

Study regulations for the Bachelor's degree programme in Process Engineering and Natural Materials Technology

From 28 April 2019

On the basis of § 36 paragraph 1 of the Saxon Higher Education Freedom Act in the version of the announcement of 15 January 2013 (SächsGVBl. p. 3), the Technische Universität Dresden enacts the following study regulations as statutes.

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§ 1

Scope

Based on the Saxon Higher Education Freedom Act and the examination regulations, these study regulations govern the objectives, content, structure and procedure of the study programme for the Bachelor's degree course in Process Engineering and Natural Materials Technology at Technische Universität Dresden.

§ 2

Aims of the study

(1) The degree programme enables graduates to apply scientific principles, sound methods and professional qualifications in the field of process engineering and natural materials engineering. They master the knowledge required in the field of process engineering and natural materials engineering, including, for example, the necessary mathematical, scientific and engineering fundamentals. They recognise process engineering problems, can present them appropriately, analyse them using scientific methods and work out possible solutions independently. Furthermore, graduates have general and, through the selected profile recommendation, in-depth skills, abilities and knowledge in the special areas of general process engineering, bioprocess engineering, chemical engineering, wood technology and fibre materials technology as well as food technology. They are able to recognise interdisciplinary problems and develop possible contributions to solving such problems.

(2) Graduates are able to meet the fundamental requirements of process engineering and natural materials engineering through their basic scientific and technical knowledge, through the mastery of specialist knowledge and scientific methods, after an appropriate familiarisation period in professional practice, and are able to apply their knowledge. Possible occupational fields can be found in process development and design as well as in product development and design, plant layout and design, in quality management and in technical service sectors as well as in teaching and training at home and abroad in various application sectors. Technology companies, manufacturing companies and plant constructors of any size can be future employers. Fields of employment include, for example, companies and institutions in mechanical, thermal and chemical process engineering, wood technology and fibre processing, food production and bioprocess engineering. Other opportunities open up in scientific institutions, testing and expert bodies, in the public sector and in freelance work. The development and marketing of one's own products, ideas and processes also opens up promising prospects for the future.

(3) Due to a high level of general education, graduates are qualified to meet their economic, social and ecological responsibilities. They are able to reach professional and social judgement early in their professional development and to deal with complex tasks and problems. They are able to communicate information, ideas, problems and solutions to lay people as well as experts through a broad professional knowledge, through the knowledge and application of scientific methods and through their competence in abstraction.

§ 3

Access requirements

The prerequisite for admission to the degree programme is a general higher education entrance qualification, a subject-specific higher education entrance qualification in the relevant sub-

ject area or a higher education entrance qualification recognized as equivalent by the higher education institution.

§ 4

Start and duration of studies

(1) The degree programme can be commenced in the winter semester.

(2) The standard period of study is six semesters and includes attendance, self-study and the Bachelor's examination.

§ 5

Teaching and learning methods

(1) The course content is structured in modules. In the individual modules, the teaching content is taught, consolidated and deepened through lectures, exercises, practical courses, language courses, self-study and tutorials. In modules which are recognisably subject to several study regulations, synonyms are permissible for teaching and learning forms with the same content.

(2) Lectures introduce the subject matter of the modules. Exercises enable the application of the subject matter in exemplary sub-areas. Internships serve the application of the taught material as well as the acquisition of practical skills in potential professional fields. Language courses impart and train knowledge, skills and abilities in the respective foreign language. Students develop communicative and intercultural competence in an academic and professional context as well as in everyday situations. Self-study enables students to acquire basic as well as in-depth subject knowledge independently with the help of various media (teaching materials, literature, internet, etc.) in individual work or in small groups. In tutorials, students, especially first-year students, are supported in acquiring practical and theoretical skills.

§ 6

Structure and sequence of studies

(1) The degree programme has a modular structure. The courses are spread over six semesters. The fifth semester is designed in such a way that it is particularly suitable for a temporary stay at another university (mobility window). Part-time study is possible in accordance with the regulations on part-time study.

(2) The degree programme comprises 19 compulsory modules and one profile recommendation, at the student's choice, with the modules provided according to the study schedule (Annex 2). The profile recommendations General Process Engineering, Bioprocess Engineering, Chemical Engineering, Wood Technology and Fibre Materials Technology as well as Food Technology are available for selection. The choice of the profile recommendation is binding. A one-time change of the profile recommendation is possible; it is made by a written application of the student to the examination office, in which the profile recommendation to be replaced and the newly selected profile recommendation are to be named.

(3) Qualification objectives, contents, teaching and learning forms covered, prerequisites, usability including any combination restrictions, frequency, workload and duration of the individual modules can be found in the module descriptions (Annex 1).

(4) The courses are held in German or in English according to the module descriptions.

(5) The appropriate allocation of the modules to the individual semesters, the observance of which enables the completion of the degree programme in the standard period of study, as well as the type and scope of the courses included in each case and the number and standard time of the required study and examination achievements are to be taken from the attached study schedule (Annex 2) or an individual study schedule confirmed by the faculty for the part-time degree programme.

(6) The range of compulsory elective modules as well as the study schedule can be changed by the Faculty Council on the proposal of the Study Commission. The current range of compulsory elective modules shall be announced at the beginning of the semester in the usual manner of the faculty. The amended study schedule shall apply to the students to whom it is announced in the customary manner at the beginning of the semester. The Examination Board shall decide on exceptions to sentence 3 upon application by the student.

