Published in the Official Bulletin ("Amtliche Bekanntmachungen") of Ulm University No. 23 of 11 August 2015, p. 224 - 232

Subject-specific study and examination regulations for the Bachelor's programme in Chemical Engineering and the English-taught Master's programme in Chemical Engineering offered by the Faculty of Natural Sciences at Ulm University of 3 August 2015

Based on § 34 (1) in conjunction with § 19 (1) sentence 2 no. 9 of the Federal State Higher Education Act Baden-Württemberg (LHG) in the version of 1 January 2005 (law gazette p. 1 ff) amended several times, last amended by article 1 of the third act amending higher education regulations (*Drittes Hochschulrechtsänderungsgesetz*) of 1 April 2014 (law gazette no. 6, p.99ff), the Senate of Ulm University, at the recommendation of the Faculty of Natural Sciences in its meeting on 15 July 2015, adopted the following regulations. The President of Ulm University gave his consent on 3 August 2015 in accordance with § 34 subsection 1 clause 3 of the LHG.

Under article 3 subsection 2 of the constitution, women and men are treated as equal; all references to person and function in these regulations are equally valid for both men and women.

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 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 (Framework Regulations). In cases of doubt, these Framework Regulations have precedence.

§ 2 Academic degrees (§ 2 Framework Regulations)

(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: "BSc").

(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: "MSc").

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

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 Framework Regulations)

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) Framework Regulations

The examination according to § 6 (6) Framework Regulations in the bachelor's programme in Chemical Engineering consists of the written module part examination *Chemie für Physiker und Ingenieure* (chemistry for physicists and engineers) with a volume of 8 CP and one of the following module part examinations: *Lineare Algebra für Ingenieure* (Linear algebra for engineers) or *Analysis I für Ingenieure* (Analysis I for engineers). The examination according to § 6 (6) Framework Regulations is completed if, by the end of the examination period of the third semester, the module part examination *Chemie für Physiker und Ingenieure* as well as one more of the named module part examinations has been taken and passed.

§ 6 Deadlines (§ 6 (8,9) Framework Regulations)

(1) In the bachelor's programme in Chemical Engineering, students must have completed all eight compulsory modules corresponding to the first to fourth semester of the programme's study curriculum by the end of the examination period of the fourth semester. They must have taken all examinations in all compulsory and all compulsory elective modules listed in the study curriculum by the end of the examination period of the sixth semester. The right to examination expires if not all compulsory and compulsory elective modules listed in the study curriculum have been passed by the end of the examination period of their ninth semester in the programme unless they are not responsible for exceeding this deadline.

(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 in the programme. 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 in the programme unless students are not responsible for exceeding this deadline.

§ 7 Courses and Examination in English (§ 7 Framework Regulations)

(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 Framework Regulations)

(1) A subject examination board is formed for the bachelor's and the master's programme in Chemical Engineering.

(2) The subject examination board consists of seven members. It is composed of four full-time university lecturers and habilitated members working full-time at Ulm University, a scientific staff member, as well as 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
- classes
- 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 Framework Regulations)

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

§ 11 Related study programmes (§ 14 Framework Regulations)

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

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

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 Framework Regulations)

(1) Students have eight weeks for writing their bachelor's thesis. The time allowed from admission to submission of the bachelor's thesis is up to 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 allowed 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.

(2) The bachelor's thesis corresponds to 12 CP. The master's thesis corresponds to 30 CP. The topic of the bachelor's or master's thesis in the study programmes Chemical Engineering can be chosen from the fields of chemistry, engineering or the specialisation chosen in the compulsory elective subject or an interdisciplinary field.

(3) 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.

(4) The master's thesis is composed of 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.

(5) 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) Framework Regulations; the master's thesis must be submitted to the

Studiensekretariat (student administration and examinations office) in two bound copies and one electronic version as prescribed in § 16c (9) Framework Regulations.

(6) Acceptance of the bachelor's and master's thesis by the supervisor is subject to the student having submitted a documentation of the underlying scientific results (e.g. measured data, spectra, analyses) to the supervisor. The form of such a documentation is defined by the supervisor.

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

(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 Framework Regulations)

(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) Framework Regulations. Such examinations can only be repeated once.

(2) In the bachelor's programme, two passed written module (part) 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 taken into account. It is not possible to repeat 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 and master's programme in Chemical Engineering

§ 17 Programme objectives

(1) The bachelor's programme aims to convey the scientific and methodical foundations in Chemical Engineering. The bachelor's examination aims to establish if students have acquired the technical knowledge 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 complement 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, admission to module examinations in the bachelor's programme

