

**DISCLAIMER:** Please note that the English translation is provided for information purposes only. The English text is not legally binding. Only the original German document has legal validity. The official language at TU Dresden is German. German jurisdiction applies.

Technische Universität Dresden  
Faculty of Computer Science

## **Examination Regulations for the Consecutive Master's Degree Program**

### **Distributed Systems Engineering**

as of May 18, 2020

On the basis of § 34 para. 1 sentence 1 of the Act on the Autonomy of Institutions of Higher Education in the Free State of Saxony in the version published on January 15, 2013 (SächsGVBl. p. 3) Technische Universität Dresden issues the following Examination Regulations as statutes.

#### **Table of contents**

##### **Part 1: General regulations**

- § 1 Standard period of study
- § 2 Examination structure
- § 3 Deadlines and dates
- § 4 General admission requirements and admission procedures
- § 5 Types of examined assessments
- § 6 Written examinations (*Klausuren*)
- § 7 Seminar papers
- § 8 Project work
- § 9 Oral examinations
- § 10 Oral presentations (*Referate*)
- § 11 Other examined assessments
- § 12 Electronic examinations
- § 13 Evaluation of examined assessments, calculation and weighting of grades, publication of examination results
- § 14 Non-appearance/Non-submission, withdrawal, cheating, violation of rules and regulations
- § 15 Passing and failing
- § 16 Re-taking module examinations
- § 17 Recognition of study achievements and examined assessments, periods of study, and qualifications obtained outside a university
- § 18 Examination Committee
- § 19 Examiners and assessors
- § 20 Purpose of the Master's examination
- § 21 Purpose, issue, submission, assessment and re-submission of the Master's thesis and defense

- § 22 Examination certificate and Master's degree certificate
- § 23 Invalidity of the Master's examination
- § 24 Access to examination documents

## **Part 2: Subject-specific regulations**

- § 25 Duration, structure and scope of the degree program
- § 26 Subject-specific requirements for the Master's examination
- § 27 Subject, nature and scope of the Master's examination
- § 28 Time permitted for the Master's thesis and duration of the defense
- § 29 Master's degree

## **Part 3: Final regulations**

- § 30 Entry into force, publicationnkrafttreten, Veröffentlichung and interim arrangements

- Annex 1: Elective compulsory modules of the professional specialization
- Annex 2: Elective compulsory modules of the language training
- Annex 3: Concentration and module assignment

## **Part 1: General regulations**

### **§ 1**

#### **Standard period of study**

The standard period of study for the Master's Distributed Systems Engineering includes attendance, independent study, supervised practice periods, and the Master's examination.

### **§ 2**

#### **Examination structure**

The Master's examination consists of module examinations as well as the Master's thesis and the colloquium. A module is concluded by a module examination, which consists of at least one examined assessment. Examined assessments are accomplished throughout the program.

### **§ 3**

#### **Deadlines and dates**

(1) The Master's examination shall be taken within the standard period of study. A Master's examination that has not been taken within four semesters following the standard period of study will be considered as failed. A failed Master's examination can be repeated once within one year. Following the expiration of this deadline, it is deemed as failed again. A second repeat examination is only possible the next time it is held, thereafter the Master's examination is deemed to be irrevocably failed.

(2) Module examinations shall be taken by the end of the semester stated in the study schedule.

(3) Technische Universität Dresden, through its study regulations and courses offered, ensures that study achievements and examined assessments as well as the Master's thesis and defenses can be completed within the specified periods of time. Students will be informed in good time and as is customary at the Faculty about the nature and the number of the required study achievements and examined assessments as well as about the respective deadline; the same holds true for the issuing and submitting of the Master's thesis and the date the defense. For each module examination, students shall also be informed about the respective opportunity to repeat the examination.

(4) During maternity leave, deadlines do not apply and the leave is not counted towards current deadlines. Regarding the claim for parental leave, please refer to § 12 para. 2 of the Enrollment Regulations of Technische Universität Dresden.

### **§ 4**

#### **General admission requirements and admission procedures**

(1) Students can only be admitted to the Master's examination according to § 2 sentence 1 if

1. they are enrolled in the Master's Distributed Systems Engineering at Technische Universität Dresden, and
2. have proven the subject-specific requirements (§ 26), and
3. have made a declaration regarding para. 4 number 3 either in writing or recorded in a data processing system.

(2) In order to submit examined assessments, students must register. Procedures and the deadline for registration and withdrawal from exams are specified by the Examination Committee and published at the beginning of each semester as is customary at the Faculty. A later withdrawal without giving reasons is possible for examinations according § 9<sup>1</sup> to these examination regulations up to two weeks, for all other examinations up to three working days before the respective examination date. The same applies to preliminary academic work.

(3) Admission is granted

1. to a module examination on the basis of the first registration for an examined assessment of this very module examination and
2. to the Master's thesis on the basis of a student's request for issue of the topic, or if § 21 para. 3 sentence 5 applies, upon issue of the topic, and
3. the defense based on the assessment of the Master's thesis with a grade of at least 'sufficient' (4.0).

(4) Admission is denied if

1. the requirements stated in para. 1 or the rules of procedure stated in para. 2 are not met, or
2. the documents are incomplete, or
3. the student has already irrevocably failed an examination required for the completion of the Distributed Systems Engineering.

