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# Revised version of the subject-specific examination and study regulations for the Master's programme in Hybrid Electric Propulsion Technology M.Sc. dated 26 February 2026

Based on Section 5 (1) sentence 2, Section 10 (5) sentence 2 in conjunction with § 20 (2) sentence 1, § 23

Paragraph 2, sentence 1, Section 70 (2) No. 8 and Section 81 (2) sentence 1 No. 1 of the Brandenburg Higher Education Act (BbgHG) of 9 April 2024 (GVBl. I/24, [No. 12]), amended by Article 2 of the Act of 21 June 2024 (GVBl. I/24, [No. 30], p. 32) and Section 16 (2) No. 1 and Section 29 (4) sentence 1 No. 1 of the Basic Regulations for the Brandenburg University of Technology Cottbus-Senftenberg (GO BTU) of 8 January 2016 (AMbl. 01/2016 of 8 January 2016), last amended by the Fourth Amendment Statute of 23 January 2025 (AMbl. 08/2025 of 31 March 2025, page 3) and § 1 of the General Examination and Study Regulations for Master's Degree Programmes at the BTU Cottbus–Senftenberg (RahmenO-MA) dated 12 September 2016 (AMbl. 14/2016), last amended by the Fifth Amendment Statute (AMbl. 30/2024 dated 29 August 2024), the Brandenburg University of Technology Cottbus–Senftenberg (BTU) adopts the following statutes:

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## § 1 Scope

<sup>1</sup>These statutes regulate the subject-specific features of the Master's programme in Hybrid Electric Propulsion Technology. <sup>2</sup>They supplement the General Examination and Study Regulations for Master's programmes at the BTU (RahmenO-MA) in their current version.

## § 2 Content profile of the programme, Objectives of the programme

(1) <sup>1</sup> In the international Master's programme in Hybrid Electric Propulsion Technology ( ) Hybrid Electric Propulsion Technology (HEPT) teaches the scientific approaches and techniques that enable graduates to develop technologies aimed at significantly reducing emissions in aviation and other areas of mobility. <sup>2</sup>The programme is committed to internationality and interdisciplinarity. <sup>3</sup>As part of the Master's programme, students are taught the latest knowledge about hybrid propulsion systems in order to prepare them for the expanding industries in the field of next-generation propulsion technology. <sup>4</sup>In terms of content, the programme " " is divided into the two fields of study "Engine Technology" and "Electrical Propulsion Technology" as well as interdisciplinary components that meet the requirements for employment in companies or scientific institutions in both fields.

(2) <sup>1</sup> In this degree programme, students acquire in-depth theoretical and practical engineering knowledge and skills in the fields of aviation propulsion, electric propulsion technology, aerothermodynamics, combustion science, structural mechanics, design, manufacturing and certification procedures, as well as life cycle analysis and control engineering. <sup>2</sup> This enables students to work independently and interdisciplinarily, solve problems, and evaluate work results and processes, including the development of alternative courses of action and interactions with related subject areas.

(3) <sup>1</sup> The interdisciplinary subject content of the programme qualifies graduates for professional careers in the expanding hybrid drive technology industry, both in the field of air, road and sea transport in small to large companies, and for self-employment in this field. <sup>2</sup> Graduates are able to participate in the design, analysis, optimisation and construction of hybrid electric drives. <sup>3</sup> It is also possible to continue scientific work in the research and development sector of the private sector or at a public research institution.

### § 3 Graduation, degree title

Upon successful completion of the Master's programme in Hybrid Electric Propulsion Technology, the academic degree "Master of Science" (M.Sc.) is awarded.

### § 4 Special admission and enrolment requirements

(1) Admission to the Master's programme requires proof of a Bachelor's degree in engineering with at least 180 credit points (LP), particularly in the fields of mechanical engineering, aerospace engineering, electrical engineering, energy technology and related fields of study.

(2) <sup>1</sup> Due to the technical orientation of the programme, all applicants for admission must provide evidence of the following special technical requirements from a previous course of study:

- A thesis that is at least comparable in quality to a thesis in a study programme at competence level 6 of the German Qualifications Framework (DQR), in German or English, or an equivalent publication (if the thesis or publication is not available in German or English, a summary in German or English must also be submitted),
- at least 24 LP in mathematics.

<sup>2</sup> For applications in the field of study "Engine Technology" must also meet the following

special subject requirements from a previous degree programme must also be demonstrated for admission:

- at least 18 LP in the field of mechanics and design,
- at least 6 LP in thermodynamics,
- at least 6 LP in the field of fluid mechanics and aerodynamics.

<sup>3</sup> For applications to the " " programme in the " " field of study

"Electrical Drive Technology" must also provide evidence of the following specific subject requirements from a previous degree programme in order to be admitted:

- at least 12 credit points in the field of electrical machines and drives,
- at least 12 CP in the field of control technology.