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

No.	Module/examination(s)	Prerequisites for taking the module	CP	E/U/ B**
1	**Fundamentals of Chemistry I**		**12**	
1a	Chemistry for physicists and engineers		8	E
1b	Introductory lab course chemistry		4	U
2	**Fundamentals of Mathematics**		**24**	
2a	Linear algebra for engineers		8	E
2b	Analysis I for engineers		8	E
2c	Analysis II for engineers		8	E
3	**Fundamentals of Chemistry II**		**10**	
3a	Introductory lecture organic chemistry		6	E
3b	Instrumental analytical chemistry		4	E
4	**Physical chemistry**		**17**	
4a	Physical chemistry I		7	E
4b	Physical chemistry II		7	E
4c	Lab course physical chemistry for Chem. Eng. students		3	E
5	**Fundamentals of physics**		**12**	
5a	Physics I for engineers		6	E
5b	Physics II for engineers		6	E
6	**Elective modules**		**12**	**E**
7	**Mechanics and materials science**	**Module 5**	**8**	
7a	Engineering mechanics		4	E
7b	Introduction to materials science		4	E
8	**Fluid mechanics**	**Modules 1, 2a+b,5**	**5**	**E**
9	**Fundamentals of process engineering**		**13**	
9a	Chemical process engineering		4	E
9b	Heat and material transmission		4	E
9c	Technical thermodynamics		5	E
10	**Fundamentals of process engineering**	**Modules 1 - 5**	**19**	
10a	Mechanical process engineering I		5	E
10b	Thermal process engineering I		5	E
10c	Chemical process engineering I		5	E
10d	Lab course chemical engineering		4	E
11	**Plant and apparatus engineering**		**9**	
11a	Measurement and control technology in chem. engineering		4	E
11b	Plant and apparatus engineering		5	E
12	**Compulsory elective modules in Chemical Engineering**	**Modules 1 - 5**	**14**	
13	**Industrial placement**		**7**	**U**
14	**Transferable skills**		**6**	
14a	Transferable skills I		3	B
14b	Transferable skills II		3	B
15	**Bachelor's thesis**		**12**	**E**

** E = counts towards final grade, U = ungraded, B = graded

§ 18a Study contents, admission to module examinations in the master's programme

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

No.	Module/examination(s)	CP	E/U/B*
A	***Compulsory modules***	***25***	
1	**Fundamentals of Chemical Engineering II**	**15**	
1a	Chemical Reaction Engineering II	5	E
1b	Thermal Process Engineering II	5	E
1c	Mechanical Process Engineering II	5	E
2	**Simulation and Modelling**	**10**	
2a	Simulation and Modelling	5	E
2b	Simulation and Modelling of Multi-Phase Reactors	5	E
B	***Compulsory elective modules***	***10***	
3	**Elective Modules Chemical Engineering** All module (part) examinations must be graded.	**10**	**E**
C	***One of the following specialisations***	***30***	
	Specialisation Energy Science Technology	**30**	
4	**Energy Science and Technology I (General Aspects)**	**10**	
4a	Energy Science and Technology I	5	E
4b	Energy Science and Technology II	5	E
5	**Energy Science and Technology II (Applications)**	**11**	
5a	Energy Technology Laboratory I	9	U
5b	Energy Science and Technology II Seminar	2	E
6	**Energy Science and Technology III (Electrochemical EST)**	**9**	
6a	Energy Technology Laboratory I	4	U
6b	Energy Science and Technology III (Batteries and Fuel Cells)	5	E
7	**Specialisation Chemical and Electrochemical Processes**	**30**	**E**
D	***Lab courses, internships and transferable skills***	***25***	
8	**External Engineering Internship (industrial placement)**	**5**	**U**
9	**Practical Training**	**17**	
9a	Advanced Laboratory Chemical Engineering	5	E
9b	Research Internship	12	U
10	**Transferable skills**	**3**	**B**
E	***Master's Thesis***	***30***	
11	**Master's Thesis**	**30**	**E**

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

(2) When taking up their studies, students must choose either "Energy Science and Technology" or "Chemical and Electrochemical Processes" as their specialisation. The

establishment of the specialisation Chemical and Electrochemical Processes is yet to be decided by the subject examination board at the proposal of the academic affairs committee.

§ 19 Academic admission requirements for the bachelor's and the master's thesis in Chemical Engineering

(1) Admission to the bachelor's thesis is subject to the student having successfully completed a minimum of six out of eight compulsory modules from semesters 1-4 in the programme, being in the fifth or a higher semester in the programme and having passed those module examinations and module part examinations of the fifth and sixth semester deemed necessary by their thesis supervisor.

(1a) Admission to the master's thesis is subject to having earned a minimum of 75 CP from the modules groups listed in § 18a (1) and having passed the module part "Research Internship".

(2) 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 2015/16. They are published in the Official Bulletin of Ulm University. At the same time, the subject-specific study and examination regulations of Ulm University for the bachelor's programme in Chemical Engineering offered by the Faculty of Natural Sciences at Ulm University of 6 July 2012, published in the Official Bulletin of Ulm University No. 24 of 13 July 2012, pages 227-233 cease to be effective.

(2) Paragraph 1 does not apply to students enrolled in the bachelor's programme in Chemical Engineering n the summer semester 2015. Such students complete their studies under the provisions of the subject-specific study and examination regulations of 6 July 2012.

Ulm, 3 August 2015

signed

Professor Dr. Karl Joachim Ebeling
-President-