
roups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c)					
roject report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation					
(approx. 30 minutes)					
Assessment offered: When and now often assessment will be offered depends on the method of assessment and will be appounded in due form under observance of Section 22 Subsection 2 ASPO (general academic and					
examination regulations) 2009.					
Language of assessment: German, English					
Allocation of places					
Additional information					
Workload					

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in
Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2010)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Technology of Functional Materials (2010)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)
Master's degree (1 major) Functional Materials (2012)

Module title Abbreviation					Abbreviation	
Principles of Classification of Patterns 11-KVM-092-m01						
Module coordinator				Module offered by		
Managing Director of the Institute of Ap		plied Physics	Faculty of Physics a	nd Astronomy		
ECTS	ECTS Method of grading Only after succ. cor			npl. of module(s)		
3	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Certain prerequisites must be met to qualify for admission to as-			
			sessment. The lecturer will inform students about the respective details			
			at the beginning of t	the course. Registrat	ion for the course will be con-	
			sidered a declaratio	n of will to seek adm	ission to assessment. If stu-	
			the course of the co	a the qualification to	will put their registration for as	
			coccmont into offoci	t Students who mae	t all proroquisitos will be admit	
			ted to assessment in	n the current or in the	e subsequent semester. For as-	
			sessment at a later	date, students will h	ave to obtain the qualification for	
			admission to assess	sment anew.		
Conter	nts					
Cimel	il.5	simore but also acou	tie recorde chastra	alastriaal maasuram	onto often contain requiring not	
terns.	Such a These n	atterns are often classifi	and analysed by o	bservers, e.g. by a d	octor when analysing an FCG.	
More a	nd mor	e automatic procedures a	are adopted to take o	on these tasks and cl	assify patterns. The lecture will	
discus	s princi	ples of different classifie	rs such as "minimum	distance" and "max	imum likelihood".	
Intend	ed lear	ning outcomes				
The stu	udents l	have specific and advanc	ed knowledge in the	field of pattern recog	gnition. They know methods of	
classif	ying pa	tterns in measuring data	as well as ways to au	itomatise these proc	esses. They are able to apply	
these r	nethod	s to practical problems.			`	
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)	
V + R (I	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)	
Metho ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt	en exa	mination (90 minutes) or	b) oral examination of	of one candidate eac	h or oral examination in groups	
(appro	x. 30 m	inutes per candidate, for	modules with less th	an 4 ECTS credits ap	prox. 20 minutes) or c) project	
report	(approx	a. 8 to 10 pages, time to c	omplete: 1 to 4 week	s) or d) presentation	/seminar presentation (approx.	
Assess	ment o	ffered: When and how of	ten assessment will b	oe offered depends o	on the method of assessment	
and wi	and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and					
examir	nation r	egulations) 2009.	1. 1			
Language of assessment: German, English						
Additional information						
Workload						
Teaching cycle						

Module appears in

Bachelor' degree (1 major) Physics (2010)

Bachelor' degree (1 major) Physics (2012)

Master's degree (1 major) Physics (2010)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Module title					Abbreviation			
Lithography in Semiconductor Technology and Theory of Quantum Transport								
Module coordinator				Module offered by				
Managing Director of the Institute of Ar		Applied Physics	Faculty of Physics a	nd Astronomy				
ECTS Method of grading			Only after succ. con	npl. of module(s)				
6	nume	rical grade						
Duratio	n	Module level	Other prerequisites					
1 seme	ster	graduate	Certain prerequisite	s must be met to qua	alify for admission to	o as-		
			sessment. The lectu	sessment. The lecturer will inform students about the respective details				
			at the beginning of the course. Registration for the course will be con-					
			sidered a declaration of will to seek admission to assessment. If stu-					
			the course of the co	the course of the semester, the lecturer will put their registration for as-				
			consecutive of the semester, the fecturer will put their registration for as-					
			ted to assessment in	n the current or in th	e subsequent semes	tor For as-		
			sessment at a later	date students will h	ave to obtain the qu	alification for		
			admission to assess	sment anew.	ave to obtain the qu			
Conten								
Introdu	ction to	o the lithographic techn	iques of semiconducto	or technology and di	scussion of the requ	ired theory		
Intende	d lear	ning outcomes						
Tho stu	donte k	any specific and advan		aiconductor lithogra	aby and of the theon	<i>i</i> of quantum		
transpo	ort.	lave specific and advan				y of quantum		
Course	s (type	, number of weekly cont	act hours, language –	- if other than Germa	n)			
R + V (n	o infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)			
Method ster, in	l of ass formati	essment (type, scope, l on on whether module	anguage — if other tha can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-		
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment offered in due form under chaptering of Section 20 Subsection 2 ASPO (second chaptering of Section 2)								
examin	ation r	egulations) 2009.		<u> </u>				
Langua	ge of a	ssessment: German, En	glish					
Allocation of places								
Additional information								
WUIKUdu								
Teaching cycle								
Referred to in LPO I (examination regulations for teaching-degree programmes)								
Module appears in								
Bachelor' degree (1 major) Physics (2010)								
Master's wi ring Techno	ith 1 major ology (2010	r FOKUS Physics - Nanostructu- b)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- turtechnik - 2010	page 107 / 214		

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Bachelor' degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010)
Module title		Abbreviation			
Laboratory and Measurement Technology in Biophysics				11-LMB-092-m01	
Module coord	linator		Module offered by		
Managing Dir	ector of the Institute of	Applied Physics	Faculty of Physics a	nd Astronomy	
ECTS Meth	od of grading	Only after succ. con	npl. of module(s)		
6 nume	erical grade				
Duration	Module level	Other prerequisites	· · · · · · · · · · · · · · · · · · ·		
1 semester	graduate	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for			
		admission to assess	sment anew.		
Contents					
The lecture co physical proc measuring teo methods of st	overs relevant principle edures for the examina chniques and sensors, tructure elucidation of l	s of molecular and cellu tion and manipulation methods of single-parti piomolecules.	ular biology as well a of biological system icle detection, specia	s the physical principles of bio- s. The main topics are optical al microscoping techniques and	
Intended lear	ning outcomes				
The students sical procedu measuring teo biomolecules	know the principles of res for the examinatior chniques and their app	molecular and cellular and manipulation of b lications and are able t	biology as well as th iological systems. Th o apply techniques c	e physical principles of biophy- ney have knowledge of optical of structure elucidation to simple	
Courses (type	, number of weekly cor	ntact hours, language –	- if other than Germa	n)	
R + V (no info	rmation on SWS (week	y contact hours) and co	ourse language avail	able)	
Method of as ster, informat	sessment (type, scope, ion on whether module	, language — if other the e can be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English					
Allocation of places					
Additional information					
Workload					
Teaching cycle					
L					
Master's with 1 majo ring Technology (201	or FOKUS Physics - Nanostructu- 10)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	n. reg. data re- turtechnik - 2010	

Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2010)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Functional Materials (2012)

Module title				Abbreviation	
Introduction to LabVIEW					11-LVW-092-m01
Module coordinator				Module offered by	
Managing Director of the Institute of Applied Physics Faculty of Physics and Astronomy			and Astronomy		
ECTS	Metho	od of grading	Only after succ. co	mpl. of module(s)	
6	nume	rical grade			
Duratio	n	Module level	Other prerequisites	5	
1 semester graduate		Certain prerequisite sessment. The lecture at the beginning of sidered a declaration dents have obtained the course of the set sessment into effect ted to assessment sessment at a later admission to assess	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for		

Contents

The module comprises basic and advanced courses. The basic course "NI LabVIEW Basic 1" is the first level of each LabVIEW learning phase. LabVIEW Basic provides a systematic introduction to the functions and application fields of the development environment of LabVIEW. The students become acquainted with dataflow programming and with common LabVIEW architectures. They learn to develop LabVIEW applications for various application fields, from assessment and measurement applications up to data collection, device control, data recording and measurement analysis. In the advanced course "NI LabVIEW Core 2", the students learn to develop comprehensive standalone applications, including the graphical development environment LabVIEW. The course builds upon LabVIEW Basic 1 and provides an introduction to the most common development technologies, in order to enable the students to successfully implement and distribute LabVIEW applications for different application fields. Course topics include techniques and procedures for the optimisation of application performance, e.g. through an optimised reuse of existing codes, usage of file I/O functions, principles of data management, event computing and methods of error handling. After finishing the course, the students have the ability to apply Lab-VIEW functions according to individual requirements, which enables a fast and productive application development.

Intended learning outcomes

The students have specific and advanced knowledge in the application field of LabVIEW. They know the principles of working with LabVIEW and are able to develop applications, e.g. for recording and analysing measuring data.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (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 can be chosen to earn a bonus)

a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) or e) project (approx. 60 minutes)

Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.

Language of assessment: German, English

Allocation of places

Naster's with 1 major FOI	KUS Physics - Nanostructu-
ing Technology (2010)	

Additional information

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Physics (2010)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Module	e title				Abbreviation	
Magne	Magnetism 11-MAG-092-m01					
Module	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of Ap	oplied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 semestergraduateCertain prerequisites must be met to qualify for admission sessment. The lecturer will inform students about the res at the beginning of the course. Registration for the cours sidered a declaration of will to seek admission to assess dents have obtained the qualification for admission to a the course of the semester, the lecturer will put their reg sessment into effect. Students who meet all prerequisite ted to assessment in the current or in the subsequent set		alify for admission to as- nts about the respective details ion for the course will be con- ission to assessment. If stu- r admission to assessment over will put their registration for as- t all prerequisites will be admit- e subsequent semester. For as-				
			sessment at a later	date, students will ha	ave to obtain the qualification for	
			admission to assess	sment anew.		
Conten	ts					
Dia- an ture, na fect.	d paraı anomaş	magnetism, exchange int gnetism, superparamagn	eraction, ferromagne etism, experimental r	tism, antiferromagne methods to measure	etism, anisotropy, domain struc- magnetic properties, Kondo ef-	
Intende	ed lear	ning outcomes				
The stu experir ches ar on prol	idents l nents; nd are a plems o	know basic terms, concep they are skilled in simple able to apply them to tash of these areas; they are a	ots and phenomena of model building and ks in the stated areas ble to evaluate the ac	of magnetism and me in the formulation of s; they have compete ccuracy of observatio	easuring methods for magnetic mathematical-physical approa- ncies in independently working ons and analyses.	
Course	s (type	, number of weekly conta	ct hours, language —	- if other than Germa	n)	
R + V (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)	
Metho ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.						
Langua	ge of a	ssessment: German, Eng	lish			
Allocat	ion of p	olaces				
Additional information						
Workload						
Teachi	Teaching cycle					

Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Nanostructure Technology (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title				Abbreviation	
Master Thesis FOKUS Nanostructuring Technology				11-MA-NF-072-m01	
Module	e coord	inator		Module offered by	
chairpe	erson o	f examination committee		Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
30	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate	Registration for asse	essment to be carried	d out electronically. Deadlines
			will be announced s	eparately. Please co	nsult with your supervisor.
Conten	ts				
Mostly nanost	indepe ructure	ndent processing of an e technology, especially a	xperimental, theoreti ccording to known pr	ical or engineering ta ocedures and scient	ask in a current research area of tific aspects; writing of the thesis.
Intende	ed lear	ning outcomes			
The stu rent res and to	idents a search summa	are able to independently on nanostructure technol rrise their results in a fina	v work on an experimory, especially in accord	ental, theoretical an cordance with knowr	d engineering task from the cur- n methods and scientific aspects
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
no cou	rses as	signed			
Methoo ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
written Langua	thesis ige of a	(approx. 75 pages) ssessment: German or Er	nglish		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	urs in			
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)	
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)				

Module title					Abbreviation	
Opto-e	Opto-electronic Material Properties 11-MOE-092-mo1					
Modul	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of A	pplied Physics	Faculty of Physics and Astronomy		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate	Admission prerequi	site to assessment: s	successful completio	on of approx.
			50% of exercises. C	ertain prerequisites r	nust be met to quali	ty for admis-
			sion to assessment.	The lecturer will info	orm students about f	the respecti-
			ve details at the beg	suming of the course	. Registration for the	e course Will
students have obtained the qualification for admission to assessme				cossment		
			over the course of the semester, the lecturer will put their registration for			pistration for
			assessment into eff	ect. Students who m	eet all prerequisites	will be ad-
mitted to assessment in the current or in the subsequent semester			mester. For			
			assessment at a late	er date, students will	have to obtain the	qualification
			for admission to ass	sessment anew.		
Conter	nts					
Physic	al princ	iples of optoelectronic m	naterial properties and	d applications.		
Intend	ed lear	ning outcomes				
The stu	udents	know the principles of op	otoelectronic material	characteristics.		
Course	es (type	, number of weekly conta	act hours, language –	- if other than Germa	n)	
V + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Metho ster, in	d of ass Iformati	sessment (type, scope, la ion on whether module c	anguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
a) writt	ten exa	mination (approx. 90 mir	nutes) or b) oral exam	ination of one candi	date each or oral exa	amination in
groups	s (appro	x. 30 minutes per candic	late, for modules with	n less than 4 ECTS cr	edits approx. 20 mir	nutes) or c)
project	t report	(approx. 10 pages, time t	to complete: 1 to 4 we	eeks) or d) presentat	ion/seminar present	tation (ap-
Allocat	tion of	les)				
Additio	onal inf	ormation				
Worklo	bad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Bache	Bachelor' degree (1 major) Physics (2010)					
Master's degree (1 major) Physics (2010)						
Master	Master's degree (1 major) Technology of Functional Materials (2010)					
Master	Master's degree (1 major) Technology of Functional Materials (2009)					
master	s uegr		re reciniology (2010)			
Master's w ring Techn	ith 1 majo	r FOKUS Physics - Nanostructu- ດ)	JMU Würzburg • ge cord Master (120 FCT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- surtechnik - 2010	page 116 / 214



Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) Functional Materials (2012)

Module title					Abbreviation
Scientific Methods and Project Management FOKUS Nanostructuring Techno-				11-MP-NF-072-m01	
logy 1					
Modul	Module coordinator			Module offered by	
chairpe	erson o	f examination committee		Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
15	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conter	Its				
Introdu theore plan fo	iction to tical, ex or the pl	o the methods of scientif operimental or engineerin anned Master's thesis.	ic work, taking into ac g questions of nanos	ccount methods of p tructure technology	roject planning. Application to . Writing of a scientific project
Intend	ed lear	ning outcomes			
The stu plannin specia ster's t	idents l ng of a l releva hesis, t	have knowledge of the so current experimental, the nce to the intended topic to plan the required work	ientific methods, the oretical or engineerir of the Master's thesi and to summarise th	methodological wo ng subdiscipline of n is and are able to de eir knowledge in an	rk and the methods of project anostructure technology with velop a project plan for the Ma- oral presentation.
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
R (no ii	nformat	tion on SWS (weekly cont	act hours) and course	e language available	2)
Metho ster, in	d of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
talk (a	oprox. 3	30 to 45 minutes) with dis	scussion		
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)				
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Modul	e title				Abbreviation	
Magne	etism a	nd Spin Transport			11-MST-092-m01	
Modul	e coord	linator		Module offered by		
Manag	ving Dir	ector of the Institute	of Applied Physics	Faculty of Physics a	and Astronomy	
ECTS	Meth	od of grading	Only after succ. co	mpl. of module(s)		
6	nume	rical grade				
Duration Module level		Other prerequisite	5			
2 semester graduate		Certain prerequisite sessment. The lect at the beginning of sidered a declaration dents have obtained the course of the se sessment into effect ted to assessment sessment at a later admission to asses	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for			
Conte	nts					
les of magnetism (ranging from atoms to solids), properties of magnetic material (individual usage) and methods to characterise magnetic properties. During the summer semester, the students learn about spin transport in me- tallic systems in due consideration of giant magnetoresistance and tunnel magnetoresistance and its applica- tion in magnetic memory. As a last point, we discuss new phenomena from the field of spin dynamics and cur- rent-induced spin phenomena.						
The st tic exp an ove mulati	udents perimen erview c on of m	know the basic term ts; they are familiar f modern findings ir nathematical-physic	ns, concepts and phenom with spin transport applic n this area (GMR, TMR). Th al approaches and are ab	ena of magnetism an cations of information ley are skilled in simp le to apply them to ta	Id measuring methods for magne- n technologies and have gained ple model building and in the for- asks in the stated areas.	
Course	es (type	, number of weekly	contact hours, language -	– if other than Germa	an)	
V + R +	- V (no i	nformation on SWS	(weekly contact hours) ar	nd course language a	vailable)	
Metho ster, ir	d of as nformat	sessment (type, sco ion on whether mod	pe, language — if other th lule can be chosen to earr	nan German, examina n a bonus)	ation offered — if not every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English						
Allocation of places						
Additi	Additional information					
Workl	oad					

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Physics (2010)

Bachelor' degree (1 major) Physics (2012)

Bachelor' degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) Physics (2010)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Module	e title				Abbreviation	
Nanoai	nalytics	5			11-NAN-092-m01	
Module	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute	of Applied Physics	Faculty of Physics a	and Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
6	nume	rical grade		1		
Duratio	on	Module level	Other prerequisites	;		
Duration Module level Other prerequisites 1 semester graduate Certain prerequisites must be met to qualify for admission to sessment. The lecturer will inform students about the respect at the beginning of the course. Registration for the course will sidered a declaration of will to seek admission to assessme dents have obtained the qualification for admission to assess the course of the semester, the lecturer will put their registration sessment into effect. Students who meet all prerequisites we ted to assessment in the current or in the subsequent semestic sessment at a later date, students will have to obtain the qualification to assessment anew.			alify for admission to as- nts about the respective details ion for the course will be con- nission to assessment. If stu- or admission to assessment over will put their registration for as- et all prerequisites will be admit- e subsequent semester. For as- ave to obtain the qualification for			
 Principles of analytic procedures in the field of nanostructure physics, imaging techniques from a microscopic level up to an atomic level, examination of chemical composition, spectroscopy of electronic properties, usage of X-ray methods Physics and material systems on the nanoscale Scanning probes: Atomic force microscopy. py. Scanning tunneling microscopy Electron probes: Scanning electron microscope. Transmission electron microscope Secondary ions - mass spectrometry - X-ray methods: Synchrotron spectroscopy. Photoemission. X-ray absorption Intended learning outcomes The students have basic knowledge of modern research methods for different nanostructures up to an atomic level. They know microscoping procedures that are used in practice in labs and the industry as well as spectroscopic methods for the determination of electronic properties. They are able to evaluate the efficiency of different research methods. 						
Course	s (type	. number of weekly c	ontact hours, language –	- if other than Germa	in)	
R + V (r	no infor	mation on SWS (wee	kly contact hours) and co	ourse language avail	able)	
Metho ster, in	d of ass formati	essment (type, scop	e, language — if other th ile can be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English						
Allocat	Allocation of places					
Additio	Additional information					
Worklo	ad					

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Referred to in LPO I (examination regulations for teaching-degree programmes)
Module appears in
Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2010)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Functional Materials (2012)

Module title			Abbreviation		
Low-Dimensional Structures					11-NDS-092-m01
Module coordinator				Module offered by	
Managi	ing Dire	ector of the Institute of A	pplied Physics	Faculty of Physics a	and Astronomy
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)	
4	nume	rical grade	-		
Duratio	n	Module level	Other prerequisites		
1 semester graduate		Certain prerequisite sessment. The lectu at the beginning of t sidered a declaratio dents have obtained the course of the se sessment into effec ted to assessment i sessment at a later admission to assess	Other prerequisites Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for		

Contents

Low-dimensional structures: Crystal lattice symmetry. Lattice dynamics and growth techniques of low-dimensional structures. Comparison between these structures and volume solids. X-ray diffractometry. Molecular beam epitaxy.