<sup>4</sup> The examination board is responsible for checking the technical requirements for admission.

(3) In order to be admitted to the programme, all applicants must demonstrate sufficient language skills for international study in accordance with the current version of the BTU's enrolment regulations.

### § 5 Scope of study and standard period of study

(1) The programme comprises 120 credit points with a standard period of study of four semesters, whereby one credit point corresponds to 30 hours of work.

(2) The programme begins in the winter semester.

(3) Individual part-time study in accordance with § 6 RahmenO-MA is possible.

### § 6 Study structure and organisation

(1) <sup>1</sup> The Master's programme in Hybrid Electric Propulsion Technology is an international programme. <sup>2</sup> The language of instruction and examination is English.

(2) <sup>1</sup> Students choose one of the following fields of study to begin their studies:

- Engine Technology,
- Electric Drive Technology.

<sup>2</sup> A change at a later date is possible, taking into account the examinations and coursework already completed and still to be completed

if this does not significantly extend the total duration of the programme. <sup>3</sup> The change must be approved by the examination board.

(3) <sup>1</sup>The curriculum is presented in Appendix 1. <sup>2</sup>The programme offers extensive freedom of choice with recommendations for suitable module combinations to achieve a specialisation in the subject. <sup>3</sup>The modules are defined in the semester- and programme-specific module handbook for the Master's programme in Hybrid Electric Propulsion Technology (programme website).

(4) <sup>1</sup> The programme consists of:

- the compulsory elective modules in the area of technical specialisation of the respective field of study, comprising 36 CP (Appendices 2 and 4),
- the compulsory elective modules of the subject-specific studies of the respective field of study, comprising 42 CP (Appendices 3 and 5)
- the project study with 6 CP,
- interdisciplinary studies (FÜS) worth 6 CP,
- a compulsory internship worth 12 CP,
- the Master's thesis with 18 CP.

<sup>2</sup>The standard study plan presented in Appendix 6 provides a recommendation for the timing of studies when commencing studies in the winter semester.

(5) <sup>1</sup>The range of compulsory elective modules can be adjusted each semester as necessary. <sup>2</sup>It must be ensured in all cases that the programme can be completed within the standard period of study. <sup>3</sup>The examination board must notify the Department of Studies and Teaching of any adjustments to the range of compulsory elective modules one month before the start of the semester.

(6) <sup>1</sup> A compulsory internship of at least eight weeks must be completed as part of the programme. <sup>2</sup> Further details on the requirements of the internship are set out in Appendix 7.

(7) <sup>1</sup>Each student shall select a mentor during their studies. <sup>2</sup>Eligible mentors shall be assigned to each year group from among the teaching staff. <sup>3</sup>A change of mentor shall only take place in justified cases. <sup>4</sup>Each student shall

a binding study plan for the intended further course of study within the first three weeks of the first semester. <sup>5</sup> The study plan and any changes made during the course of study must be discussed with the mentor and confirmed by him or her. <sup>6</sup> The confirmed study plan must then be submitted to Student Services by the end of the first semester at the latest.

(8) <sup>1</sup>Depending on study progress and compliance with the standard study plan, mobility windows for completing a study period abroad are available either after the first or after the third semester. <sup>2</sup>Students are advised to take advantage of individual subject-specific study counselling on time management.

### **Section 7 Special regulations governing the organisation of examinations**

There are no special regulations governing the organisation of examinations.

### **Section 8 Master's thesis ( )**

(1) <sup>1</sup>The Master's thesis is worth 18 credit points. <sup>2</sup>It consists of a written or creative piece of work and a colloquium. <sup>3</sup> The processing time for the written or creative part of the Master's thesis is 16 weeks from the date of registration. <sup>4</sup> The date on which the topic is issued by the first examiner is considered the registration date for the Master's thesis.

(2) Students who have earned at least 78 LP, including 36 LP in their area of specialisation, at the time of registration for the Master's thesis are eligible to write the Master's thesis.

(3) The Master's thesis must be written in English.

### **§ 9 Additional supplementary regulations**

There are no further supplementary regulations.

### **§ 10 Entry into force and expiry**

(1) These regulations shall enter into force in the winter semester 2026/27.

(2) They apply to all students in the Master's programme in Hybrid Electric Propulsion Technology who commence their studies from the winter semester 2026/27 onwards.

(3) <sup>1</sup>Students who, at the time of entry into force of these regulations, are enrolled in the Master's programme in Hybrid Electric Propulsion Technology in accordance with the examination and study regulations of 5 July 2024 (AMbl. 19/2024) in the version of the First Amendment Statute of 4 February 2025 (AMbl. 04/2025) may switch to these regulations upon application to the examination board. <sup>2</sup> All credits earned will be recognised.

