

**Note: The English translation is a service. In case of any doubts, the official German document is binding.**

# **Specific part of the examination regulations for the "Sustainable Engineering of Products and Processes" course of studies with the qualification "Bachelor of Science" at Technische Universität Braunschweig**

In accordance with § 1 subsection 2 of the general part of the examination regulations for the Bachelor, Master, Degree and "Magister" courses at Technische Universität Braunschweig (APO), TU Publication Journal no. 1209 of 23.03.2018, last amended with TU Publication Journal no. 1251 of 25.04.2019, the Faculty Council of the Faculty of Mechanical Engineering resolved the following new wording of the specific part of the examination regulations for the "Sustainable Engineering of Products and Processes" course of studies with the qualification "Bachelor of Science" on 22.09.2021:

## **§ 1 Standard period of studies**

The period of studies in which the course can be completed is 6 semesters (standard period of studies).

## **§ 2 Structure and scope of the studies**

(1) The studies have been organised in modules and entail a total of 180 credit points (CP). The studies are structured in the following areas:

### **A Compulsory Modules**

- Fundamentals of Mathematical Science and Information Technology
- Fundamentals of Engineering
- Engineering Applications
- Sustainability

### **B Specialisation Area**

The following specialisations are available for selection:

- Sustainable Mobility
- Sustainable Energy and Process Engineering
- Sustainable Production

### **C Integrated Modules**

### **D Internship**

### **E Bachelor's Thesis**

(2) In the compulsory area, compulsory modules in the areas stated in subsection 1 are to be taken to a scope of 85 CP according to Annex 1 (Area A) and Annex 2 (Areas 1 to 4).

(3) In the specialisation area, one of the specialisation directions stated in subsection 1 is to be chosen. Within the specialisation chosen, compulsory and compulsory elective modules to a total scope of 63 CP are to be taken, including project work to a scope of 6 CP and a laboratory internship to a scope of 2 CP, pursuant to Annex 1 (Area B) and Annex 2 (Areas 5.-10.). Details on the project work are regulated in § 10. Details on the laboratory internship are regulated in § 3 subsection 8.

(4) In the course of studies, 8 CP are to be taken in the area of integrated modules according to Annex 1 (Area C) and Annex 2 (Area 11.). Details are regulated in § 11.

- (5) The final module according to Annex 1 (Area E) and Annex 2 (Area 13.) entails 14 CP. Details are regulated in § 12.
- (6) In the course of studies, an internship to the scope of 10 CP (minimum duration 10 weeks) according to Annex 1 (Area D) and Annex 2 (Area 12.) is to be proven. The internship is done in the form of a study performance. The more detailed provisions on assessment, acknowledgement, implementation and support of the internship have been stipulated in the internship guidelines of the Faculty of Mechanical Engineering, as amended at the time. Admission to examinations from the fifth semester onwards can be rejected if the proof of a successful preliminary internship has not been rendered by the end of the fourth semester at the latest.

### **§ 3 Examination and study performances**

- (1) The modules, qualification objectives, nature and scope of the assigned examination and study performances and the number of allocated credit points have been stipulated in Annex 2. The contents of the examinations result from the qualification objectives of the modules.
- (2) A teaching event with the pertinent examination which has been allocated to a number of modules may only be included within the framework of one module.
- (3) Examinations are to be taken in the language of the teaching. In substantiated exceptional cases, the examiner can permit a different examination language. In teaching offered bilingually, the examination can be taken in both languages. The choice of the language of examination is made when registering for the examination.
- (4) With a written paper according to § 9 subsection 3 APO and an oral examination according to § 9 subsection 4 APO, the candidate is to prove that he possesses fundamental knowledge equivalent to the studies, Further, this is to establish that he recognises the interconnections of the examination area and is able to assign specific tasks and questions to these interconnections and to solve them. Subjects and examination tasks can be given to the candidate for selection.
- (5) The processing time for a written paper is no less than 45 minutes and no more than 240 minutes.
- (6) In the course of an oral examination, tasks can be given for written processing to a suitable extent if the oral character of the examination is not changed as a result of this.
- (7) An oral examination lasts for no less than 30 minutes and no more than 90 minutes. The outcome of the oral examination is to be notified to the candidate following the examination as a rule.
- (8) Laboratory internships are experimental work according to § 9 subsection 9 APO. They can be concluded by examination or study performances. Colloquia (oral) and/or records (written) can be planned as examination or study performances. A colloquium or record entails the theoretical processing and the development of planning of the work steps and the implementation of the internship and its critical assessment.
- (9) Presentations are oral examinations according to § 9 subsection 4 APO. A presentation entails a talk lasting for 20 minutes as a rule about the topic to be treated and a scientific discussion about the topic of the talk following it with an examination character. Both in the talk and also in the scientific discussion, the candidate must prove that the ability to process problem-related questions from the

