Subject-specific Examination and Study Regulations for the International Master's Programme Power Engineering of 27 September 2016 with the Amendment of 11 April 2023

English translation of a consolidated version incl. amendments, not legally binding!

In accordance with Section 5 Paragraph 1 Sentence 2 in combination with Section 9 Paragraph 5 Sentence 2, Section 19 Paragraph 2 Sentence 1, Section 22 Paragraph 2 Sentence 1, Section 72 Paragraph 2 Number 1 of the Brandenburg Higher Education Act (BbgHG) of 28. April 2014 (GVBI. I/14, Nr. 18) – in the valid form – the Brandenburg University of Technology Cottbus-Senftenberg (BTU) sets itself the following statute:

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I General Regulations

Current Examination and Study Regulations for Master Programmes (RahmenO) at BTU (Sections 1 to 27) in its effective version are valid.

II Subject-specific Regulations

§ 28 Scope of Validity

¹These subject-specific regulations govern the structure and procedures of the international consecutive study programme Power Engineering for the students. ²They are only valid in combination with the general regulations for master's programmes at BTU in Chapter I.

§ 29 Goal of the Programme

The master's programme has a research-oriented profile and aims at conveying to the students professional skills and knowledge in the use of the tools and methods in the field of Power Engineering, in research activities, in critical coordination of the scientific cognition, such as an independent formulation of the own scientific contribution to the field.

§ 30 Graduation, Degree

Upon successful completion of the study programme Power Engineering the academic degree "Master of Science" (M.Sc.) is awarded.

§ 31 Additional Admission Requirements

(1) Following admission requirements are valid additionally to Section 4:

- 1. Proof of the first academic degree (bachelor's level) with a standard period of study of minimum six semesters preferably in the fields of Electrical or Thermal Power Engineering.
- 2. Subject-specific prerequisites in the master's programme Power Engineering are good to very good knowledge in:
 - a. basic areas of Mathematics, Physics, Computer Science, Basics in Electrical or Mechanical Engineering
 - b. subject-specific areas of Electric Power Systems, Electrical Machines, Drive Systems, Power Electronics, High Voltage Engineering, Grid Calculation – in case a student wants to specialise in Electric Power Systems
 - c. subject-specific areas of Thermodynamics, Thermal Power Engineering, Power Plant Technology, Heat Transfer, Renewable Energies in case a student wants to specialise in Power Generation from Fossil and Renewable Fuels.
- 3. Applicants for the master's programme Power Engineering require the proof of English language skills according to Section 3 Paragraph 3 of the Enrolment Regulations for the admission.

(2) ¹Admission of the students to the study programme Power Engineering is subject to further acceptability evaluation. ²All the decisions on acceptability are taken by the Examination Board based on the criteria of Paragraph 1.

(3) ¹Since the master's programme offers several Double Degree programmes with partner universities and here a certain amount of exchange students were agreed upon on a contractual basis, ca. 25 students from partner universities will be admitted within Double Degree programmes. ²These admissions will be granted based on the best candidates criteria in accordance to prerequisites listed in Paragraph 1 in close agreement with partner universities.

§ 32 Structure and Form of the Programme

(1) The study programme Power Engineering comprises the following study disciplines:

- Electrical Power Engineering,
- Power Generation from Fossil and Renewable Fuels.

(2) ¹Organisation of the programme and study modules are shown in Annex 1. ²Table 1 offers an overview of the programme structure.

(3) ¹Tables 2 to 4 of Annex 1 illustrate core elements of the training in the respective study discipline. ²Recommendations as to the choice of the modules for specialisation in the respective study discipline are offered as well. ³Modules that have already been completed in a bachelor's programme cannot be taken again.

(4) ¹Compulsory elective modules in Engineering can be chosen from the general module catalogue of the BTU, preferable from the module catalogues of the Master's programme Power Engineering. ²A list of highly recommended compulsory elective modules for the relevant study discipline can be consulted with the respective mentor.

(5) ¹An industrial internship of at least 10 weeks is an integral part of the master's studies, see Annex 2. ²It should not exceed 6 months. ³It can be undertaken at any time of studies. ⁴In justified exceptional cases it can be replaced by two modules of overall 12 credit points from the module catalogue of the master's programme Power Engineering. ⁵Exceptions are made by the Examination Board.

(6) The General Study can be chosen freely from the offer of BTU.

(7) ¹Language of instruction and examination at the master's programme Power Engineering, as an international study programme, is English. ²Exceptions for an external Master Thesis are made by the Examination Board.

(8) The beginning of studies is only possible in winter semester.