Intended learning outcomes

The students have knowledge of the theoretical principles of the growth of low dimensional structures. They know methods of producing and analysing such structures. They know the bandstructures of the most important semiconductors as well as the fabrication and characteristics of semiconductor heterostructures and MOS-diodes. They are familiar with the subband structure of semiconductor heterostructures and MOS-diodes and can evaluate the importance of many-particle effects. They are able to solve problems related to potentials in one dimension by applying Poisson's equation. They know the k*p perturbation theory and can deduce the 2D subband structure from the bulk band structure. They have knowledge of the meaning of modulation doping and are familiar with the 2D hydrogen atom. They understand how an external magnetic field acts on the properties of a free electron gas in 2D. They have basic knowledge of the meaning of gauging, Landau-quantisation, filling factor, and are able to solve implicit problems via numerical methods. They are familiar with elementary excitations in two-dimensional systems.

Courses (type, number of weekly contact hours, language – if other than German)

R + V (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 can be chosen to earn a bonus)

a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes)

Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.

Language of assessment: German, English

Allocation of places

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Additional information
Workload
Teaching cycle
Referred to in LPO I (examination regulations for teaching-degree programmes)
Module appears in
Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2011)

Module title					Abbreviation	
Nanoe	Nanoelectronics 11-NEL-092-m01					
Modul	Module coordinator			Module offered by		
Manag	ing Dire	ector of the Institute of Ar	oplied Physics	Faculty of Physics a	nd Astronomy	
ECTS Method of grading Only after succ. compl. of module(s)			,			
6	nume	rical grade		1		
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate	Certain prerequisite	s must be met to qua	alify for admission to as-	
			sessment. The lectu	rer will inform stude	nts about the respective details	
			at the beginning of t	he course. Registrat	ion for the course will be con-	
			sidered a declaratio	n of will to seek adm	ission to assessment. If stu-	
			dents have obtained	d the qualification fo	r admission to assessment over	
			the course of the se	mester, the lecturer	will put their registration for as-	
			sessment into effect	t. Students who mee	t all prerequisites will be admit-	
			concernent at a later	n the current or in the	e subsequent semester. For as-	
			admission to accose	ale, students will in	ave to obtain the qualification for	
<u> </u>		<u> </u>		sment allew.		
Conter	105	1.1				
Afterw functio of nan the op	ards, w on of co ostructi erating	e talk about application p mmon switches and stor ures. We gain an overviev principle of quantum cor	potentials of nanostru ages through miniatu v of nanoelectric amp nputers.	actures in electronics risation and compar olifiers, rectifier, logio	5. We examine the limits of the e them to electronic properties c lattices and circuits and discuss	
Intend	ed lear	ning outcomes				
The stu	udents d appli	have mastered the basics	s of electronics of nar	nostructures in theor	y and practice. They know functi-	
Course	es (type	. number of weekly conta	ct hours. language –	- if other than Germa	n)	
R + V (no infoi	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)	
Metho ster, ir	d of ass formati	sessment (type, scope, la ion on whether module c	inguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writ	ten exa	mination (approx. 90 mir	utes) or b) oral exam	ination of one candi	date each or oral examination in	
groups	s (appro	x. 30 minutes per candic	late, for modules with	n less than 4 ECTS cr	edits approx. 20 minutes) or c)	
project	t report	(approx. 8 to 10 pages, t	ime to complete: 1 to	4 weeks) or d) prese	entation/seminar presentation	
(appro Assess	x. 30 m sment o	ffered: When and how of	ten assessment will h	ne offered depends o	on the method of assessment	
and wi	ll be an	nounced in due form und	der observance of Sec	ction 32 Subsection	3 ASPO (general academic and	
exami	nation r	egulations) 2009.				
Langua	age of a	ssessment: German, Eng	lish			
Allocation of places						
Additional information						
Workload						
Teachi	Teaching cycle					
Master's w ring Techn	/ith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- page 125 / 214 curtechnik - 2010	

Module appears in

Bachelor' degree (1 major) Physics (2010)

Bachelor' degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) Physics (2010)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Master's degree (1 major) FOKUS Physics (2010)

Module title					Abbreviation	
Nanomatrix Biophysical Analyzing Systems and Processes (Master)					11-NM-BV-MA-072-m01	
Module	coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Princip nics, pł structu proced	les and notonic ring, co ures.	specific knowledge of en s and biophysics as well mponents and system de	ngineering work in th as in the technology evelopment, especia	e application fields o -oriented materials s lly in the field of biop	of energy engineering, electro- sciences, technologies of nano- ohysical analysis systems and	
Intende	ed leari	ning outcomes				
The stu especia	dents l ally in t	nave advanced knowledg he field of biophysical an	e of one or more app alysis systems and to	lication or technolog echniques.	gy areas of engineering work,	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)	
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)	
Methoo ster, in	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exai ch or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	9				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	Module appears in					
Master Master Master	Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title					Abbreviation	
Nanoma	Nanomatrix Semiconductor Materials (Master)				11-NM-HM-MA-072-m01	
Module	e coordi	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	numei	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Principl nics, pr structur	les and notonic ring, co	specific knowledge of er s and biophysics as well omponents and system d	ngineering work in th as in the technology evelopment, especia	e application fields o oriented materials s lly in the field of sem	of energy engineering, electro- cciences, technologies of nano- iconductor materials.	
Intende	ed learr	ning outcomes				
The stu especia	dents h ally in tl	nave advanced knowledg he field of semiconducto	e of one or more app r materials.	lication or technolog	gy areas of engineering work,	
Course	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (n	io infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Methoo ster, inf	l of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writte date ea	en exar Ich or o	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)		
Module	e appea	ars in				
Master'	's degre	ee (1 major) Nanostructur	e Technology (2010)			
Master'	's degre	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master'	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title					Abbreviation	
Nanomatrix Semiconductor Processing (Master)					11-NM-HP-MA-072-m01	
Module	coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
Principl nics, pł structur	les and notonic ring, co	specific knowledge of er s and biophysics as well mponents and system d	ngineering work in th as in the technology evelopment, especia	e application fields of -oriented materials s lly in the field of sem	of energy engineering, electro- sciences, technologies of nano- niconductor processes.	
Intende	ed learn	ning outcomes				
The stu especia	dents ł ally in t	nave advanced knowledg he field of semiconducto	e of one or more app r processes.	lication or technolog	gy areas of engineering work,	
Courses	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Method ster, inf	l of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writte date ea	en exar ch or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocati	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
 Teachir		<u></u>				
	is cycl	5				
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)		
		· · · ·	5			
Module	appea	irs in				
Master'	s degre	ee (1 major) Nanostructur	e Technology (2010)			
Master'	s degre	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master'	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title Abbreviation						
Nanomatrix Micro/Nano- and Optoelectronic Devices (Master)					11-NM-MB-MA-072-m01	
Module	e coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
6	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Princip nics, pł structu compoi	les and notonic ring, co nents.	specific knowledge of er s and biophysics as well mponents and system de	ngineering work in th as in the technology evelopment, especia	e application fields o -oriented materials s lly in the field of mic	of energy engineering, electro- sciences, technologies of nano- ro-/nano- and opto-electronic	
Intende	ed learr	ning outcomes				
The stu especia	dents ł ally in t	nave advanced knowledg he field of micro-, nano- a	e of one or more app and optoelectronic co	lication or technolog mponents.	gy areas of engineering work,	
Course	s (type,	number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (n	io infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Methoo ster, in	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exar Ich or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad		-			
Teachir	ng cycl	9				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	rs in				
Master	's degre	ee (1 major) Nanostructur	re Technology (2010)			
Master	's degre	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title					Abbreviation		
Nanomatrix Heat Insulating Systems and Photovoltaics					11-NM-WP-MA-072-m01		
Module	coord	inator		Module offered by			
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
6	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
Principl nics, pł structu tovoltai	les and notonic ring, cc ics.	specific knowledge of er s and biophysics as well mponents and system do	ngineering work in the as in the technology evelopment, especial	e application fields c oriented materials s lly in the field of ther	of energy engineering, electro- sciences, technologies of nano- mal insulation systems and pho-		
Intende	ed learı	ning outcomes					
The stu especia	dents l ally in t	nave advanced knowledg he field of thermal insula	e of one or more app tion systems and pho	lication or technolog ptovoltaics.	gy areas of engineering work,		
Courses	s (type	number of weekly conta	ct hours, language —	if other than Germa	n)		
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)		
Methoo ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
a) writte date ea	en exai ch or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)		
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
Teachir	ng cycl	9					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	appea	rs in					
Master'	Master's degree (1 major) Nanostructure Technology (2010)						
Master'	s degr	ee (1 major) FOKUS Physi	cs - Nanostructuring ⁻	Fechnology (2010)			
Master'	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)						

Module title					Abbreviation	
Nano-Optics 11-NOP-092-mo1					11-NOP-092-m01	
Module	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of A	Applied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
4	nume	rical grade				
Duratio	on	Module level	Other prerequisites	6		
1 seme	ster	graduate	Certain prerequisite	s must be met to qua	alify for admission to as-	
			sessment. The lectu	ırer will inform stude	nts about the respective details	
			at the beginning of	the course. Registrat	ion for the course will be con-	
			sidered a declaratio	on of will to seek adm	nission to assessment. If stu-	
			dents have obtained	d the qualification fo	r admission to assessment over	
			the course of the se	mester, the lecturer	will put their registration for as-	
			sessment into effec	t. Students who mee	t all prerequisites will be admit-	
			ted to assessment i	n the current or in th	e subsequent semester. For as-	
			sessment at a later	date, students will h	ave to obtain the qualification for	
			admission to asses	sment anew.		
Conten	Its					
Theore quantu	tical pri ım emit	nciples. Focussing of li ters. Light emission in r	ght. Microscopy. Optic nano-tailored environn	al nearfield probes. nents. Plasmons. Op	Nearfield microscopy. Single tical antennas.	
Intend	ed learı	ning outcomes				
The stu	udents l	nave specific and advar	nced knowledge in the	field of nano-optics.	They are familiar with the theo-	
retical	princip	les and application area	as of nano-optics and	with current develop	ments in this field.	
Course	s (type	, number of weekly con	tact hours, language –	- if other than Germa	n)	
R + V (r	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Metho ster, in	d of ass formati	essment (type, scope, on on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt	en exar	mination (approx, 90 m	inutes) or b) oral exam	ination of one candi	date each or oral examination in	
groups	(appro	x. 30 minutes per cand	idate, for modules with	h less than 4 ECTS cr	edits approx. 20 minutes) or c)	
project	: report	(approx. 8 to 10 pages,	time to complete: 1 to	4 weeks) or d) prese	entation/seminar presentation	
(appro	x. 30 m	inutes) ffared When and have	ft	he offered demonder	with a weath and aff an an arm and	
and wi	ll he an	nounced in due form ur	nder observance of Sei	ction 32 Subsection	a ASPO (general academic and	
examir	nation r	egulations) 2009.				
Langua	age of a	ssessment: German, Er	glish			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Workload						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	irs in				
Bachel	or' deg	ree (1 major) Physics (2	010)			
Master's w	ith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exam	n. reg. data re- page 132 / 214	
ring rechno	010gy (201	ונ	cora Master (120 ECT	5) FUKUS PRYSIK - Nanostruki	unechnik - 2010	

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Bachelor' degree (1 major) Physics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title Abbreviation						
Organic Semi	conductor			11-OHL-092-m01		
Module coord	inator		Module offered by			
Managing Dire	ector of the Institute of	Applied Physics	Faculty of Physics a	nd Astronomy		
ECTS Metho	od of grading	Only after succ. con	npl. of module(s)			
5 nume	rical grade					
Duration	Module level	Other prerequisites	-		-	
1 semester	graduate	Admission prerequi	site to assessment: s	successful completion	on of approx.	
		50% of exercises. Co	The lecturer will info	nust be met to qual	ity for admis-	
		ve details at the bes	rinning of the course	Registration for the	course will	
		be considered a dec	laration of will to see	ek admission to ass	essment. If	
		students have obtai	ned the qualification	for admission to as	ssessment	
		over the course of th	ne semester, the lect	urer will put their re	gistration for	
		assessment into eff	ect. Students who m	eet all prerequisites	will be ad-	
		mitted to assessme	nt in the current or in	the subsequent se	mester. For	
		assessment at a late	er date, students will	have to obtain the	qualification	
		for admission to ass	sessment anew.			
Contents						
Physical princ cations.	iples of organic semic	onductors, molecular ar	nd polymer electronio	cs and sensor techn	ology, appli-	
Intended lear	ning outcomes					
The students	have advanced knowle	edge of organic semicon	iductors.			
Courses (type	, number of weekly cor	ntact hours, language –	- if other than Germa	n)		
V + Ü (no info	rmation on SWS (week	ly contact hours) and co	ourse language availa	able)		
Method of ass ster, informati	s essment (type, scope, ion on whether module	, language — if other tha e can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-	
a) written exa groups (appro project report prox. 30 minu	mination (approx. 90 n ox. 30 minutes per cano (approx. 10 pages, tim tes)	ninutes) or b) oral exam didate, for modules with e to complete: 1 to 4 we	ination of one candi n less than 4 ECTS cru eeks) or d) presentat	date each or oral ex edits approx. 20 mir ion/seminar presen	amination in nutes) or c) tation (ap-	
Allocation of J	places					
Additional inf	ormation					
Workload						
Teaching cycl	Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appea	ars in					
Bachelor' deg	ree (1 major) Physics (2	2010)				
Bachelor' deg	ree (1 major) Physics (2	2012)				
Master's degr Master's degr	ee (1 major) Physics (2 ee (1 major) Physics (2	010) 011)				
Master's with 1 majo ring Technology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 FCT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	. reg. data re- urtechnik - 2010	page 134 / 214	
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Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Master's degree (1 major) Technology of Functional Materials (2010) Master's degree (1 major) Technology of Functional Materials (2009) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FOKUS Physics (2011) Master's degree (1 major) FURUS Physics (2012)

Module title				Abbreviation		
Advanced Practical Course Master					11-PFM-072-m01	
Module coordinator				Module offered by		
Managi	ing Dire	ector of the Institute of	Applied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
6	(not) s	successfully completed	11-E1, 11-E2			
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate	11-A3			
Conten	ts					
Princip stems, tic reso superce	les of N proper nance onduct	luclear, Atomic and Mc ties of solids, surfaces (NMR) - quantum Hall (ivity - laser - solid-state	lecular Physics, experi and interfaces. Experir effect - optical pumping e optics	ments on cryogenic t ments on the followir g and spectroscopy ir	emperatures and co ng topics: X-rays - nu n the field of optics -	rrelated sy- clear magne- Hall effect -
Intende	ed learn	ning outcomes				
Knowle suing s ons and	dge of cientifi d acqui	conducting experimen c publications, applica ring practical experime	ts, analysing and docu tion of modern evaluat ental methods.	menting experimenta ion systems, working	al results, basic know g on a task based on	wledge of is- 1 publicati-
Course	s (type,	, number of weekly cor	tact hours, language –	- if other than Germa	n)	
Fortges man or Fortges man or	chritter English chritter English	nen-Praktikum Master 1 nen-Praktikum Master 1	(Advanced Practical Co (Advanced Practical Co	urse Master) Part 1: F urse Master) Part 2:	P (3 weekly contact h P (3 weekly contact h	nours), Ger- nours), Ger-
Methoo ster, in	l of ass formati	e ssment (type, scope, on on whether module	language — if other the can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
This mo 1. Lab o ring t prior ted if 2. Lab o ring t prior ted if	odule h course i the exp to the f a test course i the exp to the f a test	as the following asses in part 1 (Fortgeschritte eriment will be consid- experiment. b) Perform is passed. Students m in part 2 (Fortgeschritte eriment will be consid- experiment. b) Perform is passed. Students m	sment components enen-Praktikum Master, ered successfully comp ing and evaluating the ust prepare an experim enen-Praktikum Master ered successfully comp ing and evaluating the ust prepare an experim	/Advanced Practical pleted if an oral test (experiment will be c pent log (approx. 8 pa /Advanced Practical pleted if an oral test (experiment will be c pent log (approx. 8 pa	Course Master Part 1 approx. 30 minutes) considered successfu ages). Course Master Part 2 approx. 30 minutes) considered successfu ages).	a) Prepa- is passed ully comple- 2): a) Prepa- is passed ully comple-
Language of assessment: German or English Students must register for assessment components 1 and 2 online (details to be announced). Students will be offered one opportunity to retake element a) and/or element b) in the respective semester. To pass an assessment component, they must pass both elements (a and b) in the same semester. To pass this module, students must pass both assessment component 1 and assessment component 2.						
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teachi	ng cvcl	9				
	5 , 5					
Referre	d to in	IPOL (examination ro	gulations for teaching	degree programmec)		
Referre						
Master's wi	ith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge cord Master (120 FCT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- surtechnik - 2010	page 136 / 214
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Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module appears in

