

Subdivided Module Catalogue for the Subject

Didactics in Physics (Secondary School)

as Didaktikfach with the degree "Erste Staatsprüfung für das Lehramt an Hauptschulen"

> Examination regulations version: 2009 Responsible: Faculty of Physics and Astronomy

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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:

LASPO2009

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

20-Feb-2013 (2012-77)

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

Abbroviation	Module title		Method of	n 200				
Abbieviation			grading	puse				
Compulsory Courses (20 EC	rS credits)							
Successful completion of modules worth 20 ECTS credits in each subject selected as Didaktikfach (subject studied with a fo- cus on teaching methodology) is a prerequisite for admission to the Erste Staatsprüfung (First State Examination) in the sub- ject Didaktiken einer Fächergruppe der Hauptschule (Didactics of a Group of Subjects of Hauptschule).								
11-P-SP1-092-m01	Physics 1 for Primary and Secondary Gerneral School	5	NUM	8				
11-P-SP2-092-m01	Physics 2 for Primary and Secondary General School	5	NUM	9				
11-P-SP3-092-m01	Physics 3 for Primary and Secondary General School	5	NUM	10				
11-P-FDDRI-092-m01	Teaching Physics in Primary and Secondary General School	5	NUM	4				
Freier Bereich (general as we	ll as subject-specific electives)							
ject-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 An- nex "Frgänzende Bestimmungen für den "Freien Bereich" im Rahmen des Studiums für ein Lehramt"								
11-P-FB-LLL-121-m01	Student Lab Supervision (Physics)	2	B/NB	5				
11-MIND-Ph1-121-m01	11-MIND-Ph1-121-mo1 Low Cost - High Impact. Low-Budget Experiments for Science Courses (Physics)							
11-MIND-Ph2-121-m01	Teaching Science with Hands-on-Exhibits (Physics)	2	B/NB	11				
Thesis (10 ECTS credits)								
Preparation of a written Hausarbeit (thesis) in accordance with the provisions of Section 29 LPO I (examination regulations for teaching-degree programmes) is a prerequisite 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 studying for a teaching degree Hauptschule (a may write this thesis in the subject Didaktik einer Fächergruppe der Hauptschule (Didactics of a Group of Subjects of Hauptschule), in the subject they selected as Unterrichtsfach (subject studied with a focus on the scientific discipline) or in the subject Erziehungswissenschaften (Educational Science). Pursuant to Section 29 Subsection 1 Sentence 2 LPO I, students may also choose to write an interdisciplinary thesis.								
11-P-HS-DF-HA-092-m01	Thesis in Physics Secondary General School	10	NUM	7				

LA Hauptschulen Didactics in Physics (Secondary School) (2009)

