

Module Catalogue

for the Subject

Didactics in Physics (Middle School)

as Didaktikfach

with the degree "Erste Staatsprüfung für das Lehramt für Sonderpädagogik"

> Examination regulations version: 2015 Responsible: Faculty of Physics and Astronomy

JMU Würzburg • generated 18-Apr-2025 • exam. reg. data record L6|873|-|-|H|2015



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The subject is divided into

section / sub-section	ECTS credits	starting page
Compulsory Courses	20	5
Freier Bereich (general as well as subject-specific electives)		13
Physics		14
Thesis	10	39



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:

LASPO2015

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

20-Oct-2015 (2015-219)

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.





Compulsory Courses

(20 ECTS credits)

Successful completion of modules worth 20 ECTS credits in each subject selected as Didaktikfach (subject studied with a focus on teaching methodology) is a prerequisite for admission to the Erste Staatsprüfung (First State Examination) in the subject Didaktiken einer Fächergruppe der Mittelschule (Didactics of a Group of Subjects of Mittelschule).

Module title	Abbreviation				
Physics Teaching Concepts 1 11-L-PD1-152-m01					
Module coordinator		Module offered by			
Managing Director of the Institute of A	pplied Physics	Faculty of Physics a	nd Astronomy		
ECTS Method of grading	Only after succ. con	npl. of module(s)			
2 numerical grade					
Duration Module level	Other prerequisites				
1 semester undergraduate					
Contents					
Subject-didactic study of technical conteaching concepts. Student preconcept aching methods, and techniques to chephysics.	ntents of the basic stu otions and typical lear nange student precon	idies, student precom ming difficulties in so ceptions; epistemolo	nceptions and subje chool physics, corre ogical and working n	ct-didactic sponding te- nethods of	
Intended learning outcomes	_				
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V (2)	_				
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Allocation of places					
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Additional information					
Workload					
60 h					
Teaching cycle					
Referred to in LPO I (examination regulation	ns for teaching-degree progra	immes)			
\$ 36 Nr. 7 \$ 38 Nr. 1 \$ 53 Nr. 2 \$ 77 Nr. 2					
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First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015)					
LA Sonderpädagogik Didactics in Physics (Middle School) (2015)	JMU Würzburg • genera amt Sonderpädagog	ated 18-Apr-2025 • exam. reg. gik (Mittelschule-Didaktikfach	. data record Lehr- 1) Physik - 2015	page 6 / 39	



First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015)

Physics Teaching Concepts 2 Module offered by Managing Director of the institute of Applied Physics Faculty of Physics and Astronomy ECTS Method of grading Only after succ.ompL of module(s) San numerical grade - Duration Module level Other prerequisites 1 semester undergraduate - Contents Estension of the basic knowledge of subject didactics. Justification/legitimation of physics education, educational standards: elementarisation and didactire reconstruction of physics qualification models and educational standards: elementarisation and didactire reconstruction of physics clonellers, methods of physics, knowledge of the school subject Physics; knowledge of subjects didactions. Subject didactive reconceptions, knowledge of the egitimation and goals of the school subject Physics; knowledge of elementarising and teaching methods of physics, knowledge of the legitimation and goals of the school subject Physics; knowledge of elementarising and teaching methods, knowledge of the legitimation and solas to the school subject Physics; knowledge of elementarising and teaching methods, knowledge of the legitimation and solas of the school subject Physics; knowledge of elementarising and teaching methods is whethod of the school subject Physics; knowledge of elementarising and teaching methods is whethod of the school subject Physics; knowledge of elementarising and teaching methods is whethod of the school subject Physics; knowledge of how is know	Module title			Abbreviation		
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LA Sonderpädagogik Didactics in Physics (Middle JMU Würzburg • generated 18-Apr-2025 • exam. reg. data record Lehr- School) (2015) amt Sonderpädagogik (Mittelschule-Didaktikfach) Physik - 2015	First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015)					
	LA Sonderp School) (20	pädagogik Didactics in Physics (Middle	JMU Würzburg • gener amt Sondernädago	ated 18-Apr-2025 • exam. reg gik (Mittelschule-Didaktikfact	. data record Lehr- 1) Physik - 2015	page 8 / 39





First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015)