Master's degree (1 major) Physics (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)

Module title					Abbreviation	
Physics of Complex Systems 11-PKS-092-r						
Modul	e coord	inator		Module offered by	<u> </u>	
Manag	ing Dire	ector of the Institute of Th	neoretical Physics	Faculty of Physics a	and Astronomy	
	Moth	old of grading	Only after succ. con	nl of module(s)		
6	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate	Certain prerequisite	s must be met to qu	alify for admission to a	as-
sessment. The lecturer will inform students about the re- at the beginning of the course. Registration for the cour sidered a declaration of will to seek admission to asses dents have obtained the qualification for admission to the course of the semester, the lecturer will put their re- sessment into effect. Students who meet all prerequisit ted to assessment in the current or in the subsequent s			nts about the respecti ion for the course will nission to assessment or admission to assess will put their registrati at all prerequisites will e subsequent semest ave to obtain the qual	ive details be con- t. If stu- sment over ion for as- l be admit- cer. For as- lification for		
			admission to assess	sment anew.	·····	
Conter	nts					
 Integ Intro Intro Entro Entro Phase Univ Spin Theo 	ory of cr oduction opy pro se trans versality n glasse ory of ne	n into the physics out of duction and fluctuations sitions away from equilib t eural networks	riumt			
Intend	ed lear	ning outcomes				
The stu methor such s	udents ds of St ystems	have specific and advanc atistical Physics, Compu . They are able to work or	ced knowledge in the tational Physics and n current research pro	field of physics of co non-linear dynamics oblems in this area.	omplex systems. They , which are used to de	know the escribe
Course	es (type	, number of weekly conta	act hours, language –	- if other than Germa	ın)	
R + V (1	no infor	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Metho ster, in	d of ass Iformati	sessment (type, scope, la ion on whether module c	anguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not e	every seme-
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German English						
Allocation of places						
Additio	onal inf	ormation				
Worklo	bad					
Master's w ring Techn	vith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 138 / 214

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Nanostructure Technology (2012) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Mathematical Physics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Mathematical Physics (2012) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Master's with 1 major FOKUS Physics - Nanostructuring Technology (2010)

Module title Abbreviation					Abbreviation	
Quantum Information and Quantum Computing 11-QIC-092-m01						
Module	e coord	inator		Module offered by		
Managi and Ast	ing Dire trophys	ector of the Institute of Th sics	eoretical Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semestergraduateCertain prerequisites must be met to qualify for admission to sessment. The lecturer will inform students about the respect at the beginning of the course. Registration for the course will sidered a declaration of will to seek admission to assessmen dents have obtained the qualification for admission to assess the course of the semester, the lecturer will put their registration sessment into effect. Students who meet all prerequisites will ted to assessment in the current or in the subsequent semes sessment at a later date. students will have to obtain the quality			alify for admission to as- nts about the respective details ion for the course will be con- nission to assessment. If stu- r admission to assessment over will put their registration for as- t all prerequisites will be admit- e subsequent semester. For as- ave to obtain the qualification for			
			admission to assess	sment anew.		
Conten The firs ses the entang tron spi states. Intende The stu They ar	ts t part i main c led stati in state ed learn dents l e able s (type	ntroduces the theoretical quantum algorithms. The tes. One of the main topic es. The third part covers t hing outcomes have an advanced unders to solve simple problems	concepts of quantur second part discuss cs is the production, he description and e standing of quantum of quantum informa	m information and quest experimental post controlling and man xplanation of decone theory and basic known tion theory.	uantum computers. It discus- sibilities for the realisation of ipulation of coherent two-elec- erence of quantum mechanical owledge of quantum calculation.	
D + V (n	o infor	mation on SWS (wookly c	contact hours) and co			
Methoo ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other than be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English Allocation of places						
Additio	nal inf	ormation				
Worklo	ad					
Teachir	ıg cycl	e				

JMU Würzburg • generated 26-Aug-2024 • exam. reg. data record Master (120 ECTS) FOKUS Physik - Nanostrukturtechnik - 2010

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Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)

Module	Module title Abbreviation						
Quantum Mechanics II					11-QM2-092-m01		
Module coordinator				Module offered by			
Managi	ng Dire	ector of the Institute of Th	eoretical Physics	Faculty of Physics and Astronomy			
and Ast	rophys	sics	, 	, ,	,		
ECTS Method of grading Only after succ.			Only after succ. com	pl. of module(s)			
8	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	undergraduate	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details				
			at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu-				
			the course of the competer, the lecturer will put their registration for as				
			sessment into effect	concernent into offect. Students who most all proroquisites will be admit			
			ted to assessment in the current or in the subsequent semester. For as-				
			sessment at a later date, students will have to obtain the gualification for				
			admission to assessment anew.				
Content	's						
"Ouanti	im me	chanics II" constitutes th	e central theoretical	course of the interna	itional Master's program in		
Physics	. It bui	lds upon basics which ar	e acquired in the lect	ure "Quantum mech	anics I" of the Bachelor's de-		
gree. W	hile th	e specific emphasis can	be adjusted individua	ally, the core topics t	hat are supposed to be covered		
should	includ	e:					
1. Secor	nd qua	ntisation: Fermions and	bosons tal				
3. Angu	lar mo	mentum, symmetry opera	ators, Lie Algebras				
4. Scatt	ering t	heory: Potential scatterir	ig, partial wave expan	nsion			
5. Relati	5. Relativistic quantum mechanics: Klein-Gordon equation, Dirac equation, Loretz group, fine structure splitting						
of atom	of atomic spectra						
6. Quan	6. Quantum entanglement						
Intended learning outcomes							
The students acquire in-depth knowledge of advanced quantum mechanics and have a thorough understanding							
of the m	athem	natical and theoretical co	ncepts of the listed to	opics. They are able	to describe or model problems of		
modern theoretical Quantum Physics mathematically, to solve problems analytically, to use approximation me-							
thods and to interpret the results physically. The course is pivotal to subsequent theory courses in Astrophysics,							
High-Energy Physics and Condensed Matter/Solid-State Physics. The course is mandatory for all Master's stu-							
Courses (type, number of weekly contact hours, language — if other than German)							
R + V (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 seme-							
ster, information on whether module can be chosen to earn a bonus)							
a) writte	a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in						
groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c)							
project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes)							
Assessment offered: When and how often assessment will be offered depends on the method of assessment							
and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academi							
examination regulations) 2009.							
Languag	ge of a	ssessment: German, Eng	lish				

Additional information

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Workload

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Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Nanostructure Technology (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)

Module title					Abbreviation			
Quantum Phenomena in electronic correlated Materials					11-QPM-092-m01			
Module coordinator				Module offered by				
Managing Director of the Institute of Ar			oplied Physics	Faculty of Physics and Astronomy				
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)				
6 numerical grade								
Duratio	on	Module level	Other prerequisites					
1 seme	ester	graduate	Certain prerequisite	s must be met to qua	alify for admission to as-			
			sessment. The lectu	nts about the respective detail				
			at the beginning of t	t the beginning of the course. Registration for the course will be con-				
			sidered a declaratio	ission to assessment. If stu-				
			dents have obtained the qualification for admission to assessment over					
			the course of the semester, the lecturer will put their registration for as-					
			sessment into effect. Students who meet all prerequisites will be admit-					
			ted to assessment in the current or in the subsequent semester. For as-					
			sessment at a later	date, students will h	ave to obtain the qualification			
			admission to assess	sment anew.				
Conter	nts			and Constations 5				
Strong	lm effe ly corre	lated systems	Irrent solid-state rese	earch. Correlations. F	ree electron gas and Fermi liqu			
Intend	ed lear	ning outcomes						
The stu	udents	have specific, advanced	knowledge of the cur	rent research on Soli	d-State Physics, especially on			
quantu	im effe	cts in strongly correlated	systems. They are ab	le to understand the	connections between the theo			
retical	descrip	tion of such systems and	the current experim	ental results.				
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)			
R + V (I	no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus)								
a) writt	ten exa	mination (approx. 90 mir	nutes) or b) oral exam	ination of one candi	date each or oral examination			
groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c)								
project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation								
(appro	(approx. 30 minutes)							
and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and								
examination regulations) 2009.								
Language of assessment: German, English								
Allocat	tion of p	olaces						
Additio	onal inf	ormation						
Workload								
Teaching cycle								
Referred to in LPO L (examination regulations for teaching degree programmec)								
Modul	Module appears in							
Master's w ring Techn	rith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- page 144 / 2 purtechnik - 2010			


Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title					Abbreviation			
Many I	Body Q	uantum Theory			11-QVTP-092-m01			
Modul	e coord	inator		Module offered by				
Manag and As	ing Dire trophys	ector of the Institute of sics	Theoretical Physics	Faculty of Physics a	nd Astronomy			
ECTS	Metho	od of grading	Only after succ. cor	npl. of module(s)				
8	nume	rical grade		• • • •				
Durati	on	Module level	Other prerequisites	i				
1 seme	ster	graduate	Certain prerequisite	es must be met to qu	alify for admission t	o as-		
			sessment. The lecturer will inform students about the respective details					
			at the beginning of the course. Registration for the course will be con-					
			sidered a declaration	on of will to seek adm	nission to assessme	nt. If stu-		
			dents have obtaine	d the qualification fo	r admission to asse	ssment over		
			the course of the se	mester, the lecturer	will put their registra	ation for as-		
			sessment into effec	t. Students who mee	t all prerequisites w	ill be admit-		
			ted to assessment i	n the current or in th	e subsequent seme	ster. For as-		
			sessment at a later	date, students will h	ave to obtain the qu	alification for		
			admission to asses	mission to assessment anew.				
Contor	tc	<u> </u>						
	11.5			• • • • •				
Green'	s functi	lly be a course on quan ons.	tum many particle phy	sics approached by i	ne perturbative met	nods using		
An out	line col	lid be:						
1 Singl 2 Revie 3 Diagi 4 Diagi 5 Land 6 Supe 7 One-	 1 Single-particle Green's function 2 Review of second quantization 3 Diagrammatic method using many particle Green's functions at temperature T=0 4 Diagrammatic method for finite T 5 Landau theory of Fermi liquids 6 Superconductivity 							
Intend	ed lear	ning outcomes						
The stuply the	udents acquir	have mastered the prin ed methods to current	ciples of quantum field problems of Theoretica	d theory in many-part Il Solid-State Physics	icle systems. They a	are able to ap-		
Course	s (type	. number of weekly con	tact hours, language –	- if other than Germa	n)			
$P \pm V (r)$	no infor	mation on SWS (week)	w contact hours) and co		able)			
R + V (no information on SWS (weekly contact hours) and course language available)								
ster, in	formati	ion on whether module	can be chosen to earn	a bonus)	tion onered — if not	every seme-		
a) writt	en exa	mination (approx. 90 m	inutes) or b) oral exam	nination of one candi	date each or oral ex	amination in		
groups	appro (x. 30 minutes per cand	lidate, for modules wit	h less than 4 ECTS cr	edits approx. 20 mii	nutes) or c)		
project	t report	(approx. 8 to 10 pages	, time to complete: 1 to	4 weeks) or d) prese	entation/seminar pro	esentation		
(appro	x. 30 M	ffered: When and how	often assessment will	he offered depends (on the method of as	sassmant		
and wi	and will be announced in due form under observance of Section 22 Subsection 2 ASPO (general academic and							
examination regulations) 2009.								
Language of assessment: German, English								
Allocation of places								
Additional information								
Master's w ring Techn	rith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exam 'S) FOKUS Physik - Nanostruki	n. reg. data re- turtechnik - 2010	page 146 / 214		

Workload

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Mathematical Physics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Mathematical Physics (2012) Master's degree (1 major) Mathematical Physics (2012) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title	9	Abbreviation			
Relativistic	Effects in Mesoscopic Sys	tems		11-RMS-092-m01	
Module coo	rdinator		Module offered by		
Managing D and Astroph	irector of the Institute of T hysics	neoretical Physics	Faculty of Physics a	nd Astronomy	
ECTS Met	hod of grading	Only after succ. con	npl. of module(s)		
5 nun	nerical grade				
Duration	Module level	Other prerequisites	i i i i i i i i i i i i i i i i i i i		
1 semester	graduate	Certain prerequisite sessment. The lectu	s must be met to qua rer will inform stude	alify for admission to nts about the respec) as- ctive details
		sidered a declaratio	n of will to seek adm	ission to assessmer	nt. If stu-
		dents have obtained	d the qualification fo	r admission to asses	ssment over
		the course of the se	mester, the lecturer	will put their registra	ition for as-
		sessment into effec	t. Students who mee	t all prerequisites wi	ill be admit-
		ted to assessment i	n the current or in th	e subsequent semes	ster. For as-
		sessment at a later admission to asses	date, students will h sment anew.	ave to obtain the qu	alification for
Contents	•				
Relativistic logical insu	effects in mesoscopic syst lators Majorana fermions	ems Spin-orbit coup	oling Dirac equatio	n Quantum Hall eff	fect Topo-
Intended le	arning outcomes				
The student	s have mastered the math	ematical methods for	the description of re	lativistic quantum sy	ystems,
Courses (ty	n number of weekly cont	act hours language -	if other than Gorma	n)	
	Semi-stimum CMC (module	act nours, tanguage –			
	formation on SWS (weekly			able)	
ster, inform	ation on whether module c	anguage — if other th an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes)					
and will be examination	announced in due form un n regulations) 2009.	der observance of Sec	ction 32 Subsection	3 ASPO (general aca	demic and
Allocation	f nlaces	2001			
Additional information					
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module app	ears in				
Master's with 1 m	ajor FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exam	n. reg. data re-	page 148 / 214
ring Technology (:	2010)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	turtechnik - 2010	

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)

Module title			Abbreviation				
Statistics, Da	ta Analysis and Comput	er Physics		11-SDC-092-m01			
Module coord	linator		Module offered by				
Managing Dir	ector of the Institute of A	Applied Physics	Faculty of Physics a	nd Astronomy			
ECTS Meth	od of grading	Only after succ. com	pl. of module(s)				
4 nume	erical grade						
Duration	Module level	Other prerequisites					
1 semester	graduate	Certain prerequisite	s must be met to qua	alify for admission to	o as-		
sessment. The lecturer will inform students abou				nts about the respec	ctive details		
		at the beginning of t	he course. Registrati	ion for the course wi	ll be con-		
sidered a declaration of will to seek admission to assessment. If				nt. If stu-			
		dents have obtained	the qualification for	r admission to asses	ssment over		
		the course of the se	mester, the lecturer v	will put their registra	ition for as-		
		ted to accossment in	a the current or in the	t all prerequisites w	ill be auffili-		
		sessment at a later	date students will b	e subsequent semes	alification for		
		admission to assess	sment anew.	ave to obtain the qu			
Contents							
Statistics, dat	ta analysis and compute	er physics.					
Intended lear	ning outcomes						
The students Physics.	have specific and advar	nced knowledge in the	field of statistics, da	ta analysis and Com	nputational		
Courses (type	e, number of weekly con	tact hours, language –	· if other than Germa	n)			
R + V (no info	rmation on SWS (weekly	contact hours) and co	urse language availa	able)			
Method of as ster, informat	sessment (type, scope, ion on whether module	language — if other tha can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-		
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English							
Allocation of	places						
Additional in	formation						
Workload							
leaching cycle							
Referred to In	LPUT (examination reg	ulations for teaching-c	legree programmes)				
 Module anne	ars in						
Rachalar' dagrae (1 major) Physics (2010)							
Bachelor' deg	gree (1 major) Physics (2	012)					
Master's with 1 majo	or FOKUS Physics - Nanostructu-	JMU Würzburg • ge	nerated 26-Aug-2024 • exam	. reg. data re-	page 150 / 214		
ring Technology (20:	10)	cord Master (120 ECT)	5) FUKUS Physik - Nanostrukt	urtechnik - 2010			

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Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Nanostructure Technology (2012) Bachelor' degree (1 major) Mathematical Physics (2009) Bachelor' degree (1 major) Mathematical Physics (2012) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title				Abbreviation		
Module	e Type 4	4E Special Training Expe	rimental Physics		11-SF-4E-072-m01	
Module	e coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
4	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Specific Physics	c, adva 5.	nced knowledge of one c	or more of the Faculty	's current research a	reas in the field of Experimental	
Intende	ed learr	ning outcomes				
The stu field of	dents l Experii	nave specific and advanc mental Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the	
Course	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Methoo ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt	en exar	mination (approx, 90 min	utes) or b) talk (appr	ox. 30 minutes) or c)	oral examination of one candi-	
date ea	ich or o	ral examination in group	s (approx. 30 minute	s) or d) project repor	t (approx. 8 pages)	
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)		
Module appears in						
Master's degree (1 major) Physics (2010)						
Master	Master's degree (1 major) Nanostructure Technology (2010)					
Master	's degre	ee (1 major) FOKUS Physi	cs - Nanostructuring	Fechnology (2010)		
Master	's degre	ee (1 major) FOKUS Physi	cs (2010)			
Master	s degre	ee (1 major) FOKUS Physi	cs - Nanostructuring	recnnology (2006)		
Master's degree (1 major) FOKUS Physics (2006)						

