

**Course-Specific Examination and Study Regulations  
for the Master's Degree Course Computational Science and Engineering  
at the University of Rostock**

*Unofficial reading version*

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## I. General Provisions

### § 1

#### Scope of Application

- (1) These Regulations apply to objectives, content, procedures and course-specific regulations for completing the research-focused master's in Computational Science and Engineering at the University of Rostock based on the General Examination Regulations for the bachelor's and master's courses at the University of Rostock (General Examination Regulations (Bachelor/Master)).
- (2) For the language modules that are studied within the framework of the degree course, the examination regulations for the courses offered by the Language Centre of the University of Rostock including the University Foreign Language Certificate UNIcert® apply.

### § 2

#### Admission Requirements

- (1) According to § 3 of the General Examination Regulations (Bachelor/Master), admission to the master's degree course Computational Science and Engineering requires the applicant to have a first university degree and to meet the following additional admission requirements:
  1. Applicants whose native language is not English must provide proof of their English language skills with a TOEFL IBT with at least 90 points or an IELTS with at least 6.5 points, which is not older than two years.
  2. Proof of a first degree in Computational Science and Engineering, Electrical Engineering, Information Technology, Engineering, Physics with at least 180 credit points or another equivalent degree is required.
  3. Evidence of in-depth knowledge in the following subject areas must be provided:
    - a) for the specialisation Computational Electrical Engineering: Electromagnetic fields and waves (at least three credit points), mathematics (at least 18 credit points), programming/practical computer science (at least six credit points)
    - b) for the specialisation Computational Mechanical Engineering: Mathematics (at least 18 credit points), engineering mechanics (at least 18 credit points), thermodynamics (six credit points), fluid mechanics (six credit points) and programming (at least nine credit points)
    - c) for the specialisation Computational Physics: Quantum mechanics (at least nine credit points), electrodynamics and optics (at least six credit points), statistical physics (at least six credit points) and mathematics (at least 18 credit points).
- (2) If admission to the master's degree course Computational Science and Engineering is not subject to admission restrictions, admission can only be denied if it is unlikely that studies will be completed successfully. It is assumed that a successful completion of the master's course is not to be expected if:
  1. one of the criteria set out in sub-section (1) numbers 1 to 3 is not met, or
  2. the undergraduate degree was not completed with a mark of at least 85 % of the CGPA (Cumulative Grade Point Average) or an equivalent mark in a different marking system, unless the applicant has taken the Graduate Aptitude Test in Engineering (GATE) instead of achieving the required final mark and obtained at least 500 points,  
and the applicant has not provided any further evidence of the subject-specific and course-specific qualifications from which a positive prognosis of success can be deduced when considering the overall picture. The Examination Board may decide to invite the applicant to an interview to discuss the application. Admission can also be granted subject to conditions if the course has admission restrictions in accordance with § 4 of the *Hochschulzulassungsgesetz* (University Admission Act).

## II. Degree Course, Progression of Studies and Organisation of Studies

### § 3

#### Degree Course Objectives

- (1) Upon successful completion of the master's degree in Computational Science and Engineering, students are awarded the university degree Master of Science (M.Sc).
- (2) The Master's Degree Course Computational Science and Engineering is research-oriented. It imparts knowledge and skills for a future professional career in academic and industrial fields. The degree course should enable the graduate, on the one hand, to grasp problems of his/her subject on the basis of mathematical-scientific and engineering knowledge and to work on them scientifically in a systematic and targeted manner; and, on the other hand, to contribute to the development of the field of computational science and engineering following independent familiarisation with specific problems. Graduates of the Master's degree course in Computational Science and Engineering are expected to have a high degree of independence and scientific prowess, enabling them to contribute toward the scientific development of their subject area and to independently realise corresponding development and research work in the industry or in research institutions, as well as to take on managerial tasks.
- (3) The master's degree lays the foundation for further academic qualification. It is the general admission requirement for doctorates in which the skills for independent academic work are further developed and consolidated.

