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**Examination regulations for the Master's programme in Computer Science  
at the Faculty of Computer Science of the Ruhr-Universität Bochum**

1 October 2024

On the basis of §§ 2 para. 4, 64 of the Higher Education Act of the State of North Rhine-Westphalia (Hochschulgesetz - HG) of 16.09.2014 (GV.NRW p. 547), last amended on 5 December 2023 (GV. NRW. P. 1278), the Ruhr-Universität Bochum has issued the following examination regulations:

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## I. General

### § 1 Scope and aim of the study programme

- (1) These examination regulations apply to the Master's degree programme in Computer Science.
- (2) Taking into account the requirements and changes in the professional world, the study programme is intended to provide students with the necessary subject-specific knowledge, competences, skills and methods in such a way that they are enabled to carry out scientific work according to scientific principles, to critically classify scientific findings and to act responsibly. The teaching-learning processes enable students to study independently at an early stage and to pursue individual development perspectives. The curriculum of the Computer Science degree programme and these examination regulations provide the framework for this personal profile formation during the course of study.
- (3) In the Master's degree programme, competences in the field of computer science are taught according to DQR level 7, which are required for the processing of new complex tasks and problems as well as for the independent control of processes. Graduates have comprehensive, detailed and specialised knowledge at the latest level of knowledge in various areas of computer science. They use specialised technical and conceptual skills to solve problems and can also develop new procedures taking into account given framework conditions. You acquire missing knowledge independently. In group projects, you contribute responsibly to the solution of complex tasks and represent the results to others. Furthermore, graduates of the Master's programme are able to conduct subject-specific discussions in English. Dealing with English specialist literature is a matter of course. Depending on the choice of free elective modules, further interdisciplinary competences can be acquired.
- (4) The courses of the Master's programme are held in English.

### § 2 Academic Degree

Upon successful completion of the Master's programme, the Faculty of Computer Science awards the academic degree Master of Science (M. Sc.). Graduates are entitled to use the professional title "engineer".

### § 3 Admission requirements

- (1) Admission to the Master's degree programme in Computer Science is open to students who have completed at least six semesters of a Bachelor's degree programme in Computer Science comprising 180 LP or a comparable degree programme and who have a special eligibility according to paragraph 2-10 for this degree programme.
- (2) A further entry requirement is proof of:
  - At least 50 LP from the following areas of the fundamentals of computer science, whereby the contents must be equivalent to the respective modules of the B.Sc. Computer Science at the Ruhr-Universität Bochum:
    - Computer Science I, 12 ECTS

- Computer Science 2, 8 ECTS
- Computer Science 3, 8 ECTS
- Software Engineering, 5 ECTS
- Computer Engineering 1, 5 ECTS
- Computer Networks, 5 ECTS
- Operating Systems, 5 ECTS
- Database Systems, 7 ECTS
- Computer Engineering 2, 5 ECTS
- At least 18 LP from the field of fundamentals of mathematics.

(3) Further admission requirements are English language skills at the level of at least C1 CEFR (Common European Framework of Reference for Languages), which must be proven at the time of application. The language skills can be proven by the following certificates:

- IELTS Academic (7.0 overall score or better),
- TOEFL iBT (100 points or more),
- CAE C1 Advanced B (193 points or more),
- CAE C2 Proficiency C (200 points or more),
- Upon application, the examination board may allow other proof of English language skills in individual cases.

The presentation of a certificate can be omitted if appropriate proof is provided,

- for applicants with a German Abitur, five or more years of English language tuition.
- for applicants who have completed a Bachelor's degree with a standard period of study of at least three years, which was taught entirely in English and was "in-residence" in Australia, Ireland, Canada (English-speaking regions), New Zealand, the United Kingdom or the United States of America. This means that the entire duration of the degree must have been spent in these countries. This does not apply to degrees obtained at universities in these countries but at places outside these countries, to distance learning programmes or to joint double degrees with universities in other countries, or if a significant part of the time was not spent in the first-mentioned countries.
- for applicants whose native language is English. This means that the language has been acquired and learned since early childhood without formal instruction or teaching and that the areas of speaking, writing, reading and listening are used at the highest level and with the highest competence.
- for applicants with a Bachelor's degree in Computer Science or a related subject from universities separately determined by the Examination Committee, if the language of instruction was English or your studies were bilingual and one of the languages of instruction was English.

