



Annex SFB

Studienfachbeschreibung (subject description, SFB) for the subject Physics as vertieft studiertes Fach (studied with a focus on the scientific discipline) with the degree "Erste Staatsprüfung für das Lehramt an Gymnasien"

Responsible: Faculty of Physics and Astronomy

Examination regulations version: 2009

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, \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 for the modules in this SFB:	Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not cre- ditable for bonus.
Information on assessment procedures:	Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the me- thod 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 a 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:

LASPO2009

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

20-Feb-2013 (2012-75)

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.

Every module will be described using the following form:

Abbreviation	Module title										
	ECTS	Durat		ion	(in semesters)	Method of grading		Module level			
	Courses			To be spe	o be specified in the form X (y) with course type X abbreviated as specified above and number of weekly contact hours y						
	Method of as	ssessn	nent								
	Only after successful completion of			if applica	f applicable						
	Other prerequisites			if applicable							
	Participants and allocati- on of places			if applicable							
	Additional information			if applicable							
	Referred to in LPO I			if applicable (examination regulations for teaching-degree programmes)							

Scientific Discipline	Scientific Discipline (92 ECTS credits)									
Compulsory Course	Compulsory Courses (92 ECTS credits)									
11-P-DP1-092-m01	Demor	Demonstration Practical Course 1								
	ECTS 6 Duration			n	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	es		P (no	information on SWS	(weekly contact hou	rs) and course language availat	ole)		
	Metho	Aethod of assessment oral examination of one candidate each (approx. 10 minutes) or oral examination in groups (groups of 2, approx. 20 minutes)								
	Referred to in LPO I § 53 (1) 1. a) Physik Mechanik, Wärmelehre, Elektrizitätslehre, Optik, der speziellen Relativitätstheorie § 53 (1) 1. c) Physik physikalische Grundpraktika § 77 (1) 1. d) Physik "physikalische Praktika"							tstheorie		
11-P-DP2-092-m01	Demor	nstration	Practica	l Cours	ie 2					
	ECTS 5 Duratio		Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	es		P (no information on SWS (weekly contact hours) and course language available)						
	Metho	d of asse	essment	oral e	xamination of one ca	andidate each (appro	ox. 10 minutes) or oral examinat	ion in groups (g	groups of 2, approx. 20 minutes)	