### § 4

#### Start of Studies, Course Organisation, Standard Length of Study

- (1) The Master's degree course Computational Science and Engineering can be started in the winter and summer semester. However, if students choose the specialisation Computational Physics, they can only start in the winter semester, as the specific compulsory introductory lecture can only be offered in the winter semester. A start in the winter semester is also recommended for the specialisations Computational Electrical Engineering and Computational Mechanical Engineering as otherwise there will only be a limited choice of modules. Enrolments are made on the dates set annually by the University of Rostock's administration. The application is usually made online via the university portal or another portal mentioned there.
- (2) The Master's Degree Course Computational Science and Engineering is generally offered in English. Individual modules including their module exams are offered in German. Details are given in the respective module description. The range of modules for the Master's course Computational Science and Engineering is designed in such a way that the entire degree course can be completed exclusively in English, although not all elective modules can then be chosen.
- (3) The standard length of study within which the degree course is to be completed is four semesters.
- (4) The following areas of specialisation are provided for the Master's Degree Course Computational Science and Engineering:
  - Computational Electrical Engineering
  - Computational Mechanical Engineering
  - Computational PhysicsWhen submitting their application, applicants must choose one of the three areas of specialisation.
- (5) The master's degree course is divided into compulsory and compulsory elective modules that are provided in five areas, including the three areas of specialisation. In the specialisation Computational Electrical Engineering, compulsory modules totalling 72 credit points and compulsory elective modules from the area of specialisation totalling 36 credit points must be completed. In the specialisation Computational Mechanical Engineering, compulsory modules totalling 75 credit points and compulsory elective modules from the area of specialisation totalling 33 credit points must be completed. In the specialisation Computational Physics, compulsory modules totalling 75 credit points and compulsory elective modules from the area of specialisation totalling 33 credit points

must be completed. Furthermore, students in all three areas of specialisation must complete 12 credit points in the compulsory elective field "Language Skills" according to the Language Centre's classification. In the individual compulsory elective areas of the respective area of specialisation, modules from the corresponding area of specialisation totalling at least 12 credit points must be selected, as well as a maximum of 12 credit points from the general compulsory electives pursuant to Appendix 1. Bachelor's modules totalling a maximum of 12 credit points can be taken as compulsory electives in all of the areas of specialisation, unless they contributed towards the passing of the bachelor's degree. 30 credit points of the compulsory modules are allocated to the final examination. In order to pass the master's examination, a total of at least 120 credit points must be earned.

(6) The compulsory elective areas have the following qualification goals:

- The compulsory elective area of the specialisation Computational Electrical Engineering serves to deepen the knowledge of electrical engineering problems and is intended to prepare graduates for methods and issues when working with computer-based methods in electrical engineering.
- The compulsory elective area of the specialisation Computational Mechanical Engineering serves to deepen the knowledge of mechanical engineering problems and is intended to prepare graduates for methods and issues when working with computer-based methods in mechanical engineering.
- The compulsory elective area of the specialisation Computational Physics serves to deepen the knowledge of physics problems and is intended to prepare graduates for methods and issues when working with computer-based methods in physics.
- The general compulsory elective area serves to expand the spectrum of methods beyond the areas of specialisations provided in the focus areas.
- The compulsory elective area "Language Skills" serves to deepen the relevant language skills in order to increase the competence for acting in a foreign-language working environment

(7) In addition to the compulsory elective modules listed in Appendix 1, additional modules for the compulsory elective areas may be offered. These will be announced in good time before the start of the semester by the Study Office in a form typically used by the University.

(8) Participation in individual modules of this degree course is dependent on proof of certain previous knowledge or skills. Details are given in the respective module descriptions.

(9) Instead of taking the language modules, students with German language skills at level B2 of the Common European Framework of Reference for Languages must attend modules totalling 12 credit points from the range of modules provided in other degree courses at the University of Rostock or at other universities, following consultation with the Departmental Advisory Service. Sub-section (10) shall apply additionally to the selection and recognition of these modules.

(10) Instead of the compulsory elective modules expressly offered for this degree course, further modules from other degree courses at the University of Rostock or other universities can be chosen, if they correspond to the qualification goals of the respective compulsory elective area in consultation with the Departmental Advisory Service and the corresponding responsible module teachers. These modules will be recognised in accordance with § 19 General Examination Regulations (Bachelor/Master). The Examination Board decides on recognition in individual cases. The decision of the Examination Board shall be taken at the request of the student before the beginning of the semester in which the module to be recognised is to be taken. The attendance of such modules at the University of Rostock requires that they are not modules of a degree course with admission restrictions, unless a teaching export is stipulated by laws ruling the capacities of classes and sufficient study places are available. The prerequisites, examination requirements, examination periods and regulations regarding the form, duration and scope of the module examination apply as they are set down in the examination regulations of the respective degree course.

