

Subject-Related Examination and Study Regulations for the Master's Degree Programme Cyber Security of 22 September 2017 with the Amendment of 5 June 2024¹

English translation, not legally binding!

In accordance with the Brandenburg Higher Education Act (Brandenburgisches Hochschulgesetz – BbgHG) of 28 April 2014 (GVBl. I/14 Nr. 18), last amended by the act of 1 July 2015 (GVBl. I/15 Nr. 18), according to Section 5 Paragraph 1 Sentence 2, Section 9 Paragraph 5 Sentence 2 in conjunction with Section 19 Paragraph 2 Sentence 1, Section 22 Paragraph 2 Sentence 1, Section 72 Paragraph 2 Sentence 1 and Section 1 of the General Examination and Study Regulations for Master's Degree Programmes at the Brandenburg University of Technology Cottbus-Senftenberg from 12. September 2016 (AMbl. 14/2016), Brandenburg University of Technology Cottbus-Senftenberg (BTU) has adopted the following statutes:

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¹This amendment will entry into force on 1 October 2024.

§ 1 Scope of Validity

¹These statutes outlines the subject-related specifics for the Cyber Security Master's Programme. ²It is a supplement to the General Examination and Study Regulations for Master's Degree Programmes at BTU (RahmenO-MA) from 12 September 2016 (AMBl. 14/2016). ³In case of conflicts between the two regulations, the general study regulations have priority.

§ 2 Content Profile of the Programme, Goals of Studies

¹The aim of the Cyber Security study programme is to facilitate the learning and strengthening of relevant knowledge, skills and methods related to IT security. In addition, the programme aims to foster students' ability to work independently in the IT security sector and to incorporate them into current research. ²Graduates of this programme are qualified to assess IT system vulnerabilities and to find and assess solutions for bringing these systems up to the standards required by the relevant organisational and legal standards, using modern technology. ³The study programme couples computer science and engineering both in theory and practice. ⁴It is designed to make graduates capable of taking on important and difficult problems in industrial, administrative, and research settings, by implementing existing or their own innovative IT security strategies.

§ 3 Graduation, Degree

Upon successful completion of the study programme the academic degree »Master of Science« (M. Sc.) will be awarded.

§ 4 Further Admission and Enrolment Requirements

(1) Only students who are enrolled according to the BTU framework regulations are allowed to participate in the programme.

(2) ¹Principal requirement for admission to this Master's programme is a degree that proves qualification for work in a computer science related field (at least Bachelor's degree). ²Applicants with a degree in Computer Science, IT security, or Mathematics with a minor in Computer Science are especially qualified. ³Sufficient qualifications are met if the student's previous degree is verifiably similar in content to the Computer Science Bachelor's programme offered at the BTU in terms of theory and practical exercises for computer science and mathematics.

(3) ¹The verification of adequate qualifications ¹is carried out by the Examination Board. ²In the case the qualifications do not completely satisfy the prerequisites, the Examination Board may require that certain additional modules be taken.

(4) ¹Cyber Security is an international study programme. ²The language of teaching and examination is English. ³For admission into the study programme it is required that students

provide proof of sufficient English language skills according to Section 3 Paragraph 3 of the Enrolment Regulations at the BTU of 13 July 2015 (AMBI. 01/2015).

§ 5 Regular Duration and Scope of the Programme

(1) ¹The regular duration of studies for this programme is 4 semesters. ²The scope of the Master's programme is 120 credit points in accordance with ECTS (European Credit Transfer System), whereas one credit point corresponds to 30 hours of work.

(2) ¹The programme begins in the Winter Semester. ²It is a full-time study programme.

§ 6 Programme Structure and Organisation

(1) ¹The design of the Master's programme is 4 semesters with 30 credit points in each. ²The structure of the programme is described in the syllabus (Annex 1). ³The syllabus is designed to have both a focus on fundamentals and specialisations as well as practical training, such as general modules, an industrial internship and the Master Thesis.

(2) The »Cyber Security Basics« area for fundamentals consists of the mandatory modules listed in Annex 2, with a scope of 22 credit points.