Module title					Abbreviation		
Module Type 4I Special Training Interdisciplinary Research				Fields	11-SF-4l-072-m01		
Module	e coord	inator		Module offered by			
Manag the Ins	ing Dire titute o	ectors of the Institute of A f Theoretical Physics and	pplied Physics and Astrophysics	Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
4	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
Specifi	c, adva	nced knowledge of one o	or more of the Faculty	's current research a	reas.		
Intend	ed lear	ning outcomes					
The stu terdisc	idents l iplinary	have specific and advanc v field.	ed knowledge of one	or more current rese	earch areas of the faculty in an in-		
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)		
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)		
Metho ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
a) writt date ea	en exa ach or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 8 pages)		
Allocat	ion of p	olaces					
	-						
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referre	d to in	LPOI (examination regu	lations for teaching-o	legree programmes)			
Module appears in							
Master	Master's degree (1 major) Physics (2010)						
Master	's degr	ee (1 major) Nanostructur	re Technology (2010)	, .			
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)			
Master	's degr	ee (1 major) FUKUS Physic	CS (2010)	Tachnology (cool)			
Master	's degr	ee (1 major) FOKUS Physic ee (1 major) FOKUS Physic	cs (2006)	rechnology (2006)			
master	Master's degree (1 major) FUKUS Physics (2006)						

Module title					Abbreviation	
Module	е Туре и	11-SF-4N-072-m01				
Module	e coord	inator		Module offered by		
Manag	ing Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
4	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Specifi techno	c, adva logy.	nced knowledge of one c	or more of the Faculty	s current research a	reas in the field of nanostructure	
Intende	ed learı	ning outcomes				
The stu field of	dents l nanos	have specific and advanc tructure technology.	ed knowledge of one	or more current rese	earch areas of the faculty in the	
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language avail	able)	
Method ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exai ach or o	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minutes	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 8 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Nanostructure Technology (2010)						
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Fechnology (2010)		
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title					Abbreviation	
Module Type 4T Special Training Theoretical Physics					11-SF-4T-072-m01	
Module	e coord	inator		Module offered by		
Manag and As	ing Dire trophys	ector of the Institute of Th sics	eoretical Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
4	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	lts					
Specifi Physics	c, adva s.	nced knowledge of one o	or more of the Faculty	's current research a	reas in the field of Theoretical	
Intend	ed lear	ning outcomes				
The stu field of	idents l Theore	have specific and advanc etical Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the	
Course	s (type	, number of weekly conta	ct hours, language —	- if other than Germa	n)	
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)	
Metho ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exa ach or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 8 pages)	
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Physics (2010)						
Master	Master's degree (1 major) Nanostructure Technology (2010)					
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)					
Master	's degr	ee (1 major) FOKUS Physic	CS (2010)	Ta ala ara (a a a 4)		
Master	's degr	ee (1 major) FOKUS Physic ee (1 major) FOKUS Physic	cs - Nanostructuring	rechnology (2006)		
	Master's degree (1 major) FORUS Physics (2006)					

Module title					Abbreviation	
Module Type 5E Special Training Experimental Physics					11-SF-5E-072-m01	
Module	coord	inator		Module offered by		
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
Specific Physics	c, adva	nced knowledge of one o	r more of the Faculty	's current research a	reas in the field of Experimental	
Intende	ed learn	ning outcomes				
The stu field of	dents ł Experii	nave specific and advanc mental Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the	
Courses	s (type,	number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Method ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examinat a bonus)	tion offered — if not every seme-	
a) writte date ea	en exar ch or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocati	ion of p	laces				
Additio	nal info	ormation				
Worklo	ad					
Teachir	ng cycl	9				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Physics (2010)						
Master'	Master's degree (1 major) Nanostructure Technology (2010)					
Master'	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)					
Master'	s degre	ee (1 major) FOKUS Physic	CS (2010)	Tachnology (cool)		
Master	s degre	e (1 major) FUKUS Physic	cs - Nanostructuring	recnnology (2006)		
Master's degree (1 major) FOKUS Physics (2006)						

Module title					Abbreviation		
Module Type 5I Special Training Interdisciplinary Research				Fields	11-SF-5l-072-m01		
Module	e coord	inator		Module offered by			
Manag the Ins	ing Dire titute o	ectors of the Institute of A f Theoretical Physics and	pplied Physics and Astrophysics	Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	Its						
Specifi	c, adva	nced knowledge of one c	or more of the Faculty	's current research a	reas.		
Intend	ed lear	ning outcomes					
The stu terdisc	ıdents l iplinary	nave specific and advanc r field.	ed knowledge of one	or more current rese	earch areas of the faculty in an in-		
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)		
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)		
Metho ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
a) writt date ea	en exa ach or c	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)		
Allocat	ion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
Teachi	ng cycl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Master's degree (1 major) Physics (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)							
L							

Module title					Abbreviation	
Module Type 5N Special Training Nanostructure Technology11-SF-5N-072-m01						
Module	e coord	inator		Module offered by		
Managi	ing Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Specifi Techno	c, adva logy.	nced knowledge of one c	or more of the Faculty	s current research a	reas in the field of Nanostructure	
Intende	ed learı	ning outcomes				
The stu field of	dents l nanos	nave specific and advanc tructure technology.	ed knowledge of one	or more current rese	earch areas of the faculty in the	
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)	
V + R (n	infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)	
Methoo ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writt date ea	en exai ich or o	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Nanostructure Technology (2010)						
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)					

Module title		Abbreviation			
Module Type 5T Special Training Theoretical Physics			11-SF-5T-072-m01		
Module coordinator			Module offered by		
Manag and As	ing Dire trophys	ector of the Institute of Th sics	eoretical Physics	Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	lts				
Specifi Physics	c, adva s.	nced knowledge of one o	or more of the Faculty	's current research a	reas in the field of Theoretical
Intende	ed lear	ning outcomes			
The stu field of	idents l Theore	have specific and advanc etical Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	ourse language availa	able)
Metho ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina [.] a bonus)	tion offered — if not every seme-
a) writt date ea	en exai ach or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 10 pages)
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regu	lations for teaching-o	legree programmes)	
Module	e appea	ars in			
Master	's degr	ee (1 major) Physics (2010	0)		
Master	's degr	ee (1 major) Nanostructur	e Technology (2010)		
Master	's degr	ee (1 major) FOKUS Physic	cs - Nanostructuring	Technology (2010)	
Master	's degr	ee (1 major) FUKUS Physic ee (1 major) FOKUS Physic	us (2010) cs - Nanostructuring	Technology (2006)	
Master	's degr	ee (1 major) FOKUS Physic	cs (2006)	(2000)	

Module title Abbreviation			Abbreviation		
Module Type 6E Special Training Experimental Physics			11-SF-6E-072-m01		
Module coordinator		Module offered by			
Managi	ng Dire	ector of the Institute of Ap	plied Physics	Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Specific Physics	c, adva 5.	nced knowledge of one o	r more of the Faculty	's current research a	reas in the field of Experimental
Intende	ed leari	ning outcomes			
The stu field of	dents l Experi	nave specific and advanc mental Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the
Courses	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
Methoo ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) writte date ea	en exai ch or o	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 12 pages)
Allocat	ion of p	olaces			
 Additio	nal inf	ormation			
Worklo	ad				
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
Module	e appea	irs in			
Master'	s degr	ee (1 major) Physics (2010	o)		
Master'	s degr	ee (1 major) Nanostructur	e Technology (2010)	-	
Master'	s degr	ee (1 major) FOKUS Physic	cs - Nanostructuring	Technology (2010)	
Master	s aegro	ee (1 major) FUKUS Physic	CS (2010)	Technology (200()	
Master	s uegro	ee (1 major) FOKUS PRIVSP ag (1 major) FOKUS Physic	cs (2006)	rechnology (2006)	
Master's degree (1 major) FORUS Physics (2006)					

Module title		Abbreviation			
Module Type 6I Special Training Interdisciplinary Research			lisciplinary Research	Fields	11-SF-6I-072-m01
Module coordinator				Module offered by	
Manag the Ins	ing Dire titute o	ectors of the Institute of A f Theoretical Physics and	pplied Physics and Astrophysics	Faculty of Physics a	nd Astronomy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Specifi	c, adva	nced knowledge of one c	or more of the Faculty	's current research a	reas.
Intende	ed lear	ning outcomes			
The stu terdisc	idents l iplinary	have specific and advanc / field.	ed knowledge of one	or more current rese	earch areas of the faculty in an in-
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
Metho ster, in	d of ass formati	sessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) writt date ea	en exai ach or c	mination (approx. 90 min oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 12 pages)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
Module	Module appears in				
Master	's degr	ee (1 major) Physics (201	0)		
Master	's degr	ee (1 major) Nanostructur	re Technology (2010)		
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)	
Master	's degr	ee (1 major) FOKUS Physi	CS (2010)	Teebuelee: (()	
Master	's aegr	ee (1 major) FUKUS Physi	cs - Nanostructuring	rechnology (2006)	
master	Master's degree (1 major) FOKUS Physics (2006)				

Module title			Abbreviation		
Module Type 6N Special Training Nanostructure Technology			/	11-SF-6N-072-m01	
Module coordinator				Module offered by	
Managing Director of the Institute of Applied Physics		plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
6	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Specifi techno	c, adva logy.	nced knowledge of one c	or more of the Faculty	s current research a	reas in the field of nanostructure
Intende	ed learı	ning outcomes			
The stu field of	dents l nanos	nave specific and advanc tructure technology.	ed knowledge of one	or more current rese	earch areas of the faculty in the
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
Method ster, in	l of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) writt date ea	en exai ich or o	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 12 pages)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
Module	e appea	ars in			
Master	's degr	ee (1 major) Nanostructur	re Technology (2010)		
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Fechnology (2010)	
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)				

Module title		Abbreviation		
Module Type 6T Special Training Theoretical Physics			11-SF-6T-072-m01	
Module c	coordinator		Module offered by	
Managing Director of the Institute of Theoretical Physics and Astrophysics		Faculty of Physics a	nd Astronomy	
ECTS N	Method of grading	Only after succ. con	pl. of module(s)	
6 n	numerical grade			
Duration	Module level	Other prerequisites		
1 semest	er graduate			
Contents	5			
Specific, Physics.	advanced knowledge of one o	or more of the Faculty	's current research a	reas in the field of Theoretical
Intended	l learning outcomes			
The stude field of Th	ents have specific and advanc heoretical Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the
Courses	(type, number of weekly conta	ct hours, language –	if other than Germa	n)
V + R (no	information on SWS (weekly o	contact hours) and co	ourse language availa	able)
Method of ster, info	of assessment (type, scope, la rmation on whether module ca	nguage — if other tha an be chosen to earn	an German, examina [.] a bonus)	tion offered — if not every seme-
a) writter date eacl	n examination (approx. 90 min h or oral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 12 pages)
Allocatio	on of places			
Addition	al information			
Workload	d			
Teaching	g cycle			
Referred	to in LPO I (examination regu	lations for teaching-o	legree programmes)	
Module a	appears in			
Master's	degree (1 major) Physics (201	o)		
Master's	degree (1 major) Nanostructur	re Technology (2010)		
Master's	degree (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)	
Master's	degree (1 major) FOKUS Physi	cs (2010)		
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)			Technology (2006)	
Mactoric	Master's degree (1 major) FOKUS Physics (2006)			

Module title		Abbreviation			
Module Type 8E Special Training Experimental Physics			11-SF-8E-072-m01		
Module coordinator		Module offered by			
Managing Director of the Institute of Applied Physics		plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
Specific Physics	c, adva	nced knowledge of one o	r more of the Faculty	's current research a	reas in the field of Experimental
Intende	ed learn	ning outcomes			
The stu field of	dents ł Experii	nave specific and advanc mental Physics.	ed knowledge of one	or more current rese	earch areas of the faculty in the
Course	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)
V + R (n	o infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
Method ster, inf	l of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) writte date ea	en exar ch or o	nination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minutes	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 16 pages)
Allocati	ion of p	olaces			
 Additio	nalinf	ormation			
	natini				
Worklo	ad				
Teachir	ng cycl	9			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
Module	appea	irs in			
Master's degree (1 major) Physics (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006) Master's degree (1 major) FOKUS Physics (2006)					

Module title			Abbreviation		
Module Type 8N Special Training Nanostructure Technology			y	11-SF-8N-072-m01	
Module coordinator				Module offered by	
Managing Director of the Institute of Applied Physics		plied Physics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
8	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Specifi techno	c, adva logy.	nced knowledge of one o	r more of the Faculty	's current research a	reas in the field of nanostructure
Intende	ed learı	ning outcomes			
The stu field of	dents l nanos	nave specific and advanc tructure technology.	ed knowledge of one	or more current rese	earch areas of the faculty in the
Course	s (type	, number of weekly conta	ct hours, language —	if other than Germa	n)
V + R (r	no infor	mation on SWS (weekly o	contact hours) and co	urse language availa	able)
Method ster, in	d of ass formati	s essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) writt date ea	en exai ach or o	mination (approx. 90 min ral examination in group	utes) or b) talk (appr s (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 16 pages)
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regu	lations for teaching-c	legree programmes)	
Module	e appea	ars in			
Master	's degr	ee (1 major) Nanostructur	e Technology (2010)		
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)	
Master	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)				

Module title			Abbreviation		
Module Type 8T Special Training Theo	oretical Physics		11-SF-8T-072-m01		
Module coordinator		Module offered by			
Managing Director of the Institute of T and Astrophysics	heoretical Physics	Faculty of Physics a	nd Astronomy		
ECTS Method of grading	Only after succ. con	npl. of module(s)			
8 numerical grade					
Duration Module level	Other prerequisites				
1 semester graduate					
Contents					
Specific, advanced knowledge of one Physics.	or more of the Faculty	's current research a	reas in the field of Theoretical		
Intended learning outcomes					
The students have specific and advan field of Theoretical Physics.	ced knowledge of one	e or more current rese	earch areas of the faculty in the		
Courses (type, number of weekly conta	act hours, language –	- if other than Germa	n)		
V + R (no information on SWS (weekly	contact hours) and co	ourse language availa	able)		
Method of assessment (type, scope, la ster, information on whether module of	anguage — if other th an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
a) written examination (approx. 90 mi date each or oral examination in group	nutes) or b) talk (appr os (approx. 30 minute	ox. 30 minutes) or c) s) or d) project repor	oral examination of one candi- t (approx. 16 pages)		
Allocation of places					
Additional information					
Workload					
Teaching cycle					
Referred to in LPO I (examination regu	ulations for teaching-	degree programmes)			
Module appears in					
Master's degree (1 major) Physics (201	10)				
Master's degree (1 major) FOKUS Phys	ics - Nanostructuring	Technology (2010)			
Master's degree (1 major) FOKUS Phys	ics (2010)				
Master's degree (1 major) FOKUS Phys	ics - Nanostructuring	Technology (2006)			
Master's degree (1 major) FOKUS Physics (2006)					

Module	e title				Abbreviation	
Thermo	odynan	nics and Economics			11-TDO-092-m01	
Modul	e coord	inator		Module offered by	<u>I</u>	
Manag and As	ing Dire trophys	ector of the Institute of T sics	heoretical Physics	Faculty of Physics a	and Astronomy	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
6	nume	rical grade		• • • •		
Duratio	on	Module level	Other prerequisites	;		
1 seme Conten Energy sion in thermo	and ec the de bodynam	graduate conomic growth, entropy velopment of the univer- ics, the entropy product	Nodule levelOther prerequisitesraduateCertain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for admission to assessment anew.			
ecolog fine the capital nomic system tors lea discus compri	ecological damage and resource consumption. Energy conversion, entropy production and natural resources define the technological and ecological boundaries of industrial economic growth. Part 2 analyses how the factors capital, work, energy and creativity produce the goods and services of a national economy and determine economic growth. The productive power of cheap energy by far exceeds that of expensive labour. Within the curren system of taxes and social security contributions, this discrepancy between power and costs of production factors leads to job cuts, waste of resources, impoverishment of nations and growing social tensions. The course discusses how factor income taxation can counteract this development. Part 3 includes seminar presentations, comprises the techniques of rational energy use and non-fossil energy use, and introduces the optimisation pro-				esources de- v the factors rmine eco- n the current duction fac- lhe course esentations, misation pro-	
Intend	ed lear	ning outcomes	·			
The stu in the v connec mies. T NOTE: his own	The students understand that energy conversion and entropy production are going to play an important role in the world's economic and social development. As an extension of economic theory, the students know the connections between thermodynamics and economy as well as the productive physical basis of modern econo- mies. They are able to apply the acquired knowledge to particular problems. NOTE: this is the module that was run by Prof. Dr. R. Kümmel, who has now retired. As the module was tailored to his own theory of economy, it has yet to be decided whether we will continue to offer this module.					
Course	s (type	, number of weekly cont	act hours, language –	- if other than Germa	ın)	
R + V (r	no infoi	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Metho ster, in	d of as formati	sessment (type, scope, l ion on whether module o	anguage — if other th can be chosen to earn	an German, examina a bonus)	ition offered — if not	every seme-
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English						
Master's w ring Techno	ith 1 majo ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan 'S) FOKUS Physik - Nanostruk	n. reg. data re- turtechnik - 2010	page 168 / 214

Allocation of places

Additional information

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Workload

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Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Physics (2010) Bachelor' degree (1 major) Physics (2012) Bachelor' degree (1 major) Nanostructure Technology (2010) Bachelor' degree (1 major) Nanostructure Technology (2012) Master's degree (1 major) Physics (2010) Master's degree (1 major) Physics (2011) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Master's degree (1 major) FOKUS Physics (2010) Master's degree (1 major) FOKUS Physics (2010)