(4) With the application, the applicant must submit the following documents, which will be used for the examination of the special eligibility, if the admission requirements are only partially fulfilled:

- Academic transcripts: Certificate (or provisional certificate) and/or official transcript of

records with stated average grade (see §5) of the Bachelor's degree programme completed or to be completed or of the comparable degree programme. Module descriptions (syllabus) in English or German must be submitted for all academic achievements that are relevant for the fulfilment of the prerequisites and the examination of special eligibility.

- Explanation of motivation: A short letter of motivation (max. 2 pages) in which the reasons for the application are explained. The areas of computer science that are of particular interest should be emphasised as well as the existing knowledge in these areas.
  - Academic work sample: A sample of your own academic work can optionally be submitted with the application, e.g. a published or as yet unsubmitted research paper, the Bachelor's thesis or a draft thereof, a seminar paper or a project report. Not submitting this may have a negative impact on the assessment of special eligibility.
  - The institutional e-mail addresses of two university teachers who can be contacted for a letter of recommendation.
- (5) The proof of the admission requirements according to paragraph 1-4 must be submitted with a written online application to the Faculty of Computer Science at the Ruhr-Universität Bochum within the specified deadlines.

The application shall include the proof of English pursuant to paragraph 3 as well as the documents pursuant to paragraph 4. Provided that no degree has been obtained at the time of application, an application may be made if at least 120 credit points have been obtained in the Bachelor's degree programme according to the study plan for application to a six-semester Bachelor's degree programme and at least 150 credit points have been obtained in a seven-semester Bachelor's degree programme. In addition, the higher education institution issuing the transcript of records must have calculated an average grade, weighted with credit points, for the examinations completed and graded up to that point. The certificate must be submitted at the latest for enrolment.

- (6) The examination of the admission requirements and, if these are only partially fulfilled, the special eligibility is carried out according to the chart in Appendix 2 and consists of the examination and evaluation of the submitted documents and, if necessary, an examination interview. Participation in the procedure requires the timely submission of the application documents according to paragraph 4 and their completeness. Applicants who do not submit their documents on time or whose documents are incomplete will be excluded from the procedure for determining special eligibility.
- (7) The Faculty of Computer Science forms a selection committee to carry out the examination of the special aptitude. The selection committee consists of at least 3 professors of the Faculty of Computer Science and one member of the Dean of Studies office. The selection committee examines the submitted documents and, if necessary, is responsible for conducting the examination interviews. They report to the Examination Board after completion of the award procedure on the experience gained. They submit proposals for the further development of the selection procedure.
- (8) The documents submitted in accordance with paragraph 4 are intended to determine whether the applicant is particularly suitable for the degree programme. In particular, the ability to work in a research-oriented manner as well as the existing competences in theoretical and basic computer sciences shall be evaluated. The evaluation and scoring of the submitted documents shall be recorded in a protocol to be signed by the members of the selection committee. The individual criteria are rated as 'fulfilled', 'partially fulfilled' or 'not fulfilled' in accordance with Annex 2. In cases where an examination interview must be

conducted, a record of the essential questions and answers of the interview must be kept. The protocol must be signed by the members of the selection committee. The protocol must document the day of the interview, the names of the commission members, the name of the applicant, the duration of the interview and the evaluation. If the applicant does not appear for an examination interview without an important reason, it will be assessed with 0 points and the applicant will be excluded from the further procedure. A withdrawal from the examination interview is possible up to one week before the interview. In this case, the applicant is eliminated from the current selection procedure. If there is an important reason for non-attendance and this is proven in writing no later than two working days after the selection interview, the applicant is entitled to attend the next possible interview date in the current selection procedure or the next possible selection procedure. In case of illness, a medical certificate must be submitted. If the applicant tries to influence the result of the interview by deception or the use of unauthorised aids, the interview will be marked with 0 points and the applicant will be excluded from the further and future procedure.

- (9) Special eligibility for the degree programme is determined using the decision-making process described in Appendix 2 and on the basis of the documents submitted and, if applicable, the examination interview.
- (10) Students who have passed or definitively failed a Master's programme in Computer Science or Computer Science or a related or comparable programme at a scientific university cannot be admitted to the Master's programme.
- (11) The examination board shall determine whether the admission requirements according to paragraph 1 to 10 are fulfilled.