(4) The examination and study regulations for the Master's programme in Hybrid Electric Propulsion Technology according to the examination and study regulations of 5 July 2024 (AMbl. 19/2024) of the First Amendment Statute of 4 February 2025 (AMbl. 04/2025) shall expire after the last enrolment at the end of the standard period of study plus four semesters.

(5) The present examination and study regulations of 26 February 2026 (AMbl. 02/2026)

shall cease to be valid after the last enrolment at the end of the standard period of study plus four semesters.

(6) In a discontinued degree programme, no students will be admitted or enrolled for the first or higher semesters from the date of discontinuation.

Issued on the basis of the resolutions of the Faculty Council of the Faculty of Mechanical Engineering, Electrical Engineering and Energy Systems dated 2 July 2025 and 15 October 2025, the statement by the Senate dated 25 September 2025 and the approval by the President of the Brandenburg University of Technology Cottbus–Senftenberg dated 20 January 2026.

Cottbus, 26 February 2026

Prof. Dr. Gesine Grande President

**Appendix 1: Overview of modules, status, credit points (CP)**

Module no.	Complexes and modules	Status	Assessment	CP
<b>Technical specialisation</b>				<b>36</b>
	Elective modules according to the chosen field of study from Appendix 2 or 4	WP	Exam	36
<b>Subject-specific studies</b>				<b>42</b>
	Compulsory elective modules according to the chosen field of study from Appendix 3 or 5	WP	Exam	42
<b>Project study</b>				<b>6</b>
13793	Study Project	P	Exam	6
<b>Competence-enhancing studies</b>				<b>6</b>
	Interdisciplinary studies (FÜS) from the current range of courses on offer	WP	Ex	6
<b>Compulsory internship</b>				<b>12</b>
13790	Industrial Internship	P	SL	12
<b>Master's thesis</b>				<b>18</b>
13789	Master's thesis	P	Exam	18
<b>Total</b>				<b>120</b>

Exam: Examination performance, SL: Study performance, P: Compulsory module, WP: Elective module

**Appendix 2: Technical specialisation in the field of engine technology**

Module no.	Module name	LP
14049	Electrified Aero Engines	6
13801	Fundamentals of Engine Technology	6
13916	Fundamentals of Electrical Power Engineering	6
13835	Fundamentals of Electrical Drive Technology	6
11494	Control Engineering 1	6
13917	Aviation Industry Safety Processes and Standards	6
13836	Electrical Machines for Flight Applications	6
35437	Power Electronic Applications in Drive Systems	6

LP: Credit points

**Appendix 3: Subject-specific studies in the field of propulsion technology**

Module no.	Module name	LP
14840	Aero Engine Design and Analysis 1	6
14841	Aero Engine Design and Analysis 2	6
13804	Engine Integration	6
13805	Lifetime Assessment and Fracture Mechanics	6
13926	Hydrogen and Fuel Cells	6
13919	Testing and Certifications of Flight Propulsion Systems	6

<b>Module No.</b>	<b>Module name</b>	<b>LP</b>
14050	Environmental Impact of Aero Engines	6
14055	Thermal Management Systems in Hybrid-Electric Propulsion Aviation	6
13918	Fundamentals in Battery Systems	6
13920	Unsteady Aero-Thermodynamics of Turbomachinery	6
13763	Flow Modelling with Machine Learning	6
14514	Lecture Series Hybrid-Electric Propulsion	6
13254	Image-Based Measurement Techniques for Aerodynamics	6
12887	Engineering Acoustics - Sound Fields	6
13921	Lightweight Design and Construction	6
13519	CFD 1	6
13762	CFD 2	6

LP: Credit points

#### **Appendix 4: Technical specialisation in the field of electrical drive technology**

<b>Module no.</b>	<b>Module name</b>	<b>LP</b>
14049	Electrified Aero Engines	6
13956	Thermal Turbo Machines (Cycle Processes)	6
13801	Fundamentals of Engine Technology	6
13917	Aviation Industry Safety Processes and Standards	6
13249	Introduction to Gas Dynamics	6
14873	Thermodynamics for Engineers	6
14840	Aero Engine Design and Analysis 1	6
14841	Aero Engine Design and Analysis 2	6

LP: Credit points

#### **Appendix 5: Subject-specific studies in the field of electrical drive technology**

<b>Module No.</b>	<b>Module name</b>	<b>LP</b>
11221	Fundamentals in Power Electronics	6
35437	Power Electronic Applications in Drive Systems	6
11747	Control Engineering 2	6
13918	Fundamentals in Battery Systems	6
13919	Testing and Certifications of Flight Propulsion Systems	6
14050	Environmental Impact of Aero Engines	6
11191	EMC in Electrical Power Installations	6
13836	Electrical Machines for Flight Applications	6
11496	Research Seminar in Power Electronics	6
12887	Engineering Acoustics – Sound Fields	6
14055	Thermal Management Systems in Hybrid-Electric Propulsion Aviation	6
13926	Hydrogen and Fuel Cells	6
14514	Lecture Series Hybrid-Electric Propulsion	6

