

Study plan

Name of study plan: Učitelství chemie pro střední 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 Chemistry 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: NMSPUCICHE1

Name of the group: NMS P_UCICHE 1. ročník

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 13 courses

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
15AMV	Activating Teaching Methods David Šarboch, Petr Distler, Věra Krajčová Petr Distler Petr Distler (Gar.)	KZ	4	12B		PP
15URAEK	Environmental Chemistry and Radioecology Lucie Baborová Lucie Baborová Lucie Baborová (Gar.)	ZK	3	8B	L	PP
15UCHRP	Chemistry of Radioactive Elements Jan John, Pavel Bartl Jan John Jan John (Gar.)	ZK	3	8B	L	PP
15DIDCH1	Didactics of Chemistry 1 David Šarboch, Petr Distler Petr Distler Petr Distler (Gar.)	Z	6	16B	Z	PP
15DIDCH2	Didactics of Chemistry 2 Petr Distler, Ivona Štefková Petr Distler Petr Distler (Gar.)	Z,ZK	6	16B	L	PP
02UJINT	Didactics of Integrated Science Education Boris Tomášik, Maksym Dreval Boris Tomášik Boris Tomášik (Gar.)	KZ	6	18B	Z	PP
32MC-K-ODID-01	General Didactics David Vaněček, Kateřina Mrázková David Vaněček David Vaněček (Gar.)	Z,ZK	5	16B		PP
32MC-K-PEDO-01	General Pedagogy Daniela Nováková, Martin Kursch Daniela Nováková Martin Kursch (Gar.)	Z,ZK	5	16B		PP
01PTZ	Support for Talented Pupils Lubomíra Dvořáková Lubomíra Dvořáková Lubomíra Dvořáková (Gar.)	KZ	4	12B		PP
15PSP	Laboratory Course in School Chemistry Experiments David Šarboch, Petr Distler, Ivona Štefková Petr Distler David Šarboch (Gar.)	KZ	3	8B		PP
32ME-K-PRSK-01	Presentation and Communication Skills	ZK	4	16B		PP
15UPPP	Introduction to Teaching Practice Petr Distler Petr Distler Petr Distler (Gar.)	Z	6	16B	L	PP
32MC-K-PSEP-01	Psychology in Educational Process Lenka Emrová, Eva Šírová Eva Šírová Lenka Emrová (Gar.)	Z,ZK	5	16B		PP

Characteristics of the courses of this group of Study Plan: Code=NMSPUCICHE1 Name=NMS P_UCICHE 1. ročník

15AMV	Activating Teaching Methods	KZ	4
The student will become familiar both theoretically and especially practically with activation methods used in science education, their significance, and their effective implementation in the teaching and learning process. Based on the instructional objective, the student selects an appropriate activation method and designs a segment of a lesson, including its reflection and evaluation.			

15URAEK	Environmental Chemistry and Radioecology	ZK	3
The first part of the lecture addresses general environmental issues, the impact of human activities, and strategies for environmental protection. It then covers the composition and properties of the individual spheres of the biogeosphere, natural processes within them, biogeochemical cycles of substances, and environmental radioactivity. The course continues with an overview of the sources and types of pollution affecting the biogeosphere, the spread, chemical reactions, and effects of contaminants, and concludes with a discussion of key issues in radioecology.			
15UCHRP	Chemistry of Radioactive Elements	ZK	3
The lecture provides an in-depth discussion of the chemical properties of all known radioactive elements, including the group of pre-uranium elements, actinides, and transactinides.			
15DIDCH1	Didactics of Chemistry 1	Z	6
The aim of the course is to acquaint students with the specific aspects of teaching chemistry and to build upon the knowledge acquired in general didactics.			
15DIDCH2	Didactics of Chemistry 2	Z,ZK	6
The aim of the course is to introduce students to the specific aspects of chemistry education and to build on their prior knowledge of general didactics.			
02UINT	Didactics of Integrated Science Education	KZ	6
This course explores cross-cutting topics from the perspective of natural sciences. While mathematics, physics, and chemistry are traditionally taught as separate subjects in schools, their content frequently overlaps and intersects. In such cases, collaboration among teachers across disciplines is beneficial. The course will present several topics suitable for building interdisciplinary relationships and fostering cooperation among teachers within a school. Students will be introduced to tandem teaching and project-based learning methods.			
32MC-K-ODID-01	General Didactics	Z,ZK	5
32MC-K-PEDO-01	General Pedagogy	Z,ZK	5
The course focuses on basic knowledge of educational phenomena, processes, laws, principles, categories, and theories that form the basis of pedagogical thinking. Education and training will be discussed in the context of pedagogical sciences in connection with changes in the Czech education system over the past twenty years, namely in relation to curricular reform, diversification of the system, alternative educational concepts, and changes in vocational education.			
01PTZ	Support for Talented Pupils	KZ	4
15PSP	Laboratory Course in School Chemistry Experiments	KZ	3
The student is expected to prepare, conduct, and evaluate a practical chemistry lesson.			
32ME-K-PRSK-01	Presentation and Communication Skills	ZK	4
15UPPP	Introduction to Teaching Practice	Z	6
This course is focused on preparing students for lesson planning prior to their teaching practicum.			
32MC-K-PSEP-01	Psychology in Educational Process	Z,ZK	5
The course guides students toward future applications of psychological theory in practical teaching activities. It facilitates the acquisition and development of specific skills, particularly in the area of personal development and understanding the personality traits of others. Furthermore, the course presents selected psychological knowledge necessary for understanding and guiding the educational process. This mainly concerns the characteristics and development of cognitive, motivational, and emotional processes, the psychological characteristics of individuals, and their changes in individual developmental stages, especially during adolescence.			

