



Subject-specific study and examination regulations for the Bachelor's programme in Chemical Engineering ("Chemieingenieurwesen") and the English-taught Master's programme in Chemical Engineering offered by the Faculty of Natural Sciences at Ulm University of 14 August 2020

On the basis of § 32 (3) sentence 1 of the Higher Education Act (LHG) of Article 1 of the Third Act Amending Higher Education Regulations (Third Higher Education Amendment Act - 3. HRÄG) of 1 April 2014 (Law Gazette No. 6, p. 99 ff), last amended by Article 1 of the Act of 13 March 2018 (Law Gazette No. 5, p. 85 ff), the Senate of Ulm University, at the proposal of the Faculty of Natural Sciences, adopted the following subject-specific study and examination regulations for the bachelor's degree programme in Chemical Engineering and the English-taught master's degree programme in Chemical Engineering at its meeting on 29 July 2020. The President of Ulm University gave his consent on 14 August 2020 in accordance with § 32 (3) sentence 1 of the *LHG*.

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I. General provisions

§ 1 Scope of application

- (1) These subject-specific study and examination regulations contain specific regulations for the bachelor's programme in Chemical Engineering ("Chemieingenieurwesen") and the master's programme in Chemical Engineering.
- (2) These subject-specific study and examination regulations supplement the general provisions on study and examination regulations for bachelor's and master's programmes at Ulm University (General Framework). In cases of doubt, the General Framework has precedence.

§ 2 Academic degrees (§ 2 General Framework)

- (1) The Faculty of Natural Sciences at Ulm University offers the bachelor's programme in Chemical Engineering leading to the degree of "Bachelor of Science" (in short: "B.Sc.").
- (2) The Faculty of Natural Sciences at Ulm University offers the master's programme in Chemical Engineering leading to the degree of "Master of Science" (in short: "M.Sc.").

§ 3 Start of the programme (§ 3 General Framework)

Studies in the bachelor's programme in Chemical Engineering start in the winter semester. Studies in the master's programme in Chemical Engineering can be taken up in the winter or the summer semester.

§ 4 Standard period of study (§ 5 General Framework)

The standard period of study in the bachelor's programme is three years. The standard period of study in the master's programme is two years.

§ 5 Content, scope and volume of the examination according to § 6 (6) General Framework

The examination according to § 6 (6) General Framework in the Bachelor's degree programme in Chemical Engineering consists of the written module part examination General Chemistry with a volume of 8 CP as well as one of each of the following module examinations Higher Mathematics 1 or Higher Mathematics 2 and one of the following module examinations Physics I for Engineers or Physics II for Engineers. The examination according to § 6 (6) General Framework is passed if, by the end of the examination period of the third semester, the module part examination General Chemistry as well as one more of the module examinations Higher Mathematics 1 or Higher Mathematics 2 and Physics I for Engineers or Physics II for Engineers have been passed.

§ 6 Deadlines (§ 6 (8) and (9) General Framework)

- (1) In the bachelor's degree programme in Chemical Engineering, students must have completed the examinations amounting to 60 CP of the first to fourth semesters according to the study curriculum by the end of the examination period of the fourth semester. By the end of the examination period of the sixth semester, students must have taken all examinations in all compulsory and all compulsory elective modules listed in the study curriculum. The right to examination expires if the bachelor's degree programme is not

successfully completed by the end of the ninth semester, unless the student is not responsible for exceeding the deadline. The deadline for the ninth semester is 31 October for a summer semester and 30 April of the following semester for a winter semester.

- (2) In the master's programme in Chemical Engineering students must have successfully completed their master's studies by the end of the examination period of their fourth semester. The right to examination expires if the master's programme in Chemical Engineering has not been successfully completed by the end of the examination period of the sixth semester unless students are not responsible for exceeding this deadline. The deadline for the sixth semester is 31 October for a summer semester and 30 April of the following semester for a winter semester.

§ 7 Courses and examinations in English (§ 7 General Framework)

- (1) Courses and examinations in the bachelor's programme are held in German; in the master's programme, as a rule, they are held in English. In justified exceptional cases, e.g. if a course cannot otherwise be guaranteed, the examination board can agree to offer a compulsory course in the bachelor's programme in English.
- (2) Examinations must be conducted in the language of instruction of the course.

§ 8 Subject examination board (§ 10 General Framework)

- (1) A subject examination board is formed for the bachelor's programme in Chemical Engineering and the master's programme in Chemical Engineering.
- (2) The subject examination board consists of seven members. It is composed of four full-time lecturers and habilitated members working full-time at Ulm University, one scientific staff member and two students in an advisory capacity. The term of office for the university lecturers, the habilitated members working full-time at Ulm University and the scientific staff member is three years; for the student members, it is one year.