(11) An appropriate time distribution of the modules to the individual semesters, which in particular enables the standard length of study to be adhered to, can be found in the examination and course schedules attached as Appendix 1. The examination and course schedule makes up the foundation of the respective semester course schedules, which is made available to the students in a form typically used by the University. The chronological order and the coordination of the content of the courses ensure that the students can achieve the respective study objectives. There are sufficient possibilities for students to tailor the course to their individual interests.

(12) Detailed module descriptions are published in a form typically used by the University.

## § 5

### Individual Part-Time Studies

- (1) Up to two weeks before the start of a semester, students may declare to the Examination Board that in the following two semesters they will only be able to work for half of the amount of time foreseen for the degree course due to employment or family obligations for raising children or supervision or care of relatives. In the request, details must be provided of the required modules or partial modules that are not going to be attended and which later semesters are to be used to make up the modules or partial modules that will be missed. If the Examination Board approves the request, it may require different modules or partial modules to be retaken other than those included in the request, especially if this is necessary to ensure that the degree course is completed properly. In hardship cases, the request may also be submitted at a later date.
- (2) The request must be addressed to the Examination Board and submitted to the Study Office. If the decision differs from the request, the student must be heard beforehand. The request can be withdrawn up to two months after the beginning of the semester.
- (3) In the case of sub-section (1), a semester is not counted towards the standard length of study and is therefore not taken into account in the calculation of the deadlines specified in §§ 9 and 10 of the General Examination Regulations (Bachelor/Master). During part-time studies, examinations other than those indicated in the decision of the Examination Board are not permitted; working on another degree course during this period is not permitted. Otherwise, the rights and obligations of the students concerned shall remain unaffected.
- (4) Each student may avail him/herself of the provision under sub-section (1) a maximum of two times.
- (5) If the degree course is subject to admission restrictions, the Examination Board may limit the number of part-time students per semester, but not to less than 5% of the students in the semester. If the demand exceeds this number, the Examination Board will decide on the students who will be permitted to complete their studies part-time, taking into account the importance of the reasons put forward by the students.

## § 6

### Forms of Teaching and Learning

- (1) In addition to the course types listed in § 6a(1) of the General Examination Regulations (Bachelor/Master), the following additional course types are used:
  - *Integrated course*  
An integrated course combines the course form of a lecture with more active forms (for example, seminar or practical), during which the student works out given topics him/herself on the basis of literature and can support and discuss them among the participants of the course.
  - *Project course*  
In the project course, students work on a project topic in individual or group work under the supervision of a lecturer.
- (2) To achieve the study objectives, students must study independently in addition to participating in the indicated lectures.

## § 7 Compulsory Attendance

If specified in the module descriptions, attendance is compulsory in exercises, seminars and practical courses in accordance with § 6b of the General Examination Regulations (Bachelor/Master).

## § 8 Admission to Courses

The admission limit for courses in compulsory and compulsory elective modules is the size of the course as specified in the *Kapazitätsordnung* (Capacity Ordinance); the limited number of laboratory places may also limit admission to courses. If more students register for courses than there are places available, the Examination Board will examine whether the excess number of students can be reduced by other or additional courses. If it is not possible to reduce the excess number of students, the person responsible for the course shall make the selection from among those students who are enrolled in a degree course in which the course is planned in a compulsory or compulsory elective module, who have registered on time, and who have fulfilled the prerequisites for participation stipulated in the module description, in the following order:

1. If a course is attended by students from more than one degree course, first the available places will be distributed among the various degree courses in advance according to the quotas in the module descriptions (advance quotas). For each degree course, first students are considered who did not pass the corresponding examination in the previous semester and therefore have to attend the course again.
2. In all other cases, the allocation of free places will be by random selection within the advance quota.

Registration deadlines will be announced in a form typically used by the University. The Examination Board makes decisions regarding exceptions.