Code of the group: NMSPUCICHE2

Name of the group: NMS P_UCICHE 2. ročník

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 10 courses

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
15DPP	Educational and Pedagogical Component of the Diploma Thesis <i>Petr Distler Petr Distler Petr Distler (Gar.)</i>	Z	2	4B	Z	PP
15UDP	Master Thesis <i>Petr Distler Petr Distler Petr Distler (Gar.)</i>	Z	12	2B	L	PP
02UICT	ICT in Natural Science Education <i>Věra Krajčová, Maksym Dreval, Lukáš Tomaník Boris Tomášik Věra Krajčová (Gar.)</i>	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
15UPPS	Teaching Practice	Z	15	320XH	Z	PP
15URPP	Reflection on Teaching Practice <i>Petr Distler Petr Distler Petr Distler (Gar.)</i>	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 <i>Boris Tomášik Boris Tomášik (Gar.)</i>	Z	6	16B	L	PP
32MC-K-SKMN-01	School Management	ZK	3	8B		PP

Characteristics of the courses of this group of Study Plan: Code=NMSPUCICHE2 Name=NMS P_UCICHE 2. ročník

15DPP	Educational and Pedagogical Component of the Diploma Thesis	Z	2
The student becomes familiar with the principles of thesis writing, conducts a literature review and research of additional sources, proposes the structure and methodology of the work, and submits the theoretical didactic-pedagogical part of the thesis. These outcomes are presented and defended in front of peers at the end of the semester.			
15UDP	Master Thesis	Z	12
Under expert supervision, the student will prepare the practical part of the diploma thesis. At the end of the semester, the student will present their work to peers and defend their approach.			

02UICT	ICT in Natural Science Education	KZ	3
This course is designed for students in teacher education and introduces methods of working with ICT and their application in teaching mathematics, physics, chemistry, and natural sciences in general, taking into account the students specialization. In addition to familiarizing students with current ICT options, the course strengthens their competencies in digital technologies and communication.			
32MC-K-OSPN-01	Personality: Pathology and Normality	KZ	3
32MC-K-SVZP-02	Education of Pupils with Special Educational Needs in Science Subjects	ZK	4
15UPPS	Teaching Practice	Z	15
Before entering teaching practice, students complete a preparatory course in the Propaedeutics of Teaching Practice. The first phase of direct practice primarily consists of classroom observation at a selected school and the completion of observation reports. In the subsequent phase, students participate directly in teaching and engage in various school operations and activities. Students are required to complete a minimum of 192 hours of direct pedagogical activity, of which at least 96 hours must involve actual teaching either independently or in pairs. Up to 15 ECTS credits include lesson planning, documentation, and related tasks, with a total workload of 450 hours.			
15URPP	Reflection on Teaching Practice	Z	3
This practically oriented course places special emphasis on collaboratively finding effective solutions to common challenges in teaching practice, as well as on strategies for managing the dynamic changes occurring in contemporary education. The instruction is centered on deliberately creating a safe space for reflecting on ones own learning dispositions, sharing and processing emotions, and addressing difficult practical topics, including the presentation and communication of students initial pedagogical outputs. Methods employed include structured discussions, feedback conversations, and mentoring.			
32MC-K-PEDS-01	Social Pedagogy	ZK	3
02USTA	Current Trends in the Development and Application of Natural Sciences	Z	6
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 to a specialized research facility.			
32MC-K-SKMN-01	School Management	ZK	3

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 0

The role of the block: PV

Code of the group: NMSPUCICHEPV

Name of the group: NMS P_UCICHE povinně volitelné předměty

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 2 courses

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
32MC-K-PSHY-01	Psycho-hygiene Aspects of Teaching Profession	Z,ZK	3	8B		PV
32MC-K-SPKO-01	Social and Pedagogical Communication	KZ	3	8B		PV
32MC-K-TECR-01	Impacts of Information Technology on Society	Z,ZK	3	8B		PV
32MC-K-RIZZ-01	Risk Behavior of Pupils	KZ	3	8B		PV

Characteristics of the courses of this group of Study Plan: Code=NMSPUCICHEPV Name=NMS P_UCICHE povinně volitelné předměty

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
02UICT	ICT in Natural Science Education	KZ	3
This course is designed for students in teacher education and introduces methods of working with ICT and their application in teaching mathematics, physics, chemistry, and natural sciences in general, taking into account the students specialization. In addition to familiarizing students with current ICT options, the course strengthens their competencies in digital technologies and communication.			
02UINT	Didactics of Integrated Science Education	KZ	6
This course explores cross-cutting topics from the perspective of natural sciences. While mathematics, physics, and chemistry are traditionally taught as separate subjects in schools, their content frequently overlaps and intersects. In such cases, collaboration among teachers across disciplines is beneficial. The course will present several topics suitable for building interdisciplinary relationships and fostering cooperation among teachers within a school. Students will be introduced to tandem teaching and project-based learning methods.			