§ 7

Content of the study programme

(1) The essential contents include, in particular, differential and integral calculus, linear algebra and stochastics, equilibrium of plane and spatial load-bearing structures, moments of area, tensile, compressive and shear stress, stress and distortion states as well as the calculation of translational movements, atomic structure and structure of the periodic table, mechanisms of chemical bonds and reactions, ways of representing important organic compounds, chemical potential and equilibrium, colligative properties and phase diagrams, basic principles of electrochemistry and reaction kinetics, basic biochemical metabolic pathways and transport processes, structure, occurrence, reactions and properties of carbohydrates, lipids, proteins, enzymes and nucleotides, working concepts and working strategies of the subject areas mechanical process engineering, thermal process engineering, chemical process engineering, bioprocess engineering, chemical engineering, Food technology, wood technology and fibre materials technology as well as processing technology, calculation methods for electrical direct, alternating and three-phase circuits, the use of complex computer systems and methods of software technology, properties of thermodynamic systems, application of the conservation laws of mass, energy and momentum, manufacturing and production engineering basics for the manufacture of products and the process chains required for this, Consideration of measurement uncertainties, the measurement of electrical and non-electrical quantities, sensor technology as well as the description of dynamic behaviour, basic features of cost accounting with cost types, cost centres and cost unit accounting as well as the structure of company accounting, study and occupation-related, written and oral communication of professional and scientific language, social science, environmental protection, work science and organisation, business and patent law.

(2) Natural science and engineering fundamentals with a strong emphasis on process engineering processes, methods and applications create the conditions for focusing on one of five profile recommendations of process engineering and natural materials engineering:

1. Process Engineering covers basic contents of mechanical, thermal and chemical process engineering, plant engineering and safety engineering, heat and mass transfer as well as multi-

- phase reactions.
2. Bioprocess Engineering includes basic contents of mechanical and thermal process engineering, microbiology, biophysics and biochemistry.
 3. Chemical Engineering covers basic contents of mechanical, thermal and chemical process engineering, multiphase reactions, analytical as well as technical chemistry.
 4. Wood and Fibre Material Technology covers basic contents of mechanical and thermal process engineering, wood and fibre materials chemistry, wood anatomy, production and processing of wood materials and paper as well as physical basics of wood and paper technology.
 5. Food Engineering includes basic contents of mechanical and thermal process engineering, food technology, food science, food chemistry, food technology and food microbiology and hygiene.

§ 8

Credit points

(1) ECTS credit points document the average workload of students as well as their individual study progress. One credit point corresponds to a workload of 30 hours. As a rule, 60 credit points are awarded per academic year, i.e. 30 credit points per semester. The total workload for the degree programme corresponds to 180 credit points and includes the forms of teaching and learning described in the module descriptions in terms of type and scope, the course and examination achievements as well as the Bachelor's thesis and the colloquium.

(2) The module descriptions indicate how many credit points can be acquired through a module in each case. Credit points are acquired if the module examination has been passed. Section 26 of the examination regulations remains unaffected.

§ 9

Student advisory service

(1) General student counselling is provided by the Central Student Counselling Office of the Technische Universität Dresden and covers questions regarding study opportunities, enrolment modalities and general student matters. The student counselling of the Faculty of Mechanical Science and Engineering is responsible for the academic counselling during the studies. This academic counselling supports the students in particular in questions of study organisation.

(2) At the beginning of the third semester, every student who has not yet completed a course of study shall take part in a course guidance session.

§ 10

Adaptation of module descriptions

(1) In order to adapt to changed conditions, the module descriptions can be changed in a simplified procedure within the framework of an optimal study organisation with the exception of the fields "Module name", "Qualification objectives", "Contents", "Forms of teaching and learning", "Requirements for the award of credit points" as well as "Credit points and grades".

(2) In a simplified procedure, the Faculty Council of the Faculty of Mechanical Science and Engineering decides on the amendment of the module description on the proposal of the Study Commission. The changes are to be published in the customary manner of the faculty.

§ 11

Entry into force, publication and transitional provisions

(1) These study regulations shall enter into force on 1 June 2019 and shall be published in the Official Announcements of the Technische Universität Dresden.

(2) It shall apply to all students newly enrolled in the Bachelor's degree programme in Process Engineering and Natural Materials Technology in the winter semester 2019/2020 or later.

(3) For students enrolled earlier than the winter semester 2019/2020, the study regulations for the Bachelor's degree programme in Process Engineering and Natural Materials Technology previously valid for them before the entry into force of these regulations shall continue to apply.

(4) These study regulations shall apply from the winter semester 2020/2021 for all students enrolled in the Bachelor's degree programme in Process Engineering and Natural Materials Technology.

(5) In the case of transfer according to Paragraph 3 or Paragraph 4, the module examinations already completed, including the grades, shall be transferred ex officio, and individual examination performances shall also be transferred ex officio on the basis of equivalence tables which are determined by the Examination Committee and announced in the customary manner of the faculty. With the exception of § 14 Paragraph 5 of the Examination Regulations, module examinations and examinations not graded with at least "sufficient" (4.0) or "passed" shall not be transferred. In principle, the module grade is not recalculated on the basis of the grades of exclusively transferred examinations; exceptions can be found in the equivalency tables.

Issued on the basis of the resolution of the Faculty Council of the Faculty of Mechanical Science and Engineering of 16 November 2018 and the approval of the Rectorate of 12 February 2019.

Dresden, 28 April 2019

The Rector
of the Technical University of Dresden

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