(5) Admissions decisions will be taken by the Examination Committee. The announcement thereof may be public. § 18 para. 4 remains unaffected.

## § 5

### Types of examined assessments

(1) Examined assessments are

1. written examinations (*Klausuren*) (§ 6),
2. seminar papers (§ 7),
3. project work (§ 8),
4. oral examinations (§ 9).
5. oral presentations (*Referate*) (§ 10) and/or
6. other examined assessments (§ 11).

In modules that are subject to several examination regulations, synonyms are permitted for examinations with the same content. Written multiple-choice (MC) examinations are permitted in justified individual cases by decision of the Examination Committee in accordance with MC regulations.

2) Study achievements and examined assessments are to be made in English. Predominantly oral study achievements and examined assessments can also be taken in German at the request of the student, provided the Examination Committee agrees to this. If, according to the module description, a module primarily serves to acquire foreign language qualifications, studies and examined assessments may also have to be completed in the respective language if required by the assignment.

(3) If a student proves that, due to extended or permanent physical impairment or chronic illness, they are unable to accomplish an examined assessment or parts thereof in the stipulated form, the chair of the Examination Committee will approve, upon request, an extension or an equivalent manner for the examined assessment (compensation for disadvantages). For this purpose, the student may be required to submit a medical certificate and, in cases of doubt, an official

---

<sup>1</sup> corrected on April 7, 2022, by official announcement 03/2022, released on April 19, 2022

medical certificate by a public health officer (*Amtsarzt*). The same applies to preliminary academic work.

(4) If a student proves that, due to taking care of their own children until they reach the age of 14 or caring for close relatives, examinations cannot be taken as stipulated, the chair of the Examination Committee, upon request, will approve an equivalent method for taking the examination. Close relatives are children, parents, grandparents, spouses, and civil partners. The chair of the Examination Committee, in consultation with the responsible examiner, will decide, at their due discretion, on how the examination is to be taken. The chair of the Examination Committee shall decide on an appropriate measure to compensate for the disadvantages. Suitable measures to compensate for disadvantages are, for example, extended time allowance, extended breaks, use of other media, use of other examination rooms within the university or another examination date. The same applies to preliminary academic work.

## **§ 6**

### **Written examinations (*Klausuren*)**

(1) Written examinations are intended for students to prove that they are able to resolve tasks and analyze topics drawing on the required fundamental knowledge and using the standard methods of the degree program with time constraints and with limited resources.

(2) Written examinations that students are required to pass in order to continue their studies shall be marked by two examiners as a general rule, however, in the case of repeat examinations, two examiners and detect compulsory. The grade is calculated as the average of the individual grades according to § 13 para. 1; whereby only the first decimal point is taken into account, all other decimals are omitted without rounding. In cases pursuant to § 13 para. 3, the assessment shall correspond to the matching individual assessments pursuant to § 13 para. 1 sentence 4; if the individual assessments do not match, § 21 para. 9 sentences 1 and 2 shall apply. The time for marking the thesis shall not exceed six weeks.

(3) The duration of the written examinations is specified in the module descriptions and shall be no less than 60 minutes and shall not exceed 240 minutes.

## **§ 7**

### **Seminar papers**

(1) Seminar papers are intended to demonstrate the student's competence in dealing with selected issues on the basis of specialist literature and other sources. Furthermore, they are intended to assess whether students are familiar with the basic techniques of scientific work. Where indicated in the module descriptions, seminar papers also include a demonstration of the student's competence to present and discuss their findings in a coherent manner.

(2) For seminar papers and other equivalent written papers, § 6 para. 2 applies accordingly.

(3) Seminar papers and other equivalent written papers may not exceed a time requirement of 90 hours. The specific scope is determined in each case in the module descriptions. Derived from this, the deadline for submission is to be determined as part of the assignment.

## **§ 8**

### **Project work**

(1) Project work demonstrates, in individual work or small groups, the ability to develop, enforce, document and present concepts. The student shall demonstrate the competence to define goals and to develop interdisciplinary solutions and concepts for a larger task and to implement them in individual work or collaboratively in small groups. The student shall demonstrate the competence to define goals for an overarching task and to develop interdisciplinary solutions and concepts.

(2) For written project work, § 6 para. 2 shall apply accordingly.

(3) The time required for the project work is specified in each case in the module descriptions and amounts to a maximum of 360 hours. Derived from this, the deadline for submission is to be determined as part of the assignment.

(4) If the project work consists of teamwork, the individual contributions must be clearly identifiable and assessable and must meet the requirements set out in para. 1. If parts of the project work are performed orally, § 9 para. 4 sentence 1 shall apply accordingly.

## **§ 9**

### **Oral examinations**

(1) Oral examinations are intended to demonstrate the student's competence to recognize the interdependences of the examined subject and to be able to place particular issues within these correlations. Furthermore, they are intended to determine whether the student possesses the fundamental knowledge appropriate to the level of their studies.

(2) Oral examinations shall be as an individual examination taken in the presence of at least two examiners (colleague examination) or one examiner and one expert assessor (§ 19). Oral examinations that students are required to pass in order to continue their studies are conducted by two examiners as a general rule, however, in the case of repeat examinations, two examiners are compulsory.

