University of Chemistry and Technology, Prague	
Title	**DIRECTIVE No. A/S/961/12/2025**
Subject	**Creation of Study Programmes for Graduate Studies**
Applicability	All university
Effective from	1 July 2025
Effective to	Indefinite
Revision	once per year
Cancelled	A/S/961/03/2019
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PART I.

GENERAL AND JOINT PROVISIONS

Article 1

Introductory provisions

1. The aim of this Directive is to set out rules and procedures for the creation of study programmes for graduate studies at the University of Chemistry and Technology, Prague (hereinafter as 'UCT Prague').
2. The Directive is a part of other internal documents that assure quality of study programmes at UCT Prague.

Article 2

Definition and specification of basic terms

1. **Area of education** means factually defined section of university education as defined in Government Regulation No. 275/2016 Coll., on Areas of Education in Higher Education. A study programme belongs to only one area of education if the state examinations or the defence of the dissertation verify profiling knowledge or skills in basic topic areas that belong to one area of education. A study programme is a combined study programme that belongs to several areas of education if the state examinations or the defence of the dissertation verify profiling knowledge or skills in basic topic areas that belong to more areas of education.
2. **Study programme** means a basic educational unit of university studies that is generally defined by the characteristics of the study programme. In Bachelor's and Master's study programmes, studies are carried out according to a predefined study plan. In Doctoral study programmes, studies are carried

out according to an individual study plan that is subject to approval by the programme's Doctoral Study Board.

3. **Characteristics of a study programme** are a set of basic information about the study programme: the name, type, profile of the study programme, form of study, standard term of study, language of study, awarded academic degree, guarantor of the study programmer, study goal and graduate profile. The characteristics also include information about the potential focus of the study programme on the performance of a regulated profession.

4. **Type of study programme** is Bachelor's, Master's and Doctoral.

5. **Profile of study programme** in case of Bachelor's and Master's study programmes is professional or academic; Doctoral study programmes (hereinafter as 'DSP') have no profile.

6. **Joint study programme** is a study programme implanted jointly with another Czech or foreign higher education institution based on a contract.

7. **Form of study** is:

   a) **full-time** – the minimum share of in-person instruction is 80% of the time determined in the study plan for direct instruction,

   b) **distance** – distance instruction also includes synchronous instruction (in physical or distance form) in the minimum amount of 20 lessons per semester,

   c) **part-time** – study programmes include a minimum of 80 lessons of direct instruction per semester, with the exception of the last semester of study where the qualification thesis is prepared. The requirements on examinations and credit tests for students in the part-time form of study are equal to the requirements on examinations and credit tests for students in the full-time form of study.

8. **Graduate profile** specifies a graduate's specialised knowledge and skills and their preparedness to perform their profession.

9. **Study subject** is a basic unit of studies, clearly identified by its assigned code. The manner of assigning codes depends on the inclusion of the subject in the type of study programme.

10. **Profiling foundation subject** equips students with knowledge and skills that are essential for the acquisition of specialised knowledge or skills listed in the graduate profile and that correspond to, are related to or condition the knowledge or skills verified by the state examination.

11. **Basic theoretical profiling foundation subject** is a theoretical and methodological profiling foundation subject in the given area of education by completing which the student will acquire key knowledge that is essential for the acquisition of specialised knowledge listed in the graduate profile and that correspond to, are related to or condition the knowledge verified by the state examination.

12. **Compulsory subject** is a subject the completion of which is a precondition for taking the state final examination.

13. **Elective subject** is a subject the selection of which is fully within the student's competence.

14. **Suffix in the name of subjects I, II and III** is a mark labelling the content of basic (I) and advanced (II and III) subjects. Advanced subjects build on the content of the basic subjects. Advanced subjects can be included in the study plans as compulsory-elective or elective.

15. **Suffix in the name of subjects A and B** is a mark labelling the content of the first (A) and the second, mandatory follow-up (B) subject. It is a type of a two-semester subject.

16. **Study plan** in a Bachelor's or Master's study programme refers to a temporal and content sequence of study subjects in the study programme without a specialisation or in its different specialisations. A study plan clearly defines compulsory, compulsory-elective and elective subjects with rules for their selection, also selected groups of elective subjects may be recommended. Within the framework of

each study plan, subjects are classified as profiling foundation subjects, basic theoretical profiling foundation subjects and other subjects.