§ 33 Mentors and Study Plan

(1) A student has to present the Examination Board an overall study plan of 120 credit points, previously approved by the mentor, by the end of the sixth lecture week of the first semester. The study plan should outline the choice of the study disciplines and modules as well as individually determined deadlines for taking examinations.

(2) Deviations from the approved study plan are possible before the beginning of each semester on a one time basis and require approval of a mentor and of the Examination Board.

§ 34 Grade Improvement

¹At most two passed examinations can be repeated for the purpose of grade improvement. ²The better result will be considered. ³A Master Thesis is excluded from this regulation.

§ 35 Examination Board and Course Guidance

(1) The Examination Board for the study programme Power Engineering will be appointed by the Faculty Council of Faculty 3 in compliance with Section 14.

(2) The member of the Examination Board selected among the university teaching staff takes over the administration of the study programme.

(3) Academic assistants of the Examination Board take over the course guidance.

(4) The Examination Board also monitors the offer of modules and decides if required on the amendments in Tables 2 to 4.

§ 36 Form and Content of the Master's Examination; Examination Deadlines

(1) The master's examination consists of the modules listed in Annex 1, Table 1 with the related examination and study performances given in the module description.

(2) ¹Examination performances are to be achieved in accordance with the module description. ²Examination deadlines are regulates in the current version of general Examination and Study Regulations. ³The Master Thesis has to be completed in six months (including the preparation time for a defence).

§ 37 Registration of the Master Thesis

(1) ¹A student has to achieve 70 credit points by the time of the registration of a Master Thesis. ²Exceptions are decided upon by the Examination Board.

(2) The candidate can submit suggestions on the topic of the Master Thesis.

(3) The Master Thesis can be performed in the form of a group work on condition that individual contributions of each candidate can be clearly separated and evaluated according to the number of chapters, pages or other objective criteria.

(4) ¹The Master Thesis can be completed externally (in a university, research institution or in a company), provided the adequate supervision is secured and the first supervisor from the BTU is consulted in advance. ²The final evaluation is made by examiners from the BTU.

§ 38 Efficacy, Interim Regulations, Invalidation

(1) These regulations come into effect from the day of their publication.

(2) ¹Students, who are already enrolled in the master's programme Power Engineering, when those regulations enter into force, change into new regulations with the registration for the next semester. ²In that semester they have to compose a study plan in accordance with Section 34. ³Already achieved examination performances will be acknowledged and recognised in the study plan.

(3) ¹The Examination and Study Regulations for Master Study Programme Power Engineering from 30 June 2011 (Abl. 16/2011), become invalid with the qualifications mentioned in Paragraph 2. ²It will expire completely on 31 March 2017.

Issued on the basis of the decisions made by the Faculty Council of Faculty 2 – Mechanical Engineering, Electrical and Energy Systems held on 16 September 2015, the opinion provided by the Founding Senate on 28 Januar 2016 and the approval of the President of Brandenburg University of Technology Cottbus-Senftenberg given on 31 May 2016, and the approval of the Ministry of Science, Research and Culture given on 13 September 2016.

Annex 1: Structure of the Programme and Modules

Semester 1. 2. 3. Ex/SP Content Options 4. Common Choose 18 CP from Tab. 2 18 CP Ex **Modules** Subject-specific Modules of the Study Discipline "Electrical Power Engineering" Choose 18 CP from Modules in "Power Systems" 18 CP Ex Tab. 3A Modules in "Power Electronics Choose 18 CP from 18 CP Ex and Drive Systems" Tab. 3B Subject-specific Modules of the Study Discipline "Power Generation from Fossil and Renewable Fuels" Modules in "Power Generation Choose 18 CP from from Fossil Fuels and Thermo-18 CP Ex Tab. 4A dvnamics" Modules in "Power Generation Choose 18 CP from from Renewables and Energy 18 CP Ex Tab. 4B Storage" **Compulsory Elective Modules** Choose 18 CP from BTU's offer, preferably from the master's Engineering programme Power En-18 CP Ex **Compulsory Elective Modules** gineering and from an annually updated additional list Choose 6 CP from **General Studies** 6 CP Ex BTU's FÜS list Internship Industrial Internship (see Section 32 Paragraph 5) 12 CP SP Master Thesis 30 CP Ex 60 CP 60 CP Overall

Table 1: Structure of the Study Programme Power Engineering

CP Credit Points

Ex Examination

SP Study Performance

Table 2: Common Modules (choose 18 CP)