## § 9 Period of Study Abroad

Deviating from the examination and course schedule, as part of its compulsory elective modules, the master's degree course offers students the opportunity to spend a maximum of one semester at a foreign university from the second subject semester onwards. The period of stay abroad must be prepared in good time. For this purpose, the student chooses a thematic focus that corresponds with the research foci of the faculties involved in the degree course and usually contacts the departmental advisory service, the Examination Board and additionally the Rostock International House during the preceding semester. The departmental advisory service arranges contact to research partners and helps with the organisation of the semester abroad. A list of research partners is maintained. The period of stay abroad must be organised and financed independently by the student. Competences acquired at the foreign study location are recognised, provided that there are no significant differences from the competences to be acquired within the framework of the master's degree course Computational Science and Engineering. In order to ensure recognition, the students and the chairperson of the Examination Board shall conclude a Teaching and Learning Agreement in accordance with § 5(3) of the General Examination Regulations (Bachelor/Master) before commencing the stay abroad.

## § 10 Organisation of Studying and Teaching

- (1) At the beginning of each semester, a schedule of dates for the entire semester is posted on a notice board. It includes: the lecture times, the examination periods, the non-teaching periods, and the start of the next semester.
- (2) On the basis of the examination and course schedule (Appendix 1), the Study Office shall draw up a semester study plan for each cohort and semester in consultation with the responsible module teachers. It contains information on the subjects taught, the teaching staff, the number of hours broken down according to the different types of tuition, and the times in which the courses are taught.

- (3) Courses outside of the study plan are planned by the lecturers themselves and in agreement with the Study Office. If necessary, they are supported by the administrative organisation of the Faculty of Computer Science and Electrical Engineering.
- (4) The exchange or rescheduling of courses in justified exceptional cases is organised by the teaching staff independently in consultation with the Study Office.
- (5) All special information passed on to students by the lecturers on the organisation of teaching must be communicated in advance to the Study Office. Special information means data and facts that deviate from the specifications of the study organisation.

### III. Examinations

#### § 11

#### Examination Structure and Examinations

- (1) The compilation of the modules to be taken, the type of preliminary assessed work for examinations, the type, duration and scope of the module examinations, the regular examination date and the credit points to be attained are defined in the examination and course schedule (Appendix 1). The final examination (master's dissertation and colloquium) according to § 14 is part of the master's examination.
- (2) No additional types of assessment other than the examination types listed in § 12(1a) of the General Examination Regulations (Bachelor/Master) are used.
- (3) In a module, coursework can be determined that must be completed in order to be admitted to the module examination (preliminary assessed work for examinations). Preliminary assessed work for examinations may be evaluated and marked, but will not be included in the module mark. Types of preliminary assessed work for examinations can be: Presentations, project reports as well as:
  - *Certificate of participation in a practical course/exercises*  
The solving of exercises serves to test the students' performance level during the lecture period and usually takes place without supervision.
  - *Control work/coursework essay*  
Are written descriptions of solutions to given tasks. They serve to test the students' performance level during the lecture period and are usually completed without supervision. Control work is to be completed under supervision according to the criteria set out by the teacher and in a designated place.
  - *Programming projects*  
Is project work in which the students show that they have understood the subject matter that has been taught and are able to apply it creatively. To this end, they carry out programming work independently, which is presented and evaluated during the course according to the teacher's criteria.
  - *Simulation projects*  
Is project work in which the students show that they have understood the subject matter that has been taught and are able to apply it creatively. To this end, they carry out tasks independently that are presented and evaluated during the course according to the teacher's criteria.

The specific preliminary assessed work for examinations can be found in the respective module description and the examination and course schedule (Appendix 1).

#### § 12

#### Examinations and Examination Periods

- (1) The module examinations during the degree course shall be taken during the examination period specified for this purpose. A semester's examination period begins immediately after the lecture period and ends at the end of the semester.
- (2) Notwithstanding sub-section (1), the module examinations during the course of studies may be taken in the form of presentations, reports and project work as part of the course, provided that the students are informed of the type of examination applicable to them, its scope and the respective deadline for submission no later than in the first week of lectures. By agreement between students and examiners, examinations may also be held at other times, subject to the deadlines and registration modalities specified in the General Examination Regulations (Bachelor/Master).
- (3) The declaration of withdrawal of the registration for module examinations must be made in writing with signature and submitted to the Study Office. The same applies to the request for evaluating a module examination as a *Freiversuch* (free attempt).
- (4) In the case of the last examination attempt, the examiner decides whether an oral examination should be held in deviation from the examination form specified in the course schedule. This selection then applies to all students of a semester.
- (5) If a module description is changed, resit examinations shall be held in accordance with the module description in the version that applied to the examination to be resat.