17. **Types of instruction based on location**

17.1 **In-person (physical) instruction.** The standard type of instruction where students and instructors are physically present in the same place such as classroom, laboratory or other space for education. Students and instructors can communicate face to face and enjoy the benefits of immediate feedback and interaction.

17.2 **Distance (remote) instruction.** A type of instruction during which the students and instructors are not physically present in the same place. Instead they use technologies such as videoconferences, online platforms and other digital tools to communicate and learn remotely.

18. **Types of instruction based on time**

18.1 **Synchronous instruction.** Instruction takes place in real time. Students and instructors meet physically or remotely at the same time, which allows for immediate interaction and feedback.

18.2 **Asynchronous instruction.** Students and instructors are not present at the same time. Instruction takes place through the use of study support materials (it can be in the form of, for example, a recorded lecture, e-learning courses) and active supervision (controlled self-study).

19. Teaching strategies

19.1 **Direct instruction.** The instructor transfers knowledge, skills and habits directly to students, and is a source of information for students. The scope of direct instruction corresponds to the number of lessons of each subject specified in the study plan and includes the study load corresponding to the assigned number of credits, excluding self-study, preparation of seminar papers, preparation for the subject and similar activities of the student during which the educational process is not directly controlled by the instructor.

19.2 **Indirect instruction.** Students search for the educational content independently through active search in specialised literature and other sources, through solution of projects, experiments, worksheets to practice the studied content etc. The instructor focuses on supporting the study activities and learning process and is not the main source of information.

20. Forms of instruction in a subject

20.1 **In-person instruction** is carried out physically mainly in the form of direct instruction. In justified cases physical instruction may be replaced by distance synchronous instruction (eg because the instructor stays in place other than the usual place of instruction). Synchronous (distance) instruction is carried out via electronic means (eg MS Teams) taking place at the given time and both the instructor and the students are present. The students are not physically located at the same place as the instructor, but they can mutually interact.

In in-person instruction, the study plan created within the framework of the study programme presupposes that the majority of instruction is organised in the form of lectures, practicals, internships, laboratory classes, consultations and other similar forms of instruction that take place according to a regular, usually weekly schedule and during which the student has the possibility to acquire knowledge directly.

20.2 **Hybrid instruction** is a form of instruction typical for extraordinary situations defined in Act No. 111/1998 Coll., on Higher Education Institutions, when instruction cannot take place with the entire group of students in attendance. One part of the students studies remotely (ideally synchronously), the other part studies in person. Also examinations before a board can take place in a hybrid form (one part of the board is present remotely, the other part physically).

20.3 **Distance instruction** is carried out mostly in the form of asynchronous instruction based on the prepared study support materials. Study support materials guide the student through their study in the individual study subjects and they must include forms of checking knowledge where the student will check the acquired knowledge.

20.4 **Combined instruction** is carried out as a combination of instruction in the form of synchronous instruction (physical or remote) and asynchronous instruction. Asynchronous instruction is carried out based on the prepared study support materials. Study support materials guide the student through their study in the individual study subjects and they must include forms of checking knowledge where the student will check the acquired knowledge.

21. Instruction methods (organisational forms of instruction)

21.1 **Lecture.** A transmissive form of instruction (transfer of knowledge) when the lecturer (instructor) gives a lecture on a comprehensive topic; it is a coherent, logical and systematic explanation that can include interactive elements (eg discussions, questions). From factual perspective, the content of a lecture must correspond to the current state of science.

21.2 **Practical, seminar.** A form of instruction where the main share of activity is performed by the students. It is used mainly for practice and application of knowledge (usually acquired at a lecture or by self-study) in the form of exercises and tasks.

21.3 **Laboratory class** is a practical form of instruction. It takes place in a laboratory and is used for rehearsal and practice of practical skills. It usually requires the application of knowledge acquired by self-study of theoretical subjects. Laboratory classes are divided into physical (standard) and computer-based (virtual). Physical laboratory classes: Standard laboratory environment where experiments and practical exercises with real materials and tools are performed, eg chemical laboratory classes.
Computer-based laboratory classes: Exercises carried out in a digital environment using specialised software and programs, such as mathematical simulations or coding.