Module title				Abbreviation	
Physics	5 1 for F	Primary and Secondary G	eneral School		11-L-SP1-152-m01
Module	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)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
Physica science	al conte es in Gr	ents (mechanics, thermoo und- and Hauptschule.	dynamics) relevant to	classes in Natural S	ciences or technical-natural
Intende	ed learr	ning outcomes			
Qualita classes demons	tive kn in Gru stratior	owledge of the physical p nd- and Hauptschule; kn 1 and pupils experiments	orinciples of school-re owledge of typical ap	elevant contents of s proaches to the imp	scientific or technical-scientific lementation and evaluation of
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) + ĺ	Ü (1)				
Method module is	l of ass creditab	e ssment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
a) writte b) oral e c) oral e Langua	en exar examin examin ge of a	nination (approx. 90 min ation of one candidate e ation in groups (groups c ssessment: German and/	utes) or ach (approx. 15 minu of 2, approx. 15 minut ⁄or English	tes) or es per candidate)	
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 36 N § 38 N	lr. 7 lr. 1				
Module	e appea	irs in			
First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Grundschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)					

Module title			Abbreviation		
Physics	s 2 for l	Primary and Secondary G	ieneral School		11-L-SP2-152-m01
Module	coord	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)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Physica science	al conte es in Gr	ents (science of electricity und- and Hauptschule.	, electronics) relevan	t to classes in Natur	al Sciences or technical-natural
Intende	ed learr	ning outcomes			
Qualita classes demon	tive kn in Gru stratior	owledge of the physical p nd- and Hauptschule; kn 1 and pupils experiments	principles of school-re owledge of typical ap	elevant contents of s proaches to the imp	scientific or technical-scientific lementation and evaluation of
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) + İ	Ü (1)				
Methoo module is	l of ass creditab	s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
a) writte b) oral e c) oral e Langua	en exar examin examin ge of a	nination (approx. 90 min ation of one candidate e ation in groups (groups c ssessment: German and/	utes) or ach (approx. 15 minu of 2, approx. 15 minut ⁄or English	tes) or es per candidate)	
Allocat	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§361N §381N	lr. 7 lr. 1				
Module	e appea	rs in			
First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)					

Module title			Abbreviation		
Physics	s 3 for l	Primary and Secondary G	eneral School		11-L-SP3-152-m01
Module	e coord	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)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	undergraduate			
Conten	ts				
Physica nical-na	al conte atural s	ents (optics, acoustics, At sciences in Grund- and Ha	tomic and Nuclear Ph auptschule.	ysics) relevant to cla	sses in Natural Sciences or tech-
Intende	ed leari	ning outcomes			
Qualita classes demon	tive kn in Gru stratior	owledge of the physical p nd- and Hauptschule; kn n and pupils experiments	principles of school-re owledge of typical ap	elevant contents of s proaches to the imp	scientific or technical-scientific lementation and evaluation of
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (3) + I	Ü (1)				
Methoo module is	d of ass creditab	essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
a) writte b) oral e c) oral e Langua	en exar examin examin ge of a	nination (approx. 90 min ation of one candidate e ation in groups (groups c ssessment: German and/	utes) or ach (approx. 15 minu of 2, approx. 15 minut ⁄or English	tes) or es per candidate)	
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
§ 36 N § 38 N	lr. 7 lr. 1				
Module	e appea	ars in			
First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)					



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

(ECTS credits)

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 (ECTS credits)

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

Module title			Abbreviation			
Teaching Seminar Fundamental Principles			11-L-EL1-152-m01			
Module	e coord	inator		Module offered by		
holder	of the (Chair of Physics and its	Didactics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
3	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	ts					
Physica ceptior sed on pical so	al and i is and specifi chool e	nterdisciplinary aspects typical learning difficult c contents of physics eo xperiments and suitable	s of selected topics of ies, elementarisation ducation, verbalisatior e media.	physics education, c and didactic reconst n of physical content	orresponding studer ruction of physical co s, possible teaching	nt precon- ontents ba- ; methods, ty-
Intende	ed lear	ning outcomes				
Advanc studen Physics	ed, qu t preco s at uni	alitative knowledge of s nceptions and special r versity and school rega	chool-relevant areas c nedia on relevant topi rding contents and me	of Physics; knowledg cs; awareness of the thods.	e of common metho differences betweer	ds, typical n teaching
Course	S (type, r	number of weekly contact hours	, language — if other than Gei	rman)		
S (2)						
Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) term paper (approx. 8 pages) or b) 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 examination in groups (groups of 2, approx. 15 minutes per candidate)						
Allocat	ion of I	places				
Additio	nal inf	ormation				
Worklo	ad					
oo h						
Teachi		Δ				
reaciiii	is cyci					
Doforro	d to in					
§ 22 § 22 § 22	Nr. 1 h) Nr. 2 f) Nr. 3 f)	LFOT (examination regulation	ins for teaching-degree progra	immes)		
Module	e appea	ars in				
First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) LA Sonderpädagogik Didactics in Physics (Middle Middle Mittelschule Didactics + Sonderpädagogik + Sonder						
School) (20)15)		amt Sonderpädagos	gik (Mittelschule-Didaktikfach	n) Physik - 2015	page 15 / 39