(3) Oral examinations shall run for 15 to 60 minutes. The specific duration is determined in each case in the module descriptions.

(4) The main points and results of the oral examination shall be recorded in a protocol. The result is to be announced to the student directly after the oral examination.

(5) Students who wish to take the same examination at a later date shall be admitted as listeners if the facilities allow for this, unless the student to be examined objects. The admitted listeners are not entitled to participate in the deliberation and the announcement of the examination results.

## **§ 10**

### **Oral presentations (*Referate*)**

(1) Oral presentations are intended for students to prove their ability to prepare specific academic questions and present them.

(2) § 6 para. 2 sentences 1 and 2 shall apply accordingly. The lecturer responsible for the course in which the oral presentation is assigned and, if applicable, presented, shall be one of the examiners. 4 For the presentation , § 9 para. 1 shall apply accordingly.

(3) The time required for the preparation of the oral presentation is specified in each case in the module descriptions and amounts to a maximum of 60 hours. Derived from this, the deadline for submission or presentation is to be determined as part of the assignment.

## **§ 11**

### **Other examined assessments**

(1) Students shall provide proof of defined learning outcomes through other specifically determined examination forms (other examined assessments) that can be assessed according to equal standards, and are described in the module descriptions including requirements and duration or time frame. If a time scope is given, the resulting deadline shall be specified when assigning the task. Other examination credits include internship reports, presentations, portfolios, and simulation games.

(2) Other examined assessments pursuant to para. 1 sentence 3 are defined as follows:

1. An internship report provides written evidence of the organization, content, result and acquired competencies of a (professional) practical activity.
2. The presentation is an oral presentation by one student or, depending on the assignment, by several students in the case of definable individual contributions, in which results achieved through independent work are presented in a structured form, usually using visual aids.
3. The portfolio is a collection of diverse individual works which, due to the assignment, allows certain aspects of professional action to be considered in a larger context.
4. In simulation games, students put their language and social skills to the test in a variety of situations, such as negotiations, conferences or job interviews.

(3) For written other examined assessments, § 6 para. 2 sentences 1 and 2 shall apply accordingly. For non-written other examination performances, § 9 para. 2 and 4 shall apply accordingly.

## **§ 12**

### **Electronic examinations**

(1) In principle, the examinations according to § 6 to § 11 can also be conducted and assessed using digital technologies. Only those digital technologies may be used that correspond to the state of the art at the time of use.

(2) Prior to an examination that uses digital technologies, the suitability of these technologies with regard to the intended examination tasks and the carrying out of the electronic examination must be determined by two examiners in consultation with the examination board.

(3) The authenticity of the authorship and the integrity of the examination results must be ensured. For this purpose, the examination results in the form of electronic data must be clearly identified and be unmistakably and permanently assigned to the student's name. It must be ensured that the electronic data for evaluation and verifiability remains unchanged and complete.

(4) An automatically generated assessment of an examination shall be reviewed by an examiner at the request of the examined student.

(5) The digital technologies referred to in paragraph 1 must fully comply with the relevant statutory and legal provisions on data protection and information security. This must be checked and documented before use. If it is determined in particular that:

1. the current state of the art is not achieved or is no longer achieved,
2. due to a change in the legal or regulatory framework, the relevant provisions on data protection or information security can no longer be observed or
3. the technologies used have technical, in particular security-related, vulnerabilities, the digital technologies concerned may not be used or may no longer be used.

(6) A review in accordance with paragraph 5 shall take place annually. The result shall be documented. If the examinations cannot be verified, the digital technologies concerned may not be used.

### **§ 13**

#### **Evaluation of examined assessments, calculation and weighting of grades, publication of examination results**

(1) Assessments of the individual examined assessments are determined by the responsible examiners. The following grades shall be used:

- |                  |  |
|------------------|--|
| 1 = very good    | = a very good performance;   |
| 2 = good         | = a performance considerably exceeding average requirements;                       |
| 3 = satisfactory | = a performance that meets average requirements;                                   |
| 4 = pass         | = a performance that meets the requirements despite some inadequacies;             |
| 5 = fail         | = a performance that does not meet the requirements because of grave inadequacies. |

For a more differentiated assessment, individual grades can be raised or lowered by 0.3 to obtain intermediate values; whereby the grades 0.7, 4.3, 4.7 and 5.3 are excluded. An individual examined assessment is solely assessed as "passed" or "failed" (ungraded examined assessment) if the relevant module description provides an exception for this. Ungraded examined assessments that are assessed as "passed" do not enter into further grade calculations; ungraded examined assessments assessed as "failed" receive the "fail" (5.0). They are then included in further grade calculations.

(2) The module grade is calculated as the average of the individual examination grades which may be weighted as specified in the module descriptions. Only the first decimal point is taken into account, all further decimals are removed without rounding. On the basis of the averages, the module grades are:

- |                |                |
|----------------|----------------|
| 1.5 and better | = very good    |
| 1.6 to 2.5     | = good         |
| 2.6 to 3.5     | = satisfactory |
| 3.6 to 4.0     | = pass         |
| 4.1 and worse  | = fail.        |

If a module examination is not passed due to an examined assessment relevant to passing the examination pursuant to § 15 para. 1 sentence 2, the module grade shall be "fail" (5.0).