#### **§ 4 Standard period of study, scope of study, types of courses, compulsory attendance, credit points (LP) and subject guidance**

- (1) The general standard period of study is 4 semesters. The course of study can normally begin in the winter semester, but only in the summer semester upon justified application.
- (2) The study programme consists of modules with a total of 120 LP according to Appendix 1 and includes
  - Compulsory elective modules (Basic/Foundation) of at least 15 LP,
  - Advanced modules of at least 35 LP,
  - a specialised practical course of at least 3 LP,
  - a specialised seminar of 3 LP,
  - a project in the scope of 10 LP,
  - free elective modules amounting to 20 LP,
  - the module Final Thesis in the scope of 30 LP.

The four LPs missing for the degree can be completed flexibly in the first three areas mentioned.

Specialisation modules totalling at least 35 CP must be completed, covering at least 2 areas of specialisation with at least 10 CP each. Modules that are assigned to more than one specialisation area are only counted for one area.

- (3) A module is a teaching and learning unit which is self-contained in terms of content and time and which is successfully completed by passing the associated module examination. In exceptional cases, the module examination can be divided. As a rule, a module should last for one, at most two semesters. The individual modules contain the teaching or

development of a subject area and the corresponding competences. All modules can be found in the attached study plan and the module handbook in the current version.

- (4) The coursework and examinations completed in the individual modules are assessed in accordance with § 10.
- (5) LP correspond to the credits of the "European Credit Transfer and Accumulation System" (ECTS). The number of LPs to be acquired through a module results from the student workload, which is the amount of time students spend on the course and examination work, including preparation and follow-up work (self-study) and taking the examinations. One LP corresponds to the estimated workload of about 30 time hours. One semester comprises 30 LP, the Master's degree programme therefore comprises a total of 120 LP.
- (6) The following types of courses are offered as part of the modularised teaching programme:
  - Lectures
  - Exercises
  - Seminars
  - Colloquia
  - Tutorials
  - Internships
  - Project work
- (7) In **lectures**, the subjects of the subject are presented exemplarily and systematically. They provide an overview of problem contexts.
- (8) **Exercises** serve to deepen subject knowledge and to acquire subject-specific skills and abilities based on exemplary topics.
- (9) **Seminars** serve to deepen scientific knowledge and can be offered on any topic in the subject area. They teach scientific work within the thematic focus of the seminar. This includes working with literature, preparing and giving a presentation, as well as discussing the topics. Seminars are characterised by a high level of interactivity between teachers and students.
- (10) **Colloquia** are used for in-depth discussion of selected scientific issues.
- (11) **Tutorials** are carried out by qualified students under the responsibility of a lecturer; they serve the joint practice of cooperative forms of learning and working in small student groups as well as the deepening of subject knowledge. For the tutors, this activity also offers a 'university didactic internship', in which they can reflect on and develop their ability to perceive and control group communication processes and in this way acquire professionally relevant skills of mediation in their studies.
- (12) In **practical courses**, specialised knowledge is deepened through intensive work on practical tasks.
- (13) **Project work** trains independence, teamwork and the ability to organise projects when working on a given, usually practical, task. In addition, subject-specific skills are deepened.
- (14) The obligation to attend regularly can be provided for courses whose learning objective cannot be achieved without the active participation of the students. This applies in particular, but not exclusively, to seminars and practical courses. The compulsory attendance is to be indicated in the module description in the module handbook in the current version.
- (15) The study plan provides a recommendation for the semester in which a specific module should be completed. For the integration of a semester abroad into the degree programme, it may make sense to deviate from this order. The study counselling supports students in

planning their individual course of studies.

### § 5 Formation of a focus

- (1) It is possible to set a thematic focus in the degree programme. The available focal points are defined in the respective current version of the module handbook.
- (2) A focus is formed when at least 50 CP have been collected from modules that are assigned to the same specialisation area. This may include the Master's thesis, compulsory elective modules, specialisation modules, specialised seminar, specialised practical course. A successfully completed focus is shown on the degree certificate.
- (3) The assignment of courses to specialisation areas is shown in the module handbook, in the case of seminars and practical courses in the course catalogue. It is possible to assign a course to more than one specialisation area.