11-P-E-092-m01	Experi	mental	Physics 1 a	nd 2 - Teaching Post (M	Aechanics, Thermodynamics, Oscillations, Waves	s, Electrics, Magneti	sm and Optics)
	ECTS	22	Duration	2 semester	Method of grading numerical grade	Modul level	undergraduate
	Course	25		Experimentelle Physik 1 semester) Experimentelle Physik 2 mer semester) Mathematische Rechen year (winter semester) Mathematische Rechen year (summer semester)	(Experimental Physics 1): V (4 weekly contact ho (Experimental Physics 2): V (4 weekly contact ho methoden 1 (Mathematical Methods 1): V (2 week methoden 2 (Mathematical Methods 2): V (2 week)	urs) + Ü (2 weekly co ours) + Ü (2 weekly c kly contact hours) + ekly contact hours) +	ontact hours), once a year (winter contact hours), once a year (sum- Ü (1 weekly contact hour), once a Ü (1 weekly contact hour), once a
	Metho	d of ass	essment	This module has the fol 1. Topics covered in lect (approx. 120 minutes in groups (approx. 30 2. Topics covered in lect (approx. 120 minutes in groups (approx. 30 3. Topics covered in lect ses or talk (approx. 14 4. Topics covered in lect ses or talk (approx. 14 5. Topics covered in lect usually chosen) or wr Successful completion of through 4. To qualify for admission sessment components 5 Students must register for To pass this module, stu- must then pass assess The grade achieved in a	lowing assessment components tures and exercises in part 1 (Experimentelle Phys s, usually chosen) or oral examination of one can obminutes, groups of 2 candidates). tures and exercises in part 2 (Experimentelle Phys s, usually chosen) or oral examination of one can obminutes, groups of 2 candidates). tures and exercises in part 2 (Mathematische Rec 5 minutes, usually chosen) or written examination tures and exercises in part 2 (Mathematische Rec 5 minutes, usually chosen) or written examination tures and exercises in part 2 (Mathematische Rec 5 minutes, usually chosen) or written examination tures and exercises in parts 1 and 2: oral examina- ritten examination (approx. 120 minutes). of approx. 50% of practice work each is a prerequ n to assessment component 5, students must pas 3 and 4. Students are highly recommended to att Experimentelle Physik 2 (Experimental Physics 2) liscussed in Mathematische Rechenmethoden (M for assessment components 1 through 5 online (c udents must first pass assessment component 1 ment component 5.	sik 1 (Experimental F didate each (approx sik 2 (Experimental didate each (approx chenmethoden 1 (Ma n (approx. 60 minute chenmethoden 2 (Ma n (approx. 60 minute ation of one candida usite for admission ss assessment comp end both courses Ex). The topics discuss lathematical Method details to be announ or 2 as well as asses	Physics 1)): written examination . 20 minutes) or oral examination Physics 2)): written examination . 20 minutes) or oral examination athematical Methods 1)): exerci- es) athematical Methods 2)): exerci- es) ite each (approx. 30 minutes, to assessment components 1 conent 1 and/or 2 as well as as- ceperimentelle Physik 1 (Expe- sed in these two courses, to- ds) 1 and 2, will be covered in as- ced). ssment components 3 and 4 and odule as a whole.
	other p	orerequi	sites	Bridge course Mathema logical thinking skills.	atik (Mathematics) for first-semester students and	d sound reading, wri	ting and maths skills as well as
	Referre	ed to in	LPO I	§ 53 (1) 1. a) Physik Mec § 77 (1) 1. a) Physik "Gru	chanik, Wärmelehre, Elektrizitätslehre, Optik, der undlagen der Experimentalphysik"	speziellen Relativitä	ätstheorie

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11-P-FP-092-m01	Advanced Practical Course										
	ECTS	4	Duration	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Course	S		P (no	information on SWS	6 (weekly contact hou	rs) and course language availa	ble)			
	Metho	d of ass	essment	Prepa	reparing, performing and evaluating (lab report) the experiments will be considered successfully completed if a Testat (ex-						
				am) is	passed. Experimer	nts that were not succ	cessfully completed can be repo	eated once. Tall	k (with discussion; approx. 30 mi-		
				succe	nutes) to test the candidate's understanding of the physics-related contents of the module component. Talks that were not successfully completed can be repeated once. Both components of the assessment have to be successfully completed.						
	Referred to in LPO I			§ 77 (77 (1) 1. d) Physik "physikalische Praktika"						
11-P-GK-092-m01	Genera	l Conce	pts								
	ECTS 8 Duration			n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course	S		V + Ü	(no information on S	SWS (weekly contact	hours) and course language av	/ailable)			
	Method of assessment			a) wri in gro	written examination (approx. 90 minutes; usually chosen) or b) oral examination of one candidate each or oral examination of groups (approx. 20 minutes per candidate)						
	other prerequisites			Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respec- tive details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admissi- on 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 as- sessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the quali- fication for admission to assessment anew. Successful completion of the courses of modules 11-P-E and 11-P-MP1 is a prere- quisite for participation in module 11-P-GK.							
	Referre	ed to in l	LPO I	§ 77 (§ 77 (1) 1. b) Physik "Fortgeschrittene Experimentalphysik"						
11-P-MP1-092-m01	Moder	n Physic	CS 1								
	ECTS	8	Duration	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course	S		V + Ü	(no information on S	SWS (weekly contact	hours) and course language av	vailable)			
	Metho	d of ass	essment	a) wri tion ir	a) written examination (approx. 120 minutes; usually chosen) or b) oral examination of one candidate each or c) oral examina- tion in groups (approx. 30 minutes per candidate)						
	other prerequisites			Prior completion of module 11-P-E is recommended. 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.							
	Referred to in LPO I			§ 53 (§ 53 (§ 77 (1) 1. a) Physik Mech 1) 1. b) Physik Aufba 1) 1. c) Physik "Theo	anik, Wärmelehre, El au der Materie pretische Physik"	ektrizitätslehre, Optik, der spez	ziellen Relativitä	ätstheorie		