(3) Module examinations that solely consist of an ungraded examined assessment are assessed as "passed" or "failed" in accordance with the grading of the examined assessment (ungraded module examinations). Ungraded module examinations do not enter into further grade calculations.



(4) For the Master's examination, an overall grade is calculated. The final grade of the Master's examination is calculated on the basis of the final grade of the Master's thesis with a 30-fold weighting and the module grades weighted according to the credit points pursuant to § 27 para. 1. The final grade of the Master's thesis is composed of the grade of the Master's thesis with 3-fold weighting and the grade the defense with 1-fold weighting. For the overall and final grades, para. 2 sentences 2 and 3 shall apply accordingly.

(5) Additionally, the overall grade of the Master's examination is indicated as a relative grade corresponding to the ECTS grading scale.

(6) Students shall be informed, as is customary at the Faculty, about how examination results are announced.

## § 14

### **Non-appearance/Non-submission, withdrawal, cheating, violation of rules and regulations**

(1) An examined assessment is deemed to be a "fail" (5.0) or "failed" if a student fails to appear for they are or withdraws from a compulsory examination without due justification. The same shall apply when an examined assessment is not completed within the specified period of time.

(2) The given reason for non-appearance, non-submission, or withdrawal shall be immediately communicated and justified in writing to the Examination Office. In case of illness, the student normally shall provide a doctor's note and, in cases of doubt, a note from a public health officer (*Amtsarzt*). With regard to deadlines for the first entry into examinations, re-taking of examinations, reasons for non-appearance at examinations and the adherence to submission periods, the illness of a child in need of care who is mainly cared for by the student shall be equivalent to the illness of the student themselves. If the reason is accepted, a new date is set. In this case, already existing examination results shall be considered. Acceptance of the withdrawal or the reason for non-appearance or non-submission is subject to the decision of the Examination Committee.

(3) If a student attempts to manipulate the result of the examined assessment by cheating, e.g. by bringing or using illicit aids, the examination concerned is deemed to be assessed as "fail" (5.0) upon detection by the Examination Committee. Ungraded examinations shall be assessed as "failed" accordingly. A student who is disrupting the normal proceedings of an examination may be excluded from continuing the examination by the respective examiner or proctor; in this case, the examination is given the grade "fail" (5.0) or assessed as "failed". In serious cases, the Examination Committee may exclude the student from taking further examinations.

(4) If, during an examination, a student has cheated and this is only detected after the publication of the result, the Examination Committee may change the result of the examination to the grade "fail" (5.0) or assess it as "failed" and subsequently change the module grade according to § 13 para. 2. If the requirements for taking a module examination have not been met and the student was not at fault, this irregularity is rectified by passing the module examination. If the student intentionally and unduly obtained admission to an examination, the Examination Committee may assess the module examination as "fail" (5.0) or "failed". In serious cases, the Examination Committee may exclude the student from taking further examinations.

(5) Para. 1 to 4 shall apply accordingly to preliminary graded work, the Master's thesis and defenses thereof.

(6) If the student declares in writing to the Examination Office that they wish to waive the completion of an examination, this examination will be considered "fail" (5.0) or "failed" in the respective examination attempt. The waiver is irrevocable and presupposes admission pursuant to § 4.

## **§ 15** **Passing and failing**

(1) In order to pass a module examination, the module grade needs to be at least "pass" (4.0) or the ungraded module examination needs to be assessed as "passed". If the module examination is passed, the credit points specified for the module in the module descriptions are awarded. In the cases specified by the module descriptions, the passing of the module examination is also dependent on the assessment of individual examined assessments as at least "pass" (4.0). Furthermore, in the cases specified by the module descriptions, the passing of the module examination is also dependent on a further passing requirement, i.e. the completion of a professional internship. This must be proven by submission of a professional internship certificate.

(2) The Master's examination is passed if the module examinations and the Master's thesis as well as defenses have been passed. Master's thesis and defense are passed if they have each been assessed with at least "sufficient" (4.0).

(3) A module examination is failed if the module grade is below "pass" (4.0) or if the ungraded module is assessed as "failed". Master's thesis and thesis defense are not passed if they have not been assessed as at least 'sufficient' (4.0) or the ungraded module examination has been assessed as 'not passed'.

(4) A module examination is irrevocably failed if it has not been assessed as at least "pass" (4.0) or if the ungraded module examination is assessed as "failed" and cannot be re-taken. The Master's thesis and defense are irrevocably failed if they have not been evaluated with at least "sufficient" (4.0) and a repetition is no longer possible.

(5) The Master's examination is failed or irrevocably failed if either one of the module examinations or the final master's thesis or the defense, if applicable, have been failed or irrevocably failed. § 3 para. 1 remains unaffected. If a module examination is irrevocably failed in the elective compulsory field, the irrevocable failure of the final examination is only declared according to § 18 para. 4 if, within one month after the publication of the module examination results, the student does not change their module or if a change of the module is no longer possible pursuant to § 6 para. 2 sentence 3 of the study regulations. If a student has irrevocably failed the Master's examination, the student loses the right to take examinations for all parts of the Master's examination according to § 2 sentence 1.