21.4 **Project** is a comprehensive solution to a task (assignment) that has clearly defined goals, expected benefits and a set implementation schedule. A project can be solved by an individual or a team of students. Subjects can be taught in this form in their entirety, or the solution to the project can be one of the course outputs. An integral part is the presentation and defence of the obtained results and conclusions.

21.5 **Workshop** is an interactive form of instruction that builds on previous theoretical knowledge and focuses on the practical application of knowledge and skills. A workshop is usually delivered by external teachers, eg directly in a work environment, and is usually integrated into the content of regular practicals over the course of several lessons.

21.6 **Excursion** may be a part of an internship or another subject. It refers to professionally focused visits to companies or institutions related to the graduate profile of the study programme or specialisation.

21.7**Internships** take place outside the university. The aim of an internship is to get acquainted with the environment and concrete work of an external organisation and increase the student's specialised practical knowledge. Students carry out activities typical for the given workplace. Internships are organised as longer-term study activities.
Pedagogical internships: instruction takes place in a real-life pedagogical environment (school, educational institution, leisure time centre etc) under the supervision of a local employee. Their aim is to get acquainted with the given environment and develop knowledge and skills needed for the performance of pedagogical activity.

22. Qualification theses

22.1 Bachelor's thesis is the final outcome of Bachelor's studies in which the student demonstrates the ability to use the acquired knowledge and skills in an independent professional project. The thesis should demonstrate the student's ability to understand the assigned topic, to professionally describe and interpret the acquired knowledge in text, to use theoretical knowledge in practice, to formulate their own conclusions and to orally present the results. A Bachelor's thesis can be replaced by multi-semester laboratory projects, provided that the

student maintains the acquired competencies. A Bachelor's thesis must not consist solely in a literature search and review.

22.2 Master's thesis is a final outcome of Master's studies in which the student demonstrates the ability to apply the acquired knowledge and skills in the solution of a scientific, research or development task. The thesis should demonstrate the student's ability to design, plan and organise experimental and computational methods, reliably process and interpret the results and systematically discus the acquired knowledge and experience. A Master's thesis must not consist solely in a literature search and review.

22.3 Dissertation is the final outcome of Doctoral studies in which the student demonstrates the ability to apply the knowledge, skills and experience acquired during university studies to solve a comprehensive scientific task. The thesis should demonstrate the student's readiness for independent scientific work and their ability to publish the achieved original results at a high professional level.

23. Credits are ECST (European Credit Transfer and Accumulation System) credits and represent the amount of study load needed to achieve the goals of the given educational/study subject or programme, ie learning outcomes, or competencies acquired by completing a subject or programme. One ECST credit corresponds to 28 hours of study load. The entire academic year corresponds to 60 ECTS credits, which means 30 credits per semester.

24. Study load is the entire time dedicated to study activities which include lectures, seminars, practicals, examinations, self-study etc that lead to the fulfilment of learning outcomes. In the determination of the study load expressed in credits, the following factors are most commonly considered:

Number of physical hours of education is the amount of time that the student spends in synchronous instruction, ie in direct contact with the instructor or consultant, in person or online (eg lectures, seminars, practicals, laboratory work).

Independent study is the time needed for independent study or research. It includes the time spent reading, writing, doing research and fulfilling tasks outside direct instruction (eg preparation for lectures and seminars, solution of tasks, preparation of protocols, writing of seminar papers and theses, preparation for end-of-semester tests, working on team and individual projects).

Preparation for completion (evaluation) of subject is the time needed for the preparation for completion of a subject (eg revising, creating summary notes and study materials, writing the final project).

25. **Study materials** are all sources of information that students use during their studies to understand and learn the subject matter, acquire new knowledge and prepare for examinations or practice. Electronic study materials for subjects are shared in Moodle (Modular Object-Oriented Dynamic Learning Environment) on the website e-learning.vscht.cz. A special form of study materials are **study support materials**, which serve to support distance learning. They are used to guide the student through self-study, enable, among other things, the provision of feedback and interaction with the instructor (eg in the form of consultation).