First state examination for the teaching degree Grundschule Physics (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Realschule Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)

Module title				Abbreviation		
Selecte	ed Topi	cs in Physics Didactics	11-L-EL2-152-m01			
Module	e coord	inator		Module offered by		
chairpe	erson o	f examination committe	ee	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	,	
3	(not)	successfully completed		· · · · · · · · · · · · · · · · · · ·		
Duratio	nn	Module level	Other prerequisites			
1 0000	octor	undorgraduato				
Conton	ster	undergraduate				
Conten		in a horizon a deconstruction				
Curren	t topics	in physics education.				
Intend	ed lear	ning outcomes				
The stu red kno	udents l owledge	nave knowledge of a cu e according to subject-	rrent subdiscipline of specific contexts and ir	physics education ar nplement it into clas	nd are able to classif ses.	y the acqui-
Course	S (type, r	umber of weekly contact hours	s, language — if other than Ge	rman)		
S (2)						
Metho	d of ass	essment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informat	ion on whether
module is	s creditab	le for bonus)			•	
a) term	paper	(approx. 8 pages) or				
b) pres	entatio	n (approx. 45 minutes)	or			
c) writt	en exar	nination (approx. 45 m	inutes) or	t		
d) oral	examin	ation of one candidate	each (approx. 15 minu	ites) or		
l angua	examini age of a	ssessment: German an	d/or English	les per canuldale)		
Alleget						
Allocal		Jiaces				
Additio	onal inf	ormation				
Worklo	ad					
90 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	immes)		
§ 22	Nr. 1 h)					
§ 22	Nr. 2 f)					
§ 22	Nr. 3 f)					
Module	e appea	ars in				
First st	ate exa	mination for the teachi	ng degree Grundschule	e Physics (2015)		
First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015)						
First state examination for the teaching degree Realschule Physics (2015)						
First st	First state examination for the teaching degree Gymnasium Physics (2015)					
First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015)						
First state examination for the teaching degree Mittelschule Physics (2015)						
	First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015)					
First St	First state examination for the teaching degree Grundschule Physics (2018)					
First st	First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018)					
1						
LA Sonderp School) (20	pädagogik 015)	Didactics in Physics (Middle	JMU Würzburg • genera amt Sonderpädago	ated 18-Apr-2025 • exam. reg gik (Mittelschule-Didaktikfacl	. data record Lehr- 1) Physik - 2015	page 17 / 39



First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)

Module title				Abbreviation		
Preparatory Course Mathematics					11-P-VKM-152-m01	
Module	coordi	inator		Module offered by		
Managi the Inst	ng Dire itute of	ectors of the Institute of f Theoretical Physics ar	Applied Physics and Astrophysics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	undergraduate				
Conten	ts					
 Principles of mathematics and elementary calculation methods from school and partially beyond, especially for the introduction to and preparation for the modules of Experimental and Theoretical Physics. 1. Basic geometry and algebra 2. Coordinate systems and complex numbers 3. Vectors - vectored values 4. Differential calculus 						
Intende	d learr	ning outcomes				
The stu	dents k sfully st	now the principles of r tudying Theoretical and	nathematics and elem Experimental Physics	entary calculation mo	ethods which are rec	juired for
Courses	5 (type, n	umber of weekly contact hours	, language — if other than Ger	rman)		
T (2)						
Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) exercises (successful completion of approx. 50% of approx. 6 exercise sheets) or b) talk (approx. 15 minutes)						
Allocati	on of p	olaces				
Additio	nal info	ormation				
Workloa	ad					
60 h						
Teachin	ig cycle	9				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
§ 22 N § 22 N § 22 N	Nr. 1 h) Nr. 2 f) Nr. 3 f)					
Module	appea	rs in				
Bachelor's degree (1 major) Physics (2015) Bachelor's degree (1 major) Nanostructure Technology (2015) Bachelor's degree (1 major) Nanostructure Technology (2015) Bachelor's degree (1 major) Mathematical Physics (2015) Bachelor's degree (1 major, 1 minor) Physics (Minor, 2015) First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) Kasonderpädagogik Didactics in Physics (Middle JMU Würzburg • generated 18-Apr-2025 • exam. reg. data record Lehr- amt Sondomädargik (Mittelschule Didaktikfsch) Physik ager						

First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) Bachelor's degree (1 major) Mathematical Physics (2016) First state examination for the teaching degree Grundschule Physics (2018)

First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018)

First state examination for the teaching degree Realschule Physics (2018)

First state examination for the teaching degree Gymnasium Physics (2018)

First state examination for the teaching degree Mittelschule Physics (2018)

First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018)