(6) If a student has failed a module examination, the Master's thesis or defenses of, the student is informed as to whether, when and to what extent they can re-take or re-submit it.

(7) If a student failed the Master's examination, upon request and upon submission of the relevant proof and the certificate of de-registration (withdrawal from the student registry), the student is provided with a certificate listing the completed examined assessments including the results, as well as those that have not been completed (if this is relevant) showing that the Master's examination has not been passed.

## § 16

### Re-taking module examinations

(1) Failed module examinations can be repeated once within one year following the first examination attempt. This period of time begins with the announcement of the first failed attempt of the module examination. Following the expiration of this deadline, the examination is deemed to be failed again.

(2) An examination can only be repeated a second time the next time it is held. After that, the module examination is deemed to have been irrevocably failed. Another repeat examination is not permissible.

(3) Repeating a failed module examination that consists of several parts entails only those examined assessments that were not assessed as at least "pass" (4.0) or "passed". When repeating a failed module examination that includes one or more elective examined assessments, students are not bound to the previous selection of an examined assessment not graded with at least "pass" (4.0) or with "passed".

(4) It is not permitted to re-take a module examination that has already been passed.

(5) Failed attempts at the module examination in the same or in other degree programs are taken into account.

## § 17

### Recognition of study achievements and examined assessments, periods of study, and qualifications obtained outside a university

(1) Studies and examined assessments accomplished at a different university are recognized upon request of the student if there are no substantial differences in the acquired skills. Further agreements between Technische Universität Dresden, the German Rectors' Conference, the Standing Conference of the Ministers of Education and Cultural Affairs, as well as agreements ratified by the Federal Republic of Germany shall be observed, if applicable.

(2) Qualifications obtained outside an institution of higher education are recognized upon request of the student if they are deemed to be equivalent. Qualifications are equivalent if their contents, scope and requirements are fundamentally similar to parts of the Master's Distributed Systems Engineering at Technische Universität Dresden. The qualification comparison shall not be schematic, instead it should be considered and assessed in its entirety.

(3) Study achievements and examined assessments in the same degree program accomplished in the Federal Republic of Germany are transferred ex officio.

(4) Study achievements and examined assessments accomplished at a different institution of higher education can be recognized despite substantial differences if, when assessed as a whole, their contents and qualification objectives are equivalent to the intent and purpose of the modules included in this degree program, and they are thus structurally equivalent. The degree certificate shows the assessments that were actually accomplished.

(5) If study achievements and examined assessments are recognized or transferred according to para. 1, 3 or 4, or if qualifications obtained outside a university are recognized according to para. 2, the respective study periods are ex officio recognized as well. If the grading systems are comparable, grades are transferred and enter into further grading calculations. If the grading systems

cannot be compared, a note "passed" is added and they do not enter into further grading calculations. Recognition is marked as such in the degree certificate.

(6) Recognition is decided by the Examination Committee. The student needs to provide the required documents. After submission, the recognition procedure must not exceed two months. If recognition is denied, § 18 para. 4 sentence 1 shall apply.

## **§ 18 Examination Committee**

(1) An Examination Committee for the Master's Distributed Systems Engineering is established. It will conduct and organize examinations and take on the tasks outlined in the Examination Regulations. The Examination Committee consists of three lecturers, one research and teaching associate, and one student. With the exception of the students, the term of office shall be three years. The term of office of the student members shall be one year.

(2) The chairperson, their deputy, and the other members and their deputies are appointed by the Faculty Council of the Faculty Computer Science; student members and their deputies are appointed upon recommendation by the Student's Council. The chairperson normally manages the Examination Committee.

(3) The Examination Committee ensures that the stipulations of the Examination Regulations are adhered to. The Committee reports on a regular basis on the development of examination and study periods including the actual time spent on the Master's thesis, as well as about the distribution of the module and overall grades. The Examination Committee offers suggestions to reform the Examination Regulations, the Study Regulations, the Module Descriptions, and the Study Schedule.

(4) Decisions that adversely affect students must be announced to them in writing, including a justification and information about legal appeal options. The Examination Committee as the examination authority rules on appeals against such decisions in due course, and communicates its decisions concerning the appeal.

(5) The chairperson normally manages the Examination Committee. The Examination Committee may also delegate individual tasks to the chairperson for independent processing and decision-making if the student member agrees to that. This does not apply to decisions pursuant to para. 4 sentence 2. If any or all of the members of the Examination Committee are reappointed, any previous delegation shall expire.

(6) The Examination Committee can allow guests without voting rights to attend its meetings. The members of the Examination Committee are entitled to attend any examination and/or defense.

(7) The members of the Examination Committee and their deputies must abide by the duty of official confidentiality. The chairperson shall oblige any members who are not public service staff to maintain official confidentiality.

(8) Based on the decisions of the Examination Committee, the Examination Office organizes the examinations and manages the examination files.

## **§ 19**

### **Examiners and assessors**

(1) The Examination Committee appoints the examiners from amongst university lecturers and other individuals who are authorized to be examiners under Saxon State Law. A person can only be appointed assessor if they have passed the respective Master's examination or at least a comparable examination.

