

**Degree Programme Regulations (Statutes) for Students
of the Master's Degree Programme IT Security
at the University of Lübeck leading to the Degree "Master of Science"**
from 31 January 2017 (NBl. HS MSGWG Schl.-H. p. 35)

amended by:

Statute from 04 July 2019 (NBl. HS MBWK Schl.-H. p. 50)

Statute from 15 February 2022 (NBl. HS MBWK Schl.-H. p. 31)

§ 1

Scope

These degree programme regulations, in conjunction with the examination procedure regulations (*Prüfungsverfahrensordnung, PVO*) for students of the Bachelor's and Master's programmes of the University of Lübeck, govern the Master's programme IT Security at the University of Lübeck.

§ 2

Aim of the degree programme

(1) The Master's degree programme prepares graduates for activities in the field of IT security and reliability in research-, teaching-, development- and application-related professional fields.

(2) The aim of the Master's degree programme IT Security is to enable students to understand and work on diverse problems of secure and reliable information processing by teaching scientific methods and models and practising skills of IT security and reliability. The subject of the degree programme is the analysis, description, construction and validation of information-processing systems, especially from the point of view of security and reliability. In contrast to the Bachelor's programme, the emphasis here is on the acquisition of skills for scientific work. The course takes this into account by providing a foundation-oriented degree programme that is both broad and in-depth, and is intended to create the prerequisites for lifelong learning in the field of computer science and, more specifically, secure and reliable IT systems, as well as for further academic qualification, such as a doctorate. Furthermore, the competences acquired by the students should enable them to take on leadership positions in industry.

(3) The Master's degree programme in IT Security is research-oriented and consecutive to the Bachelor's degree programme in IT Security at the University of Lübeck. Students are expected as a prerequisite to already possess knowledge, skills and competences in the field of IT security and reliability to the extent and depth taught in the Bachelor's degree programme.

(4) Upon successful completion of the Master's programme, the University of Lübeck awards the academic degree "Master of Science".

§ 3

Access to the degree programme

(1) The Master's degree programme is consecutive to the Bachelor's degree programme in IT Security at the University of Lübeck.

(2) The prerequisite for admission to the Master's degree programme in IT Security is that the applicant provides the following evidence:

1. Bachelor's degree in IT security or a related subject, for which the applicant must provide evidence
 - a) that he or she has obtained a Bachelor's degree or an equivalent degree in IT security or in a closely related degree programme at a German university or at a university belonging to one of the Bologna signatory states or
 - b) that he or she has obtained an equivalent degree in a closely related subject at a foreign university.

The equivalence of a foreign qualification is established in accordance with the assessment proposals of the Central Office for Foreign Education at the Permanent Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs. The grades of the foreign educational certificates must be converted into the German grading system.

2. Special qualification
 - a) first degree completed with a grade of 2.7 or better.
 - b) the scope of the fundamental, mathematical concepts of stochastics, analysis and linear algebra in the Bachelor's degree programme completed by the applicant must have amounted to at least 28 credit points (CP).
 - c) the scope of the basic computer science components such as software development, IT security, cryptology, computer systems and theoretical computer science in the Bachelor's degree programme completed by the applicant must have amounted to at least 60 CP,
 - d) of which at least 12 CP from the field of IT security.
 - e) In individual cases, the requirements a) - d) may be waived if the applicant proves his or her professional suitability in another suitable manner.
3. Sufficient knowledge of English according to CEFR B2 (proven by a German Abitur certificate according to which the language has been taken for at least seven years or by corresponding language tests (e.g. TOEFL, IELTS)).

(3) The examination board decides whether the admission requirements stated in paragraph 2 are met.

(4) If the qualifying degree programme has not yet been completed at the time of application, but the Bachelor's thesis has already been started, proof of examination achievements amounting to at least 135 credit points and an average grade of at least 2.7 calculated from these examination achievements shall be sufficient for conditional admission. In this case, proof of successful completion of the Bachelor's degree programme must be provided within three months of the start of studies. If this is not done, the admission expires.

(5) Enrolment shall be refused if the applicant has conclusively failed an examination required by an examination regulation in the IT Security degree programme at a German university or if he or she is currently undergoing an examination procedure in such a degree programme.

(6) The degree programme can be started in both the summer and the winter semester.

§ 4

Master agreement

In the case of applicants whose competences acquired in the Bachelor's degree programme leads the examination board to consider it expedient to catch up on subject-specific requirements from the Bachelor's degree programme, a so-called Master agreement can be concluded between the student and the chairperson of the examination board. In this, it is agreed which modules from the Bachelor's programme should be successfully completed by which date. No more than three modules may be agreed. If the agreed module completion is not achieved, the chairperson of the examination board shall invite the student to a student advisory meeting in accordance with § 6 PVO.