Module title Abbrev		Abbreviation		
Theoretical So	olid State Physics			11-TFK-092-m01
Module coord	inator		Module offered by	
Managing Dire	ector of the Institute of Th sics	eoretical Physics	Faculty of Physics a	nd Astronomy
ECTS Metho	od of grading	Only after succ. con	npl. of module(s)	
8 nume	rical grade			
Duration	Duration Module level Other prerequisites			
1 semestergraduateCertain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective de at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment the course of the semester, the lecturer will put their registration for sessment into effect. Students who meet all prerequisites will be at ted to assessment in the current or in the subsequent semester. For		alify for admission to as- nts about the respective details ion for the course will be con- nission to assessment. If stu- r admission to assessment over will put their registration for as- t all prerequisites will be admit- e subsequent semester. For as- ave to obtain the qualification for		
		admission to assess	sment anew	
Contents				
Principles of T thods. Magne	Theoretical Solid-State Ph tism. Superconductivity. ning outcomes	ysics. Fermi liquid th	eory. Electron-electro	on interaction. Variational me-
The students have basic knowledge of the theoretical description of solid-state phenomena. They know the cor- responding mathematical or theoretical methods and are able to apply them to basic problems of solid-state theory and to understand the connections to experimental results. The individual students have elaborated on an advanced topic of solid-state theory and have discussed this topic in a seminar presentation.				
Courses (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)
R + V (no infor	mation on SWS (weekly o	contact hours) and co	ourse language avail	able)
Method of ass ster, informat	sessment (type, scope, la ion on whether module c	nguage — if other than be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009.				
Allocation of				
	10.05			
Additional inf	ormation			
Additionat ini	ormation			
Workload				
Teaching cycl	۵			
	~			
L				

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)

Module title					Abbreviation	
Theory of Superconduction				11-TSL-092-m01		
Modul	e coord	linator		Module offered by		
Managing Director of the Institute of Theoretical Physic and Astrophysics			Theoretical Physics	Faculty of Physics and Astronomy		
ECTS	Meth	od of grading	Only after succ. con	Only after succ. compl. of module(s)		
5	nume	erical grade		• • • •		
Durati	on	Module level	Other prerequisites			
1 semester		graduate	Certain prerequisites must be met to qualify for admission to as- sessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be con- sidered a declaration of will to seek admission to assessment. If stu- dents have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for as- sessment into effect. Students who meet all prerequisites will be admit- ted to assessment in the current or in the subsequent semester. For as- sessment at a later date, students will have to obtain the qualification for			
				Sment anew.		
Pheno vity (A eleme Intend The str the pro	menolo ndreev nts. ed lear udents opertie	ogical theory of supercon scattering, Bobolioubov ning outcomes have basic knowledge o s and application areas	nductivity (Ginzburg-La -de Gennes equation, 	andau theory). Meso SQUIDS). Quantum els for the description re able to apply calc	scopic aspects of superconduct computing with superconductiv n of superconductivity. They kno ulation methods to simple pro-	
Course	es (type	e, number of weekly con	tact hours, language –	- if other than Germa	n)	
R + V (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Metho ster, ir	d of as format	sessment (type, scope, ion on whether module	language — if other th can be chosen to earn	an German, examina a bonus)	tion offered — if not every seme	
a) writ groups projec (appro Assess and wi exami Langu	ten exa s (appro t report ox. 30 n sment o ill be an nation age of a	mination (approx. 90 m ox. 30 minutes per cand t (approx. 8 to 10 pages, hinutes) offered: When and how o nounced in due form un regulations) 2009. assessment: German, Er	inutes) or b) oral exam idate, for modules with time to complete: 1 to often assessment will nder observance of Sen nglish	ination of one candi n less than 4 ECTS cr 4 weeks) or d) prese be offered depends o ction 32 Subsection	date each or oral examination in edits approx. 20 minutes) or c) entation/seminar presentation on the method of assessment 3 ASPO (general academic and	
Alloca	tion of	places				
Additi	onal in	formation				
Workl	oad					
Teach	ing cyc	le				
L						
Master's v ring Techr	vith 1 majo ology (20	or FOKUS Physics - Nanostructu- 10)	JMU Würzburg • g cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	1. reg. data re- turtechnik - 2010	

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Bachelor' degree (1 major) Physics (2010)
Bachelor' degree (1 major) Physics (2012)
Bachelor' degree (1 major) Mathematical Physics (2009)
Bachelor' degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) Mathematics (2012)
Master's degree (1 major) Mathematics (2010)
Master's degree (1 major) Physics (2010)
Master's degree (1 major) Physics (2011)
Master's degree (1 major) Nanostructure Technology (2011)
Master's degree (1 major) Nanostructure Technology (2010)
Master's degree (1 major) Mathematical Physics (2012)
Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)
Master's degree (1 major) FOKUS Physics (2010)
Master's degree (1 major) FOKUS Physics (2011)
Master's degree (1 major) Computational Mathematics (2012)

Module title				Abbreviation		
Basic module: Competence for Acquiring Information - for students of natural					41-IK-NW1-072-m01	
sciences						
Module	e coord	inator		Module offered by		
head of	f Unive	rsity Library		University Library		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
1	(not) s	successfully completed				
Duratio	n at a r	Module level	Other prerequisites			
1 Seme	ster	undergraduate				
Conten	ts					
- Searcl - Using - Resou - Online - Overvi - Refere on disc	ation lit h strate the lib irces fo e searcl iew of a ence ma iplines	eracy in an academic cor egies and tools. rary's electronic resource r natural sciences: datab hes and search engines. additional resources (eLe anagement. Some section in the natural sciences).	ntext: s. ases and journals. arning etc.). ns of the module will	focus on particular o	disciplines (wherever possible,	
Intende	ed learn	ning outcomes				
Studen within t differer ses) an they ha with the	ts knov their di tce in q d infor tve four e skills	v what information is nee scipline and beyond in a juality between informati mation they have found c nd, using reference mana needed to find informati	eded for what purpose variety of resources a on they have retrieve on the free web. Stude gement software and on and literature that	e. They are able to lo and to evaluate this i d from specific, rest ents are able to man l eLearning tools. Th i s relevant to the to	information that is relevant information. They recognise the ricted access resources (databa- age and process the information e module aims to equip students pics of their Bachelor's theses.	
Course	Courses (type, number of weekly contact hours, language — if other than German)					
Ü (no ir	format	ion on SWS (weekly cont	act hours) and course	e language available	e)	
Methoo ster, inf	l of ass formati	e ssment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
written	examir	nation (60 minutes)				
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	rs in				
Bachel	Bachelor' degree (1 major) Chemistry (2007)					
Master	Naster's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)					
Master	s uegre 's deore	e (1 major) FORUS PRIVSI	cs - Nanostructuring	Technology (2010)		
musiel	Juegn			(2000)		

Module title				Abbreviation		
Information Literacy for Students of the Natural Sciences (Basic Level) 41-IK-NW1-101-m01					41-IK-NW1-101-m01	
Module coordinator				Module offered by		
head o	of Unive	rsity Library		University Library		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
2	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ester	undergraduate				
Conter	nts					
Inform - Searc - Using - Resou - Onlin - Overv - Refere on disc	ation li ch strate g the lib urces fo e searc view of ence m ciplines	teracy in an academic con egies and tools. orary's electronic resource or natural sciences: datab hes and search engines. additional resources (eLe anagement. Some sectio s in the natural sciences).	ntext: es. bases and journals. earning etc.). ns of the module will	focus on particular	disciplines (wherever possible,	
Intend	ed lear	ning outcomes				
within differe ses) ar they ha with th Course Ü (no i Metho ster, in a) writh 10 min sentati prox. 5 15 min	Students know what information is needed for what purpose. They are able to locate information that is relevant within their discipline and beyond in a variety of resources and to evaluate this information. They recognise the difference in quality between information they have retrieved from specific, restricted access resources (databa- ses) and information they have found on the free web. Students are able to manage and process the information they have found, using reference management software and eLearning tools. The module aims to equip students with the skills needed to find information and literature that is relevant to the topics of their Bachelor's theses. Courses (type, number of weekly contact hours, language — if other than German) Ü (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 seme- ster, information on whether module can be chosen to earn a bonus) a) written examination (approx. 60 minutes) or b) preparing and delivering a presentation with slides (approx. 10 minutes or approx. 5 minutes and approx. 1 page) or c) completing exercises (approx. 10 exercises) or d) pre- sentation without slides (approx. 20 to 30 minutes) or e) preparing and delivering a presentation with slides (approx. 10 minutes) and completing exercises (approx. 10 exercises) or d) pre- sentation without slides (approx. 20 to 30 minutes) or e) preparing and delivering a presentation with slides (approx. 10 minutes) and completing exercises (approx. 5 exercises) or f) presentation without slides (approx. 10 to					
Number Studer ration. science to the be allo	Allocation of places Number of places: 5-50. There is a restricted number of places. If necessary, places will be allocated as follows: Students of the degree programmes of the respective subject-specific focuses will be given preferential conside- ration. The remaining places, if and when any become available, will be allocated to students of the other natural sciences degree programmes. In each of the above-mentioned groups, 30% of places will be allocated according to the number of subject semesters. Among applicants with the same number of subject semesters, places will be allocated by lot. The remaining 70% of places will each be allocated by lot					
Additional information						
Workload						
Tee-b	Teaching and					
Teachi						
Referre	ed to in	LPOI (examination regu	lations for teaching-	degree programmes)		
		_				



Module appears in

Bachelor' degree (1 major) Biochemistry (2011) Bachelor' degree (1 major) Biochemistry (2013) Bachelor' degree (1 major) Biochemistry (2009) Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) No final examination Special study offering (2010)

Module title				Abbreviation			
Second module: Competence for Acquiring Information - for students of natu-					41-IK-NW2-072-m01		
ral sciences							
Module coordinator				Module offered by			
head of University Library University Lib			University Library				
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
2	numei	rical grade					
Duratio	n	Module level	Other prerequisites				
Conton		undergraduate					
Conten	<u></u>	· · ·					
- More i ject-spe - Publis - Subjec - New w - Search - Inform - Copyri - Electro the natu Intende Student cipline tools to formatic ped an academ	ation lit in-dept ecific d. hing ar ct-spec yeb-bas hing for hation s ight and onic pu ural sci ed learr ts have and are locate on retri unders hic cont	eracy in an academic cor h discussion of selected atabases. Ind information practices if ific information retrieval sed information and comment r subject-specific facts (en- search skills for the workpend d citations. blishing. Some sessions ences). Ining outcomes e developed a differentiat e familiar with the possib subject-specific facts in eval tools as well as to us standing of the legal fram text and are able to use in	intext: topics that were cove in the natural science tools, e. g. classificat munication technolog . g. substances and p olace. will focus on particul ed understanding of ilities offered by elec a variety of resources se new web-based te ework surrounding p nformation responsib	ered in the level one es. ions and thesauri. gies. hysical data). ar disciplines (wher the publishing and i tronic publishing. Th s. Students are able chnologies to share ublications, informa	module, e. g. searching sub- ever possible, on disciplines in information practices in their dis- ney are able to use electronic to work with subject-specific in- information. They have develo- tion, and communication in an		
Courses	s (type,	number of weekly conta	ct hours, language —	if other than Germa	n)		
Ü (no in	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
Method ster, inf	l of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	in German, examina a bonus)	tion offered — if not every seme-		
written	examir	nation (60 minutes)					
Allocati	ion of p	olaces					
Additio	nal info	ormation					
Worklo	ad						
Teachir	ng cycl	9					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	appea	rs in					
Bachelor' degree (1 major) Chemistry (2007)							
Master'	Master's degree (1 major) Nanostructure Technology (2010)						
Master'	Aaster's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)						
Master'	Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2006)						

Master's with 1 major FOKUS Physics - Nanostructu-	JMU Würzburg • generated 26-Aug-2024 • exam. reg. data re-	page 177 / 214
ring Technology (2010)	cord Master (120 ECTS) FOKUS Physik - Nanostrukturtechnik - 2010	

Module title					Abbreviation	
Information Literacy for Students of the Natural Science				Advanced Level)	41-IK-NW2-101-m01	
Module coordinator				Module offered by		
head o	of Unive	rsity Library		University Library		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
2	(not)	successfully completed				
Durati	on	Module level	Other prerequisites			
1 seme	ester	undergraduate	Knowledge and skill desirable.	ls equivalent to thos	e achieved in the basic module	
Conter	nts					
- More ject-sp - Publi - Subje - New v - Searc - Inforr - Copyr - Electr	in-dept ecific d shing a ect-spec web-ba ching fo nation right an conic pu	eracy in an academic col th discussion of selected atabases. Ind information practices cific information retrieval sed information and com r subject-specific facts (e search skills for the work d citations. (blishing. Some sessions inces)	ntext: topics that were cove in the natural science tools, e. g. classificat munication technolo g. substances and p place. will focus on particu	ered in the level one es. tions and thesauri. gies. ohysical data). lar disciplines (wher	module, e.g. searching sub- rever possible, on disciplines in	
Intend						
Studer cipline tools to format ped an acader	Students have developed a differentiated understanding of the publishing and information practices in their dis- cipline and are familiar with the possibilities offered by electronic publishing. They are able to use electronic tools to locate subject-specific facts in a variety of resources. Students are able to work with subject-specific in- formation retrieval tools as well as to use new web-based technologies to share information. They have develo- ped an understanding of the legal framework surrounding publications, information, and communication in an academic context and are able to use information responsibly.					
Course	es (type	, number of weekly conta	ct hours, language —	- if other than Germa	ın)	
Ü (no i	nforma	tion on SWS (weekly cont	tact hours) and cours	e language available	e)	
Metho ster, in	d of as format	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
a) writh 10 min sentat prox. 5 15 min	a) written examination (approx. 60 minutes) or b) preparing and delivering a presentation with slides (approx. 10 minutes or approx. 5 minutes and approx. 1 page) or c) completing exercises (approx. 10 exercises) or d) pre- sentation without slides (approx. 20 to 30 minutes) or e) preparing and delivering a presentation with slides (ap- prox. 5 minutes) and completing exercises (approx. 5 exercises) or f) presentation without slides (approx. 10 to 15 minutes) and completing exercises (approx. 5 exercises)					
Alloca	tion of _l	olaces				
Numbe lows: S al cons other r cated a sters, j	Number of places: 10 to 50. There is a restricted number of places. If necessary, places will be allocated as fol- lows: Students of the degree programmes of the respective subject-specific focuses will be given preferenti- al consideration. The remaining places, if and when any become available, will be allocated to students of the other natural sciences degree programmes. In each of the above-mentioned groups, 30% of places will be allo- cated according to the number of subject semesters. Among applicants with the same number of subject seme- sters, places will be allocated by lot. The remaining 70% of places will each be allocated by lot.					
Additio	onal inf	ormation				
Worklo	bad					

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)

Bachelor' degree (1 major) Biochemistry (2013)

Bachelor' degree (1 major) Biochemistry (2009)

Master's degree (1 major) Nanostructure Technology (2011)

Master's degree (1 major) Nanostructure Technology (2010)

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)

Module title					Abbreviation		
Intercu	Intercultural Competence (English, Advanced Level) 42-ENO-IK-072-mo1						
Module coordinator				Module offered by			
head of Language Centre (ZFS)				Language Centre (ZfS)			
ECTS	Metho	od of grading	Only after succ. compl. of module(s)				
3	nume	rical grade	42-ENM2 or 42-ENM	3 or 42-ENM4 or ass	essment test		
Duratio	on l	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts		1				
This mo cultura will allo	This module equips students with knowledge and skills that will enable them to act and communicate in inter- cultural situations. It familiarises them with criteria and options for action and equips them with knowledge that will allow them to adequately interpret intercultural situations and act appropriately.						
Intende	ed learr	ning outcomes					
Studen ly and i flexibly level "E Commo	its deve in writir use th 32 Va on Euro	elop advanced intercultur ng, in a globalised world, e target language, both c ntage" and aims to enab pean Framework of Refer	ral and language skill , taking intercultural a during study abroad p le students to reach l rence for Languages.	s that will allow ther spects into account periods and in the wo evel "C1 Effective (n to communicate, b . They are able to eff orkplace. This modul Operational Proficien	oth verbal- ectively and e builds on ncy" of the	
Course	s (type,	, number of weekly conta	act hours, language –	· if other than Germa	n)		
Ü (no ir	nformat	ion on SWS (weekly cont	tact hours) and cours	e language available	<u>)</u>		
Method ster, in option hension nutes) compre- tes tota weighte Langua Allocat Numbe Additio Worklo	Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) option 1: written multi-component examination (approx. 90 minutes total) with 4 components (reading compre- hension, listening comprehension, writing, communication skills) or option 2: oral assessment (approx. 10 mi- nutes) and written multi-component examination (approx. 60 to 90 minutes total) with 3 components (reading comprehension, listening comprehension, writing) or option 3: 2 to 4 oral assessments (approx. 30 to 60 minu- tes total) as well as 2 to 4 written assessments (approx. 10 to 15 pages total), all components/assessments each weighted 1:1; options will be selected and examination dates be fixed at the beginning of the course Language of assessment: English Allocation of places Number of places: 5-25. Places will be allocated by lot. Additional information 						
Teachi	ng cycl	e					
Referre	ed to in	LPOI (examination regu	llations for teaching-o	legree programmes)			
Module	e appea	rs in					
Bachel Bachel Bachel Bachel Bachel Bachel Bachel Master's wi	or' degr or' degr or' degr or' degr or' degr or' degr or' degr 's degre ith 1 maior	ree (1 major) Chemistry (ree (1 major) Computer S ree (1 major) Business M ree (1 major) Business M ree (1 major) Economatho ree (1 major) Economatho ree (1 major) Business In ee (1 major) Nanostructu FOKUS Physics - Nanostructu	2009) ccience (2010) anagement and Econ anagement and Econ ematics (2009) ematics (2008) formation Systems (2 re Technology (2011) JMU Würzburg • ge	omics (2009) omics (2010) 009) :nerated 26-Aug-2024 • exam	1. reg. data re-	page 180 / 214	
ring Techno	ology (2010	o)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010	puge 100 / 214	
Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module title			Abbreviation			
Cultural Studies (English, Advanced Level) 42-			42-ENO-LK-072-mo	1		
Module	e coord	inator		Module offered by		
head o	f Langu	age Centre (ZFS)		Language Centre (Z	fS)	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	-	
3	nume	rical grade	42-ENM2 or 42-ENM	13 or 42-ENM4 or ass	essment test	
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
This mo and thu	odule fa us enab	amiliarises students w ples them to act appror	ith the culture and soci priately in the target lan	ety of countries when guage. It discusses t	re the target languag the culture, geograp	ge is spoken hy, history,
society	, politio	cal system, and the eco	onomy of said countries	5.		
Intende	ed learı	ning outcomes				
Studen countri in a var dents a workpla	its deve es whe riety of are able ace. Th ional Pi	elop highly advanced la re the target language situations, taking into to effectively and flex is module builds on le roficiency" of the Comr	anguage skills and a the is spoken. They are the account aspects relate ibly use the target lang vel "B2 Vantage" and non European Framewor	orough familiarity wi us able to communica d to the culture and s uage, both during stu aims to enable stud ork of Reference for L	th the culture and so ate, both verbally an society of said count udy abroad periods a ents to reach level " anguages.	ociety of Id in writing, tries. Stu- and in the C1 Effective
Course	s (type	number of weekly cor	tact hours language -	- if other than Germa	n)	
Ü (no ir	format	tion on SWS (weekly co	ontact hours) and cours	e language available	2)	
Metho	d of acc	essment (type scope	language — if other th	an German examina	tion offered — if not	every seme-
ster, in	formati	on on whether module	e can be chosen to earn	a bonus)		every senie-
hension nutes) compre tes tota weighte Langua	n, lister and wri chensic al) as w ed 1:1; ige of a	ning comprehension, v itten multi-component on, listening comprehe ell as 2 to 4 written as options will be selecte ssessment: English	vriting, communication examination (approx. 6 nsion, writing) or option sessments (approx. 10 d and examination date	skills) or option 2: o 50 to 90 minutes tota n 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	ral assessment (app al) with 3 component sments (approx. 30 components/asses ginning of the course	to 60 minu- ts ments each
Allocat	ion of p	olaces				
Numbe	er of pla	ces: 5-25. Places will b	be allocated by lot.			
Additio	onal info	ormation				
Worklo	ad					
Teachi	ng cycl	0				
reaciili	is cycl	5				
Referre	d to in	IPOI (examination re	gulations for teaching.	degree programmec)		
			Sulations for leaching-	acsiec programmes)		
Module	annea	ins in				
Bachel	or' dag	ree (1 major) Chemistr	(2000)			
Bachel	or ueg or dea	ree (1 major) Chennistry	r Science (2010)			
Bachel	or' deg	ree (1 maior) Business	Management and Fcon	iomics (2000)		
Bachel	Bachelor' degree (1 major) Business Management and Economics (2009)					
Bachel	or' deg	ree (1 maior) Economa	thematics (2009)			
Bachel	or' deg	ree (1 maior) Economa	thematics (2008)			
Bachel	or' deg	ree (1 major) Business	Information Systems (2	2009)		
Master's wi	ith 1 major	FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exam	n. reg. data re-	page 182 / 214
ring Techno	ology (201	0)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010	