(2) The student may nominate the supervisor for their Master's thesis and the examiners for oral examinations and the colloquium. This suggestion does not bear any entitlement.

(3) For examiners and assessors, § 18 para. 6 shall apply accordingly.

## **§ 20**

### **Purpose of the Master's examination**

Passing the Master's examination concludes the degree program and qualifies the student for professional work. It ensures that students have an overview of the professional contexts, are able to apply academic methods and findings, and have acquired the in-depth knowledge required for entering into the world of work.

## **§ 21**

### **Purpose, issue, submission, assessment and re-submission of the Master's thesis and defense**

(1) The purpose of the Master's thesis is to prove that the student is able to analyze issues of the degree program through independent work and within a given period of time, using academic methods.

(2) The Master's thesis can be supervised by a university lecturer or another individual who is authorized to examine according to the Act on the Autonomy of Institutions of Higher Education in the Free State of Saxony, provided that they are working at the Faculty of Computer Science of Technische Universität Dresden. If an extramural person authorized to be an examiner is to supervise the Master's thesis, the chairperson of the Examination Committee must approve such supervision.

(3) The Examination Committee issues the topic of the Master's thesis. The topic and date of issuance shall be documented. Students are allowed to suggest a topic. Upon the request of the student, the Examination Committee issues the topic of the Master's thesis in a timely manner. The Examination Committee issues the topic ex officio at the latest at the beginning of the semester that follows the completion of the last module examination.

(4) The topic can be changed only once within two months of being issued. In case of re-submission of the Master's thesis, changing the topic is only permitted if the student did not use this option previously. If a student has changed their topic, they are immediately issued a new topic in accordance with para. 3 sentences 1 to 3.

(5) The Master's thesis may also be produced as a group thesis if the individual contribution to be assessed as the student's Master's thesis is clearly distinguishable and assessable due to the indication of sections, page numbers or other objective criteria that allow a clear delimitation, and if this contribution fulfills the requirements pursuant to para. 1.

(6) Two typed and bound copies of the Master's thesis written in English shall be submitted to the Examination Office of the Faculty of Computer Science, as well as a digital copy on a suitable storage device; the date of submission shall be documented. Upon submission, the student must declare in writing that they have written the thesis - or, in the case of a group thesis, the appropriately marked share of the paper - independently and has not used any sources or aids other than those indicated.

(7) The Master's thesis shall be graded by two examiners separately according to § 13 para. 1 sentences 1 to 3. The supervisor of the Master's thesis shall be one of the examiners. The time for grading the thesis shall not exceed two weeks.

(8) The grade for the Master's thesis is calculated as the average of the individual grades given by the two examiners. If the two individual grades given by the examiners differ by more than two grades, the average is only valid if both examiners agree on this. If this is not the case, the Examination Committee arranges for the thesis to be marked by an additional examiner. In this case, the grade of the Master's thesis is calculated as the average of the three individual grades. § 13 para. 2 sentences 2 and 3 shall apply accordingly.

(9) If one of the examiners has assessed the master's thesis as at least "pass" (4.0) and the other examiner as "fail" (5.0), the Examination Committee arranges for the thesis to be marked by an additional examiner. The additional examiner then decides whether the Master's thesis is passed or failed. If the thesis is then deemed to be passed, the grade of the Master's thesis is calculated as the average of the individual grades given in favor of pass, in the opposite case in favor of fail. § 13 para. 2 sentences 2 and 3 shall apply accordingly.

(10) A failed Master's thesis can be re-submitted once within a one-year period. Following the expiration of this deadline, it is deemed as failed again. A second re-submission is only possible at the next available examination date, following that date it is deemed to be irrevocably failed. Any further re-submission or a re-submission after already having passed the Master's thesis is not permitted.

(11) The student must elucidate their Master's thesis to the supervisor of the thesis as the examiner and to an assessor in a public thesis defense. The defense is intended to demonstrate that the student is able to present and discuss the results of the Master's thesis in a coherent and professional manner and is able to orally present and independently justify the professional and methodological foundations of the Master's thesis, its interdisciplinary connections and its significance for practice. Additional examiners may be called in. Para. 10 as well as § 9 para. 4 and § 13 para. 1 sentences 1 to 3 shall apply accordingly.

## **§ 22**

### **Examination certificate and Master's degree certificate**

(1) Upon passing the Master's examination, students receive an examination certificate without undue delay, if possible within four weeks. The Master's examination certificate shall consist of the module results according to § 27 para. 1 and the respective credit points and where applicable an indication of the recognized achievements and results, of the topic of the Master's thesis, its grade and supervisor, as well as of the overall grade pursuant to § 13 para. 3 and 4. The results of the individual examined assessments are shown on a supplement to the examination certificate. Upon request of the student, the certificate also shows the results of additional modules and the study time spent on the completion of the Master's examination; and the supplement also includes the

results of the examined assessments in the additional modules. A focus can be designated if modules assigned to the focus have been completed earning at least 24 credit points. The possible assignment of modules to focal points is shown in Appendix 3.