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11-P-MP2-092-m01	Moder	n Physic	5 2							
	ECTS	6	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	S		V + Ü	V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Methoo	d of asse	essment	a) writ in gro	a) written examination (approx. 90 minutes; usually chosen) or b) oral examination of one candidate each or oral examination in groups (approx. 20 minutes per candidate)					
	other prerequisites Prior successful completion of modules 11-P-E and 11-P-MP1 is recommended. Certain prerequisites must be m admission to assessment. The lecturer will inform students about the respective details at the beginning of the gistration for the course will be considered a declaration of will to seek admission to assessment. If students h the qualification for admission to assessment over the course of the semester, the lecturer will put their registr sessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in th semester. For assessment at a later date, students will have to obtain the qualification for admission to assess								uisites must be met to qualify for e beginning of the course. Re- nent. If students have obtained ill put their registration for as- the current or in the subsequent mission to assessment anew.	
	Referre	d to in L	PO I	§ 77 (1) 1. b) Physik "Fortg	eschrittene Experime	entalphysik"			
11-P-MP3-092-m01	Moder	n Physic	s 3							
	ECTS	5	Duratio	1	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	S		V + Ü	(no information on S	SWS (weekly contact	hours) and course language ava	ailable)		
	Methoo	d of asse	essment	a) wri in gro	tten examination (ap ups (approx. 20 min	oprox. 90 minutes; u utes per candidate)	sually chosen) or b) oral examin	ation of one ca	ndidate each or oral examination	
	other prerequisites			Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respec- tive details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admissi- on 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 as- sessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the quali- fication for admission to assessment anew.						
	Referre	d to in L	PO I	§ 77 (1) 1. b) Physik "Fortg	eschrittene Experime	entalphysik"			

11-P-PA-112-m01	Lab Course A										
	ECTS	5	Duration	1 semester	Method of grading (not) successfully completed Modul level undergraduate						
	Course	<u>.</u> ?S		Auswertung von Messungen und Fehlerrechnung (Measurements and Data Analysis): V (1 weekly contact hour) + Ü (1 weekly contact hour), once a year (winter semester) Beispiele aus Mechanik, Wärmelehre und Elektrik (Examples from Mechanics, Thermodynamics and Electricity, BAM): P (2 weekly contact hours)							
	Metho	d of ass	essment	This module has the 1. Topics covered in 2. Lab course: a) Pre (exam) is passed. (approx. 30 minute Successful completion To pass assessment retake element a) an Students must regist	e following assessment components 1 lectures and exercises: written examination (approx. 120 minutes) eparing, performing and evaluating the experiments will be considered successfully completed if a Testat b) Talk (with discussion) to test the students' understanding of the physics-related contents of the course ites). tion of approx. 50% of practice work is a prerequisite for admission to assessment component 1. at component 2, students must pass both elements a) and b). Students will be offered one opportunity to ind/or element b).						
				Students must register for assessment components 1 and 2 online (details to be announced). Students must attend Auswertung von Messungen und Fehlerrechnung (Measurements and Data Analysis) before attendir Beispiele aus Mechanik, Wärmelehre und Elektrik (Examples from Mechanics, Thermodynamics and Electricity). To pass this module, students must pass both assessment component 1 and assessment component 2.							
	Referre	ed to in l	PO I	§ 53 (1) 1. a) Physik A § 53 (1) 1. c) Physik p § 77 (1) 1. a) Physik " § 77 (1) 1. d) Physik "	Mechanik, Wärmelehre, Elektrizitätslehre, Optik, der speziellen Relativitätstheorie physikalische Grundpraktika "Grundlagen der Experimentalphysik" "physikalische Praktika"						