Name of the Module	CP
Introduction in Electrical Power	6
Control Engineering 1	6
Control Engineering 2	6
Power System Economics I	6
Power System Economics II	6
International Management	6

Table 3A: Subject-specific Modules in "Power Systems" (choose 18 CP)

Name of the Module	CP
Medium- and Low-Voltage Technologies	6
Switching Technologies	6
Calculation of Grids with Renewable Sources	6
Power System Operation	6
EMC in Electrical Power Installations	6
Auxiliary Power Supply of the Power Plant	6

Table 3B: Subject-specific Modules in "Power Electronics and Drive Systems" (choose 18 CP)

Name of the Module	СР
Fundamentals in Power Electronics	6
Power Electronic Applications in Drive Systems	6
Power Electronic Applications in High Voltage Grids	6
Generators and Large Drives	6
Research Seminar in Power Electronics	6

Table 4A: Subject-specific Modules in "Power Generation from Fossil Fuels and Thermodynamics" (choose 18 CP)

Name of the Module	СР
Power Plant Technology 1	6
Power Plant Technology 2	6
Technical Combustion	6
Selected Chapters of Technical Combustion	6
Fundamentals in Thermal Process Engineering	6
Thermal Process Engineering and Equilibrium Thermodynamics	6

Table 4B: Subject-specific Modulea in "Power Generation from Renewables and Energy Storages" (choose 18 CP)

Name of the Module	СР
Power Generation from Wind Energy	6
Power Generation from Solar Energy	6
Power Generation from Bio Fuels	6
Energy Storage Technology	6
Renewable Hybrid and Virtual Power Plants	6

Annex 2: Internship Regulations of the Study Programme Power Engineering

1 Scope of Validity

These Internship Regulations apply to interns, who conduct an industrial internship within the master's programme Power Engineering.

2 Goal and Duration of the Internship

¹The industrial internship is intended to supplement the lecture contents and to enable the practical application of the theoretical knowledge acquired during the study programme. ²It enables students to independently apply the theoretical knowledge and methods acquired during their studies. ³The students analyse operational processes and the technologies used in a working environment with a predominantly researching, developing, planning or controlling characteristics and enhance operational processes and technologies with the methods they are familiar with. ⁴They will be enabled to generate new applications or solutions to problems in the field of energy technology. ⁵In doing so, they work either independently or in a team. ⁶The internship also offers an insight into the technical, economic and social contexts of an industrial company. ⁷As a result, students can use the skills acquired during the internship when writing their Master Thesis – if this is written afterwards – and in their future careers.

⁸The internship lasts at least 10 weeks and should not exceed 6 months.

3 Enterprises for the Internship

¹The industrial internship can be completed at power engineering plants within the country or abroad. ²Here belong power plant operators, network operators, producers and suppliers of the power engineering equipment as well as corresponding consulting firms. ³Enterprises and activities should be chosen with respect to the study discipline and aim at the consolidation of the knowledge.

⁴BTU does not arrange any internship positions. ⁵It is a responsibility of an intern to find and apply for an internship position.

⁶At an internship place an intern should be coached by a supervisor at an enterprise ⁷This supervisor defines and monitors the performed activities and records them in an internship report.

4 Internship Report, Certificate of Employment

¹Interns have to hand in a written report on their activities during the internship. ²This technical report should have the scope of 5 to 10 pages. ³The report has to be signed both by the intern and the supervisor.

⁴The enterprise issues a certificate of employment which gives the account of the company name, the department, the duration of an internship, absence from work and a general assessment of an intern.

5 Recognition of the Internship

¹The recognition of the internship is performed by a professor from BTU, who instructs at the master's programme Power Engineering. ²For that an internship report and a certificate of employment in English or German have to be provided.

³The content and results of internship activities need to be presented in a presentation of 20 minutes followed by a discussion.

⁴An internship will not be recognised when an internship report or a presentation are considered to be insufficient.

⁵Because it is an industrial internship, only practical activities, which have direct relation to the master's programme Power Engineering and are professionally relevant, can be recognised. ⁶The Examination Board takes a decision on the recognition of other practically oriented activities.

6 Disclaimer

¹Legal relationships exist exclusively between the enterprise and the intern.

²During an internship an intern is subjected to the industrial process and fulfils the prerequisites for employees according to Section 2 Paragraph 1 Number 1 SGB VII. ³Employer's Liability Insurance Association (Berufsgenossenschaft) or the Accident Insurance (Unfallkasse), where the intern is insured, is herewith responsible (Section 133 Paragraph 1 SGB VII). ⁴Companies bear the costs for the insurance by covering the contributions to the accident insurance.