## Study plan

## Name of study plan: U itelství fyziky pro st ední školy

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Master Continuation Programme in Physics Education

Type of study: Follow-up master combined

Required credits: 0

Elective courses credits: 120 Sum of credits in the plan: 120

Note on the plan:

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 0

The role of the block: PP

Code of the group: NMSPUCIFY1

Name of the group: NMS P\_UCIFY 1. ro ník

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 Note on the group:

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Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15AMV	Activating Teaching Methods	KZ	4	12B		PP
02UAOR	Astrophysics and General Relativity	ZK	3	8B	L	PP
02UDIF1	Physics Didactics 1	Z,ZK	6	16B	Z	PP
02UDIF2	Physics Didactics 2	Z,ZK	6	16B	L	PP
02UINT	Didactics of Integrated Science Education	KZ	6	18B	Z	PP
02UHF	History of Physics and Technology Applications	KZ	3	8B	L	PP
32MC-K-ODID-01	General Didactics	Z,ZK	5	16B		PP
32MC-K-PEDO-01	General Pedagogy	Z,ZK	5	16B		PP
01PTZ	Support for Talented Pupils	KZ	4	12B		PP
02UPSP	Practicum in School Physics Experiments	KZ	3	8B	Z	PP
32ME-K-PRSK-01	Presentation and Communication Skills	ZK	4	16B		PP
02UPPP	Introduction to Teaching Practice	Z	6	16B	L	PP
32MC-K-PSEP-01	Psychology in Educational Process	Z,ZK	5	16B		PP

Characteristics of the courses of this group of Study Plan: Code=NMSPUCIFY1 Name=NMS P\_UCIFY 1. ro ník

15AMV	Activating Teaching Methods	KZ	4
The student will becom	e familiarboth theoretically and especially practicallywith activation methods used in science education, their significance, and	d their effective im	plementation in
the teaching and learning and evaluation.	ng process. Based on the instructional objective, the student selects an appropriate activation method and designs a segment	of a lesson, include	ding its reflection
02UAOR	Astrophysics and General Relativity	ZK	3
The course provides a	basic overview of concepts in astronomy, key topics in astrophysics, and selected topics from general relativity. It is designed	as an introduction	n for future
teachers who, after con	pleting the course, will be better equipped to understand the subject matter and independently study further topics.		
02UDIF1	Physics Didactics 1	Z,ZK	6
The course provides an	introduction to and practical training in methodological approaches to teaching physics in secondary schools. It covers diverse	approaches to so	cience education
and to physics instruction	n specifically. Emphasis is placed on lesson preparation and delivery with a focus on engaging students. Students will practice b	oth student-led ar	nd demonstration
experiments, as well as	laboratory work. The course highlights interesting and essential topics in mechanics, molecular physics, and oscillations and	l waves, tailored to	o the secondary
school level.			

02UDIF2	Physics Didactics 2	Z,ZK	6
This course builds upon	Physics Didactics I. It offers practical training in methodological procedures for teaching physics in secondary schools. The	ourse introduces	inquiry-based
learning and laboratory	work in physics. It emphasizes learning in context and the application of physics knowledge in practice. Student motivation a	nd possibilities for	r formative
assessment in physics e	ducation are addressed. The course focuses on engaging and essential topics in electricity and magnetism, optics, and mod	lern physics at the	e secondary
school level.			
02UINT	Didactics of Integrated Science Education	KZ	6
This course explores cro	ess-cutting topics from the perspective of natural sciences. While mathematics, physics, and chemistry are traditionally taugh	t as separate sub	jects in schools,
their content frequently	overlaps and intersects. In such cases, collaboration among teachers across disciplines is beneficial. The course will present	several topics sui	table for building
interdisciplinary relations	ships and fostering cooperation among teachers within a school. Students will be introduced to tandem teaching and project-	based learning m	nethods.
02UHF	History of Physics and Technology Applications	KZ	3
Students will become ac	quainted with key experiments and discoveries that have significantly contributed to the development of our current understa	anding of the natu	ral world. This
knowledge can be effect	ively incorporated into physics teaching as a supplement to the curriculum. Presenting interesting facts about experiments, p	rominent scientis	sts, and their
applications will enrich t	ne instruction and enhance student motivation.		
32MC-K-ODID-01	General Didactics	Z,ZK	5
32MC-K-PEDO-01	General Pedagogy	Z,ZK	5
01PTZ	Support for Talented Pupils	KZ	4
02UPSP	Practicum in School Physics Experiments	KZ	3
The aim of the course is	to acquaint students with the fundamental types of experiments and their effective integration into secondary school physics	instruction. The	course also
introduces the technical	equipment of the physics laboratory and preparation room. Pre-service teachers will learn to prepare, appropriately incorporat	e into lessons, an	d clearly explain
core experiments in med	chanics, oscillations and waves, thermodynamics, electricity and magnetism, and optics. The Practicum in School Physics Ex	periments compl	ements the
theoretical foundations p	provided in Physics Didactics 1 and Physics Didactics 2.		
32ME-K-PRSK-01	Presentation and Communication Skills	ZK	4
02UPPP	Introduction to Teaching Practice	Z	6

Z,ZK

5

Code of the group: NMSPUCIFY2

Name of the group: NMS P\_UCIFY 2. ro ník

32MC-K-PSEP-01 Psychology in Educational Process

The course focuses on preparing students for lesson planning before they begin their teaching practice.