(2) Concurrent with receiving the Master's examination certificate, students shall receive the Master's degree certificate with the date identical to that of the examination certificate. It certifies that the Master's degree has been awarded. The Master's degree certificate is signed by the chairperson of the Examination Committee and bears the handwritten or electronic signature of the Rector, alongside the seal of Technische Universität Dresden. Additionally, students are provided with an English translation of both the degree certificate and the examination certificate.

(3) The examination certificate bears the date of completion of the last part of the examination according to § 15 para. 2. It is signed by the chairperson of the Examination Committee and bears the faculty seal of Technische Universität Dresden.

(4) Technische Universität Dresden issues a Diploma Supplement (DS) in accordance with the Diploma Supplement model of the European Union/Council of Europe/UNESCO. For information on the German higher education system (DS para. 8), the text agreed upon by the Conference of the Ministers of Education and Cultural Affairs and the German Rector's Conference shall be used as amended.

## **§ 23**

### **Invalidity of the Master's examination**

(1) If a student has cheated in an examined assessment and if this cheating is only discovered after the examination certificate has been issued, the results of the examined assessment can be amended according to § 14 para. 4 sentence 1. If applicable, the Examination Committee may declare the grade of the module examination as "fail" (5.0) and the Master's examination as "failed". The same applies to ungraded module examinations, the Master's thesis, and the defense.

(2) If the requirements for taking a module examination had not been met and this had not been discovered prior to the issuance of the examination certificate and the student was not at fault, this irregularity is rectified by passing the examined assessment examination. If the student intentionally and unduly obtained admission to an examined assessment, the Examination Committee may assess the module examination as "fail" (5.0) the final examination as "failed". The same applies to ungraded module examinations, the Master's thesis, and the defense.

(3) The incorrect examination certificate and its translation shall be retracted by the chairperson of the Examination Committee and replaced by a new one, if applicable. If the Master's examination has been declared 'failed' due to cheating, the Master's degree certificate, any translations, and the Diploma Supplement shall be retracted together with the now invalid examination certificate. Following a period of 5 years since the date of the examination certificate, a decision according to para. 1 and para. 2 sentences 2 or 3 is no longer permissible.

## **§ 24**

### **Access to examination documents**

Within one year after completion of the examinations, the student will be granted access to their written examination papers, the related expert opinions and the examination protocols within a reasonable period of time upon request.

## **Part 2: Subject-specific regulations**

### **§ 25**

#### **Duration, structure and scope of the degree program**

- (1) The standard period of study according to § 1 is four semesters.
- (2) The program is divided into modules and is concluded with the Master's examination.
- (3) By passing the Master's examination, a total of 120 credits are awarded for modules, the Master's thesis, and the defense.

### **§ 26**

#### **Subject-specific requirements for the Master's examination**

- (1) For the examined assessments (*Prüfungsleistung*) examinations, study achievements may be required as preliminary graded work. Their number, type and design are to be regulated in the module descriptions, and the number of repeat attempts may be limited as well. Prior to the defense, the Master's thesis must have been evaluated with a grade of at least 'sufficient' (4.0).
- (2) The topic of the Master's thesis may be issued when the student has achieved 80 credit points. The start of the Master's thesis also requires the completion of the module from the area of general qualification.

### **§ 27**

#### **Subject, nature and scope of the Master's examination**

- (1) The Master's examination comprises all module examinations of the compulsory area and those of the selected modules of the elective compulsory area as well as the Master's thesis and defenses of.
- (2) Modules of the compulsory field are
  1. Foundations of Systems Engineering
  2. Advanced Concepts of Systems Engineering
  3. Ubiquitous Systems
  4. Transactional Information Systems
  5. Foundations of Security and Cryptography
  6. System Design
  7. Internship.
- (3) The modules of the elective compulsory area of specialization are listed in Annex 1. Of these, modules amounting to 42 credit points must be selected. The elective compulsory modules for language training are listed in Appendix 2. Of these, one module worth 3 credit points must be selected.
- (4) The required examined assessments in the modules and their type and structure are specified in the module descriptions. The subject matter of the examined assessment consists of the contents and skills acquired in the module, if not stated otherwise in the module descriptions.



(5) Students can take examinations in modules other than those stipulated in para. 1 (additional modules). Optionally, these module examinations can be selected from the full range of modules offered at Technische Universität Dresden or a cooperating institute of higher education after consultation with the person conducting or examining the module. They do not enter into the calculations of a student's workload nor of the overall grade.

## **§ 28**

### **Time permitted for the Master's thesis and duration of the defense**

(1) Students have 22 weeks to complete their final master's thesis, and 29 credits are awarded for it. The supervisor shall limit the topic, tasks, and scope of the Master's thesis so that the deadline for the submission of the Master's thesis can be realistically met. In specific cases and upon justified request by the student, the Examination Committee may extend the period by up to a maximum of 12 weeks, the number of credits awarded remains unaffected.

(2) The defense shall run for 60 minutes. One credit point is earned.

## **§ 29**

### **Master's degree**

If the graduation Master's is passed, the "Master of Science" degree (abbr. M.A.) is awarded.