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Master's degree (1 major) Nanostructure Technology (2011) Master's degree (1 major) Nanostructure Technology (2010) Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Bachelor's degree (1 major, 1 minor) Pedagogy (2009) Magister Theologiae Catholic Theology (2009) No final examination Special study offering (2010)

Module	e title				Abbreviation	
Englisł	n for the	e Natural Sciences 1 (Adv	vanced Level)		42-ENO-NW1-072-m	101
Module	e coord	inator		Module offered by		
head o	fLangu	age Centre (ZFS)		Language Centre (Z	fS)	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
4	nume	rical grade	42-ENM2 or 42-ENM	3 or 42-ENM4 or ass	essment test	
Duratio	n l	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	its		<u> </u>			
This mo to com	odule e munica	quips students with adva te appropriately, in both	anced communication written and oral form	n skills in the target n, in science-oriented	language. These will d situations.	allow them
Intend	ed learı	ning outcomes				
Studen They de lected gy and ped na of the 0	its gain evelop topics i are abl tural sc Commo	sound natural sciences- advanced natural science n corresponding situatio e to communicate effecti iences-specific language n European Framework o	specific communicati es-specific language ns, using language fl ively within the discip skills that are equive f Reference for Langu	ion skills (written an skills that will allow exibly. Students are bline. At the end of th alent to level "C1 E lages.	d oral) in the target l them to communica proficient in scientif ne stage, they will ha ffective Operational	anguage. te about se- ic terminolo- ave develo- Proficiency"
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)	
Ü + Ü (no infoi	mation on SWS (weekly)	contact hours) and co	ourse language avail	able)	
Metho ster, in	d of ass formati	essment (type, scope, la on on whether module ca	inguage — if other that an be chosen to earn mination (approx, oo	an German, examina a bonus) minutes total) with	tion offered — if not	every seme-
hensio nutes) compre tes tota weight Langua Assess	n, lister and wri ehensic al) as w ed 1:1; age of a ment o	ning comprehension, writ itten multi-component ex on, listening comprehens ell as 2 to 4 written asses options will be selected a ssessment: English ffered: once a year, winte	ting, communication camination (approx. 6 ion, writing) or option ssments (approx. 10 and examination date er semester	skills) or option 2: o to to 90 minutes tota 1 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	ral assessment (app al) with 3 component sments (approx. 30 components/asses ginning of the course	orox. 10 mi- ts (reading to 60 minu- sments each
Allocat	ion of p	olaces	-			
Numbe	er of pla	ces: 5-25. Places will be	allocated by lot.			
Additio	onal inf	ormation				
Worklo	ad		-			
			-			
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regu	lations for teaching-o	legree programmes)		
Module	e appea	irs in				
Bachel	or' deg	ree (1 major) Chemistry (2	2009)			
Bachel	or' deg	ree (1 major) Computer S	cience (2010)			
Bachel	or' deg	ree (1 major) Economathe	ematics (2009)			
Bachel	or' deg	ree (1 major) Economathe	ematics (2008)			
Master	's degr	ee (1 major) Nanostructui	re Technology (2011)			
Master	's degr	ee (1 major) Nanostructui	re Technology (2010)			
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Master's w ring Techno	ith 1 major plogy (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostruki	1. reg. data re- turtechnik - 2010	page 184 / 214



Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Bachelor's degree (1 major, 1 minor) Pedagogy (2009) No final examination Special study offering (2010)

Module title				Abbreviation	
English for the Natural Sciences 2 (Advanced Level)42-ENO-NW2-072-m01			101		
Module coord	linator		Module offered by		
head of Lang	Jage Centre (ZFS)		Language Centre (Z	fS)	
ECTS Meth	od of grading	Only after succ. con	pl. of module(s)	,	
4 nume	erical grade	42-ENM2 or 42-ENM	3 or 42-ENM4 or ass	essment test	
Duration	Module level	Other prerequisites	<u> </u>		
1 semester	undergraduate				
Contents		<u> </u>			
This module e to communica	equips students with adva ate appropriately, in both	anced communication written and oral form	n skills in the target l n, in science-oriented	language. These will d situations.	allow them
Intended lear	ning outcomes				
Students gair They develop lected topics gy and are ab ped natural so of the Commo	advanced natural sciences- advanced natural science in corresponding situatio le to communicate effecti ciences-specific language on European Framework o	specific communicati es-specific language ns, using language fl ively within the discip e skills that are equiv f Reference for Langu	ion skills (written and skills that will allow exibly. Students are pline. At the end of th alent to level "C1 E lages.	d oral) in the target l them to communica proficient in scientif ne stage, they will ha ffective Operational	anguage. te about se- ic terminolo- ave develo- Proficiency"
Courses (type	, number of weekly conta	act hours, language –	- if other than Germa	n)	
Ü + Ü (no info	rmation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Method of as ster, informat	sessment (type, scope, la ion on whether module c	anguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
hension, liste nutes) and wr comprehensio tes total) as w weighted 1:1; Language of a Assessment of	ning comprehension, wri itten multi-component ex on, listening comprehens /ell as 2 to 4 written asses options will be selected a assessment: English offered: once a year, sumi	ting, communication kamination (approx. 6 ion, writing) or optior ssments (approx. 10 t and examination date mer semester	skills) or option 2: 0 to 50 to 90 minutes tota 1 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	ral assessment (app al) with 3 component sments (approx. 30 components/asses ginning of the course	rox. 10 mi- ts (reading to 60 minu- sments each
Allocation of	places	-			
Number of pla	aces: 5-25. Places will be	allocated by lot.			
Additional inf	ormation				
Workload					
Teaching cycl	0				
Referred to in	LPOI (examination regu	lations for teaching-o	legree programmes)		
Module appea	ars in				
Bachelor' deg	gree (1 major) Chemistry (2	2009)			
Bachelor' deg	ree (1 major) Economath	ematics (2009)			
Bachelor' deg	ree (1 major) Economath	ematics (2008)			
Master's degr	ee (1 major) Nanostructu	re Technology (2011)			
Master's degr	ee (1 major) Nanostructu	re Technology (2010)			
Master's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)		
Bachelor's de	gree (1 major, 1 minor) Pe	edagogy (2009)			
Master's with 1 majo ring Technology (201	r FOKUS Physics - Nanostructu- 10)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	1. reg. data re- turtechnik - 2010	page 186 / 214





Module title			Abbreviation	
Advanced English Final Exam 42-ENO-PR-072-mo1				42-ENO-PR-072-m01
Modul	e coordinator		Module offered by	
head o	f Language Centre (ZFS)		Language Centre (Z	fS)
ECTS	Method of grading	Only after succ. com	pl. of module(s)	
2	numerical grade		• • • •	
Duratio	on Module level	Other prerequisites		
1 seme	ester undergraduate	Registration for asse	essment: as specifie	d.
Conter	its			
Final e	xam in the upper level of the tar	get language.		
Intend	ed learning outcomes			
In this Operat the exa	exam, students will be expected ional Proficiency" of the Commo am may obtain a UNIcert(R) Leve	l to demonstrate lang n European Framewo l III certificate once th	uage skills that are e rk of Reference for L ne university has bee	equivalent to level "C1 Effective anguages. Students who passed en accredited.
Course	s (type, number of weekly conta	ct hours, language —	if other than Germa	n)
no cou	rses assigned			
Metho ster, in	d of assessment (type, scope, la formation on whether module ca	inguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
reading succes Langua Assess	g and listening comprehension, sfully completed will assessmer age of assessment: English sment offered: once a year (autur	writing and oral com nt be considered succ mn, semester break)	nig the candidate s nunication skills; on cessfully completed	ily if all components have been
Allocat	tion of places			
	······································			
Additio	onal information			
Worklo	bad			
Teachi	ng cycle			
		L		
Referre	ed to in LPO I (examination regu	lations for teaching-o	legree programmes)	
Modul	e appears in			
Bachel	or' degree (1 major) Chemistry (2	2009)		
Bachel	or' degree (1 major) Computer S	cience (2010)		
Bachel	or' degree (1 major) Business M	anagement and Econ	omics (2009)	
Bachel	or' degree (1 major) Business M	anagement and Econ	omics (2010)	
Bachel	or' degree (1 major) Economathe	ematics (2009)		
Bachel	or' degree (1 major) Economathe	ematics (2008)		
Bachel	or' degree (1 major) Business In	formation Systems (2	009)	
Master	's degree (1 major) Nanostructu	re Technology (2010)		
Master	's degree (1 major) FOKUS Physi	cs - Nanostructuring ⁻	Technology (2010)	
Bachel	or's degree (1 major, 1 minor) Pe	edagogy (2009)		
Magist	er Theologiae Catholic Theology	(2009)		

Module	e title				Abbreviation		
French for the Humanities 1 (Advanced Level)42-FRO-GW1-072-m01					01		
Module	e coord	inator		Module offered by			
head o	f Langu	age Centre (ZFS)		Language Centre (Z	fS)		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
4	nume	rical grade	42-FRM2 or 42-FRM3	or 42-FRM4 or asse	ssment test		
Duratio	n	Module level	Other prerequisites	<u> </u>			
1 seme	ster	undergraduate					
Conter	its						
This motor	odule e munica	quips students with adva te appropriately, in both	anced communication written and oral form	n skills in the target , at university and ir	anguage. These will business settings.	allow them	
Intend	ed learı	ning outcomes					
Studen velop a in corre able to ties-sp Europe	nts gain advance espond commi ecific la ean Fran	sound humanities-speci ed humanities-specific la ing situations, using lang unicate effectively within anguage skills that are eq nework of Reference for L	fic communication sk nguage skills that wil guage flexibly. Studer the discipline. At the guivalent to level "C1 anguages.	kills (written and ora l allow them to comm nts are proficient in h e end of the stage, th Effective Operation	I) in the target langu municate about sele numanities terminolo ey will have develop nal Proficiency" of th	age. They de- cted topics ogy and are oed humani- e Common	
Course	s (type	, number of weekly conta	ct hours, language –	· if other than Germa	n)		
Ü (no i	nformat	tion on SWS (weekly cont	act hours) and cours	e language available	2)		
Metho ster, in	d of ass formati	cessment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-	
hensio nutes) compre tes tota weight Langua Assess	n, lister and wri ehensic al) as w ed 1:1; age of a ment o	ning comprehension, writ itten multi-component ex on, listening comprehens ell as 2 to 4 written asses options will be selected a ssessment: French ffered: once a year, winte	ting, communication amination (approx. 6 ion, writing) or option ssments (approx. 10 t and examination date er semester	skills) or option 2: o to to 90 minutes tota a 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	ral assessment (app al) with 3 component sments (approx. 30 f components/asses ginning of the course	rox. 10 mi- ts (reading to 60 minu- sments each	
Allocat	ion of p	olaces					
Numbe	er of pla	ces: 5-25. Places will be	allocated by lot.				
Additio	onal info	ormation					
Worklo	ad						
Teachi	ng cycl	e					
		•					
Referre	ed to in	LPO I (examination regu	lations for teaching-o	legree programmes)			
				<u> </u>			
Module	e appea	urs in					
Bachel	or' deg	ree (1 maior) Economathe	ematics (2009)				
Bachel	or' deg	ree (1 major) Economathe	ematics (2008)				
Master	's degr	ee (1 major) Nanostructur	re Technology (2011)				
Master	's degr	ee (1 major) Nanostructur	re Technology (2010)				
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)			
Bachel	or's de	gree (1 major, 1 minor) Pe	dagogy (2009)				
Magist	er Theo	logiae Catholic Theology	(2009)				
Master's w ring Techno	ith 1 major ology (201	r FOKUS Physics - Nanostructu- o)	JMU Würzburg • ge cord Master (120 ECT	nerated 26-Aug-2024 • exam 5) FOKUS Physik - Nanostruki	1. reg. data re- curtechnik - 2010	page 189 / 214	





Module	e title				Abbreviation	
French for the Humanities 2 (Advanced Level) 42-FRO-GW2-072-m01					101	
Module	e coord	inator		Module offered by		
head o	f Langu	age Centre (ZFS)		Language Centre (Z	fS)	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
4	numer	rical grade	42-FRM2 or 42-FRM3	or 42-FRM4 or asse	ssment test	
Duratio	on l	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	its					
This mo to com	odule e munica	quips students with adva te appropriately, in both	anced communication written and oral form	n skills in the target l , at university and ir	language. These will n business settings.	allow them
Intend	ed learr	ning outcomes				
Studen velop a in corre able to ties-sp Europe	its gain idvance espondi commu ecific la ean Fran	sound humanities-speci ed humanities-specific lar ing situations, using lang unicate effectively within inguage skills that are eq nework of Reference for L	fic communication sl nguage skills that wil guage flexibly. Studer the discipline. At the uivalent to level "C1 anguages.	kills (written and ora l allow them to com nts are proficient in h end of the stage, th Effective Operation	l) in the target langu municate about sele numanities terminolo ey will have develop nal Proficiency" of th	age. They de- cted topics ogy and are oed humani- e Common
Course	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	n)	
Ü (no iı	nformat	ion on SWS (weekly cont	act hours) and cours	e language available	2)	
Metho ster, in	d of ass formati	essment (type, scope, la on on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-
hensio nutes) compre tes tota weight Langua Assess	n, lister and wri ehensio al) as w ed 1:1; (age of a ment o	ning comprehension, writ itten multi-component ex on, listening comprehensi ell as 2 to 4 written asses options will be selected a ssessment: French ffered: once a year, sumr	ting, communication amination (approx. 6 ion, writing) or optior ssments (approx. 10 t and examination date ner semester	skills) or option 2: o to to 90 minutes tota 1 3: 2 to 4 oral asses to 15 pages total), all tes be fixed at the beg	ral assessment (app al) with 3 component sments (approx. 30 t components/asses ginning of the course	rox. 10 mi- ts (reading to 60 minu- sments each
Allocat	ion of p	olaces				
Numbe	er of pla	ces: 5-25. Places will be	allocated by lot.			
Additio	onal info	ormation				
Worklo	ad					
Teachi	ng cycl	9				
Referre	ed to in	LPO I (examination regu	lations for teaching-o	legree programmes)		
Module	e appea	irs in				
Bachel Bachel Master Master Bachel	or' degi or' degi 's degre 's degre 's degre or's deg	ree (1 major) Economathe ree (1 major) Economathe ee (1 major) Nanostructur ee (1 major) Nanostructur ee (1 major) FOKUS Physi gree (1 major, 1 minor) Pe	ematics (2009) ematics (2008) re Technology (2011) re Technology (2010) cs - Nanostructuring rdagogy (2009)	Technology (2010)		
Magist	er Theo	logiae Catholic Theology	(2009)	nerated 26-Aug-2024 • evan	n reg data re-	nage 101 / 214
ring Techno	ology (2010)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010	page 191 / 214