11-P-PB-L-092-m01	Lab Course B										
	ECTS 6	Duration	ı	1 semester	Method of grading	(not) successfully com	npleted	Modul level	undergraduate		
	Courses		Elektr Atom-	izitätslehre und Sch und Kernphysik (At	naltungen (Electricity tomic and Nuclear Ph	and Circuits, ELS): P (2 ysics, AKP): P (2 weekly	veekly colly colly contact l	ontact hours) hours)			
	Method of asse	essment	This n	his module has the following assessment components							
			1. Lab Tes cou	Lab course in part 1: a) Preparing, performing and evaluating the experiments will be considered successfully completed if a Testat (exam) is passed. b) Talk (with discussion) to test the students' understanding of the physics-related contents of the course (approx. 30 minutes).							
			2. Lab a Te the	a Testat (exam) is passed. b) Talk (with discussion) to test the students' understanding of the physics-related contents of the course (approx. 30 minutes).							
			Stude Stude must	tudents must register for assessment components 1 and 2 online (registration deadline to be announced). tudents will be offered one opportunity to retake element a) and/or element b). To pass an assessment component, they nust pass both elements a) and b).							
			Students must attend Elektrizitätslehre und Schaltungen (Electricity and Circuits) courses before attending Atom- und Kern- physik (Atomic and Nuclear Physics) courses. To pass this module, students must pass both assessment component 1 and assessment component 2.								
	Modules succe completed	essfully	11-P-P	A							
	Referred to in L	.PO I	§ 53 (1) 1. a) Physik Mechanik, Wärmelehre, Elektrizitätslehre, Optik, der speziellen Relativitätstheorie § 53 (1) 1. b) Physik Aufbau der Materie								
				§ 53 (1) 1. c) Physik physikalische Grundpraktika							
			§ 77 (1) 1. b) Physik "Fortgeschrittene Experimentalphysik" § 77 (1) 1. d) Physik "physikalische Praktika"								
11-P-LLL-092-m01	Practice in Stu	dent Lab									
	ECTS 2	Duration	1	1 semester	Method of grading	numerical grade		Modul level	undergraduate		
	Courses		S (no	information on SWS	5 (weekly contact hou	irs) and course languag	ge availab	le)			
	Method of assessment		a) 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, unless different length and mode of oral examination of one candidate each or oral examination in groups stated) or b) term paper (approx. 6 to 12 pages, time to complete: 1 to 4 weeks)								
	other prerequis	sites	Modu	les 11-P-E, 11-P-FD1,	11-P-DP1 are recomm	iended.					
	Referred to in LPO I		§ 53 (§ 53 (§ 77 (1) 1. a) Physik Mech 1) 1. c) Physik physil 1) 1. d) Physik "phys	anik, Wärmelehre, El kalische Grundprakti sikalische Praktika"	ektrizitätslehre, Optik, ka	der spezie	ellen Relativitä	tstheorie		