## **Part 3: Final regulations**

## **§ 30**

### **Entry into force, publicationnkrafttreten, Veröffentlichung and interim arrangements**

(1) These Examination Regulations shall enter into force on the day following their publication in the Official Announcements of TU Dresden.

(2) They apply to all newly enrolled students in the Master's program in Distributed Systems Engineering in the 2020/2021 winter semester or later.

(3) For students who enrolled earlier than in the 2020/2021 winter semester, the Examination Regulations for the Master's degree program Distributed Systems Engineering that has been valid for them up until the amendment continues to apply unless they declare their acceptance of the amendment in writing. This requires a corresponding application; the form and deadline of the declaration are determined by the Examination Committee and announced in the usual manner of the faculty. Switching to the new regulations is possible at the earliest on October 1, 2020. Transfer is approved if less than 90 credits have been earned minus the credits earned for the master's thesis and its defense. However, transfer will not be approved if any module of the compulsory field has been irrevocably failed.

(4) These examination regulations shall apply from the 2022/2023 winter semester for all students enrolled in the Distributed Systems Engineering Master's degree program who have acquired less than 90 credit points by then minus the credit points acquired for the Master's thesis and its defense.

(5) In the case of transfer according to para. 3 clause 1 or para. 4, primarily the module examinations already taken and subordinately also individual examination achievements are taken over ex officio, including the grades, on the basis of equivalence tables, which are determined by the Examination Committee and announced publicly by the faculty. With the exception of § 16 para. 5, module examinations and examined assessments not graded with at least “sufficient” (4.0) or “passed” will not be transferred. The module grade is generally not recalculated based on exclusively transferred examined assessments; exceptions are listed in the equivalence tables.

Issued based on the resolution of the Faculty Board of the Faculty of Computer Science as of July 24, 2019, and the approval of the University Executive Board as of October 22, 2019.

Dresden, May 18, 2020

The Rector  
of Technische Universität Dresden

Prof. Dr.-Ing. habil. DEng/Auckland Hans Müller-Steinhagen

## **Annex 1: Elective compulsory modules of the professional specialization**

- Advanced Security and Cryptography
- Wireless Sensor Networks
- Distributed Operating Systems
- Operating Systems Security
- Real Time Systems
- Special Operating Systems
- Component-based Software Engineering
- Internet and Web Applications
- Prediction and Estimation Techniques
- Engineering Adaptive Mobile Applications
- Foundations of Concurrent and Distributed Systems
- Lab: Concurrent and Distributed Systems
- Foundations of Software Fault Tolerance
- Lab: Software Fault Tolerance
- Principles of Dependable Systems
- Current Topics in Systems Engineering
- Robolab Sessions
- Design and Programming of Embedded Multicore Architectures
- Hardware Modelling and Simulation
- Micro-Kernel-based Systems
- Embedded Hardware Systems Design
- Lab: Embedded Hardware Systems
- Academic Skills in Computer Science
- Across the Disciplines of Distributed Systems Engineering
- Beyond Distributed Systems Engineering

## **Annex 2: Elective compulsory modules of the language training**

- English – Advanced Professionals
- German Language Skills

### Annex 3: Concentration and module assignment

In the Master's degree program in Distributed Systems Engineering, the following concentrations may result from the student's choice:

- Operating Systems (OS)
- Software Engineering (SE)
- Secure and Dependable Systems (SDS)
- Systems Architecture (SA)

| Module   | OS | SE | SDS | SA |
|--|----|----|-----|----|
| Advanced Security and Cryptography                         |    |    | X   |    |
| Wireless Sensor Networks                                   |    |    |     | X  |
| Distributed Operating Systems                              | X  |    |     |    |
| Operating Systems Security                                 | X  |    | X   |    |
| Real Time Systems  | X  |    |     |    |
| Special Operating Systems                                  | X  |    |     |    |
| Component-Based Software Engineering                       |    | X  |     |    |
| Internet and Web Applications                              |    | X  |     |    |
| Prediction and Estimation Techniques                       |    | X  |     |    |
| Engineering Adaptive Mobile Applications                   |    | X  |     |    |
| Foundations of Concurrent and Distributed Systems          |    |    |     | X  |
| Lab: Concurrent and Distributed Systems                    |    |    |     | X  |
| Foundations of Software Fault Tolerance                    |    |    | X   |    |
| Lab: Software Fault Tolerance                              |    |    | X   |    |
| Principles of Dependable Systems                           |    |    | X   |    |
| Current Topics in Systems Engineering                      |    |    | X   |    |
| Robolab Sessions   |    | X  |     |    |
| Design and Programming of Embedded Multicore Architectures |    |    |     | X  |
| Hardware Modelling and Simulation                          |    |    |     | X  |
| Micro-Kernel-based Systems                                 | X  |    |     | X  |
| Embedded Hardware Systems Design                           |    |    |     | X  |
| Lab: Embedded Hardware Systems                             |    |    |     | X  |
| Academic Skills in Computer Science                        | -  | -  | -   | -  |
| Across the Disciplines of Distributed Systems Engineering  | A  | A  | A   | A  |
| Beyond Distributed Systems Engineering                     | A  | A  | A   | A  |

X ... Allocation of the module to the respective concentration

A ... Allocation possible after approval by the Examination Committee.