§ 9 Courses, examination achievements, module handbook

- (1) The programme's contents will be conveyed, in particular, in the following types of courses:
 - lectures
 - practice classes (*Übungen*)
 - laboratory courses/internships
 - seminars
 - tutorials
 - project work
- (2) Assessment is typically through written or oral examinations or project work.
- (3) Within one module, ungraded coursework such as participation in classes, papers and seminar presentations in the same module may be required. Form and volume of the respective coursework are published in the module handbook.
- (4) If a module part examination is done progressively during a course, it is only deemed to have been passed when both this module part examination and the related coursework as defined in the module handbook, especially successful participation in classes and seminars, have been completed.

§ 10 Organisation of module examinations (§ 13 General Framework)

As a rule, written module (part) examinations in the bachelor's and master's programme follow the recommendations of § 13 (1) General Framework.

§ 11 Related study programmes (§ 14 General Framework)

Related study programmes within the meaning of § 14 (2c) General Framework are, in particular, study programmes in chemical engineering or programmes with a similar designation.

§ 12 Written module examinations (§ 16a General Framework)

Assessment and grading of written module (part) examinations must not exceed six weeks of the date of the written exam. It must be ensured that the registration deadline for the repeat examination can be met.

§ 13 omitted

§ 14 Modules bachelor's and master's thesis (§ 16c General Framework)

- (1) The bachelor's thesis corresponds to 12 CP. The master's thesis corresponds to 30 CP.
- (2) The time allowed from admission to submission of the bachelor's thesis is no more than four months; the time allowed from admission to submission of the master's thesis is six months. The subject examination board can extend the time for writing the bachelor's or master's thesis by up to one month upon justified request if the student is not responsible for exceeding the deadline.
- (3) The bachelor's and master's thesis in the degree programme in Chemical Engineering is chosen from the subject areas of Chemical Engineering. The master's thesis can also be written in an interdisciplinary field with the consent of the examination board.
- (4) Bachelor's and master's theses may be carried out externally upon request and approval by the subject examination board.
- (5) The bachelor's thesis can be written in English if the supervisor agrees. The master's thesis can be written in English or in German.
- (6) The master's thesis includes a presentation with a duration of approx. 45 minutes including a discussion of the subject of the master's thesis or a colloquium on the topic of the thesis.
- (7) The bachelor's thesis must be submitted to the *Studiensekretariat* (student administration and examinations office) in one bound copy and one electronic version as prescribed in § 16c (9) General Framework; the master's thesis must be submitted to the *Studiensekretariat* in two bound copies and one electronic version as prescribed in § 16c (9) General Framework.
- (8) Acceptance of the bachelor's and master's thesis by the examiner is subject to the student having submitted a documentation of the underlying scientific results (e.g. measured data, spectra, analyses) to the examiner. The form of this is determined by the examiner.

§ 15 Evaluation of the module examinations, module handbook (§ 17 General Framework)

- (1) In cases justified by their subject-matter, in particular during bachelor's studies, written exams may take the form of multiple choice tests. In such cases, module examinations are deemed to have been passed if a student has earned a minimum of 60% of the total number of points or if the number of points earned by the student does not fall more than 20% short of the average number of points achieved by all examinees and the candidate has obtained a minimum of 50% of the total number of points.
- (2) The grades in all examinations marked as counting towards the final grade in § 18 (1) count towards the final grade of the bachelor's programme.
- (2a) The grades in all examinations marked as counting towards the final grade in § 18a (1) count towards the final grade of the master's programme.
- (3) Where more credits points are earned from compulsory elective modules than are required under the study curriculum, these count towards the final grade with the actual weight corresponding to their credit points. If, in a compulsory elective module, the minimum number of credit points has already been earned, no further modules or examinations can count towards this module.
- (4) The module handbook specifies which modules may be taken as compulsory elective modules.
- (5) Admission to compulsory and compulsory elective module exams may be subject to coursework. Required coursework is specified in the module handbook. Form and volume of the respective coursework are published in good time before the courses begin.
- (6) Each module concludes with a module examination or several module part examinations.

§ 16 Repetition of module examinations (§ 20 General Framework)

- (1) In the bachelor's programme, up to six module (part) examinations can be repeated up to twice each; in the master's programme, up to two module (part) examinations can be repeated up to twice each. This does not apply to examinations under § 6 (6) General Framework. Such examinations can only be repeated once.
- (2) In the bachelor's programme, two passed written module examinations can be repeated once each at the following written examination date with the purpose of improving the grade; this possibility exists until the end of the examination period of the sixth semester in the programme. The better exam result is then considered. It is not possible to repeat module examinations in the master's programme or the bachelor's or the master's thesis with the purpose of improving the grade.

II. Bachelor's programme in Chemical Engineering ("Chemieingenieurwesen") and master's programme in Chemical Engineering

§ 17 Programme objectives

- (1) The bachelor's programme aims to convey the scientific and methodical foundations of chemical engineering. The bachelor's examination aims to establish if students have acquired the expertise required for an early transition into a professional career and if they have a good working knowledge in their subject.
- (2) The master's programme in Chemical Engineering is a research-oriented programme. It aims to deepen and broaden the scientific and methodological qualifications acquired in the bachelor's programme. The programme objective is to convey knowledge and skills to the students that enable them to independently work on complex problems in chemical and process engineering applying scientific methods and to thus qualify them for work in research, science, development and application in the industry, higher education and research institutes. In particular, the master's degree qualifies graduates for doctoral studies.