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11-P-TP1-092-m01	Theore	tical Phy	ysics 1 (T	eachin	g Post)					
	ECTS	8	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	S		V + Ü	V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Methoo	d of asse	essment	a) wri on in	a) written examination (approx. 120 minutes; usually chosen) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate)					
	other prerequisites			Certai tive d on to the le sessn ficatio	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respec- tive 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 for admission to assessment will have to obtain the qualification for admission to assessment anew.					
	Referre	d to in L	PO I	§ 77 (§ 77 (1) 1. c) Physik "Theoretische Physik"					
11-P-TP2-092-m01	Theoretical Physics 2									
	ECTS	7	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate	
	Course	S		V + Ü	V + Ü (no information on SWS (weekly contact hours) and course language available)					
	Method of assessment			a) written examination (approx. 120 minutes; usually chosen) or b) oral examination of one candidate each or oral examinati- on in groups (approx. 30 minutes per candidate)						
	other prerequisites			Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respec- tive details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admissi- on 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 as- sessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the quali- fication for admission to assessment anew.						
	Referre	d to in L	PO I	§ 77 (1) 1. c) Physik "Theor	etische Physik"				

Feaching (10 ECTS credits)									
11-P-FD1-092-m01	Teaching 1								
	ECTS 4 Duration	on 1 semester	Method of grading numerical grade	Modul level undergraduate					
	Courses	Einführung Fachdidaktik Einführung Fachdidaktik (summer semester)	Einführung Fachdidaktik 1 (Introduction to Didactics 1): S (2 weekly contact hours), once a year (summer semester) Einführung Fachdidaktik 2 (Introduction to Didactics 2): V (1 weekly contact hour) + Ü (1 weekly contact hour), once a year (summer semester)						
	Method of assessment	 This module has the following assessment components 1. Seminar (Einführung Fachdidaktik 1/Introduction to Didactics 1): term paper (approx. 8 pages) or presentation (approx. 30 minutes) or oral examination of one candidate each (approx. 10 minutes) or oral examination in groups (approx. 20 minutes, groups of 2 candidates). 2. Topics covered in lectures and exercises (Einführung Fachdidaktik 2/Introduction to Didactics 2): written examination (approx. 45 minutes) or term paper (approx. 8 pages) or presentation (approx. 30 minutes) or oral examination of one candidate each (approx. 45 minutes) or oral examination in groups (approx. 8 pages) or presentation (approx. 30 minutes) or oral examination of one candidate each (approx. 45 minutes) or oral examination in groups (approx. 20 minutes) or oral examination of one candidate each (approx. 10 minutes) or oral examination in groups (approx. 20 minutes) or oral examination of one candidate each (approx. 10 minutes) or oral examination of one candidate each (approx. 10 minutes) or oral examination in groups (approx. 20 minutes) or oral examination of one candidate each (approx. 10 minutes) or oral examination in groups (approx. 20 minutes, groups of 2 candidates). 							
		To pass this module, students must pass both assessment component 1 and assessment component 2.							
	other prerequisites	Prior completion of mod	ule 11-P-E recommended.						
	Additional Information	Important information on number and allocation of places: There is a restricted number of places. Should the number of app- lications exceed the number of available places, places will be allocated as follows: Places will be allocated according to the number of subject semesters/ECTS credits (1st: studying in 3rd subject semester or higher, 2nd: has achieved a minimum of 50 ECTS credits, and 3rd: highest number of subject semesters if studying in 1st or 2nd subject semester). Among applicants with the same number of subject semesters/ECTS credits, places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available.							
	Referred to in LPO I	 § 36 (1) 7. Didaktik der Grundschule Physik § 38 (1) 1. Didaktik der Hauptschule Physik § 38 (1) 1. Didaktik der Mittelschule Physik § 53 (1) 2. Physik Fachdidaktik § 77 (1) 1. a) Physik "Grundlagen der Experimentalphysik" § 77 (1) 2. Physik Fachdidaktik 							
11-P-FD2-092-m01	Teaching Concepts Consolidating Seminar								
	ECTS 2 Duration	on 1 semester	Method of grading numerical grade	Modul level undergraduate					
	Courses	S (no information on SW	/S (weekly contact hours) and course language a	available)					
	Method of assessment	 a) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) presentation/seminar presentation (approx. 30 minutes) or d) oral examination of one candidate each (approx. 10 minutes) or oral examination in groups (approx. 20 minutes, groups of 2) 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. 							
	other prerequisites								
	Referred to in LPO I	§ 77 (1) 2. Physik Fachdi	daktik						
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11-P-FD-LLL-092-	Student Lab Supervision (Physics)										
m01	ECTS	4	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Courses		S (no	(no information on SWS (weekly contact hours) and course language available)							
	Method of assessment			a) writ amina	a) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) oral ex- amination of one candidate each (approx. 10 minutes) or oral examination in groups (approx. 20 minutes, groups of 2)						
	other prerequisites			Certai tive d on to the le sessm ficatio	n prerequisites mus etails at the beginnin assessment. If stude cturer will put their r nent in the current on on for admission to a	t be met to qualify fo ng of the course. Reg ents have obtained th registration for assess r in the subsequent s assessment anew.	r admission to assessment. Th istration for the course will be ne qualification for admission t sment into effect. Students who emester. For assessment at a l	e lecturer will in considered a de o assessment o o meet all prerec ater date, stude	form students about the respec- claration of will to seek admissi- ver the course of the semester, quisites will be admitted to as- nts will have to obtain the quali-		
	Referred to in LPO I			§ 53 (§ 77 (1) 2. Physik Fachdida 1) 2. Physik Fachdida	aktik aktik					