Module title			Abbreviation			
Studen	Student Lab Supervision (Physics) 11-L-L3B-152-m01					
Module	e coord	inator		Module offered by		
holder	of the C	Chair of Physics and its I	Didactics	Faculty of Physics a	nd Astronomy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
2	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate				
Conten	its					
The mo in the t	odule pr eaching	ovides an introduction glearning-laboratory.	o successful supervis	ion of pupils indepe	ndently carrying out	experiments
Intende	ed learr	ning outcomes				
The stuvel of p experimination of p ly and of the state ve behavior of the state terns b control	Idents l performation critically aviour p y repea compe	earn to classify differen ance, to support the pup ((supervision competen y evaluate their own act patterns and to support tedly working on the sa otencies).	t groups of pupils acco bils according to their cies in open classrood ions. A lecturer gives i the students' strength me topic with differen	ording to their subject needs and age and t m situations). The str ndividual feedback t is. The students deve t groups of pupils (re	ct-specific and exper to help them during i udents are able to m to the students to av elop professional be eflection competenci	imental le- ndependent ethodical- oid negati- haviour pat- es and self-
Course	S (type, n	umber of weekly contact hours,	language — if other than Ger	man)		
P (2)						
Metho module is	d of ass s creditab	e essment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if no	t every semester, informati	on on whether
a) writt b) oral c) oral d) term	en exar examin examin paper	nination (approx. 45 mi ation of one candidate ation in groups (groups (approx. 8 pages)	nutes) or each (approx. 10 minu of 2, approx. 10 minut	ites) or tes per candidate) or		
Allocat	ion of p	olaces				
Additio	onal info	ormation				
This mo	odule is	designed for students	studying at least one s	subject in the natura	l sciences.	
Worklo	ad					
60 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)		
§ 22 § 22 § 22	Nr. 1 h) Nr. 2 f) Nr. 3 f)					
Module	e appea	in and the second se				
First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) A Sonderpädagogik Didactics in Physics (Middle Mittelschule Didactics of Physics (Middle School) (2015)						
School) (20	015)		amt Sonderpädagog	gik (Mittelschule-Didaktikfach	i) Physik - 2015	paze 21 / 39

First state examination for the teaching degree Grundschule Physics (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Realschule Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)

Module title					Abbreviation	
Low Cost - High Impact. Low-budget Experiments for Science Courses (Phy-					11-MIND-Ph1-152-m	01
sics)				-		
Module	coord	inator		Module offered by		
holder	of the (Chair of Physics and its	Didactics	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		Other prerequisites			
1 como	stor	undorgraduato				
Conton		undergraduate	<u> </u>			
Conten	LS .					
Concep Grunds	tion ar chule a	Id realisation of experimination of experimentation of experimentation of the secondary level I.	nental stations with or	dinary and inexpens	ive consumables for	classes of
Intende	ed learn	ning outcomes				
The stu ry level content	dents o I for sn s relev	develop simple scientifi nall groups from differe ant to the curriculum in	c experimenting statio nt types of schools. In due consideration of t	ns to use for the trar doing so, they learn the target group.	nsition from primary to simplify and conv	to seconda- 'ey scientific
Courses	5 (type, n	umber of weekly contact hours	, language — if other than Ger	man)		
S (2)						
Method module is	l of ass creditab	essment (type, scope, langule for bonus)	age — if other than German, e	examination offered — if no	t every semester, information	on on whether
a) writte b) oral e c) oral e d) term	en exar examin examin paper	nination (approx. 45 mi ation of one candidate ation in groups (groups (approx. 8 pages)	nutes) or each (approx. 10 minu of 2, approx. 20 minu	tes) or tes) or		
Allocati	ion of p	olaces				
Additio	nal info	ormation				
This mo	dule is	designed for students	studying at least one s	subject in the natura	l sciences.	
Worklo	ad	0				
60 h						
Toochir		•				
Teacini	ig tyti	5				
			_			
Referre	d to in	LPOI (examination regulation	ns for teaching-degree progra	mmes)		
§ 22 N § 22 N § 22 N	Nr. 1 h) Nr. 2 f) Nr. 3 f)					
Module	appea	rs in				
First sta	ate exa	mination for the teachir	ng degree Grundschule	Physics (2015)		
First sta	First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015)					
First state examination for the teaching degree Realschule Physics (2015)						
First sta	ate exa	mination for the teachir	ng degree Gymnasium	Physics (2015)		
First sta	te exa	mination for the teachir	ig degree Sonderpäda	gogik Didactics in Ph	nysics (Middle Schoo	ol) (2015)
First sta	ate exa	mination for the teachir	ig degree Mittelschule	Physics (2015)		
First sta	First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015)					
First sta	ate exa	mination for the teachir	ig degree Grundschule	Physics (2018)		
First sta	ate exa	mination for the teachir	ig degree Grundschule	Didactics in Physics	s (Primary School) (2	018)
First sta	ate exa	mination for the teachir	ig degree Realschule P	hysics (2018)		
LA Sonderp School) (20	ädagogik 15)	Didactics in Physics (Middle	JMU Würzburg ● genera amt Sonderpädagog	ited 18-Apr-2025 • exam. reg. sik (Mittelschule-Didaktikfach	. data record Lehr- n) Physik - 2015	page 23 / 39