Module title			Abbreviation		
Intercultural Competence (French, Adv	vanced Level)		42-FRO-IK-072-m01		
Module coordinator		Module offered by			
head of Language Centre (ZFS)		Language Centre (Z	fS)		
ECTS Method of grading	Only after succ. com	nl. of module(s)	,		
3 numerical grade	42-FRM2 or 42-FRM3	or 42-FRM4 or asse	ssment test		
Duration Module level	Other prerequisites				
1 semester undergraduate					
Contents					
This module equips students with know cultural situations. It familiarises them will allow them to adequately interpret	This module equips students with knowledge and skills that will enable them to act and communicate in inter- cultural situations. It familiarises them with criteria and options for action and equips them with knowledge that will allow them to adequately interpret intercultural situations and act appropriately.				
Intended learning outcomes					
Students develop advanced intercultur ly and in writing, in a globalised world, flexibly use the target language, both o level "B2 Vantage" and aims to enab Common European Framework of Refer	ral and language skill , taking intercultural a during study abroad p Ile students to reach l rence for Languages.	s that will allow ther spects into account eriods and in the wo evel "C1 Effective (n to communicate, b . They are able to eff orkplace. This modul Operational Proficier	ooth verbal- ectively and e builds on ncy" of the	
Courses (type, number of weekly conta	act hours, language —	if other than Germa	n)		
Ü (no information on SWS (weekly con	tact hours) and cours	e language available	2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) option 1: written multi-component examination (approx. 90 minutes total) with 4 components (reading compre- hension, listening comprehension, writing, communication skills) or option 2: oral assessment (approx. 10 mi- nutes) and written multi-component examination (approx. 60 to 90 minutes total) with 3 components (reading comprehension, listening comprehension, writing) or option 3: 2 to 4 oral assessments (approx. 30 to 60 minu- tes total) as well as 2 to 4 written assessments (approx. 10 to 15 pages total), all components/assessments each weighted 1:1; options will be selected and examination dates be fixed at the beginning of the course Language of assessment: French Allocation of places Number of places: 5-25. Places will be allocated by lot.				every seme- ng compre- rox. 10 mi- ts (reading to 60 minu- sments each e	
Workload					
Teaching cycle					
Referred to in LPO I (examination regu	lations for teaching-c	legree programmes)			
Module appears in					
Bachelor' degree (1 major) Chemistry (:	2009)				
Bachelor' degree (1 major) Business M	anagement and Econ	omics (2009)			
Bachelor' degree (1 major) Business M	anagement and Econ	omics (2010)			
Bachelor' degree (1 major) Economath	ematics (2009)				
Bachelor' degree (1 major) Economath	ematics (2008)				
Bachelor' degree (1 major) Business In	formation Systems (2	009)			
Master's degree (1 major) Nanostructu	re Technology (2011)				
Master's degree (1 major) Nanostructu	re Technology (2010)				
Master's with 1 major FOKUS Physics - Nanostructu- ring Technology (2010)	JMU Würzburg • ge cord Master (120 ECTS	nerated 26-Aug-2024 • exam 6) FOKUS Physik - Nanostrukt	n. reg. data re- curtechnik - 2010	page 193 / 214	

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Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Bachelor's degree (1 major, 1 minor) Pedagogy (2009) Magister Theologiae Catholic Theology (2009) No final examination Special study offering (2010)

Module	e title				Abbreviation	
Intercultural Competence (French, Advanced Level) 42-FRO-LK-072-mo1			1			
Module	e coord	inator		Module offered by		
head o	fLangu	age Centre (ZFS)		Language Centre (7	fS)	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	- /	
3	nume	rical grade	42-FRM2 or 42-FRM	3 or 42-FRM4 or asse	ssment test	
Duratio	n n	Module level	Other prerequisites			
1 Seme	ster	undergraduate				
Conten	te	undergraduate				
This me and the society	odule fa us enat v, politio	amiliarises students wir bles them to act approp cal system, and the eco	th the culture and soci riately in the target lan nomy of said countries	ety of countries when guage. It discusses f 5.	re the target languag the culture, geograp	ge is spoken hy, history,
Intend	ed lear	ning outcomes				
Studen countri in a var dents a workpl Operat	its deve ies whe riety of are able ace. Th ional Pi	elop highly advanced la re the target language i situations, taking into a to effectively and flexi is module builds on lev roficiency" of the Comm	nguage skills and a the is spoken. They are the account aspects relate bly use the target lang rel "B2 Vantage" and non European Framewo	orough familiarity wi us able to communica d to the culture and s uage, both during stu aims to enable stud ork of Reference for L	th the culture and so ate, both verbally ar society of said count udy abroad periods ents to reach level " anguages.	ociety of ad in writing, tries. Stu- and in the C1 Effective
Course	s (type	number of weekly con	tact hours, language –	- if other than Germa	n)	
Ü (no ji	nformat	tion on SWS (weekly co	ntact hours) and cours	e language available	a)	
Metho	doface	assment (type, scope	language — if other th	an Corman, ovamina	tion offered — if not	
ster, in	formati	on on whether module	can be chosen to earn	a bonus)		every seme-
nutes) compre tes tota weight Langua	and wr ehensic al) as w ed 1:1; age of a	itten multi-component of on, listening compreher ell as 2 to 4 written ass options will be selected ssessment: French	examination (approx. 6 nsion, writing) or option essments (approx. 10 d and examination date	560 to 90 minutes tota n 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	al) with 3 componen sments (approx. 30 l components/asses ginning of the course	ts (reading to 60 minu- sments each
Allocat	ion of p	olaces				
Numbe	er of pla	ces: 5-25. Places will b	e allocated by lot.			
Additio	onal inf	ormation				
Worklo						
TOINU						
 T. 11		_				
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination reg	gulations for teaching-o	degree programmes)		
Module	e appea	ars in				
Bachel	or' deg	ree (1 major) Chemistry	(2009)			
Bachel	or' deg	ree (1 major) Business I	Management and Econ	iomics (2009)		
Bachel	or' deg	ree (1 major) Business I	Management and Econ	iomics (2010)		
Bachel	or' deg	ree (1 major) Economat	hematics (2009)			
Bachel	or' deg	ree (1 major) Economat	hematics (2008)	``		
Bachel	or' deg	ree (1 major) Business l	Information Systems (2	2009)		
Master	's degr	ee (1 major) Nanostruct	ure lechnology (2011)	an available of Array -		
Master's w ring Techno	ology (201	o)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exan S) FOKUS Physik - Nanostrukt	1. reg. data re- turtechnik - 2010	page 195 / 214

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module	e title				Abbreviation
Advanced French Final Exam 42-FRO-PR-072-mo1				42-FRO-PR-072-m01	
Module	e coord	inator		Module offered by	-
head o	fLangu	lage Centre (ZFS)		Language Centre (Z	fS)
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)	· ·
2	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	Registration for asse	essment: as specifie	d.
Conten	Its				
Final e	xam in	the upper level of the targ	get language.		
Intend	ed lear	ning outcomes	<u> </u>		
In this Operat the exa	exam, s ional P am may	students will be expected roficiency" of the Commo obtain a UNIcert(R) Leve	l to demonstrate lang n European Framewo l III certificate once th	uage skills that are or ork of Reference for L ne university has bee	equivalent to level "C1 Effective anguages. Students who passed en accredited.
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)
no cou	rses as	signed			
Metho ster, in	d of as format	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-
reading succes Langua Assess	g and li sfully c age of a ment o	stening comprehension, completed will assessmer issessment: French iffered: once a year (autur	writing and oral com nt be considered succ mn, semester break)	munication skills; or cessfully completed	nly if all components have been
Allocat	ion of _l	places			
Additio	onal inf	ormation			
Worklo	ad				
Teachi	ng cycl	Δ			
	is cyci				
Deferre		IDO L (avamination requ	lations for tooshing		
Reierre		LPUT (examination regu	tations for teaching-c	legree programmes)	
 Module	e appea	ars in			
Bachel	or' deg	ree (1 major) Chemistry (2	2009)		
Bachel	or' deg	ree (1 major) Business Ma	anagement and Econ	omics (2009)	
Bachel	or' deg	ree (1 major) Business Ma	anagement and Econ	omics (2010)	
Bachel	or' deg	ree (1 major) Economathe	ematics (2009)		
Bachel	or' deg	ree (1 major) Economathe	ematics (2008)		
Bachel	or' deg	ree (1 major) Business In	formation Systems (2	.009)	
Master	's degr	ee (1 major) Nanostructur	re Technology (2010)		
Master	's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)	
Bachel	or's de	gree (1 major, 1 minor) Pe	dagogy (2009)		
Magist	er Thec	ologiae Catholic Theology	(2009)		

Module title			Abbreviation		
French for Business 1 (Advanced Level)			42-FRO-W1-072-mo	1	
Module coordinate	or		Module offered by		
hoad of Language	Contro (7ES)		Language Centre (7	fC)	
ECTS Mothod of	centre (ZFS)	Only offer cuce com	Language Centre (2	13)	
A numorical	grado	Chily aller Succ. Con	ipi. of module(s)	semant tost	
			3 01 42-1 1 1 1 4 3 5 6		
Duration Mod		Uther prerequisites			
1 sellester und	leigiauuale				
Contents					
This module equip	s students with adv	anced communication	n skills in the target l	language. These will	allow them
to communicate a	ppropriately, in both	written and oral form	i, at university and ir	i business settings.	
Intended learning	outcomes				
Students gain sou guage. They develor nicate about selec ness and economi stage, they will har Effective Operati	nd business- and ec op advanced busine ted topics in corres cs terminology and ve developed busin onal Proficiency" of	conomics-specific con ess- and economics-sp ponding situations, us are able to communic ess- and economics-s the Common Europea	nmunication skills (w becific language skill sing language flexibl ate effectively withir pecific language skil an Framework of Refe	vritten and oral) in the ls that will allow the y. Students are profin the discipline. At the lls that are equivaler erence for Languages	ne target lan- m to commu- icient in busi- ne end of the nt to level "C1 s.
Courses (type, nur	nber of weekly cont	act hours, language —	if other than Germa	n)	
Ü (no information	on SWS (weekly con	tact hours) and cours	e language available	2)	
ster, information o option 1: written m hension, listening nutes) and written comprehension, lis tes total) as well a weighted 1:1; optio	Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) option 1: written multi-component examination (approx. 90 minutes total) with 4 components (reading compre- hension, listening comprehension, writing, communication skills) or option 2: oral assessment (approx. 10 mi- nutes) and written multi-component examination (approx. 60 to 90 minutes total) with 3 components (reading comprehension, listening comprehension, writing) or option 3: 2 to 4 oral assessments (approx. 30 to 60 minu- tes total) as well as 2 to 4 written assessments (approx. 10 to 15 pages total), all components/assessments each				
Language of asses	sment: French				
Assessment offere	d: once a year, wint	ersemester			
Allocation of place	25				
Number of places:	5-25. Places will be	allocated by lot.			
Additional informa	ation				
Workload					
Teaching cycle					
Referred to in LPO	I (examination reg	ulations for teaching-	legree programmes)		
 Module appears in					
Bachelor' degree (Bachelor' degree (1 major) Chemistry (2000)				
Bachelor' degree (1 major) Business N	lanagement and Econ	omics (2009)		
Bachelor' degree (1 major) Business N	lanagement and Econ	omics (2010)		
Bachelor' degree (1 major) Economath	ematics (2009)			
Bachelor' degree (1 major) Economath	ematics (2008)			
Bachelor' degree (1 major) Business Ir	nformation Systems (2	.009)		
Master's degree (1	major) Nanostructu	re Technology (2011)			
Master's with 1 major FOKU ring Technology (2010)	S Physics - Nanostructu-	JMU Würzburg • ge cord Master (120 ECT	nerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- curtechnik - 2010	page 198 / 214

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module title			Abbreviation		
French for Business 2 (Advanced Leve	42-FRO-W2-072-mc	01			
Module coordinator		Module offered by			
head of Language Centre (7ES)		Language Centre (7			
FCTS Method of grading	Only after succ. con	nl of module(s)	15)		
4 numerical grade	42-FRM2 or 42-FRM3	or 42-FRM4 or asse	ssment test		
Purction Module level	Other prorequisites	5 01 42 111114 01 0350			
1 semester undergraduate					
	<u> </u>				
Contents					
This module equips students with adv	anced communication	n skills in the target l	language. These will	allow them	
to communicate appropriately, in both		i, at university and in	i business settings.		
Intended learning outcomes					
guage. They develop advanced busine nicate about selected topics in correspondence ness and economics terminology and stage, they will have developed busine	ess- and economics-specific con ponding situations, us are able to communic ess- and economics-s	becific language skill sing language flexibl ate effectively withir pecific language skil	Is that will allow the y. Students are profine the discipline. At the lls that are equivale	m to commu- icient in busi- ne end of the nt to level "C1	
Effective Operational Proficiency" of	the Common Europea	an Framework of Refe	erence for Language	5.	
Courses (type, number of weekly contained)	act hours, language –	- if other than Germa	n)		
U (no information on SWS (weekly con	itact hours) and cours	e language available	2)		
Method of assessment (type, scope, la ster, information on whether module of	anguage — if other the can be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-	
hension, listening comprehension, wr nutes) and written multi-component en comprehension, listening comprehensi tes total) as well as 2 to 4 written asse weighted 1:1; options will be selected Language of assessment: French Assessment offered: once a year, sum	iting, communication xamination (approx. 6 sion, writing) or option essments (approx. 10 and examination date mer semester	skills) or option 2: o to to 90 minutes tota 1 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	ral assessment (app al) with 3 componen sments (approx. 30 components/asses ginning of the course	to 60 minu- ts (reading to 60 minu- sments each	
Allocation of places	_				
Number of places: 5-25. Places will be	allocated by lot.				
Additional information					
Workload					
Teaching syste					
	_				
Referred to in LPO I (examination regi	ulations for teaching-o	degree programmes)			
Module appears in					
Bachelor' degree (1 major) Chemistry (2009)					
Bachelor' degree (1 major) Business Management and Economics (2009)					
Bachelor' degree (1 major) Business N	lanagement and Econ	omics (2010)			
Bachelor' degree (1 major) Economath	ematics (2009)				
Bachelor' degree (1 major) Economath	ematics (2008)	、 、			
Bachelor' degree (1 major) Business Ir	ntormation Systems (2	2009)			
Master's degree (1 major) Nanostructu	ire lechnology (2011)			(
ring Technology (2010)	JMU Würzburg • ge cord Master (120 ECT	enerated 26-Aug-2024 • exam S) FOKUS Physik - <u>Nanost</u> rukt	i. reg. data re- curtechnik - 2010	page 200 / 214	

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module title				Abbreviation		
Spanish for the Humanities 1 (Advanced Level) 42-SPO-GW1-072-m01				101		
Module coord	linator		Module offered by	<u>.</u>		
head of Lang	Jage Centre (ZFS)		Language Centre (Z	fS)		
ECTS Meth	od of grading	Only after succ. con	pl. of module(s)	,		
4 nume	rical grade	42-SPM2 or 42-SPM	3 or 42-SPM4 or asso	essment test		
Duration	Module level	Other prerequisites				
1 semester	undergraduate					
Contents						
This module of to communication	equips students with adva ate appropriately, in both	anced communication written and oral form	n skills in the target l , in situations involv	language. These will ving humanistic topi	allow them	
Intended lear	ning outcomes					
Students gair velop advanc in corresponc able to comm ties-specific l European Fra	sound humanities-speci ed humanities-specific la ling situations, using lang unicate effectively within anguage skills that are ec mework of Reference for l	fic communication sl nguage skills that wil guage flexibly. Studer the discipline. At the quivalent to level "C1 Languages.	kills (written and ora l allow them to com hts are proficient in h e end of the stage, th Effective Operatior	I) in the target langu municate about sele numanities terminolo ey will have develop nal Proficiency" of th	age. They de- cted topics ogy and are oed humani- e Common	
Courses (type	, number of weekly conta	act hours, language –	if other than Germa	n)		
Ü (no informa	tion on SWS (weekly con	tact hours) and cours	e language available	e)		
Method of as ster, informat	sessment (type, scope, la ion on whether module c	anguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not	every seme-	
hension, liste nutes) and wi comprehension tes total) as w weighted 1:1; Language of a Assessment of	ning comprehension, wri itten multi-component ex on, listening comprehens /ell as 2 to 4 written asses options will be selected a assessment: Spanish offered: once a year, winte	ting, communication kamination (approx. 6 ion, writing) or optior ssments (approx. 10 f and examination date er semester	skills) or option 2: o to 50 minutes tota 1 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	ral assessment (app al) with 3 component sments (approx. 30 components/asses ginning of the course	rox. 10 mi- ts (reading to 60 minu- sments each	
Allocation of	places					
Number of pla	aces: 5-25. Places will be	allocated by lot.				
Additional inf	ormation					
Workload		-				
Tooching ave						
Teaching Cycl						
 Referred to in	IPOI (examination regu	lations for teaching.	legree programmes)			
	Referred to in LPO I (examination regulations for leaching-degree programmes)					
 Module appears in						
Bachelor' deg	ree (1 major) Economath	ematics (2009)				
Bachelor' deg	ree (1 major) Economath	ematics (2008)				
Master's degr	ee (1 major) Nanostructu	re Technology (2011)				
Master's degr	ee (1 major) Nanostructu	re Technology (2010)				
Master's degr	ee (1 major) FOKUS Physi	cs - Nanostructuring	Technology (2010)			
Bachelor's de	gree (1 major, 1 minor) Pe	edagogy (2009)				
Magister Theo	ologiae Catholic Theology	(2009)				
Master's with 1 majo ring Technology (20:	r FOKUS Physics - Nanostructu- 10)	JMU Würzburg • ge cord Master (120 ECT	nerated 26-Aug-2024 • exam S) FOKUS Physik - Nanostrukt	n. reg. data re- curtechnik - 2010	page 202 / 214	