LP: Credit points

**Appendix 6: Standard study plan (assignment of modules and LP to the semesters)**

Complexes and modules	LP per semester				Total CP
	1	2	3	4	
<b>Technical specialisation<sup>1</sup></b>					<b>36</b>
Elective module 1	6				
Compulsory elective module 2	6				
Compulsory elective module 3	6				
Compulsory elective module 4	6				
Compulsory elective module 5	6				
Compulsory elective module 6		6			
<b>Subject-specific studies<sup>2</sup></b>					<b>42</b>
Compulsory elective module 1		6			
Compulsory elective module 2		6			
Compulsory elective module 3		6			
Compulsory elective module 4		6			
Compulsory elective module 5			6		
Compulsory elective module 6			6		
Elective module 7			6		
<b>Project study</b>					<b>6</b>
Study Project			6		
<b>Competence-enhancing studies</b>					<b>6</b>
Interdisciplinary studies (FÜS)			6		
<b>Mandatory internship</b>					<b>12</b>
Industrial Internship				12	
<b>Master's thesis</b>					<b>18</b>
Master's thesis				18	
<b>Total credits achieved</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>120</b>

<sup>1</sup> in accordance with Appendix 2 or Appendix 4

<sup>2</sup> according to Appendix 3 or Appendix 5

## Appendix 7: Internship regulations

### 1. Scope

<sup>1</sup>These internship regulations apply to interns who are completing an internship as part of the Master's programme in Hybrid Electric Propulsion Technology. <sup>2</sup>Interns within the meaning of these regulations are students at the BTU enrolled in the Master's programme in Hybrid Electric Propulsion Technology.

### 2. Purpose of the internship

<sup>1</sup>The internship is compulsory for students in order to familiarise themselves with the essential work processes of engineers and to apply the skills they have acquired in practice. <sup>2</sup>It enables them to independently apply the theoretical knowledge and methods acquired during their studies. <sup>3</sup>Students analyse operational processes and the technologies used in a working environment that is predominantly research-oriented, development-oriented, planning-oriented or control-oriented, and further develop operational processes and technologies using the methods they are familiar with. <sup>4</sup>The internship helps to supplement key qualifications such as the design and management of teamwork and communication in a practical context. <sup>5</sup>An essential aspect of the internship is experiencing and reflecting on the economic and sociological events in the company. <sup>6</sup>Students should understand the company as a social entity and, in particular, learn about the relationship between managers and employees. <sup>7</sup>As a result, students can apply the technical skills acquired during the internship to the preparation of their Master's thesis – if this is written afterwards – as well as personal skills in their future professional life.

### 3. The internship position

<sup>1</sup>The internship can be carried out in private companies (especially medium-sized and large companies), engineering offices or external research institutions. <sup>2</sup>Students are responsible for finding an internship position themselves.

### 4. Duration of the internship

<sup>1</sup>The internship consists of an industrial internship lasting at least eight weeks. <sup>2</sup>An internship week corresponds to the regular weekly working hours of the respective company. <sup>3</sup>Working hours lost due to holidays, illness or company closures do not count as internship time and must be made up.

and must be made up. <sup>4</sup> If necessary, a contract extension should be requested in order to complete an internship that has already begun. <sup>5</sup> The internship can be divided between different companies. <sup>6</sup> It is recommended that students voluntarily complete additional internships in relevant companies.

### 5. Supervision of interns and internship reports

<sup>1</sup>The internship must be supervised by a university lecturer from the BTU and a mentor with an engineering degree at the target institute or company. <sup>2</sup>A written internship report must be prepared about the internship. <sup>3</sup> The internship and the internship report shall be reviewed and approved by the mentor. <sup>4</sup> The reports must reflect the intern's own activities, observations and findings. <sup>5</sup>The profile should contain the fields of activity and products of the internship company as well as information about the size of the company (e.g. number of employees) and social and organisational structures, approximately half a page in length. <sup>6</sup> The reports must be written in English. <sup>7</sup> In justified cases, the report may be written in German.

### 6. Recognition of the internship

<sup>1</sup> The following documentation is required for recognition of the internship:

- a signed and stamped internship certificate with details of the internship company, the surname and first name of the intern, the start and end dates of the internship with details of the weekly working hours and, if applicable, the number of days of absence,
- an internship report.

<sup>2</sup>Professional activity or work as a working student may be credited as an internship, provided that the content and duration comply with the provisions of these internship regulations. <sup>3</sup>The final decision on the recognition of the internship and the completion of the module shall be made by the internship supervisor after reviewing the complete documentation.