area of the specialisation chosen independently on a scientific basis and to intensify the work results has been acquired in processing of the topic. A presentation can be held in the course of a seminar.

#### **§ 4 Repeating examinations**

- (1) As a supplement to § 9 subsection 4 sentence 6 APO, the requirement is that both examiners must come from different institutions for final repeat examinations.
- (2) Oral supplementary exams according to § 13 subsection 5 APO are to take place no earlier than five weekdays after insight into the written paper.
- (3) Within one month of the notification of the grade of the written performance, the candidate must obtain a date for the oral supplementary examination from the examiner and notify it to the board of examiners or an agency commissioned by the latter. The date of the oral supplementary examination is to be stipulated by the examiner such that it has taken place no later than 30.04. for a winter semester and 31.10. for a summer semester. If pertinent reasons exist pursuant to § 11 subsection 3 APO, the board of examiners can extend the period in the individual case.
- (4) When appointing the second examiner for oral supplementary examinations according to § 5 subsection 4 APO, only members of the group of university teachers or full-time associate professors ("Privatdozenten") of the subjects responsible for the course in question may be named by the first examiner. As a rule, the second examiners are appointed no later than three days prior to the date of the examination in question.

#### **§ 5 Withdrawal from examinations**

- (1) The reasons claimed for the withdrawal or the omission pursuant to § 11 subsection 3 APO must be notified and made credible in writing within three weekdays. Saturdays are not deemed weekdays in the sense of this directive. The board of examiners decides on exceptions with a view to the period for the notification of the reasons claimed for the withdrawal or the omission.
- (2) In the event of withdrawal due to illness pursuant to § 11 subsection 3 sentence 3 APO, a medical certificate must also be produced by request of the board of examiners and must be so meaningful that the board of examiners can establish the symptoms, nature and scope as well as duration of the impairment.

#### **§ 6 Free attempt regulation**

- (1) Insofar as the free attempt according to § 13 subsection 4 APO has been taken in a compulsory elective module according to § 2 subsection 1 Area B, a change of the examination subject is possible. This change is to be notified in writing to the Examinations Office before the period for registering for the examination. The changed examination subject can be classified as an additional subject by application. Re-commencement of the changed examination subject in the compulsory elective area has been ruled out.
- (2) The withdrawal-induced extension of the period in which an examination can be taken in a free attempt provided for in § 13 subsection 2 sentence 3 APO is only possible insofar as the examination for which the withdrawal is being claimed was to be taken in the last semester of the standard study period.

#### **§ 7 Insight into written papers**

- (1) Insight into assessed written papers pursuant to § 21 subsection 2 APO (insight into assessed written papers) is without application and the date is stated by the examiner with a run-up of no less than five weekdays.
- (2) Insight is to be granted at a suitable point in time and to a suitable scope, albeit no less than 30 minutes.
- (3) A sufficient number of sample solutions must be available at the insight and can be used for substantiation of the grade according to § 9 subsection 12 APO sentence 7. A grade key is to be provided no later than 14 days after the insight into the paper.

### **§ 8 Acknowledgement**

- (1) Identical examinations taken as part of parallel studies in a different course of studies according to § 6 subsection 7 APO, independent of the outcome, are acknowledged without application to the extent that they are contained in the compulsory area pursuant to Annex 1 Area A.
- (2) By application, the board of examiners can acknowledge up to two compulsory elective modules in the compulsory elective part pursuant to § 2 subsection 1 Area B which have not been contained in Annexes 1 and/or 2 up to now insofar as these modules are taken during a study stay abroad and sensibly supplement the student's course of studies up to that time.