First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)

LA Sonderpädagogik Didactics in Physics (Middle School) (2015)

Module title					Abbreviation		
Teachi	Teaching Science with Hands-on-Exhibits (Physics) 11-MIND-Ph2-152-m01						
Module	e coord	inator		Module offered by			
holder of the Chair of Physics and its Di			Didactics	Faculty of Physics and Astronomy			
ECTS Method of grading		Only after succ. con	Only after succ. compl. of module(s)				
2	(not)	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conter	nts						
Design	ing and	d creating hands-on exh		c			
Intend	ed lear	ning outcomes					
The stu	udonte	ovaluate the advantage		fthe hands on annr	ash for toaching co	iontific con	
tents ir ject-ori	n and o ented	ut of school. They plan work with pupils of seco	and implement an inte ondary level I and II.	erdisciplinary science	e exhibition as an ex	ample of pro-	
Course	S (type, 1	number of weekly contact hours	, language — if other than Ge	rman)			
S (2)							
Metho	d of as	sessment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informati	ion on whether	
	s creditat	mination (annyay (5 m	inutac) ar				
a) writt	en exa examir	mination (approx. 45 m	inutes) or each (approx 10 mini	ites) or			
c) oral	examir	ation in groups (groups	of 2, approx. 20 minu	ites) or			
d) term	n paper	(approx. 8 pages)	· • • • •				
Allocat	ion of	places					
Additio	onal inf	ormation					
This m	odule i	s designed for students	studying at least one	subject in the natura	l sciences.		
Worklo	ad						
60 h		,					
Teachi	ng cycl	e					
	0.7						
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)			
§ 22	Nr. 1 h)						
§ 22	Nr. 2 f)						
§ 22	Nr. 3 f)						
Module	e appea	ars in					
First st	ate exa	mination for the teaching	ng degree Grundschule	e Physics (2015)			
First st	ate exa	mination for the teaching	ng degree Grundschule	e Didactics in Physics	s (Primary School) (2	2015)	
First st	ate exa	mination for the teaching	ng degree Realschule I	Physics (2015)			
First state examination for the teaching degree Gymnasium Physics (2015)							
First st	First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015)						
First st	ate exa	mination for the teaching	ng degree Mittelschule	Physics (2015)			
First St	ate exa	mination for the teachin	ig degree Mittelschule	Physics (2019)	(wildule School) (20	,15)	
First st	ate exa	mination for the teaching	ng degree Grundschuld	Didactics in Physics	s (Primary School) (2	2018)	
First st	ate exa	mination for the teaching	ng degree Realschule P	Physics (2018)		.010)	
First st	ate exa	mination for the teaching	ng degree Gymnasium	Physics (2018)			
			/ "			ا 	
LA Sonder School) (20	oädagogik 015)	Didactics in Physics (Middle	JMU Würzburg ● gener amt Sonderpädago	ated 18-Apr-2025 • exam. reg gik (Mittelschule-Didaktikfach	. data record Lehr- n) Physik - 2015	page 25 / 39	

First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)