Module	title	Abbreviation					
Teaching	g Physics in Primary and Seco	11-P-FDDRI-092-m01					
Module coordinator			Module offered by				
holder of the Chair of Physics and its Di		idactics	actics Faculty of Physics and Astronomy				
ECTS	Method of grading	Only after succ. con	Inly after succ. compl. of module(s)				
5	numerical grade						
Duration	n Module level	Other prerequisites					
1 semes	ter undergraduate	Prior completion of	module 11-P-E recom	imended.			
Justifica nal stan media ir of biolog ning diff of schoo	Justification/legitimation of physics education, educational goals of physics, qualification models and educatio- nal standards: elementarisation and didactic reconstruction of physical contents, methods of physics education, media in physics education and their application to support learning. Interdisciplinary aspects of selected topics of biology, chemistry, geography and physics education, corresponding student preconceptions and typical lear- ning difficulties, elementarisation and didactic reconstruction of scientific contents, based on specific contents of school classes.						
Knowloc	a ceaning outcomes	ning goals of Physics	classos, knowlodge	of possibilitios of elementarisa			
tion and tive und preconc	of methods of Physics classes erstanding of school-relevant s eptions and special media on s	scientific topic areas; selected topics.	ical teaching and wo knowledge of comm	rking material. Advanced qualita- non approaches, typical student			
Courses	(type, number of weekly conta	ct hours, language –	- if other than Germa	in)			
Einführu ce a yea Fächerül (summe	Einführung Fachdidaktik 2 (Introduction to Didactics 2): V (1 weekly contact hour) + Ü (1 weekly contact hour), on- ce a year (summer semester) Fächerübergreifender Unterricht (Teaching Interdisciplinary Contents): S (2 weekly contact hours), once a year (summer semester)						
Method ster, info	of assessment (type, scope, la ormation on whether module ca	nguage — if other than 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 (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. 10 minutes) or oral examination in groups (approx. 20 minutes, groups of 2 candidates). 2. Seminar (Fächerübergreifender Unterricht (Teaching Interdisciplinary Contents)): term paper (approx. 8 pages) or presentation (approx. 45 minutes) or log of a class (approx. 6 pages) or written examination (approx. 45 minutes) or oral examination of one candidate each (approx. 15 minutes) or oral examination in groups (approx. 30 minutes). 							
Students To pass	Students must register for assessment components 1 and 2 online (details to be announced). To pass this module, students must pass both assessment component 1 and assessment component 2.						
Allocatio	on of places						
Additional information							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
§ 36 (1) § 38 (1) § 38 (1) § 38 (1) § 53 (1) § 77 (1)	7. Didaktik der Grundschule Ph 1. Didaktik der Hauptschule Ph 1. Didaktik der Mittelschule Ph 2. Physik Fachdidaktik 2. Physik Fachdidaktik	iysik ysik ysik					

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Module title			Abbreviation			
Student Lab Supervision (Physics)				11-P-FB-LLL-121-m01		
Module	e coord	inator		Module offered by		
holder	of the C	Chair of Physics and its D	idactics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	This module can be the natural sciences	chosen by students	studying at least one subject in	
Conten	ts					
The mo in the t	dule pı eachin	rovides an introduction to g-learning-laboratory.	o successful supervis	ion of pupils indepe	ndently carrying out experiments	
Intende	ed learr	ning outcomes				
vel of performance, to support the pupils according to their needs and age and to help them during independent experimenting (supervision competencies in open classroom situations). The students are able to methodical- ly and critically evaluate their own actions. A lecturer gives individual feedback to the students to avoid negati- ve behaviour patterns and to support the students' strengths. The students develop professional behaviour pat- terns by repeatedly working on the same topic with different groups of pupils (reflection competencies and self- control competencies).						
Course	s (type,	, number of weekly conta	ct hours, language —	· if other than Germa	n)	
S (no ir	nformat	ion on SWS (weekly cont	act hours) and cours	e language available)	
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) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) examination of one candidate each (approx. 10 minutes) or d) examination in groups (approx. 20 minutes, groups of 2)						
Allocation of places						
Additional information						
-						
Referred to in LPO I (examination regulations for teaching-degree programmes)						

Module title					Abbreviation		
Low Co	st - Hig	sh Impact. Low-Budget E	ce Courses (Phy-	rses (Phy- 11-MIND-Ph1-121-m01			
sics)							
Module	<u>coord</u>	inator		Module offered by			
holder	of the (Chair of Physics and its D	idactics	Faculty of Physics a	nd Astronomy		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
2	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate	This module can be	chosen by students	studying at least one subject in		
Conten	ts			•			
Concep Grunds	otion ar chule a	nd realisation of experimentation of experimentation of experimentation of experimentation of the secondary level I.	ental stations with or	dinary and inexpens	ive consumables for classes of		
Intende	ed learı	ning outcomes					
The students develop simple scientific experimenting stations to use for the transition from primary to seconda- ry level I for small groups from different types of schools. In doing so, they learn to simplify and convey scientific contents relevant to the curriculum in due consideration of the target group.							
Courses	s (type	, number of weekly conta	ct hours, language —	· if other than Germa	n)		
S (no in	format	ion on SWS (weekly cont	act hours) and cours	e language available	2)		
Method ster, inf	l of ass formati	sessment (type, scope, la on on whether module c	nguage — if other tha an be chosen to earn	an German, examina a bonus)	tion offered — if not every seme-		
a) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) examination of one candidate each (approx. 10 minutes) or d) examination in groups (approx. 20 minutes, groups of 2)							
Allocation of places							
Additional information							
Referred to in LPO I (examination regulations for teaching-degree programmes)							