### **§ 13**

#### **Admission to Final Examination**

- (1) Admission to the final examination is granted to those who meet the following additional admission requirement in accordance with § 25 of the General Examination Regulations (Bachelor/ Master):
  - proof of completion of at least 78 credit points from the compulsory and compulsory elective areas of this degree course
- (2) The students shall apply in writing to the Study Office for admission to the final examination. The application must be submitted no later than two weeks prior to the start of the semester in which the dissertation is to be written.

### **§ 14**

#### **Final Examination**

- (1) The final examination is completed in the module "Master's Dissertation Computational Science and Engineering". It consists of the written dissertation master's dissertation and the colloquium.
- (2) The choice of topics for the master's dissertation is made on the basis of offers from academics of the faculties involved in the degree course and other faculties of the University of Rostock, other scientific institutions outside the University or according to the students' own suggestions, always provided that a supervisor can be found for the dissertation according to § 27 of the General Examination Regulations (Bachelor/Master).
- (3) The specific task approached in the master's dissertation is developed by the students together with their supervisor. In this process, the supervisor ensures that the task meets the requirements for such work.
- (4) The master's dissertation is written in the fourth semester. The time limit for writing up the dissertation is 20 weeks. In individual cases, the Examination Board may, upon justified request, extend the writing-up period by a maximum of five weeks. The master's dissertation must be submitted to the Study Office prior to the deadline.
- (5) The master's dissertation must be completed according to the University of Rostock's rules to secure good scientific practice and avoid academic misconduct.



(6) The colloquium consists of an approximately 20-minute presentation by the student and an approximately 20-minute discussion.

(7) 30 credit points are awarded for the successful completion of the module "Master's Dissertation M.Sc. Computational Science and Engineering". The associated workload of 900 hours consists of 860 hours for the master's dissertation and 40 hours for the preparation and holding of the colloquium.

## **§ 15**

### **Evaluation of Examinations, Mark Calculation**

(1) The Examination and Course Schedule (Appendix 1) shows which modules are marked and which are assessed as "passed" or "failed". All marked modules are taken into account in accordance with § 13(5) of the General Examination Regulations (Bachelor/Master) when forming the final mark.

## **§ 16**

### **Examination Board and Examination Organisation**

(1) The Examination Board has five members, including three members from the group of professorial staff, one member from the group of academic staff and one student member. The members' term of office is two years with the exception of the student member, whose term of office is one year.

(2) The planning and organisation of the examinations and the verification of the preliminary assessed work for examinations is carried out by the Study Office in consultation with the Examination Board. In particular, registration for the module examinations takes place via the online portal. The Study Office draws up the examination schedules based on the received registrations and makes them public.

## **§ 17**

### **Diploma Supplement**

The Diploma Supplement (German and English) contains the information specific to the degree course as shown in Appendices 2 and 3.

## **IV. Final Provisions**

## **§ 18**

### **Transitional Provision**

(1) These Course-Specific Examination and Study Regulations apply for the first time to students who were enrolled at the University of Rostock for the master's degree course Computational Science and Engineering in the summer semester 2018.

(2) For students who started their studies in the master's degree course Computational Science and Engineering before summer semester 2018, the provisions of the respective Course-Specific Examination and Study Regulations continue to apply, but no later than 31 March 2021. However, upon request to the Examination Board, they can be examined according to the provisions of the General Examination Regulations (Bachelor/Master) and these Course-Specific Examination and Study Regulations. The request cannot be revoked. Examinations and coursework that have already been completed are credited in accordance with § 19 of the General Examination Regulations (Bachelor/Master). After submitting the request, the changes in the module descriptions apply to the students who still have to take the module examinations affected by the change. Resit examinations, however, shall be held in accordance with the module description in the version that applied to the examination to be resat.

## **§ 19** **Entry into Force**

These Regulations enter into force on the day after their publication in the University of Rostock's official bulletin.

### **Appendix:**

Appendix 1: Examination and Course Schedule

Appendix 2: Diploma Supplement (German)

Appendix 3: Diploma Supplement (English)