§ 5

Degree programme contents

The degree programme is divided into the following sub-areas:

1. Acquisition of knowledge and skills in theoretical, practical and technical computer science including software development
2. Acquisition of advanced knowledge in IT safety and reliability
3. Subject-specific specialisation by selecting further teaching modules
4. Acquisition of interdisciplinary competences

§ 6

Structure and scope of the degree programme

(1) The degree programme comprises courses with a total of 120 CP according to the ECTS standard with a standard period of study of two years. The scope of the teaching modules is:

- in the compulsory area of IT security 10 CP
- in the elective compulsory area of IT security 40 CP
- in the compulsory area of computer science 12 CP
- in the elective compulsory area of computer science 12 CP
- in the free specialisation area 12 CP
- in the interdisciplinary area 4 CP

The Master's thesis is worth 30 CP and is followed by a final colloquium.

(2) Participation in further teaching modules offered by the university according to the module handbook beyond the scope specified in paragraph 1 is possible and recommended. Such examination achievements can be listed in the Diploma Supplement on application, provided they are included in the module handbook.

(3) The teaching modules of the individual areas and the elective options are listed in the annex and described in detail in the module handbook. Compulsory and elective modules that are already included in the curriculum of the preceding Bachelor's degree programme and have been successfully completed cannot be selected in the Master's degree programme.

(4) The language of instruction and examination is English. Within elective modules, courses can also be held in German, although an English-language alternative is always offered.

§ 7

Master's examination and examination prerequisites

(1) The Master's examination consists of course-related subject examinations for the individual teaching modules and the Master's thesis with a concluding colloquium. For modules of category A and B according to the annex, an examination performance according to § 12 (1) with §§ 13 ff. PVO must be completed.

(2) Application for admission to the Master's thesis must be submitted separately in writing to the chairperson of the examination board in accordance with § 11 (5) PVO.

(3) Admission to the subject examinations during the course of the degree programme is generally granted with enrolment in the Master's degree programme in IT Security in accordance with § 11 PVO. For admission to a subject examination, examination prerequisites can be defined in accord-

ance with § 11 (2) PVO, which must be listed in the module handbook before the start of the respective module. Examination prerequisites must be completed and proven before the time of the examination and do not count towards the module grade.

§ 8

Subject-specific admission requirements for the Master's thesis

Only those who fulfil the requirements according to § 11 PVO, are at least in the 3rd semester and present credit certificates of the degree programme amounting to at least 70 credit points according to § 6 (1) can be admitted to the Master's thesis.

**Annex 1 to the degree programme regulations for the
Master's programme in IT Security**

at the University of Lübeck
The module catalogues

1. Preamble

The following tables list the teaching modules (TM) for which credit certificates (CC) must be obtained in order to pass the Master's examination, subdivided into the different fields of study. For each teaching module, the number of average attendance hours per week (AHW), the type – lecture (V), tutorial (Ü), practical (P) or seminar (S) – the number of credit points (CP) according to the European Credit Transfer System and the type of credit certificate – category A or B – are indicated. Further details such as learning objectives and contents, the coursework to be taken or the type of examination are provided in the module handbook (MHB).

2. General notes and rules when selecting teaching modules

The students can freely select teaching modules in the compulsory elective areas, taking into account the requirements of the examination regulations. The following rules must be observed:

- Teaching modules cannot be credited more than once.
- Teaching modules that are already listed in the examination certificate or diploma supplement of the qualifying Bachelor's degree programme cannot be selected.
- Further teaching modules or module combinations can be approved by the examination board upon justified application.
- Of the elective courses, only a limited number of teaching modules are offered in each academic year and only if there is sufficient demand.

3. Compulsory teaching modules from the area of IT Security

Module no.	Compulsory teaching modules IT Security	AHW	CP	CC type
CS4701-KP06	Communication and System Security	2V+1Ü+1S	6	A
CS5195-KP04	Current Topics in IT Security	2V+1P	4	A
	Total		10	

4. Elective compulsory area IT Security

Two modules must be selected from each of the following two elective areas.

Module no.	Subject area Security and Privacy	AHW	CP	CC type
CS4210-KP06	Cryptographic Protocols	3V+2Ü	6	A
CS4211-KP06	Modelling and Analysing Security	3V+1Ü+1P	6	A

CS4450-KP06	Networks and Mobile Systems	2V+2Ü	6	A
CS4451-KP06	Privacy	2V+2Ü	6	A
CS4702-KP06	Computer Security	2V+3P	6	A
	Sum to be reached		12	

Module no.	Subject area Safety and Reliability	AHW	CP	CC type
CS4138-KP06	Model Checking	3V+1Ü	6	A
CS4139-KP06	Runtime Verification and Testing	3V+1Ü	6	A
CS5220-KP06	Static Analysis	3V+1Ü	6	A
CS4452-KP06	Technical Reliability Engineering	2V+2Ü	6	A
	Sum to be reached		12	

In the compulsory elective area of IT Security Advanced, either the 10 CP module Case Study IT Security and another compulsory elective module from the area of Security and Privacy or Safety and Reliability or the 16 CP module Case Study IT Security must be selected.