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
02UPDP	Didactic-Pedagogical Project of the Diploma Thesis	Z	2	4B	Z	PP
02UDIP	Diploma Thesis	Z	12	2B	L	PP
02UICT	ICT in Natural Science Education	KZ	3	8B	Z	PP
32MC-K-OSPN-01	Personality: Pathology and Normality	KZ	3	8B		PP
32MC-K-SVZP-02	Education of Pupils with Special Educational Needs in Science Subjects	ZK	4	12B		PP
02UPPS	Direct School-Based Teaching Practice	Z	15	320XH	Z	PP
02URPP	Reclection on Teaching Practice	Z	3	6B	L	PP
32MC-K-PEDS-01	Social Pedagogy	ZK	3	8B		PP
02USTA	Current Trends in the Development and Application of Natural Sciences	Z	6	16B	L	PP
32MC-K-SKMN-01	School Management	ZK	3	8B		PP

32MC-K-SKMN-01	School Management	ZK	3	8B		PP
Characteristics of th	ne courses of this group of Study Plan: Code=NMSPUCIFY2 Nan	ne=NMS P_U	CIFY 2. r	o ník		
02UPDP D	Didactic-Pedagogical Project of the Diploma Thesis				Z	2
Students will become famil	liar with the principles of writing a masters thesis, conduct a literature review and research	other relevant so	urces, and p	ropose the	structure a	and methodology
of their work. They will also	develop and present the theoretical didactic-pedagogical section of their thesis. These	outcomes will be	presented to	peers and	defended	during the
presentation.						
02UDIP D	Diploma Thesis				Z	12
Under expert supervision,	students will prepare the practical part of their diploma thesis. At the end of the semeste	er, they will preser	nt their work	to fellow stu	idents and	defend their
approach.						
02UICT IC	CT in Natural Science Education				KZ	3
This course is designed fo	r students in teacher education and introduces methods of working with ICT and their ap	plication in teach	ing mathem	atics, physic	s, chemis	try, and natural
sciences in general, taking	g into account the students specialization. In addition to familiarizing students with curren	t ICT options, the	course stre	ngthens the	ir compete	encies in digital
technologies and commun	ication.					
32MC-K-OSPN-01 P	Personality: Pathology and Normality				KZ	3
32MC-K-SVZP-02 E	ducation of Pupils with Special Educational Needs in Science Subjection	cts			ZK	4

Direct School-Based Teaching Practice

Before beginning the teaching practice, the student completes an introductory course in teaching practice (Introduction to Teaching Practice). The first phase of direct practice primarily involves classroom observation at a specific school and the preparation of observation protocols. In the following phase, students actively participate in teaching and engage in school-related activities. The student carries out the practice at a designated school for one semester, either two days per week or one day per week over the course of the school year. At least 90 hours must be spent in the classroom, of which 45 hours involve actual teaching, either independently or in pairs. The full 15 ECTS credits also account for time spent on lesson preparation, writing observation protocols, and similar activities, amounting to a total of 450 hours.

O2URPP

Reclection on Teaching Practice

Z
3

This practically oriented course places special emphasis on collaboratively seeking effective solutions to common challenges in teaching practice, as well as on strategies for managing dynamic changes in contemporary education. The instruction is primarily based on creating a safe and supportive environment for reflecting on ones own learning dispositions, sharing and processing emotions and challenging professional topics, including the presentation and communication of students initial pedagogical outcomes. Methods incorporated include structured discussions, feedback interviews, and mentoring.

ZK 3

32MC-K-PEDS-01 Social Pedagogy

This course is designed for teacher education students. It introduces students to the latest research directions in the natural sciences. Emphasis is placed on developing professional qualifications and interdisciplinary connections. The course is delivered through specialized seminars, which also include guest lectures from external experts, and features a field trip

6

3

ZK

Current Trends in the Development and Application of Natural Sciences

Name of the block: Elective courses
Minimal number of credits of the block: 0

The role of the block: V

to a specialized research facility.

02USTA

Code of the group: NMSPUCIFYV

32MC-K-SKMN-01 School Management

Name of the group: NMS P\_UCIFY volitelné p edm ty

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
32MC-K-PSHY-01	Psycho-hygiene Aspects of Teaching Profession	Z,ZK	3	8B		V
32MC-K-SPKO-01	Social and Pedagogical Communication	KZ	3	8B		V
32MC-K-TECR-01	Impacts of Information Technology on Society	Z,ZK	3	8B		V
32MC-K-RIZZ-01	Risk Behavior of Pupils	KZ	3	8B		V

Characteristics of the courses of this group of Study Plan: Code=NMSPUCIFYV Name=NMS P\_UCIFY voliteIné p edm ty

