



Faculty of Process and Systems Engineering

Study Regulations

Master of Science (M. Sc.) Programme

Chemical and Energy Engineering

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The Study Regulations contain general hints. A precisely planned study requires further information. For this purpose students are recommended to use the Examination Regulations of the Master Programme.

For legal purposes the German “Studienordnung für den Masterstudiengang Chemical and Energy Engineering” is binding, which was enacted by the Academic Senate of the University on December 16, 2009.

§ 1

Scope of Application

- (1) The Study Regulations are based on the valid Examination Regulations and fix goal, content and structure of the Chemical and Energy Engineering Programme at Otto-von-Guericke-University Magdeburg.
- (2) The programme is not intended to be consecutive. The type of profile is mainly research-oriented.
- (3) The programme is run as a full time class attendance course.
- (4) The programme is held in English language.

§ 2

Goal

- (1) The Master Programme deepens and expands the goals from the previous Bachelor Programme.

Graduates are capable of:

- analyse and solve problems scientifically, even though problem definition is unusual or incomplete, and contains competing specifications

- abstract and formulate complex problems from a new field or a field under development
- apply innovative methods for basics-oriented problem solutions and develop new scientific methods

Graduates are capable of:

- development of concepts and solutions for basic problems, that are partly unusual and require inclusion of other disciplines
- creation and development of new products, processes, and methods
- application of their engineering knowledge to deal with complex, possibly incomplete information, and to recognize and handle contradictions

Graduates are capable of:

- detection of information needs, and tracking down and procuring of information
- planning and implementation of theoretical and experimental studies
- critical evaluation of data and drawing conclusions
- analyse and evaluate the application of new technologies

In addition to the qualifications acquired from the Bachelor Programme graduates are able to:

- classify and systematically combine knowledge from different areas, and to deal with complexity
- become systematically acquainted with new problems within a short time
- systematically reflect and responsibly deal with non-technical effects of engineering activities
- develop solutions that require deep methodological competence

Students of the Master Programme have the opportunity to collaborate in research projects of the University, projects of non-university research institutions and industry. Particularly foreign graduates are to be introduced to current problem solutions of Energy and Environmental Engineering. The programme is based on the application of physically founded models and process simulations, and its verification for the purpose of control and automation of material conversion processes and recycling processes. The profile of the programme is characterized by the combination of modern methods of material and energy generation and engineering methods of characterization of complex distributed properties of the final product on micro scale as well as technical macro scale.

(2) Graduates have the following possibilities:

- professional activity in industry, economy, or administration
- continuing the academic career and joining a PhD Programme

(3) Professional fields:

- chemistry, pharmacy, food and feed and beverage industry, power engineering, environmental engineering, plant design, ceramics, metallurgy, bioengineering, building materials, and research and development

§ 3

Degree

Graduates gain professional qualification by the awarding of the academic degree „Master of Science” (M. Sc.).

§ 4

Admission Requirements

- (1) The admission for the Master Programme requires the successful completion of a corresponding bachelor programme.
- (2) If they are particularly suitable, graduates of a bachelor programme which is professionally similar can also be admitted under special conditions.
- (3) Bachelor graduates who completed modules of at least 30 CP and a Bachelor thesis with the grading “good” or better, are qualified to do the Master Programme.
- (4) The examination board decides on the admission of graduates from related disciplines and on the acquisition of further credit points. It may set conditions, which must be usually fulfilled until the end of the first semester and should not be more than 30 CP. To pass the adjusting semester at least 15 CP are to be proved. Missing Credits can be provided during the first semester of the Master Programme. Non-performance of these conditions entails exmatriculation. The examination board decides on exceptions.
- (5) Adequate command of the English language is prerequisite. Non-native speakers must pass
 - ETS TOEFL – 550 (525*) points for paper based or 213 (197*) points for computer based or 80 (70*) for internet based or
 - Cambridge Certificate of Proficiency in English (CPE) – grade C or
 - Cambridge Certificate of Advanced English (CAE) – grade B or
 - International English Language Testing System (IELTS) – overall band score 6.0 (5.5*)
- (6) The examination board decides on exceptions.
- (7) Admission is going to be refused, if the student failed exams definitely within the matriculated programme or a similar programme at a university or an equated institution. The same applies, if the student is passing another examination procedure.

§ 5

Duration and Beginning of the Study

- (1) The course is a four-semester programme, including Master Thesis and colloquium.
- (2) The programme starts in summer and winter terms.
- (3) Chronological placement of the courses is settled in the curriculum. Courses can also be held as block seminars.

§ 6

Extent of the Study

- (2) Studying time for the programme comply 120 Credits.
- (3) To complete the study successfully all examinations from the examination schedule have to be passed and a Master Thesis including colloquium must be handed in. The preparation time for Master Thesis and colloquium complies 30 Credits. The processing period is not more than 20 weeks.

§ 7

Contents of the Study

- (1) The examination regulations contain all modules and module examinations that are required to pass the programme successfully. The recommended distribution of modules within the semesters is determined in the schedule.
- (2) Examinations that have to be supplied comprise module examinations and a Master Thesis incl. colloquium. Number and method of examinations are determined in the examination regulations. Examinations take place during the studies.
- (3) The Master Thesis is an independent scientific work that must be submitted in written form. Also it must be defended. The candidate must prove his/her ability to work independently and with scientific methods on problems from his/her subject within a specific period of time.