### **§ 9 Consultancy discussions**

- (1) As a deviation from § 8 subsection 2 APO, students who have not acquired at least 30 credit points at the end of the second semester are to attend a consultancy discussion.
- (2) Attendance of a consultancy discussion is not obligatory and admission to further examination and study performances is not dependent on it.

### **§ 10 Project work**

- (1) With the project work, the ability to develop, to assert and to present concepts is promoted. In this context, the candidate is to obtain the abilities to define objectives in a larger task and to work on interdisciplinary approaches to solutions and concepts, in particular also in teamwork.
- (2) Project work has a scope of 6 credit points. The results are to be processed in a written form (5 CP) and to be presented to the examiners in an oral presentation (1 CP) according to § 3 subsection 9.
- (3) As a rule, project work is done in the form of group work according to § 9 subsection 2 sentence 5 APO.

### **§ 11 Integrated modules**

- (1) Teaching according to § 2 subsection 1 Area C is to be chosen from the offer of teaching at Technische Universität Braunschweig or from the offer of teaching of a foreign university during studies abroad and must be concluded with an examination according to § 9 subsection 1 APO.
- (2) As a matter of principle, performances in the area of integrated modules are taken into account as study performances.
- (3) Performances stated in the curriculum of the "Sustainable Engineering of Products and Processes" course of studies (Annexes 1, 2) cannot be included in the area of integrated modules.

## **§ 12 Final module**

- (1) The final module is composed of written processing of the task, including literature research, in the form of a bachelor's thesis according to § 14 APO with a scope of 12 CP and a presentation in accordance with the results produced according to § 3 subsection 9 with a scope of 2 CP. Both parts must be passed separate from one another. If the written processing has not been passed, the entire final module is to be repeated.
- (2) Only students who have concluded the project work and can prove at least 142 CP in the course of studies can be admitted to the bachelor's thesis.
- (3) The presentation may be held up to four weeks before the stipulated hand-in date for the bachelor's thesis.
- (4) As a rule, the bachelor's thesis and the presentation are to be assessed within six weeks of hand-in of the bachelor's thesis.

## **§ 13 Assessment of examination performances and formation of the overall grade**

- (1) According to § 12 subsection 6 sentence 3 APO, the module grade is calculated from the average of the grades of the individual examinations in the module weighted according to credit points. For modules in which study performances are also graded alongside examination performances, the grades for the study performances are not included in the calculation of the module grade.
- (2) An overall grade is formed for the Bachelor's Examination according to § 16 subsection 2 APO. The number of credit points in the final module is multiplied by a factor of 3 for the calculation of the overall grade. The credit points in the areas of integrated modules and internship and also in additional subjects are not taken into account in the calculation of the overall grade.

## **§ 14 University degree and qualification documents**

- (1) After the Bachelor's Examination has been passed, the university degree "Bachelor of Science" (abbreviated to: "B.Sc.") in the "Sustainable Engineering of Products and Processes" course of studies is conferred and qualification documents according to § 17 subsection 1 APO are issued. The Diploma Supplement states the learning outcomes to be achieved in the studies according to Annex 3.
- (2) The assessment "excellent pass" is conferred if a grade average up to and including 1.3 is achieved in the calculation of the average grade according to § 13 subsection 2.
- (3) The outcome of additional examinations and the number of credit points achieved are included in the certificate up to a maximum number of 10 examinations.
- (4) By application, additional examinations can be left unconsidered when stated on the certificate. The application is to be made in writing to the board of examiners before passing the final examination or study performance at the latest.
- (5) If more than 10 additional examinations are taken or if more than 10 additional examinations were to be taken into account on the certificate according to an application pursuant to subsection 4, the additional examinations are entered on the certificate chronologically according to the date of the examination until the maximum number of 10 additional examinations has been reached. By

application, a certification from which the rendered performances not taken into account on the certificate can be seen is issued.

**§ 15 Effect, transitional regulation**

(1) These regulations take effect on the day after they are notified publicly in the university.