18 Study contents of the bachelor's programme

The following modules must be completed in the bachelor's programme:

Areas	Modules	CP	E/U/B*
Area of Chemistry		30	
1	General chemistry	7	E
2	Introductory lab course chemistry	4	U
3	Organic chemistry	7	E
4	Instrumental analytical chemistry	4	E
5	Physical chemistry I	8	E
Area of mathematics and physics		37	
6	Higher mathematics I	10	E
6	Higher mathematics II	10	E
7	Higher mathematics III	5	E
8	Physics I for engineers	6	E
9	Physics II for engineers	6	E
Area of mechanics and materials science		9	
10	Engineering mechanics	5	E
11	Introduction to materials science	4	E
Area of chemical engineering		50	
12	Fluid mechanics	5	E
13	Introduction to chemical engineering	5	E
14	Heat and material transmission	5	E
15	Technical thermodynamics	5	E
16	Mechanical process engineering I	5	E
17	Thermal process engineering I	5	E

18	Chemical process engineering I	5	E
19	Process dynamics and control	5	E
20	Plant and apparatus engineering	5	E
21	Thermodynamics of mixtures	5	E
Area of digital tools in chemical engineering		17	
22	Digital tools in chemical engineering I	5	U
23	Digital tools in chemical engineering II	5	E
24	Digital tools in chemical engineering III	7	E
Area of elective module		12	
25	Elective module	12	E
Area of internship		7	
26	Industrial placement	7	U
Area of transferable skills (ASQ)		6	
27	Additive transferable skills I	3	B
28	Additive transferable skills II	3	B
Bachelor's thesis		12	
29	Bachelor's thesis	12	E

*E = counting towards final grade, U = ungraded, B = graded, but not counting towards final grade

§ 18a Study contents in the master's programme

The following modules must be completed in the master's programme:

No.	Area Modules	CP	E/U/B**
Area of Chemical Engineering (compulsory)		45	
1	Chemical Reaction Engineering II	5	E
2	Thermal Process Engineering II	5	E
3	Mechanical Process Engineering II	5	E
4	Chemical Reaction Engineering III	5	E
5	Thermal Process Engineering III	5	E
6	Process Intensification	5	E
7	Simulation and Modelling of Multi-Phase Reactors	5	E
8	Industrial Catalysis	5	E
9	Chemistry and Management	5	E
Area of elective modules		20	
10	Modules amounting to at least 20 CP must be completed.	20	E

	Area of laboratory courses/internships and additive transferable skills (ASQ)	25	
11	External Engineering Internship (industrial placement)	5	U
12	Advanced Laboratory Chemical Engineering	5	E
13	Research Internship	12	U
14	Additive transferable skills (ASQ)	3	B
	Master's Thesis	30	
15	Master's Thesis	30	E

**E = counting towards final grade, U = ungraded, B = graded, but not counting towards final grade

§ 19 Subject-related admission requirements for the bachelor's and the master's thesis in Chemical Engineering

- (1) Students who have successfully completed at least 120 CP of the modules named in § 18, are at least in the 5th semester and have passed the module examinations or module part examinations of the 5th to 6th semester deemed necessary by the supervisor of the thesis can be admitted to the bachelor's thesis.
- (1a) Students who have earned at least 75 CP from the module groups according to § 18a (1) and who have passed the module part "Research Internship" can be admitted to the master's thesis.
- (3) The application for admission to the bachelor's or master's thesis must be submitted no later than six weeks after passing the last module examination.

III. Final provisions

§ 20 Effective date and transitional provisions

- (1) These study and examination regulations apply with effect from the winter semester 2020/21. They are published in the Official Bulletin of Ulm University. At the same time, the subject-specific study and examination regulations for the Bachelor's degree programme in Chemical Engineering and the English-language Master's degree programme in Chemical Engineering of the Faculty of Natural Sciences at Ulm University of 3 August 2015, published in the Official Bulletin of Ulm University No. 23 of 11 August 2015, page 224 - 232, shall cease to apply.
- (2) Paragraph 1 sentence 3 shall not apply, subject to the provision in paragraph 3, to students who were enrolled in a higher semester in the bachelor's degree programme in Chemical Engineering or the English-taught master's degree programme in Chemical Engineering in the winter semester 2020/21 and for whom the subject-specific study and examination regulations for the bachelor's degree programme in Chemical Engineering and the English-taught master's degree programme in Chemical Engineering of the Faculty of Natural Sciences at Ulm University of 3 August 2015 applied in the summer semester 2020. These students

finish their studies in accordance with the previous study and examination regulations subject to paragraph 3.

- (3) Students who were enrolled in the first or a higher subject semester in the bachelor's degree programme in Chemical Engineering in the summer semester 2020 may, upon written irrevocable application until 30 November 2020, with prior approval of the examination board, apply to complete their studies according to these study and examination regulations.

The above regulations have been approved. They are hereby executed and are to be published.

Ulm, 14 August 2020

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Courtesy Translation