Module title					Abbreviation			
Spanis	Spanish for the Humanities 2 (Advanced Level) 42-SPO-GW2-072-m01							
Module coordinator				Module offered by				
head of Language Centre (ZFS)				Language Centre (Z	fS)			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)				
4	nume	rical grade	42-SPM2 or 42-SPM	3 or 42-SPM4 or ass	essment test			
Duratio	n l	Module level	Other prerequisites					
1 seme	ster	undergraduate						
Conten	ts							
This mo to com	This module equips students with advanced communication skills in the target language. These will allow them to communicate appropriately, in both written and oral form, in situations involving humanistic topics.							
Intende	ed learr	ning outcomes						
Studen velop a in corre able to ties-sp Europe	ts gain dvance spond commu ecific la an Fran	sound humanities-speci ed humanities-specific la ing situations, using lang unicate effectively within anguage skills that are eq nework of Reference for L	fic communication sl nguage skills that wil guage flexibly. Studer the discipline. At the quivalent to level "C1 .anguages.	kills (written and ora I allow them to com hts are proficient in h e end of the stage, th Effective Operation	l) in the target langu municate about sele numanities terminolo ey will have develop nal Proficiency" of th	age. They de- cted topics ogy and are oed humani- e Common		
Course	s (type,	, number of weekly conta	ct hours, language —	· if other than Germa	n)			
Ü (no ir	format	tion on SWS (weekly cont	tact hours) and cours	e language available	a)			
Method ster, in option hensio nutes) compre- tes tota weighte Langua Assess Allocat	d of ass formati 1: writte n, listen and wri ehensio al) as w ed 1:1; e ge of a ment o ion of p	sessment (type, scope, la on on whether module ca en multi-component exar ning comprehension, writ itten multi-component ex on, listening comprehens ell as 2 to 4 written asses options will be selected a ssessment: Spanish ffered: once a year, sumr olaces	inguage — if other that an be chosen to earn mination (approx. 90 ting, communication camination (approx. 6 ion, writing) or option ssments (approx. 10 th and examination date mer semester	an German, examina a bonus) minutes total) with a skills) or option 2: o to to 90 minutes tota 1 3: 2 to 4 oral asses to 15 pages total), all es be fixed at the beg	tion offered — if not 4 components (readi ral assessment (app al) with 3 component sments (approx. 30 f components/asses ginning of the course	every seme- ng compre- rox. 10 mi- ts (reading to 60 minu- sments each		
Numbe	r of pla	ces: 5-25 Places will be	allocated by lot					
Additio	nalinf	ormation						
Auuitio								
Worklo	ad							
Teachi	ng cycl	e						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module	e appea	ars in						
Bachel Bachel Master Master Bachel Magist	or' degr or' degr 's degre 's degre or's degre or's deg er Theo ith 1 major	ree (1 major) Economathe ree (1 major) Economathe ee (1 major) Nanostructur ee (1 major) Nanostructur ee (1 major) NOKUS Physi gree (1 major, 1 minor) Pe logiae Catholic Theology FOKUS Physics - Nanostructu-	ematics (2009) ematics (2008) re Technology (2011) re Technology (2010) cs - Nanostructuring edagogy (2009) (2009) JMU Würzburg • ge	Technology (2010) nerated 26-Aug-2024 • exam	n. reg. data re-	page 204 / 214		
ring Techno	ology (2010	0)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010			





Module title				Abbreviation			
Intercultural Competence (Spanish, Advanced Level) 42-SI							
Module coord	linator		Module offered by				
head of lang	Jage Centre (7ES)		Language Centre (7	fS)			
FCTS Meth	od of grading	Only after succ. com	nl. of module(s)				
3 nume	prical grade	42-SPM2 or 42-SPM	3 or 42-SPM4 or assi	essment test			
Duration	Modulo loval	Other prorequisites	<u> </u>				
1 somostor	undergraduate						
Contonto	undergraduate						
Contents This module equips students with knowledge and skills that will enable them to act and communicate in inter- cultural situations. It familiarises them with criteria and options for action and equips them with knowledge that will allow them to adequately interpret intercultural situations and act appropriately.							
Intended lear	ning outcomes						
Students dev ly and in writi flexibly use th level "B2 Va Common Euro	elop advanced intercultung, in a globalised world ng, in a globalised world ne target language, both antage" and aims to enalopean Framework of Refe	ural and language skill I, taking intercultural a during study abroad p ble students to reach l erence for Languages.	s that will allow ther aspects into account periods and in the wo evel "C1 Effective (n to communicate, b . They are able to eff orkplace. This modul Operational Proficier	ooth verbal- ectively and e builds on ncy" of the		
Courses (type	, number of weekly cont	act hours, language –	- if other than Germa	n)			
Ü (no informa	tion on SWS (weekly cor	ntact hours) and cours	e language available	2)			
Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) option 1: written multi-component examination (approx. 90 minutes total) with 4 components (reading compre- hension, listening comprehension, writing, communication skills) or option 2: oral assessment (approx. 10 mi- nutes) and written multi-component examination (approx. 60 to 90 minutes total) with 3 components (reading comprehension, listening comprehension, writing) or option 3: 2 to 4 oral assessments (approx. 30 to 60 minu- tes total) as well as 2 to 4 written assessments (approx. 10 to 15 pages total), all components/assessments each weighted 1:1; options will be selected and examination dates be fixed at the beginning of the course Language of assessment: Spanish Allocation of places Number of places: 5-25. Places will be allocated by lot. Additional information							
worktoau							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
-							
Module appears in							
Bachelor' deg Bachelor' deg Bachelor' deg Bachelor' deg Bachelor' deg Bachelor' deg Master's deg Master's deg Master's deg	gree (1 major) Chemistry gree (1 major) Business A gree (1 major) Business A gree (1 major) Economath gree (1 major) Economath gree (1 major) Business I gree (1 major) Nanostructu gree (1 major) Nanostructu or FOKUS Physics - Nanostructu	(2009) Management and Econ Management and Econ nematics (2009) nematics (2008) nformation Systems (2 ure Technology (2011) ure Technology (2010)	omics (2009) omics (2010) 2009) enerated 26-Aug-2024 • exam	1. reg. data re-	page 206 / 214		
ring Technology (20:	10)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	urtechnik - 2010			

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010) Bachelor's degree (1 major, 1 minor) Pedagogy (2009) Magister Theologiae Catholic Theology (2009) No final examination Special study offering (2010)

Module title				Abbreviation			
Cultura	Cultural Studies (Spanish, Advanced Level) 42-SPO-LK-072-mo1					1	
Modul	e coord	inator		Module offered by			
head	flore	(750)		Language Cantus (7			
			Only offer	Language Centre (Z	15)		
ECIS	Metho	ba of grading	Unly after succ. con	ipi. of module(s)	a com out to ot		
3	Inume	rical grade	42-5PM2 or 42-5PM	3 or 42-SPM4 or ass	essment test		
Durati	on	Module level	Other prerequisites				
1 seme	ester	undergraduate					
Conter	nts						
This m	odule f	amiliarises students wi	th the culture and soci	ety of countries whe	re the target languag	ge is spoken	
and th	us enal	oles them to act approp	riately in the target lan	guage. It discusses	the culture, geograp	hy, history,	
society	/, politi	cal system, and the eco	nomy of said countries	5.			
Intend	ed lear	ning outcomes					
Studer	nts deve	elop highly advanced la	inguage skills and a th	orough familiarity wi	th the culture and so	ociety of	
countr	ies whe	re the target language	is spoken. They are thu	is able to communic	ate, both verbally ar	nd in writing,	
in a va	riety of	situations, taking into	account aspects relate	d to the culture and s	society of said coun	tries. Stu-	
dents	are able	e to effectively and flexi	bly use the target lang	uage, both during st	udy abroad periods	and in the	
Workpl	ace. In	is module builds on lev	vei "B2 Vantage" and	aims to enable stud	ents to reach level "	C1 Effective	
	s (type	number of weekly con	tact hours language -	- if other than Germa	anguages. m)		
Ü (no i	nforma	tion on SWS (weekly con	intact hours) and cours	e language available	a)		
Matha			language if other th		+ion offered if not		
ster, in	of of assister	ion on whether module	can be chosen to earn	a bonus)	llion offered — If hol	every seme-	
option	1: writt	en multi-component ex	amination (approx. 90	minutes total) with A	4 components (read	ing compre-	
hensio	n, liste	ning comprehension, w	riting, communication	skills) or option 2: o	ral assessment (app	prox. 10 mi-	
nutes)	and wr	itten multi-component	examination (approx. 6	o to 90 minutes tota	al) with 3 componen	ts (reading	
compr	enensio	on, listening comprener	ision, writing) or option	1 3: 2 to 4 oral asses	sments (approx. 30	to 60 minu-	
weight	ai) as w ed 1.1.	ontions will be selected	d and examination date	io 15 pages local), all	inning of the course		
Langua	age of a	ssessment: Spanish		is be lived at the beg		-	
Alloca	tion of	olaces					
Numbe	er of pla	ices: 5-25. Places will b	e allocated by lot.				
Additio	onal inf	ormation					
Workle	bad						
Teachi	ng cvcl	e					
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Bachelor' degree (1 major) Chemistry (2009)							
Bachelor' degree (1 major) Business Management and Economics (2009)							
Bachelor' degree (1 major) Business Management and Economics (2010)							
Bachelor' degree (1 major) Economathematics (2009)							
Bachelor' degree (1 major) Economathematics (2008)							
Bache	lor' deg	ree (1 major) Business	Information Systems (2	2009)			
Master	Master's degree (1 major) Nanostructure Technology (2011)						
Master's w	ith 1 majo	r FOKUS Physics - Nanostructu-	JMU Würzburg • ge	enerated 26-Aug-2024 • exam	n. reg. data re-	page 208 / 214	
ring Techn	ology (201	0)	cord Master (120 ECT	S) FOKUS Physik - Nanostrukt	turtechnik - 2010		

Subdivided Module Catalogue for the Subject FOKUS Physics - Nanostructuring Technology Master's with 1 major, 120 ECTS credits

Module title					Abbreviation	
Advanc	Advanced Spanish Final Exam 42-SPO-PR-072-m01					
Module coordinator				Module offered by		
head o	f Langu	age Centre (ZFS)		Language Centre (Z	fS)	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Registration for asse	essment: as specifie	d.	
Conten	ts					
Final ex	kam in	the upper level of the targ	get language.			
Intende	ed lear	ning outcomes				
In this Operat the exa	exam, s ional P im may	students will be expected roficiency" of the Commo obtain a UNIcert(R) Leve	l to demonstrate lang n European Framewo l III certificate once th	uage skills that are or ork of Reference for L ne university has bee	equivalent to level "C1 Effective anguages. Students who passed en accredited.	
Course	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)	
no cou	rses as	signed				
Methor ster, in	d of ass formati	sessment (type, scope, la ion on whether module ca	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-	
reading succes Langua Assess	g and li sfully c ige of a ment o	stening comprehension, ompleted will assessmer ssessment: Spanish ffered: once a year (autur	writing and oral com nt be considered succ mn, semester break)	munication skills; or cessfully completed	ly if all components have been	
Allocat	ion of _l	olaces				
Additio	nal inf	ormation				
Worklo	be					
WORKIO	au					
Teachi	ng cycl	e				
Referre	ed to in	LPOI (examination regu	lations for teaching-o	legree programmes)		
Module appears in						
Bachelor' degree (1 major) Chemistry (2009)						
Bachelor' degree (1 major) Business Management and Economics (2009)						
Bachelor' degree (1 major) Business Management and Economics (2010)						
Bachelor' degree (1 major) Economathematics (2009)						
Bachelor' degree (1 major) Economathematics (2008)						
Bachelor degree (1 major) Business Information Systems (2009)						
master's degree (1 major) Nanostructure Technology (2010)						
Waster	Master's degree (1 major) FORUS Physics - Nanostructuring Technology (2010)					
Magict	Dachelor S degree (1 major, 1 minor) redagogy (2009) Magister Theologiae Catholic Theology (2000)					
magist		nosiae camolie meology	(2009)			

Module title					Abbreviation	
Spanis	Spanish for Business 1 (Advanced Level) 42-SPO-W1-072-m01					
Module coordinator				Module offered by		
head of	f Langu	age Centre (ZFS)		Language Centre (Z	fS)	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
4	nume	rical grade	42-SPM2 or 42-SPM	3 or 42-SPM4 or ass	essment test	
Duratio	n	Module level	Other prerequisites	i		
1 seme	ster	undergraduate				
Conten	ts					
This mo	odule e munica	quips students with ad	vanced communicatio	n skills in the target 1. at university and ir	language. These will husiness settings.	allow them
Intende	ed learı	ning outcomes		<u>,</u>		
Studen guage. nicate a ness ar stage, t Effect	ts gain They d about s nd ecor they wi tive Op	sound business- and e evelop advanced busin elected topics in corres nomics terminology and Il have developed busin erational Proficiency" o	economics-specific con less- and economics-s sponding situations, us d are able to communic ness- and economics-s of the Common Europea	nmunication skills (w pecific language skil sing language flexibl cate effectively withir specific language ski an Framework of Refe	vritten and oral) in th Is that will allow the y. Students are profi n the discipline. At th Ils that are equivalen erence for Languages	ne target lan- m to commu- icient in busi- ne end of the nt to level "C1 s.
Course	s (type	, number of weekly con	tact hours, language –	- if other than Germa	ın)	
Ü (no ir	nformat	tion on SWS (weekly co	ntact hours) and cours	se language available	e)	
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 seme- ster, information on whether module can be chosen to earn a bonus) option 1: written multi-component examination (approx. 90 minutes total) with 4 components (reading compre- hension, listening comprehension, writing, communication skills) or option 2: oral assessment (approx. 10 mi- nutes) and written multi-component examination (approx. 60 to 90 minutes total) with 3 components (reading comprehension, listening comprehension, writing) or option 3: 2 to 4 oral assessments (approx. 30 to 60 minu- tes total) as well as 2 to 4 written assessments (approx. 10 to 15 pages total), all components/assessments each weighted 1:1; options will be selected and examination dates be fixed at the beginning of the course Language of assessment: Spanish Assessment offered: once a year, winter semester Allocation of places Number of places: 5-25. Places will be allocated by lot. Additional information Workload						
Teachir	ng cycl	۵				
	Scyce					
Referred to in LPO L (examination regulations for teaching-degree programmes)						
Module	e appea	urs in				
Bachele Bachele Bachele Bachele Bachele Master'	or' deg or' deg or' deg or' deg or' deg or' deg 's degro	ree (1 major) Chemistry ree (1 major) Business ree (1 major) Business ree (1 major) Economat ree (1 major) Economat ree (1 major) Business ee (1 major) Nanostruct	(2009) Management and Econ Management and Econ hematics (2009) hematics (2008) Information Systems (2 cure Technology (2011)	nomics (2009) nomics (2010) 2009) enerated 26-Aug-2024 • exan	n. reg. data re-	page 211 / 214
ring Techno	010gy (201	0)	cord Master (120 ECT	S) FUKUS Physik - Nanostruk	turtechnik - 2010	

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Module title					Abbreviation	
Spanis	Spanish for Business 2 (Advanced Level) 42-SPO-W2-072-m01					
Module coordinator				Module offered by		
head of	f Langu	age Centre (ZFS)		Language Centre (Z	fS)	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
4	nume	rical grade	42-SPM2 or 42-SPM	3 or 42-SPM4 or ass	essment test	
Duratio	n	Module level	Other prerequisites	i		
1 seme	ster	undergraduate				
Conten	ts	5				
This mo to com	odule e munica	quips students with ad	vanced communicatio	n skills in the target 1. at university and ir	language. These will n business settings.	allow them
Intende	ed leari	ning outcomes		,		
Studen guage. nicate a ness ar stage, t Effect	ts gain They d about s nd ecor they wi tive Op	sound business- and e evelop advanced busin selected topics in corres nomics terminology and Il have developed busi erational Proficiency" o	economics-specific con less- and economics-s sponding situations, us d are able to communic ness- and economics-s of the Common Europea	nmunication skills (w pecific language skil sing language flexibl cate effectively withir specific language ski an Framework of Refe	vritten and oral) in th ls that will allow the y. Students are profin the discipline. At th Ils that are equivalen erence for Languages	ne target lan- m to commu- icient in busi- ne end of the nt to level "C1 s.
Course	s (type	, number of weekly con	tact hours, language –	- if other than Germa	ın)	
Ü (no ir	nformat	tion on SWS (weekly co	ntact hours) and cours	e language available	e)	
Other methadion on SWS (weekly contact modes) and course language dividiable) Method of assessment (type, scope, language — if other than German, examination offered — if not every seme- ster, information on whether module can be chosen to earn a bonus) option 1: written multi-component examination (approx. 90 minutes total) with 4 components (reading compre- hension, listening comprehension, writing, communication skills) or option 2: oral assessment (approx. 10 mi- nutes) and written multi-component examination (approx. 60 to 90 minutes total) with 3 components (reading comprehension, listening comprehension, writing) or option 3: 2 to 4 oral assessments (approx. 30 to 60 minu- tes total) as well as 2 to 4 written assessments (approx. 10 to 15 pages total), all components/assessments each weighted 1:1; options will be selected and examination dates be fixed at the beginning of the course Language of assessment: Spanish Assessment offered: once a year, summer semester Allocation of places Number of places: 5-25. Places will be allocated by lot. Additional information						
WOFKIO	ad					
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination reg	gulations for teaching-	degree programmes)		
Module	e appea	urs in				
Bacheld Bacheld Bacheld Bacheld Bacheld Bacheld Master'	or' deg or' deg or' deg or' deg or' deg or' deg 's degro	ree (1 major) Chemistry ree (1 major) Business ree (1 major) Business ree (1 major) Economat ree (1 major) Economat ree (1 major) Business ee (1 major) Nanostruct	(2009) Management and Econ Management and Econ hematics (2009) hematics (2008) Information Systems (2 cure Technology (2011)	nomics (2009) nomics (2010) 2009) enerated 26-Aug-2024 • exan	n. reg. data re-	page 213 / 214
ring Techno	ology (201	0)	cord Master (120 ECT	S) FOKUS Physik - Nanostruk	turtechnik - 2010	

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