Module title						
chool		11-P-HS-DF-HA-092-m01				
	Module offered by					
	Faculty of Physics a	nd Astronomy				
Only after succ. com	pl. of module(s)					
Where applicable, s	pecific modules/mo	dule components as specified by				
supervisor.						
Other prerequisites						
nysics and/or Didact	ics of Physics, chose	en in consultation with a lecturer.				
The students are able to independently work on a predetermined physical topic while applying the knowledge and methods acquired in the teaching degree programme. They are able to present their results in written form in due consideration of didactic aspects.						
ct hours, language —	· if other than Germa	n)				
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)						
written thesis (approx. 40 pages) Language of assessment: German, exceptions in accordance with Section 29 Subsection 4 LPO I (examination re- gulations for teaching degree programmes)						
Allocation of places						
Additional information						
Additional information on module duration: 1 to 2 semesters.						
tion: 1 to 2 semester	s.					
ation: 1 to 2 semester: ations for teaching-c	s. legree programmes)					
	chool Only after succ. com Where applicable, s supervisor. Other prerequisites 	chool Module offered by Faculty of Physics a Only after succ. compl. of module(s) Where applicable, specific modules/mo supervisor. Other prerequisites hysics and/or Didactics of Physics, chose work on a predetermined physical topic degree programme. They are able to pres ct hours, language — if other than German n be chosen to earn a bonus) eptions in accordance with Section 29 Su hes)				

Module title					Abbreviation	
Physics 1 for Primary and Secondary Gerneral School			erneral School		11-P-SP1-092-m01	
Module coordinator				Module offered by		
holder of the Chair of Physics and its Didactics			idactics	Faculty of Physics a	and 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 semester undergraduate Certain prerequisites must be met to qualify for admission to as sessment. The lecturer will inform students about the respective at the beginning of the course. Registration for the course will be sidered a declaration of will to seek admission to assessment. In dents have obtained the qualification for admission to assessment the course of the semester, the lecturer will put their registration sessment into effect. Students who meet all prerequisites will be ted to assessment in the current or in the subsequent semester 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- hission 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			
Physica science:	l conte s in Gr	ents (mechanics, thermoo und- and Hauptschule.	dynamics) relevant to	classes in Natural S	Sciences or technical-natural	
Intende	d learr	ning outcomes				
Qualitat classes demons	tive kn in Gru stratior	owledge of the physical p nd- and Hauptschule; kn n and pupils experiments	orinciples of school-r owledge of typical ap	elevant contents of s oproaches to the imp	scientific or technical-scientific olementation and evaluation of	
Courses	s (type,	, number of weekly conta	ct hours, language —	if other than Germa	in)	
V + Ü (n	o 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) written examination (approx. 90 minutes) or b) oral examination of one candidate each (approx. 15 minutes) or oral examination in groups (groups of 2, 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 places						
Additional information						

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

- § 36 (1) 7. Didaktik der Grundschule Physik § 38 (1) 1. Didaktik der Hauptschule Physik