### § 6 Study Abroad and Project

- (1) As part of the degree programme, it is possible to spend a semester or an academic year at a foreign university. The third or fourth semester are usually best suited for this.
- (2) The student is free to choose the place of study for the semester abroad. Before the start of the semester abroad, a learning agreement must be arranged with the student advisory service and deposited with the examination board.
- (3) Within the scope of the degree programme, practical training in the form of a project amounting to 10 LP (300 working hours) is compulsory. The students must work on a practical task from the field of computer science within one semester. The projects can be worked on individually or in groups. Usually the project is completed in the 2nd or 3rd semester.
- (4) More detailed information on the project can be found in the module handbook in its current version.

### § 7 Examinations, examinations and forms of examination

- (1) Examinations consist of graded or ungraded module examinations during the course of study according to the study plan, which is attached as Annex 1 to the examination regulations, as well as the graded written Master's thesis with colloquium. It should be possible to complete these within the standard period of study. Students must be registered to take an examination.
- (2) Examinations can take the form of a written examination, an oral examination, a seminar paper, a presentation, a term paper, a project paper, a practical examination, an internship report or a colloquium presentation. The final form of the examination performance and the permitted aids are announced at the beginning of the semester in which the module takes place. In individual cases, the completion of the examination may be dependent on the prior completion of coursework. The coursework to be completed is listed in the current version of the module handbook.
- (3) In a **written examination**, proof is to be provided that tasks from the area of the module's courses can be properly worked on in a limited time and with limited aids and that suitable solutions can be found. Written examinations can be taken in electronic form and in electronic communication. The duration of an examination is determined according to the



subject content, taking into account the LP allocated for the module. It is determined by the examiner and is between one and four hours. The duration of the assessment procedure may not exceed three weeks. Multiple choice tasks may also be set within the framework of written examinations. Multiple choice is a format used in examinations in which there is a choice of several pre-formulated answers to a question. Marking individual wrong answers will result in the answer being marked as wrong overall. The awarding of negative points is not permitted. The proportion of these tasks may not exceed 50 percent of the required examination performance. The assessment criteria must be announced on the examination sheet and 14 days before the examination.

- (4) In an **oral examination**, the candidate shall prove that he or she has sufficient knowledge in the examination area, recognises contexts and is able to classify special questions in these contexts. Oral examinations are usually conducted by at least two examiners or one examiner in the presence of an expert assessor. Oral examinations are taken as group examinations or as individual examinations. The oral examination shall last 15 to a maximum of 45 minutes per candidate. It may be taken by electronic communication. The essential subjects and results of the examination shall be recorded in minutes. Before determining the grade, the examiners shall discuss the grade. The assessor shall be heard before the grade is determined. The candidate shall be informed of the grade of the examination immediately after the examination and the reasons for the grade shall be given. Students who wish to take the same examination in a later examination period may be admitted as listeners in accordance with the space available, provided the candidate does not object. Admission does not extend to the discussion and announcement of the examination result.
- (5) **Seminar contributions** are performances on a given framework topic by a participant in the form of a lecture and, if applicable, an explained graphic presentation in front of the participants of the seminar and evaluated by the seminar leader. If necessary, a supplementary written paper can be provided. The scope is determined according to subject content aspects, taking into account the LP provided for the module. The examination is passed when the student has successfully given his/her own presentation, if necessary in electronic communication, and has participated in the previously determined number of individual appointments for the discussion of the seminar contributions. The examination is not passed if the student has not given the presentation and, if applicable, has not submitted the supplementary written work in due time and has not participated in the previously determined number of individual appointments and has not or not successfully used the opportunity to make up the missed individual appointments.
- (6) Within the framework of a written **homework**, a task from the area of the module's courses is worked on appropriately with the help of the relevant literature and, if necessary, other suitable aids and suitable solutions are found. The aids are announced together with the assignment. The scope of the assignment is determined according to the subject content, taking into account the LPs planned for the module.
- (7) A **project work** represents the independent processing of a set topic. Group work may also be permitted by the course instructor if an individual assessment of the share of each group member is possible. The performance to be achieved is to be defined by the head of the course at the beginning of the course and individually assessed at the end of the course.
- (8) A **practical examination** usually consists of a series of practical tasks, experiments or programming tasks with written papers. The tasks can be carried out in groups. The examination performance is achieved when the student has successfully participated in the previously determined number of individual dates of the relevant course. This is given if, in the case of an internship, experiments have been carried out, recorded and evaluated. The

practical course is not passed if the student has not successfully participated in the previously determined number of individual appointments and has not or not successfully used the opportunity to make up the missed individual appointments.