26. Methods to verify study results include an examination (ZK), a graded credit (KZ) a credit (Z) and the evaluation of the Bachelor's, Master's and Doctoral theses.

27. SIS is the Study Information System use at UCT Prague.

PART II.

Article 3

Study plan

1. The study plan is proposed by the guarantor of the study programme. The guarantor observes the internal regulation 'Study and Examination Rules of UCT Prague', recommended procedures of the

National Accreditation Bureau for Higher Education and other internal regulations of UCT Prague related to the preparation of the study programme and accreditation documents. In the preparation and completion of the plan and proposal of the study programme, the guarantor of the study programme collaborates in particular with:

a) the Vice-Dean for Education;
b) guarantors of the individual subjects and heads of their departments;
c) the Department of Education of UCT Prague;
d) and with partners from the industry and state sector or the Czech Academy of Science.

2. In the creation of the study plan, the guarantor of the study programme in particular:
   a) creates study objectives, profile and acquired competencies of the graduate of the study programme;
   b) creates the study plan so that its composition of the subjects ensures the fulfilment of the objective of the study programme and guarantees the declared graduate profile, proceeds so that the list of study subjects is always based on the requirement of subjects for continuity;
   c) determines the basic theoretical profiling foundation subjects and the profiling foundation subjects;
   d) defines compulsory and compulsory-elective subjects within the study plan so that the profiling foundation subjects are included in the group of compulsory subjects or in the group of compulsory-elective profiling subjects;
   e) allocates the necessary minimum number of elective subjects to each group of compulsory-elective subjects;
   f) always takes into account in the study plan the even distribution of the student's study load into individual semesters of study, the sum of the credits for compulsory and compulsory-elective subjects;
   g) takes into account the resolutions of the Internal Evaluation Board of UCT Prague in effect.

The recommended percentage share of credits for compulsory (CS), compulsory-elective (CE) and elective subjects in core and specialisation subjects within the framework of specialisations of study programmes:

Subjects	**Share, %**
Compulsory subjects (CS), compulsory-elective subjects (CE)	from 95 to 80
Elective subjects	from 5 to 20

Study programme with specialisations:

Subjects	**Share, %**
Core subjects CS and CE	over 50
Specialisation subjects	over 25
Elective subjects	from 5 to 20

Article 4

Study subjects

1. Based on their inclusion in the type of study programme, study subjects are classified as Bachelor's and Master's, as subjects without a link to the type of the study programme (eg elective language courses) and as subjects taught in English. The codes of subjects in SIS are also dependent on the inclusion in the type of study programme: B – Bachelor's subject, M – Master's subject, V – subject with no link to the type of study programme and A – subject taught in English.
2. Subjects taught in English that have an equivalent subject in Czech must have an equivalent content as well the scope, form of instruction, number of awarded credits and way of completion of the subject.

3. The information entered in SIS includes:
   a) Czech and English name;
   b) guarantor of subject;
   c) language of instruction;
   d) department responsible for instruction;
   e) interchangeability of subjects (if applicable);
   f) number of credits;
   g) lessons per week, form of conclusion;
   h) type of instruction (eg in-person);
   i) instruction methods;
   j) annotation;
   k) syllabus;
   l) learning outcomes;
   m) competencies after completion;
   n) examination requirements;
   o) literature;
   p) study materials or study support materials;
   q) study prerequisites;
   r) requirements on completion of subject;
   s) student evaluation (form/weight);
   t) study load (credits/hours).

Article 5

State final examinations

1. The study is duly completed by a state final examination (SFE).
2. In Bachelor's study programmes, the knowledge or skills in the basic topic areas are verified by SFE. The topic areas may include several subjects. The examination also includes the defence of the Bachelor's thesis if the Bachelor's thesis is part of the accreditation. The content of the individual topic areas must be published no later than three months prior to SFE.
3. In Master's study programmes, SFE includes the defence of the Master's thesis, which is followed by either the verification of profiling knowledge and skills in the topic areas that are crucial to the given programme, or an extended discussion during which the examination board asks questions related to the Master's thesis as well as broader questions related to the profiling knowledge in the studied programme. The general requirements on profiling knowledge must be published no later than on the day when the Master's thesis is assigned.
4. The topic areas for SFE are generally divided into compulsory and compulsory-elective, with the number of topic areas being three or four. Compulsory areas are always formed on the basis of compulsory subjects, especially basic theoretical subjects and profiling foundation subjects. Elective topic areas may also be based on compulsory-elective subjects which are profiling foundation subjects. The content of the individual topic areas must be published no later than three months before SFE.
5. In study programmes with specialisations, at least one of the SFE areas will include profiling foundation subjects of the specialisation.