Module title					Abbreviation		
Astrophysics					11-AP-152-m01		
Module	coord	inator		Module offered by			
Managi	ng Dire	ector of the Institute of	Theoretical Physics	Faculty of Physics a	nd Astronomy		
and Ast	rophys	sics					
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
6	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate					
Conten	ts						
History	of astr	onomy, coordinates an	d time measurement, t	the Solar System, exe	oplanets, astronomi	cal scales,	
um, mo	pes an leculai	a detectors, stellar structure of th	e milky way, the local	s, stellar evolution a universe, the expand	na ena stages, inter ling universe, galaxi	stellar medi- es, active ga-	
lactic n	uclei, l	arge-scale structures, c	cosmology.			,	
Intende	ed learı	ning outcomes					
The stu	dents a	are familiar with the mo	dern world view of Ast	rophysics. They know	w methods and tools	s for astro-	
physica	ıl obse	rvations and evaluation	ns. They are able to use	e these methods to p	lan and analyse owr	n observati-	
ons. Th	ey are	familiar with the physic	s and development of	the main astrophysi	cal objects such as s	stars and ga-	
Course		umber of weekly contact hour		rman)			
V(2) +	R (2)			iiiiaii)			
Module	taugh	t in: German or English					
Method	l of ass	essment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informat	ion on whether	
module is	creditab	le for bonus)					
a) writte	en exai	nination (approx. 90 to	0 120 minutes) or				
b) oral (examin examin	ation of one candidate	each (approx. 30 mini	ites) or tes per candidate) o	r		
d) proje	ect repo	ort (approx. 8 to 10 pag	es) or	tes per cundidate) o	•		
e) prese	entatio	n/talk (approx. 30 min	utes)				
If a writ	ten exa	amination was chosen a form of an oral examin	as method of assessm	ent, this may be chai	nged and assessmei mination in groups	nt may in- If the method	
of asse	ssmen	t is changed, the lectur	er must inform studen	ts about this by four	weeks prior to the o	riginal exami-	
nation	date at	the latest.		,	•	5	
Langua	ge of a	ssessment: German an	d/or English				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
180 h							
Teaching cycle							
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)			
§ 22 8 22	vr.1h) vr.5f)						
§ 22	vr. 3 f)						
Module	appea	irs in					
LA Sondorn	ädagogik	Didactics in Physics (Middle	MII Würzburg a gener	ated 18-Apr-2025 • ovam rom	data record Lebr.	nage 27 / 20	
School) (20	15)	Didactics in Fliysics (Miluule	amt Sonderpädago	gik (Mittelschule-Didaktikfach	1) Physik - 2015	page 27 / 39	

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Bachelor's degree (1 major) Physics (2015) Bachelor's degree (1 major) Mathematical Physics (2015) Bachelor's degree (1 major) Aerospace Computer Science (2015) Bachelor's degree (1 major, 1 minor) Physics (Minor, 2015) First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) Bachelor's degree (1 major) Mathematical Physics (2016) Master's degree (1 major) Nanostructure Technology (2016) Bachelor's degree (1 major) Aerospace Computer Science (2017) First state examination for the teaching degree Grundschule Physics (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Realschule Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) Master's degree (1 major) Nanostructure Technology (2020) Bachelor's degree (1 major) Physics (2020) Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major, 1 minor) Physics (Minor, 2020) Bachelor's degree (1 major) Aerospace Computer Science (2020) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Physics (2020) Master's degree (1 major) Quantum Technology (2021) exchange program Physics (2023) Bachelor's degree (1 major) Mathematical Physics (2024)

Module title					Abbreviation			
Principles of Energy Technologies 11-ENT-152-mo1								
Module coordinator				Module offered by				
Manag	ing Dire	ector of the Institute of	Applied Physics	hysics Faculty of Physics and Astronomy				
ECTS	Meth	od of grading	Only after succ. cor	only after succ. compl. of module(s)				
6	nume	rical grade						
Duratio	on	Module level	Other prerequisites	5				
1 seme	ster	graduate						
Conten	ts							
as rene ting ma studen verters Electric	ewable aterials ts. Ene . Nucle . ity. Bic	resources of energy conserv resources of energy. W , selective layers, high rgy conservation via th ar power plants. Hydro omass. Geothermal ener ning outcomes	e also discuss aspects y activated carbons). T ermal insulation. Therr electricity. Wind turbin rgy. Energy storage. Er	of optimising mater he course is especia nodynamic energy ef es. Photovoltaics. So hergy transport	ials (e.g. nanostructu lly suitable for teach ficiency. Fossil fired plar thermal: Heat. So	age as well ured insula- ing degree energy con- olar thermal:		
The stu	idents	know the principles of	different methods of e	nergy technology, esp	pecially energy conv	ersion, trans-		
port an	d stora	ige. They understand tr	e structures of corresp	onding installations	and are able to com	pare them.		
V	\mathbf{S} (type, r	number of weekly contact hour	s, language — If other than Ge	rman)				
Module	e taugh	t in: German or English						
Metho	d of as	sessment (type, scope, lang	uage — if other than German,	examination offered — if no	ot every semester, informati	ion on whether		
module is	s creditab	le for bonus)						
 a) written examination (approx. 90 to 120 minutes) or b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English 								
Allocat	ion of _l	places						
Additio	nal inf	ormation						
Worklo	ad							
180 h								
Teaching cycle								
Referred to in LPO I (examination regulations for teaching-degree programmes)								
§ 22 § 22 § 22	§ 22 Nr. 1 h) § 22 Nr. 2 f) § 22 Nr. 3 f)							
Module	e appea	ars in						
LA Sonderp School) (20	oädagogik 015)	Didactics in Physics (Middle	JMU Würzburg • gener amt Sonderpädago	ated 18-Apr-2025 • exam. reg gik (Mittelschule-Didaktikfacl	. data record Lehr- h) Physik - 2015	page 29 / 39		