- (9) **Colloquium presentations** are performances in which students present the contents and the most important results of a subject-related scientific work (e.g. their final thesis) to a specialist audience. Lecturers, staff and students of the Computer Science degree programme may participate in colloquia.
- (10) In an **internship report**, the candidate should prove that he or she is able to present mathematical-technical or commercial facts in connection with his or her internship in a technically correct manner and to reflect on the entire course of the internship. In addition, the candidate should be trained in how to document technical developments.
- (11) The requirements of a course credit are clearly below the requirements of a module examination or partial credit in terms of form and content. If the form in which a piece of coursework is to be completed for a module is not defined in the module descriptions of the module handbook, it will be announced by the lecturer at the beginning of the course.

### § 8 Additional examinations

In the elective and compulsory elective area, only as many module examinations are credited as are necessary to pass the Master's examination. Students can also take examinations in additional modules. The results are not taken into account in the calculation of the overall grade. They are listed in the Transcript of Records (cf. § 22).

### § 9 Registration and access to modules and module examinations

- (1) Anyone who is enrolled in the Computer Science degree programme and has not lost the examination entitlement in the Computer Science degree programme or a degree programme recognised as equivalent or has passed the examination may be admitted to participate in a module including the module examination.
- (2) In order to take part in a module examination or a partial module examination, students must register. Registration usually takes place in the system f for the registration of study and examination achievements of the Ruhr-Universität Bochum within the deadlines. The specific deadlines will be announced by the examination office in good time.
- (3) In individual cases, registration for a module examination requires that certain academic achievements have been successfully completed in advance. The respective module description in the module handbook in the current version of the documented prerequisites provides information about any academic achievements that may have to be completed in advance.
- (4) Deregistration from a previously registered module examination or partial module examination is possible and takes place via the system for recording study and examination achievements of the Ruhr-Universität Bochum. Deregistration from a module examination with a final examination can be made at the latest 10 days before the start of the examination date without giving reasons. Block practical courses and block seminars during the semester break can be cancelled up to 10 days before the start of the course. Examinations during the semester can be cancelled up to 14 days after the start of lectures.

### § 10 Assessment of modules and formation of grades

- (1) The grades for the individual module examinations are set by the respective examiners. The following grades are to be used for the assessment:

0,7; 1,0; 1,3	very good	an outstanding performance;
1,7; 2,0; 2,3	good	a performance that is significantly above the average requirements;
2,7; 3,0; 3,3	satisfactory	a performance that meets average requirements;
3,7; 4,0	Sufficient	a performance that still meets the requirements despite its shortcomings;
5,0	insufficient	a performance that no longer meets the requirements due to significant defects.

An examination is passed if it has been assessed with a grade of 4.0 or better, in the case of an ungraded examination performance with "passed".

The grading, including the pass mark, of a written examination with multiple choice (MC) questions is to be chosen in such a way that the MC part is passed if at least 60 % of the questions asked are answered correctly or at least 60 %

of the total achievable points have been achieved or, if on the basis of the regulation under a) only 20 % of those taking the examination pass the examination with at least 4.0, the number of correctly answered questions or points achieved does not fall below the average examination performance of the candidates by more than 22 %.

Negative points may not be awarded. If the candidate has answered the minimum number of questions correctly and thus passed the examination, the grade is as follows:

‘very good’ (0.7) if he or she has achieved at least 95 %

‘very good’ (1.0) if they have achieved at least 85% but less than 95%,

‘very good’ (1.3), if she/he achieves at least 75% but less than 85%,

‘good’ (1.7) if she or he achieves at least 67% but less than 75%,

‘good’ (2.0) if she/he achieves at least 59% but less than 67%,

‘good’ (2.3) if she or he achieves at least 50% but less than 59%,

‘satisfactory’ (2.7) if she or he achieves at least 42% but less than 50%,

‘satisfactory’ (3.0) if she/he achieves at least 34% but less than 42%,

‘satisfactory’ (3.3) if she/he achieves at least 25% but less than 34%

‘sufficient’ (3.7) if she or he achieves at least 12% but less than 25%,

‘sufficient’ (4.0), if he or she fulfils none or less than 12 %

or less than 12% of the additional tasks or the additional points.

If he or she does not achieve the required number of points, the grade is ‘insufficient’ (5.0).