Module no.	IT Security Advanced	AHW	CP	CC type
CS4421-KP16	Case Study IT Security	2S +12P	16	A
CS4422-KP10	Case Study IT Security	2S +5P	10	A
	Compulsory elective module from the subject area Security and Privacy or Safety and Reliability	varies	6	A
	Sum to be reached		16	

In addition to the modules in the above catalogues, the examination board can determine further modules that can be selected for the compulsory elective area of IT security, provided that there are still free places in these courses.

5. Compulsory teaching modules from the field of computer science

One module must be selected from each of the following elective areas. In the case of the basic modules, the respective courses are usually offered in alternating semesters.

Module no.	Basic modules theoretical computer science	AHW	CP	CC type
CS4000-KP06	Algorithmics	2V+2Ü	6	A
CS4020-KP06	Specification and Modelling	2V+2Ü	6	A
	Total		12	

6. Elective compulsory teaching modules from the field of computer science

One module must be selected from each of the following two elective areas. In the case of the basic modules, the respective courses are usually offered in alternating semesters.

Module no.	Basic module Practical computer science	AHW	CP	CC type
CS4130-KP06	Information Systems	2V+2Ü	6	A
CS4150-KP06	Distributed Systems	2V+2Ü	6	A
	Sum to be reached		6	

Module no.	Basic module Technical computer science	AHW	CP	CC type
CS4160-KP06	Real-Time Systems	2V+2Ü	6	A
CS4170-KP06	Parallel Computer Systems	2V+2Ü	6	A
	Sum to be reached		6	

7. Free specialisation area

From the following specialisation area, either a 12 CP module or two further elective modules from the area of Security and Privacy or Safety and Reliability can be taken.

Module no.	Advanced computer science	AHW	CP	CC type
CS4501-KP12	Algorithmics, Logic and Computational Complexity	4V+2Ü+2S	12	A
CS4503-KP12	Ambient Computing	3V+2S+3P	12	A
CS4504-KP12	Cyber Physical Systems	4V+2Ü+2S	12	A
CS4505-KP12	System Architecture	4V+2Ü+2P	12	A
CS4508-KP12	Data Management	4V+2Ü+2S	12	A
CS4509-KP12	Internet Structures and Protocols / Internet Technologies	5V+1Ü+3P	12	A
CS4510-KP12	Signal Analysis	4V+2Ü+3P	12	A
CS4511-KP12	Learning Systems	4V+2Ü+2S	12	A
CS4514-KP12	Intelligent Agents	4V+2Ü+3P	12	A
	Advanced IT Security			
	any 2 compulsory elective modules from the subject area	varies	6	A
	Sum to be reached		12	

In addition to the modules in the above catalogue, the examination board can determine further modules that can be chosen for the Free Specialisation Area, provided that there are still free places in these courses.

8. Elective interdisciplinary

Modules to the extent of 4 credit points must be chosen that are interdisciplinary in nature. The list of these modules is published on the webpages of the degree programme and the university regulations.

9. Thesis

Module no.	Thesis IT Security	CP
CS5993-KP30	Master's Thesis IT Security	30

**Annex 2 to the degree programme regulations for the
Master's programme in IT Security
at the University of Lübeck**

The following table describes the recommended course of study.

1./2. Semester (30 CP)	1./2. Semester (30 CP)	3. Semester (30 CP)	4. Semester (30 CP)
CS4701-KP06 Communication and System Security (WS) 6 CP (2V+1Ü+1S)	Security and Privacy Electives 6 CP	Security and Privacy Electives 6 CP	CS5993-KP30 Master Thesis IT Security 30 CP
Safety and Reliability Electives 6 CP	Safety and Reliability Electives 6 CP	CS5195-KP04 Current Topics in IT Security 4 CP (2V+1P)	
Basic Module Computer Engineering 6 CP	Basic Module Practical Computer Science 6 CP	Advanced IT Security 16 CP	
CS4000-KP06 Algorithmics (WS) 6 CP (2V+2Ü)	CS4020-KP06 Specification and Modelling (SS) 6 CP (2V+2Ü)		
Free Specialization Area 12 CP		Free Elective 4 CP	
4 Exams	5 Exams	2 Exams	1 Exam
Credit hours: Lecture(V) / Exercise(Ü) / Project(or Internship) / Seminar			CP: Credit Points / ECTS
Mandatory Module IT Security		Mandatory Module Computer Science	Free Elective (Interdisciplinary)