02USTA	Current Trends in the Development and Application of Natural Sciences	Z	6
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 to a specialized research facility.			
15AMV	Activating Teaching Methods	KZ	4
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15DIDCH1	Didactics of Chemistry 1	Z	6
The aim of the course is to acquaint students with the specific aspects of teaching chemistry and to build upon the knowledge acquired in general didactics.			
15DIDCH2	Didactics of Chemistry 2	Z,ZK	6
The aim of the course is to introduce students to the specific aspects of chemistry education and to build on their prior knowledge of general didactics.			
15DPP	Educational and Pedagogical Component of the Diploma Thesis	Z	2
The student becomes familiar with the principles of thesis writing, conducts a literature review and research of additional sources, proposes the structure and methodology of the work, and submits the theoretical didactic-pedagogical part of the thesis. These outcomes are presented and defended in front of peers at the end of the semester.			
15PSP	Laboratory Course in School Chemistry Experiments	KZ	3
The student is expected to prepare, conduct, and evaluate a practical chemistry lesson.			
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The lecture provides an in-depth discussion of the chemical properties of all known radioactive elements, including the group of pre-uranium elements, actinides, and transactinides.			
15UDP	Master Thesis	Z	12
Under expert supervision, the student will prepare the practical part of the diploma thesis. At the end of the semester, the student will present their work to peers and defend their approach.			
15UPPP	Introduction to Teaching Practice	Z	6
This course is focused on preparing students for lesson planning prior to their teaching practicum.			
15UPPS	Teaching Practice	Z	15
Before entering teaching practice, students complete a preparatory course in the Propaedeutics of Teaching Practice. The first phase of direct practice primarily consists of classroom observation at a selected school and the completion of observation reports. In the subsequent phase, students participate directly in teaching and engage in various school operations and activities. Students are required to complete a minimum of 192 hours of direct pedagogical activity, of which at least 96 hours must involve actual teaching either independently or in pairs. Up to 15 ECTS credits include lesson planning, documentation, and related tasks, with a total workload of 450 hours.			
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The first part of the lecture addresses general environmental issues, the impact of human activities, and strategies for environmental protection. It then covers the composition and properties of the individual spheres of the biogeosphere, natural processes within them, biogeochemical cycles of substances, and environmental radioactivity. The course continues with an overview of the sources and types of pollution affecting the biogeosphere, the spread, chemical reactions, and effects of contaminants, and concludes with a discussion of key issues in radioecology.			
15URPP	Reflection on Teaching Practice	Z	3
This practically oriented course places special emphasis on collaboratively finding effective solutions to common challenges in teaching practice, as well as on strategies for managing the dynamic changes occurring in contemporary education. The instruction is centered on deliberately creating a safe space for reflecting on one's own learning dispositions, sharing and processing emotions, and addressing difficult practical topics, including the presentation and communication of students' initial pedagogical outputs. Methods employed include structured discussions, feedback conversations, and mentoring.			
32MCK-ODID-01	General Didactics	Z,ZK	5
32MCK-OSPN-01	Personality: Pathology and Normality	KZ	3
32MCK-PEDO-01	General Pedagogy	Z,ZK	5
The course focuses on basic knowledge of educational phenomena, processes, laws, principles, categories, and theories that form the basis of pedagogical thinking. Education and training will be discussed in the context of pedagogical sciences in connection with changes in the Czech education system over the past twenty years, namely in relation to curricular reform, diversification of the system, alternative educational concepts, and changes in vocational education.			
32MCK-PEDS-01	Social Pedagogy	ZK	3
32MCK-PSEP-01	Psychology in Educational Process	Z,ZK	5
The course guides students toward future applications of psychological theory in practical teaching activities. It facilitates the acquisition and development of specific skills, particularly in the area of personal development and understanding the personality traits of others. Furthermore, the course presents selected psychological knowledge necessary for understanding and guiding the educational process. This mainly concerns the characteristics and development of cognitive, motivational, and emotional processes, the psychological characteristics of individuals, and their changes in individual developmental stages, especially during adolescence.			
32MCK-PSHY-01	Psycho-hygiene Aspects of Teaching Profession	Z,ZK	3
32MCK-RIZZ-01	Risk Behavior of Pupils	KZ	3
32MCK-SKMN-01	School Management	ZK	3
32MCK-SPKO-01	Social and Pedagogical Communication	KZ	3
32MCK-SVZP-02	Education of Pupils with Special Educational Needs in Science Subjects	ZK	4
32MCK-TECR-01	Impacts of Information Technology on Society	Z,ZK	3
32MEK-PRSK-01	Presentation and Communication Skills	ZK	4

For updated information see <http://bilakniha.cvut.cz/en/FF.html>

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