(3) ¹The specialisation part of the programme has a scope of 52 credit points and is divided into two areas with compulsory elective modules (see Annex 2) and the Study Project. ²From the module area »Cyber Security Methods«, at least 28 credit points and from the module area »Computer Science«, at least 12 credit points are required.

(4) ¹The professional internship amounting to 10 CP has a duration of at least 260 working hours and should be carried out at an institution outside the university. ²Internships at central university facilities (e.g. IT services in universities) are permitted. ³Student Trainee (»Werkstudent«) placements can be recognised by the Examination Board with the approval of the mentor if they correspond to the objectives of the professional internship. ⁴Details are specified in the Internship Regulations (see Annex 4).

(5) ¹The professional internship is accompanied by the mentor and managed by a supervisor at the respective institution. ²The assignment of the internship task is carried out by the supervisor in consultation with the mentor.

(6) ¹The professional internship must be covered by a written thesis describing the task worked on and its solution. ²The internship and the final paper are assessed by the supervisor and the mentor. ³If the assessment is positive, the mentor certifies that the professional internship has been successfully completed.

(7) ¹In verifiably justified cases, e.g. if an adequate internship cannot be found despite reasonable effort, the professional internship can be replaced by a project of the appropriate scope at the Computer Science chairs. ²The Examination Board and the mentor must give their approval.

(8) ¹In special exceptional cases, the professional internship can be replaced by other modules from the module areas »Cyber Security Methods« or »Computer Science«. ²The Examination Board and the mentor must give their approval. ³Appropriate exceptions are, e.g.

- relevant professional practice or
- successfully completed professional internships in other degree programmes.

§ 7 Special Regulations for the Organisation of Examinations

There are no special regulations for the organisation of examinations.

§ 8 Master Thesis

(1) ¹The Master Thesis must be written in English and is generally to be completed in the 4th semester. ²It has a scope of 30 credit points. ³The working time for the written portion of the thesis is 5 months. ⁴The registration of the thesis can only be done when all modules including the Study Project have been successfully completed by earning 82 credit points. ⁵The industrial internship can be completed after the completion of the Master Thesis.

(2) ¹The topic of the Master Thesis must be related to the field of Cyber Security (IT Security). ²This must be verified by the Examination Board upon registration of the thesis.

§ 9 Further Supplementary Regulations

There are no additional regulations.

§ 10 Entry into Force, Abrogation, Transitional Regulations

(1) These regulations come into effect the day after they are published.

(2) These Examination and Study Regulations are no longer relevant 4 semesters after the established regular study duration of the programme and the final enrolment.

Annex 1: Overview of the Modules, Status, Credit Points (CP)

Module Areas/Modules	Status	Evaluation	Credit Points
Basic Modules			22
Cyber Security Basics	P	Examination	22
Specialisation Modules			52
Cyber Security Methods	WP	Examination*	28–32
Computer Science	WP	Examination*	12–16
Study Project	P	Study Performance	8
			46
General Studies	WP	Examination	6
Internship	P	Study Performance	10
Master Thesis	P	Examination	30
Sum			120

P = Mandatory, WP = Compulsory Elective

*) Seminars and Laboratory Courses that are assessed with a Study Performance can be considered to the extent of a maximum of 12 credit points as Specialisation Modules.

Annex 2: Modules for Basic and Specialisation Studies

Module Title	Credit Points
Cyber Security Basics (Mandatory)	
Introduction into Cyber Security	8
Cryptography	8
IT Security Law	6
Cyber Security Methods (Compulsory Elective)	
Cryptographic Protocols	6
Pervasive System Security	6
Security of Resource-constraint Systems	6
Software Security	6
Hands on Knowledge for Side Channel Attacks	6
Cyber Security Application Areas	6
Cyber Security Lab	6
Seminar	4
Computer Science (Compulsory Elective)	
Introduction to Web Services and eBusiness Technologies	6
Web-Technologies Lab	4
Dependability and Fault Tolerance	6
Foundations of Data Mining	6
Neural Networks and Learning Theory	8
Software Project Management	8
Internet - Functionality, Protocols, Applications	8
Wireless Sensor Networks: Concepts, Protocols and Applications	6
Introduction into Concurrency	8
Software Dependability	8
Software Testing	8
Operating Systems II (Multi-Level Memory Management)	6
Distributed and Parallel Systems II (Concurrency, Replication and Consistency)	6

The head of the study programme may extend the list of Compulsory Elective Modules upon request.