Freier Bereich (general as well as subject-specific electives)

Teaching degree students must take modules worth a total of 15 ECTS credits in the area Freier Bereich (general as well as subject-specific electives) (Section 9 LASPO (general academic and examination regulations for teaching-degree programmes)). To achieve the required number of ECTS credits, students may take any modules from the areas below.

Freier Bereich -- interdisciplinary: The interdisciplinary additional offer for a teaching degree can be found in the respective Annex "Ergänzende Bestimmungen für den "Freien Bereich" im Rahmen des Studiums für ein Lehramt".

Physics

(Freier Bereich (general as well as subject-specific electives) -- subject specific)

11-FD-WP-092-m01 W- and P-Courses in Secondary Classes of Gymnasium (Physics)

ECTS	3	Duratior	1	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
Courses			S + P	5 + P (no information on SWS (weekly contact hours) and course language available)						
Method of assessment			a) writ classe Langu	ten elaboration (ap) s at a Gymnasium (a age of assessment:	prox. 10 to 15 pages) approx. 3 hours) German, English	or b) presentation/seminar pr	esentation (appr	ox. 30 minutes) or c) sitting in on		
Participants and allo- cation of places			Numb subje studyi will be	er of places: 16. Plac ct semester or highe ing in 1st or 2nd sub e allocated by lot. A	ces will be allocated r, 2nd: has achieved ject semester). Amor waiting list will be ma	according to the number of su a minimum of 50 ECTS credits ig applicants with the same nu aintained and places re-alloca	bject semesters, , and 3rd: highes Imber of subject ted by lot as the	/ECTS credits (1st: studying in 3rd st number of subject semesters if semesters/ECTS credits, places y become available.		