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Bachelor's degree (1 major) Physics (2015) Bachelor's degree (1 major) Nanostructure Technology (2015) First state examination for the teaching degree Grundschule Physics (2015) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2015) First state examination for the teaching degree Realschule Physics (2015) First state examination for the teaching degree Gymnasium Physics (2015) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) Master's degree (1 major) Functional Materials (2016) First state examination for the teaching degree Grundschule Physics (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Realschule Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) Bachelor's degree (1 major) Physics (2020) Bachelor's degree (1 major) Nanostructure Technology (2020) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Physics (2020) Bachelor's degree (1 major) Quantum Technology (2021) Master's degree (1 major) Functional Materials (2022) exchange program Physics (2023) Master's degree (1 major) Functional Materials (2025)

Module title					Abbreviation		
Curren	Current Topics of Teaching Concepts in Physics 11-L-APD-152-mo1						
Modul	e coord	inator		Module offered by			
chairperson of examination committee			ee	Faculty of Physics and Astronomy			
ECTS Method of grading Only after succ. compl. of module(s)							
2	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
d como	stor	undorgraduato		•			
1 Sellie	ster	undergraduate					
Conter							
Curren	t topics	in physics education.					
Intend	ed lear	ning outcomes					
The stu red kno	udents owledg	have knowledge of a cu e according to subject-	irrent subdiscipline of specific contexts and in	physics education ar mplement it into clas	nd are able to classif ses.	y the acqui-	
Course	S (type, i	number of weekly contact hour	s, language — if other than Ge	rman)			
S (2) Module	e taugh	t in: German or English					
Metho	d of as	sessment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informat	ion on whether	
	s creditat	ie for bonus)					
a) writt	en exa examir	mination (approx. 45 m	inutes) or each (approx-10 mini	ites) or			
c) oral	examir	ation in groups (group	s of 2, approx. 10 minu	tes per candidate) oi	ſ		
d) term	n paper	(approx. 8 pages) or					
e) talk	(30 to 4	45 minutes) with discus	sion				
Allocat	tion of	olaces					
Additio	onal inf	ormation					
Worklo	ad						
oo h							
Teachi	ng cycl	ρ					
	ing cyce						
Poforr	d to in						
S oo !!		LFUT (examination regulation	ons for teaching-degree progra	ammes)			
8 22 II 8 22 II	Nr. 11) Nr. 2 f)						
§ 22	Nr. 3 f)						
Modul	e appea	ars in					
First st	ate exa	mination for the teachi	ng degree Grundschule	Physics (2015)			
First st	ate exa	mination for the teachi	ng degree Grundschule	e Didactics in Physics	s (Primary School) (2	2015)	
First state examination for the teaching degree Realschule Physics (2015)							
First st	ate exa	mination for the teachi	ng degree Gymnasium	Physics (2015)			
First st	ate exa	mination for the teachi	ng degree Sonderpäda	gogik Didactics in Pł	nysics (Middle Schoo	ol) (2015)	
First st	ate exa	mination for the teachi	ng degree Mittelschule	e Physics (2015)			
First st	ate exa	mination for the teachi	ng degree Mittelschule	Didactics in Physics	s (Middle School) (20	o15)	
First st	First state examination for the teaching degree Grundschule Physics (2018)						
First st	ate exa	mination for the teachi	ng degree Grundschule	e Didactics in Physics	s (Primary School) (2	2018)	
First st	ate exa	mination for the teachi	ng degree kealschule i	2nysics (2018)			
LA Sonder School) (20	pädagogik 015)	Didactics in Physics (Middle	JMU Würzburg ● gener amt Sonderpädago	ated 18-Apr-2025 • exam. reg gik (Mittelschule-Didaktikfacl	. data record Lehr- 1) Physik - 2015	page 31 / 39	



First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020)

LA Sonderpädagogik Didactics in Physics (Middle School) (2015)