Article 6

Common study core of Bachelor's study programmes

1. It is a set of core subjects that standardise the content and course of the common study at UCT Prague for the area of education 'Chemistry'.

2. The aim is to ensure high-quality knowledge and skills of students for their subsequent specialisation, guarantee universal education with regard to good employability at the labour market, support the engineering and technological nature of studies at the UCT Prague, make sure there is a reasonable number of study programmes, specialisations and subjects at UCT Prague and simplify and deepen the transition between Bachelor's and follow-up Master's study programmes and their specialisations.
3. The study plan for a 100% area of education 'Chemistry' in academically profiled study programmes must include at least one subject from the group of subjects:

Group	**Name of group**
OACH	General and Applied Chemistry (or Inorganic Chemistry)
CHV	Chemical and Balance Calculations
LOACH	Inorganic Chemistry: Laboratory
MAT	Mathematics
TOX	Toxicology and Ecotoxicology
OCH	Organic Chemistry
LOCH	Organic Chemistry: Laboratory
PP	Computer Practice
FY	Physics
LFY	Physics: Laboratory
J	Professional English Language
FYCH	Physical Chemistry
LFYCH	Physical Chemistry: Laboratory
AS	Applied Statistics
ACH	Analytical Chemistry
LACH	Analytical Chemistry: Laboratory
BIOCH	Biochemistry
LBIOCH	Biochemistry: Laboratory
CHI	Chemical Engineering
LCHI	Chemical Engineering: Laboratory
INF	Chemical Informatics
BC	Bachelor's thesis/Project equivalent

The content of the groups is provided in Annex 1, which includes further information about the inclusion of subjects in the study plan (prerequisites, corequisites and information about the semester of study).
If a study programme is not 100% in the area of education 'Chemistry', the credit load of the common core must correspond at least to the percentage of the area of education 'Chemistry' and the sequence of subjects according to Annex 1 must be maintained. If the subject is followed by a Laboratory, it must be included either in the concurrent semester (in agreement with the guarantor of the subject) or in the nearest following semester. In case of two-semester courses A and B, the Laboratory can be included only after completing subject B.

4. **Subject without suffix** provides the student with the necessary basic knowledge for the follow-up subjects, unless the prerequisite for the follow-up subject is a subject with suffix. The subject is not a profiling subject and may only be a minor part of the topic areas for the state final examination (SFE). The subject has a maximum of 5 credits.
Subjects I and II. **Subject I** provides the student with more detailed knowledge than the subject (without suffix), while being comprehensive (self-supporting) in itself and providing the necessary

knowledge for the follow-up subject II. **Subject II** usually builds on subject I and expands its topics. Subject II does not have to be part of the groups of compulsory or compulsory-elective subjects. Subject I or II may be profiling and part of the SFE topic areas. Subject I may have a maximum of 8 credits; if a subject without suffix is not offered, subject I must have a maximum of 5 credits. The sum of credits for subjects I + II must be lower than for subjects A+B.
Subjects A and **B**. These are two-semester courses where the student will acquire the complete knowledge only after completing both parts. **Subject B**, in its content and placement in the study plan, follows immediately after **Subject A**. The topics in subjects A+B are studied in more depth and in a broader scope. These subjects are usually profiling subjects and are part of the SFE topic areas. The sum of credits for subjects A and B is a maximum of 15 credits.

5. The offer of subjects is created on the basis of agreement between the guarantors of study programmes and the faculty responsible for instruction.
If the subject **'Inorganic Chemistry'** is included, the study plan must at the same time include the subject **'Chemistry Refresher Course'**.
If the subject **'Mathematics for Chemists I'** is included, the study plan must at the same time include the subject **'Mathematics Introductory Course'**.

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Annexes:
Content of groups listed in Art. 6, Para 3