11-P-EL-092-m01	Teaching Seminar Fundamental Principles								
	ECTS 4 Duratio		n	1 semester	Method of grading (not) successfully completed Modul level undergraduate				
	Courses	_	S (no	S (no information on SWS (weekly contact hours) and course language available)					
	Method of asse	essment	a) ter	m paper (approx. 8 p	pages, time to complete: 1 to 4 weeks) or b) presentation/seminar presentation (approx. 45 minutes				
			or c)	written examination	(approx. 45 minutes) or d) oral examination of one candidate each (approx. 15 minutes) or e) oral ex ups of a sapprox so minutos)				
	othor proroquie	ritoc	Drior	Prior completion of module 11-D-F is recommended. Certain prerequisites must be met to qualify for admission to assessment					
	other prerequis	SILES	The le	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					
			consi						
			to as						
			date, students will have to obtain the gualification for admission to assessment anew.						
	Referred to in L	PO I	§ 53 (1) 2. Physik Fachdid	Jaktik				
11-P-VKM-092-m01	Preparatory Co	ourse Mat	hemat	ics					
	ECTS 2	Duratio	n	1 semester	Method of grading (not) successfully completed Modul level undergraduate				
	Courses		T (no	information on SWS	5 (weekly contact hours) and course language available)				
	Method of asse	essment	discussion and exercises (approx. 15 minutes)						
			Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be an-						
			2009.						
	other prerequis	sites	Certa	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respec-					
			tive details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admissi-						
			the le	the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to as-					
			sessr	sessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the quali-					
			fication for admission to assessment anew.						
11-P-FB-LLL-121-	Student Lab Su	pervisio	n (Phy	sics)					
m01	ECTS 2 Duratio		n	1 semester	Method of grading (not) successfully completed Modul level undergraduate				
	Courses	_	S (no	information on SWS	S (weekly contact hours) and course language available)				
	Method of asse	essment	a) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) examina-						
			tion of one candidate each (approx. 10 minutes) or d) examination in groups (approx. 20 minutes, groups of 2)						
11 MIND Db1 121	Low Cost High	himpact			for Science Courses (Physics)				
mo1	LOW COSt - High	Duration	LUW-E	LOW-BUDget Experiments for Science Courses (Physics)					
		Duratio	S (no	information on SWS	S (wookly contact hours) and course language available)				
	Mothod of acc	occmont	3 (110 2) wri	tton oxamination (a	b (weekly contact hours) and course language available)				
	method of assessment		tion c	of one candidate eac	ch (approx. 10 minutes) or d) examination in groups (approx. 20 minutes, groups of 2)				
	other prerequis	sites	This r	nodule can be chose	en by students studying at least one subject in the natural sciences.				

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11-MIND-Ph2-121-	Teaching Science with Hands-on-Exhibits (Physics)										
m01	ECTS	2	Duration		1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Course	s		S (no	information on SWS	(weekly contact hou	rs) and course language availal	ole)			
	Method of assessment			a) wri tion o) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) examina- on of one candidate each (approx. 10 minutes) or d) examination in groups (approx. 20 minutes, groups of 2)						
	other prerequisites			This n	his module can be chosen by students studying at least one subject in the natural sciences.						
03-98-FSQ-	Radiation Safety and Protection										
STRA-092-m01	ECTS	2	Duratio	n	1 semester	Method of grading	(not) successfully completed	Modul level	undergraduate		
	Course	S		V + S	Y + S (no information on SWS (weekly contact hours) and course language available)						
	Metho	d of asse	essment	2 writ	ten examinations (30	o to 60 minutes each)				
	Additional Information Additional information on module duration: Courses will usually be offered in the form of a block course with two ons.							lock course with two block sessi-			
Thesis (10 ECTS cre	edits)										
Preparation of a wr site for teaching de ing for a teaching d cipline) or in the su terdisciplinary thes	Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequi- site for teaching degree students to be admitted to the Erste Staatsprüfung (First State Examination). In accordance with the provisions of Section 29 LPO I, students study ing for a teaching degree Gymnasium may write this thesis in one of the subjects they selected as vertieft studiertes Fach (subject studied with a focus on the scientific dis cipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an in-										
11-P-HAGY-092-	Thesis	in Phys	ics Gram	mar Sc	hool						
mo1	ECTS	10	Duratio	n	1 semester	Method of grading	numerical grade	Modul level	undergraduate		
	Course	S		no courses assigned							
	Metho	d of asse	essment	writte Langu teach	written thesis (approx. 40 pages) Language of assessment: German, exceptions in accordance with Section 29 Subsection 4 LPO I (examination regulations for teaching degree programmes)						
	Modules successfully completed			Where	Where applicable, specific modules/module components as specified by supervisor.						
	Additional Information			Additi	ional information on	module duration: 1 t	o 2 semesters.				