Module title					Abbreviation			
Scienti	Scientific Work in Teaching Concepts 11-L-WPD-152-m01							
Module coordinator				Module offered by				
Managing Director of the Institute of Ar		Applied Physics	Faculty of Physics a	nd Astronomy				
FCTS Method of grading			Only after succ. con	Only after succ. compl. of module(s)				
2010	(not)	succossfully completed						
Duratio		Module level						
1 semester undergraduate								
Conten	its							
Curren	t topics	in scientific work in phy	ysics education					
Intend	ed lear	ning outcomes						
The stu of phys	เdents l sics edเ	have knowledge of a cu acation on the basis of s	rrent subdiscipline of p scientific methods.	physics education ar	nd are able to proces	s questions		
Course	S (type, r	umber of weekly contact hours	language — if other than Ger	rman)				
S (2)								
Module	e taugh	t in: German or English						
Metho	d of ass	Sessment (type, scope, langu	age — if other than German, o	examination offered — if no	t every semester, informati	on on whether		
module is	s creditab	le for bonus)						
talk (30	o to 45	minutes)						
Allocat	tion of p	olaces						
Additio	onal inf	ormation						
Worklo	ad							
oo h	<u></u>							
90 II								
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)				
§ 22	Nr. 1 h)							
§ 22	Nr. 2 f)							
§ 22	Nr. 3 f)							
Module	e appea	ars in						
First st	ate exa	mination for the teachir	ng degree Grundschule	Physics (2015)				
First st	ate exa	mination for the teachir	ng degree Grundschule	Didactics in Physics	s (Primary School) (2	015)		
First st	ate exa	mination for the teachir	ig degree Realschule H	hysics (2015)				
First st	ate exa	mination for the teachir	ng degree Gymnasium	Physics (2015)				
First st	ate exa	mination for the teachir	ig degree Sonderpada	gogik Didactics in Pr	iysics (Middle Schoo	01) (2015)		
First state examination for the teaching degree Mittelschule Physics (2015)								
First st	First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015)							
First st	ate exa	mination for the teachir	ng degree Grundschule	Didactics in Physics	(Primary School) (2	018)		
First st	ate exa	mination for the teachir	ng degree Realschule F	Physics (2018)		010)		
First st	ate exa	mination for the teachir	ig degree Gymnasium	Physics (2018)				
First st	ate exa	mination for the teachir	ng degree Mittelschule	Physics (2018)				
First st	ate exa	mination for the teachir	ig degree Sonderpäda	gogik Didactics in Ph	vsics (Middle Schoo	ol) (2018)		
First st	ate exa	mination for the teachir	ng degree Mittelschule	Didactics in Physics	(Middle School) (20	018)		
LA Sonder School) (20	pädagogik 015)	Didactics in Physics (Middle	JMU Würzburg • genera amt Sonderpädagos	ated 18-Apr-2025 • exam. reg. gik (Mittelschule-Didaktikfach	. data record Lehr- 1) Physik - 2015	page 33 / 39		

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First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Physics (2020)

Module title					Abbreviation		
Current Topics in Physics 11-LX6-152-mo1							
Module coordinator			Module offered by				
chairpe	erson o	f examination committe	e	Faculty of Physics and Astronomy			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
6	nume	rical grade					
Duratio	n	Module level	Other prerequisites	i			
1 seme	ster	undergraduate	Approval from exam	ination committee r	equired.		
Conten	ts	<u> </u>	1		·		
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Course	S (type, r	number of weekly contact hours	s, language — if other than Ge	rman)			
V (3) + I	R (1)						
Method	d of ass	sessment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether	
module is	creditab	le for bonus)					
 b) oral examination of one candidate each (approx. 30 minutes) or c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or d) project report (approx. 8 to 10 pages) or e) presentation/talk (approx. 30 minutes) If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest. Language of assessment: German and/or English 							
Additio	nal inf	ormation					
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180 h							
Teachir	ıg cycl	e					
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First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Grundschule Physics (2018) First state examination for the teaching degree Realschule Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Mittelschule Physics (2020) First state examination for the teaching degree Mittelschule Physics (2020) First state examination for the teaching degree Mittelschule Physics (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Physics (2020)

Module title					Abbreviation		
Selected Topics of Physics 11-LCS6-152-mo1							
Module coordinator				Module offered by			
chairperson of examination committee			ee	Faculty of Physics and Astronomy			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
4	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	undergraduate	Approval from exam	ination committee re	equired.		
Conten	ts						
Current study a	topics broad.	in experimental physi	cs. Credited academic a	achievements, e.g. ir	η case of change of ι	iniversity or	
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First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Mittelschule Physics (2015) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2015) First state examination for the teaching degree Grundschule Physics (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2018) First state examination for the teaching degree Realschule Physics (2018) First state examination for the teaching degree Gymnasium Physics (2018) First state examination for the teaching degree Mittelschule Physics (2018) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2018) First state examination for the teaching degree Grundschule Didactics in Physics (Primary School) (2020) First state examination for the teaching degree Grundschule Physics (2020) First state examination for the teaching degree Gymnasium Physics (2020) First state examination for the teaching degree Realschule Physics (2020) First state examination for the teaching degree Sonderpädagogik Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Didactics in Physics (Middle School) (2020) First state examination for the teaching degree Mittelschule Physics (2020)





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 Mittelschule may write this thesis in the subject Didaktik einer Fächergruppe der Mittelschule (Didactics of a Group of Subjects of Mittelschule), 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.