§ 38 (1) 1. Didaktik der Mittelschule Physik

Module title					Abbreviation		
Physics 2 for Primary and Secondary General School			ieneral School		11-P-SP2-092-m01		
Module coordinator				Module offered by			
holder of the Chair of Physics and its Didact			idactics	Faculty of Physics a	nd Astronomy		
ECTS Method of grading Only after succ. com			Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate	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 de			
			at the beginning of t	he 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 in	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						
Physica science	al conte es in Gr	ents (science of electricity rund- and Hauptschule.	, electronics) relevar	nt to classes in Natur	ral Sciences or technical-natural		
Intend	ed lear	ning outcomes					
Qualita classes demon	ative kn 5 in Gru stratior	owledge of the physical µ nd- and Hauptschule; kn n and pupils experiments	orinciples of school-r owledge of typical ap	elevant contents of s oproaches to the imp	scientific or technical-scientific elementation and evaluation of		
Course	s (type	, number of weekly conta	ct hours, language –	- if other than Germa	n)		
V + Ü (I	no infoi	rmation on SWS (weekly o	contact hours) and co	ourse language avail	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 (approx. 15 minutes) or oral examination in groups (groups of 2, 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	Allocation of places						
Additio	onal inf	ormation					

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

- § 36 (1) 7. Didaktik der Grundschule Physik § 38 (1) 1. Didaktik der Hauptschule Physik

§ 38 (1) 1. Didaktik der Mittelschule Physik

Module title Abbreviation					Abbreviation	
Physics 3 for Primary and Secondary General School					11-P-SP3-092-m01	
Module	e coord	inator		Module offered by	<u> </u>	
holder of the Chair of Physics and its Didactics			idactics	Faculty of Physics and Astronomy		
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade		•		
Duration Module level Other prerequisites						
1 seme	ster	undergraduate	Certain prerequisites must be met to qualify for admission to as-		alify for admission to as-	
			sessment. The lectu	nts about the respective details		
			at the beginning of	he 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	et 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	admission to assessment anew.		
Conten	its					
Physica nical-na	al conte atural s	ents (optics, acoustics, A sciences in Grund- and Ha	tomic and Nuclear Ph auptschule.	ysics) relevant to cla	asses in Natural Sciences or tech-	
Intende	ed lear	ning outcomes				
Qualita	ative kn	owledge of the physical	principles of school-r	elevant contents of s	scientific or technical-scientific	
classes	s in Gru	nd- and Hauptschule; kn	owledge of typical ap	proaches to the imp	plementation and evaluation of	
demon	stratio	n and pupils experiments				
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	ın)	
V + Ü (r	no info	mation on SWS (weekly	contact hours) and co	ourse language avail	able)	
Methoo ster, in	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) written examination (approx. 90 minutes) or b) oral examination of one candidate each (approx. 15 minutes) or oral examination in groups (groups of 2, 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 places						
Additional information						
Referred to in LPO I (examination regulations for teaching-degree programmes)						

§ 36 (1) 7. Didaktik der Grundschule Physik § 38 (1) 1. Didaktik der Hauptschule Physik

§ 38 (1) 1. Didaktik der Mittelschule Physik

Module title					Abbreviation	
Teaching Science with Hands-on-Exhibits (Physics)			oits (Physics)		11-MIND-Ph2-121-m01	
Module coordinator				Module offered by		
holder	of the (Chair of Physics and its D	idactics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
2 (not) successfully completed						
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate	This module can be the natural sciences	chosen by students	studying at least one subject in	
Conten	ts		·			
Designi	ing and	l creating hands-on exhil	oits for STEM subjects	5.		
Intende	ed lear	ning outcomes				
The stu tents in ject-orio	dents and o ented v	evaluate the advantages ut of school. They plan a vork with pupils of secor	and disadvantages o nd implement an inte Idary level I and II.	f the hands-on appro rdisciplinary science	oach for teaching scientific con- e exhibition as an example of pro-	
Course	s (type	, number of weekly conta	ict hours, language –	- if other than Germa	n)	
S (no in	format	tion on SWS (weekly cont	act hours) and cours	e language available	2)	
Methoo ster, inf	l 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) written examination (approx. 45 minutes) or b) term paper (approx. 8 pages, time to complete: 1 to 4 weeks) or c) examination of one candidate each (approx. 10 minutes) or d) examination in groups (approx. 20 minutes, groups of 2)						
Allocation of places						
Additional information						
Referred to in LPO I (examination regulations for teaching-degree programmes)						