32MC-K-PSHY-01 Psycho-hygiene Aspects of Teaching Profession	Z,ZK	3
32MC-K-SPKO-01 Social and Pedagogical Communication	KZ	3
32MC-K-TECR-01 Impacts of Information Technology on Society	Z,ZK	3
32MC-K-RIZZ-01 Risk Behavior of Pupils	KZ	3

## List of courses of this pass:

Code	Name of the course	Completion	Credits
01PTZ	Support for Talented Pupils	KZ	4
02UAOR	Astrophysics and General Relativity	ZK	3
The course pro	vides a basic overview of concepts in astronomy, key topics in astrophysics, and selected topics from general relativity. It is designed	as an introduction	for future
	teachers who, after completing the course, will be better equipped to understand the subject matter and independently study furth	er topics.	
02UDIF1	Physics Didactics 1	Z,ZK	6
The course provide	es an introduction to and practical training in methodological approaches to teaching physics in secondary schools. It covers diverse ap	proaches to scienc	e education
and to physics insti	ruction specifically. Emphasis is placed on lesson preparation and delivery with a focus on engaging students. Students will practice both	student-led and de	monstratio
experiments, as w	ell as laboratory work. The course highlights interesting and essential topics in mechanics, molecular physics, and oscillations and w	aves, tailored to the	e secondar
	school level.		
02UDIF2	Physics Didactics 2	Z,ZK	6
This course build:	s upon Physics Didactics I. It offers practical training in methodological procedures for teaching physics in secondary schools. The co	urse introduces inq	uiry-based
learning and lat	poratory work in physics. It emphasizes learning in context and the application of physics knowledge in practice. Student motivation a	nd possibilities for t	formative

This course builds upon Physics Didactics I. It offers practical training in methodological procedures for teaching physics in secondary schools. The course introduces inquiry-based learning and laboratory work in physics. It emphasizes learning in context and the application of physics knowledge in practice. Student motivation and possibilities for formative assessment in physics education are addressed. The course focuses on engaging and essential topics in electricity and magnetism, optics, and modern physics at the secondary school level

02UDIP	Diploma Thesis	Z	12
	ervision, students will prepare the practical part of their diploma thesis. At the end of the semester, they will present their work to fell	1	1
Onder expert sup	approach.	ow students and t	deletia tileli
02UHF	History of Physics and Technology Applications	KZ	3
	mistory or Physics and Technology Applications one acquainted with key experiments and discoveries that have significantly contributed to the development of our current understan	1	-
	e effectively incorporated into physics teaching as a supplement to the curriculum. Presenting interesting facts about experiments, pi	-	
Knowledge can b	applications will enrich the instruction and enhance student motivation.	TOTTIMENT SCIENTISE	s, and then
02UICT	ICT in Natural Science Education	KZ	3
	igned for students in teacher education and introduces methods of working with ICT and their application in teaching mathematics, p	1	-
	al, taking into account the students specialization. In addition to familiarizing students with current ICT options, the course strengthen	-	
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02UINT	Didactics of Integrated Science Education	KZ	6
	es cross-cutting topics from the perspective of natural sciences. While mathematics, physics, and chemistry are traditionally taught as		
•	ently overlaps and intersects. In such cases, collaboration among teachers across disciplines is beneficial. The course will present sev		
	y relationships and fostering cooperation among teachers within a school. Students will be introduced to tandem teaching and projec		
02UPDP	Didactic-Pedagogical Project of the Diploma Thesis	Z	2
	ne familiar with the principles of writing a masters thesis, conduct a literature review and research other relevant sources, and propose	l .	1
	ey will also develop and present the theoretical didactic-pedagogical section of their thesis. These outcomes will be presented to pe		
	presentation.		
02UPPP	Introduction to Teaching Practice	Z	6
020111	The course focuses on preparing students for lesson planning before they begin their teaching practice.	_	
02UPPS	Direct School-Based Teaching Practice	Z	15
	ne teaching practice, the student completes an introductory course in teaching practice (Introduction to Teaching Practice). The first pl	1	-
	om observation at a specific school and the preparation of observation protocols. In the following phase, students actively participate	· ·	
	tivities. The student carries out the practice at a designated school for one semester, either two days per week or one day per week	_	
	urs must be spent in the classroom, of which 45 hours involve actual teaching, either independently or in pairs. The full 15 ECTS creations are supported by the control of		
	on lesson preparation, writing observation protocols, and similar activities, amounting to a total of 450 hours.		•
02UPSP	Practicum in School Physics Experiments	KZ	3
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The aim of the co	ourse is to acquaint students with the fundamental types of experiments and their effective integration into secondary school physics	instruction The c	
	ourse is to acquaint students with the fundamental types of experiments and their effective integration into secondary school physics		ourse also
ntroduces the tech	nical equipment of the physics laboratory and preparation room. Pre-service teachers will learn to prepare, appropriately incorporate in	nto lessons, and c	ourse also learly explair
ntroduces the tech	nical equipment of the physics laboratory and preparation room. Pre-service teachers will learn to prepare, appropriately incorporate in s in mechanics, oscillations and waves, thermodynamics, electricity and magnetism, and optics. The Practicum in School Physics Ex	nto lessons, and c	ourse also learly explain
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Presentation and Communication Skills

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