Annex 3: Regular Study Plan

Modules	CP per Semester				CP Sum
	1	2	3	4	
Basic Modules: Cyber Security Basics (Mandatory)					
Introduction into Cyber Security	8				8
Cryptography		8			8
IT Security Law			6		6
Sum Basic Modules	8	8	6		22
Specialisation Modules					
Compulsory Elective Modules Cyber Security Methods	12	12	6		30
Compulsory Elective Modules Computer Science	6	8			14
Study Project			8		8
Sum Specialisation Modules	18	20	14		52
General Studies	6				6
Internship			10		10
Master Thesis				30	30
Sum	6		8	30	46
Total Sum of Studies	32	28	30	30	120

Annex 4: Internship Regulations for the Professional Internship

1. Validity

These regulations apply to the professional internship of the Master's programme Cyber Security at the Brandenburg University of Technology Cottbus-Senftenberg in conjunction with the current Examination and Study Regulations.

2. Purpose of the Internship

¹The professional internship is intended to give students the opportunity to use and implement the knowledge gained in the classroom. ²In particular, it strengthens the ability to work as a team. ³The internship serves as an opportunity to get an understanding for the connection between the industry side, and the research and academia side of IT security. ⁴It is the students' responsibility to find an appropriate internship place. ⁵The chairs of the programme can and should help facilitate this connection. ⁶A possible non-disclosure or confidentiality agreement must be concluded before the start of the internship.

3. Registration

¹The internship must be approved by a mentor at least 4 weeks before its start. ²The approval entails the screening of the type of work, the company, and the supervisor at the company.

4. Internships Abroad

¹In general, internships abroad are welcomed. ²However, they must follow the same prerequisites as those in Germany. ³Exchange programmes and agencies can be found through the Deutscher Akademischer Austauschdienst (DAAD).

5. Internship Places

¹Potentially suitable companies for an internship are those that operate in the field of IT security, but also non-university research institutions (e.g. institutes of the Fraunhofer-Gesellschaft). ²Only in exceptional cases students are permitted to intern at higher education institutions (e.g. IT services in universities). ³The interning student should receive mentoring from supervisor that is employed by the company or institution, and has earned a Diploma or Master's degree in a relevant field. ⁴This supervisor must be mentioned in the report and be available as a contact person. ⁵He or she should guide the students in their thesis and be readily available to answer questions and make recommendations.

6. Supervision

¹The supervision on the BTU's side is the responsibility of the mentor. ²Research assistants are permitted to assist in the supervision. ³It is expected that the mentor at the BTU and the supervisor at the respective institution or company regularly engage in consultations with each other.

7. The Duration and Division of the Internship

¹The internship must have a duration of at least 260 working hours. ²If possible, it should be completed without interruptions. ³The vacation time is determined in accordance with the German Federal Holiday Act (Bundesurlaubsgesetz) ⁴Longer periods of missed work due to illness must be made up for, shorter periods are ruled upon by the Examination Board. ⁵It is advised to do scheduling during the internship and keep a journal.

8. Internship Report

¹For the whole duration of the internship it is required that the student writes a report (about 3,500–4,000 words) to be submitted to the supervisor at the company. ²The report must satisfy the general requirements for scientific work. ³With permission from the supervisor at the company providing the internship, it is possible to write the report in English. ⁴It should describe:

- the company where the internship takes place,
- the sector that company operates in and if relevant the department within the company,
- the task, the existing state of the technology,
- the approach, solution,
- reflection on one owns work, experiences, knowledge gained, applicability of knowledge/skills gained from the study programme.

⁵The supervisor at the company providing the internship must sign off on the report before it is submitted. ⁶The report must be submitted to the mentor at the BTU at the latest 8 weeks after the completion of the internship.