§ 8

Programme Structure

- (1) Course offer comprises compulsory modules, compulsory optional modules, and optional modules.
- (2) Compulsory modules are obligatory to complete the Programme successfully.

(3) Compulsory optional modules must be elected from a certain number of modules. With this individual preferences and special demands of the later field of activity of the students are taken into account. The offer of compulsory optional modules depends on the development and availability of tutors and is steadily adapted to the teaching of the Faculty.

Further modules of all Faculties of the Otto-von-Guericke-University can be accepted as compulsory optional modules after agreement of the examination board and the programme adviser.

(4) Optional modules can be taken in addition to compulsory and compulsory optional modules at student's own option from all modules of the Otto-von-Guericke-University. Students can take an examination in the optional modules. The grade will not have influence on the final grade. By request it can appear on the certificate.

The performance of compulsory optional modules and optional modules requires 5 participants at least. If less than 5 students have registered, the module will be cancelled.

§ 9 Courses

(1) Lectures, seminars, tutorials, colloquia, laboratory classes, projects, reports, and excursions are offered.

(2) Lectures teach expertise, theoretical know-how, and methodological knowledge in a cohesive and systematic manner.

(3) Seminars are conceived for scientific review of theoretical and practical problems in cooperation with teachers. Possible working models are data representation, reports, thesis formation, or discussion.

(4) Tutorials are designed for acquisition of basic methods, abilities, and skills.

(5) Colloquia are designed to deepen scientific discussions regarding a special problem between teachers and students.

(6) Excursions are designed to collect information and get in contact with local companies.

(7) Projects are designed to develop the ability of independent scientific work. It also qualifies to solve complex problems in a practice-oriented manner. Projects are held in groups.

(8) Laboratory work is designed to consolidate knowledge by practical application.

§ 10 Advisory Service

The Faculty offers an advisory service for the Programme. The name of the person can be found on the Faculty's Homepage and in the examination office.

§ 11 Individual Schedule

- (1) Individual schedules require permission of the Programme coordinator and the Programme advisor.
- (2) Individual schedules enable students to complete the Programme successfully. They are particularly designed for students who fulfil admission requirements, but lack previous knowledge for one or more modules.
- (3) The Programme coordinator and the Programme advisor are responsible for the creation of an individual schedule.

§ 12 Temporary Regulation

These Study regulations are valid for all students who started the Programme in summer semester 2010 or later.

§ 14 Commencement of these Regulations

The Study regulations come into operation on the day after the internal university announcement.

Study regulations are based on the decisions of the Faculty Council of the Faculty of Process and System Engineering from 2nd December 2009 and the Senate of the Otto von Guericke University from 16th December 2009.

Appendix 1: Study Course “Chemical and Energy Engineering”

Modul	1. SS	2. WS	3. SS	4. WS	Credit Points
Fundamental Subjects (Compulsory)	25	23	6	M	(54)
Chemistry	5			A	
Advanced Fluid Dynamics	5			S	
Advanced Heat and Mass Transfer	5			T	
Mechanical Process Engineering	5			E	
Chemical Reaction Engineering	5			R	
Thermal Process Engineering		5		T	
Process System Engineering		5		H	
Combustion Engineering		5		E	
Plant Design		5		S	
Laboratory work and Excursions		3	6	S	
Selective Subjects from list:	4	8	24		36
Chemical Engineering					
Energy Engineering					
Environmental Engineering					
Safety Engineering					
Master Thesis					30
Sum CP	29	31	30	30	120

Start: Summer Semester

Modul	1. WS	2. SS	3. WS	4. SS	Credit Points
Fundamental Subjects (Compulsory)	20	28	6	M	(54)
Chemistry		5		A	
Advanced Fluid Dynamics		5		S	
Advanced Heat and Mass Transfer		5		T	
Mechanical Process Engineering		5		E	
Chemical Reaction Engineering		5		R	
Thermal Process Engineering	5			T	
Process System Engineering	5			H	
Combustion Engineering	5			E	
Plant Design	5			S	
Laboratory work and Excursions		3	6	S	
Selective Subjects from list:	8	4	24		36
Chemical Engineering					
Energy Engineering					
Environmental Engineering					
Safety Engineering					
Master Thesis					30
Sum CP	28	32	30	30	120

Start: Winter Semester

SWS: “Semesterwochenstunden”; contact hours per week per semester

CP: Credit Points

Appendix 2: Examination plan “Chemical and Energy Engineering”

Module	Hours
Chemistry	WE120
Advanced Fluid Dynamics	WE120
Advanced Heat and Mass Transfer	WE120
Mechanical Process Engineering	OE / WE120*
Chemical Reaction Engineering	WE 120
Thermal Process Engineering	WE120
Process System Engineering	WE120
Combustion Engineering	WE120
Plant Design	WE120
Laboratory work and Excursions	OE/TE
Selective Subjects to be chosen from attached list	OE

*dependent on number of candidates

WE – Written examination with duration in minutes

OE – Oral examination with grade

TE – Test examination with grade