If a written examination consists of both multiple choice and other tasks, the multiple choice tasks shall be assessed in accordance with paragraph 2. The other tasks are assessed according to the usual procedure for them. The grade is calculated from the weighted results of both parts of the examination.

- (2) If an examination performance is to be assessed by several examiners, the grade is calculated from the arithmetic mean of the individual examination assessments. This arithmetic mean is rounded up or down to the nearest grade level. If the mean lies exactly between two grade levels, it is rounded down to the better grade. If the grades differ by at least 2.0 or if one grade is "not sufficient" but the other is "sufficient" or better, the examination board shall appoint a third examiner to evaluate the examination performance. The grade is then calculated from the arithmetic mean of the three examination grades, which is rounded according to the same rules as above. However, the grade can only be "sufficient" (4.0) or better if at least two of the proposed grades are "sufficient" (4.0) or better.

## **§ 11 Passing and repeating module examinations**

- (1) A module is passed if the associated module examination is passed or, in individual cases, the partial examinations are passed. For oral or written module examinations, two examination dates are offered per year. Module examinations or partial examinations that have not been passed or are considered failed can be repeated twice. This does not apply to the final thesis (see § 21 Para. 1). On application, a fourth examination attempt can be approved for up to two examinations. This requires that at least 60 LP or an average of 15 LP per semester have already been successfully completed and that the student has participated in an advisory meeting.
- (2) Up to 3 module examinations that have already been passed may be improved once after written registration in the examination office. The best attempt counts. This regulation only applies to modules that include a written or oral examination as a final examination. If the approved grade improvement is not attended (deregistration or certificate), it can only be claimed again for the same examination. If a grade improvement is assessed as not passed (5.0) due to failure, the improvement attempt is thereby used up. The last opportunity for grade improvement is in the semester in which the Master's examination was passed.
- (3) A module examination is definitively failed if all examination attempts have been assessed as "insufficient" (5.0) or "failed" or the candidate can no longer be admitted to an examination. Exmatriculation follows.
- (4) Repeat examinations in written or oral examinations for which there is no possibility of compensation are to be assessed by at least two examiners. If, in the case of an oral examination, no agreement is reached between the two examiners regarding the passing of the examination, the examination must be repeated with 3 examiners; in this case, the majority decision shall apply.

## **§ 12 Compensation for disadvantages and statutory protection periods**

- (1) The statutory maternity protection regulations and periods, the periods of parental leave and the periods of absence due to the care and upbringing of children within the meaning of Section 25 (5) of the Federal Training Assistance Act (Bundesausbildungsförderungsgesetz) as well as due to the care of the spouse, the registered partner or a relative in the direct line or within the first degree of affinity shall be taken into account.
- (2) If the candidate proves by means of a medical certificate that he or she is unable to take an examination in whole or in part in the intended form due to a prolonged or permanent physical disability or chronic illness, the chairperson of the examination board shall allow the candidate to take equivalent examinations in another form.
- (3) As a rule, the application for disadvantage compensation must be submitted to the examination board for each examination and at the latest 4 weeks before the examination date.

## **§ 13 Failure to attend, withdrawal, deception, breach of regulations**

- (1) An examination performance shall be deemed to have been assessed as "insufficient" (5.0)

or "failed" if the candidate fails to appear at an examination date without valid reasons or if he or she withdraws from the examination after it has begun without valid reasons. The same applies if a written examination performance is not completed within the specified processing time.

- (2) The reasons asserted for the withdrawal or failure to attend must be notified to the examination board in writing without delay and must be made credible. In the case of illness of the candidate, the submission of a medical certificate is required, at the latest one week after the missed examination date, and in cases of doubt the certificate of a medical officer of the RUB. The illness of a child who has to be cared for predominantly alone is equivalent to the candidate's illness. If the examination board recognises the reasons for the missed examination, the examination in question will not be counted towards the maximum number of examination attempts.
- (3) In the event of exmatriculation, examinations registered prior to exmatriculation must be taken, provided that the registration has not been revoked in accordance with Paragraph 2 or a justified withdrawal or recognised failure is made and recognised by the examination board, otherwise the examinations are deemed to be "insufficient" (5.0) or "failed".
- (4) In the case of written examinations - with the exception of examinations under supervision - the candidate must certify in writing that he or she has performed the examination without unauthorised outside assistance.
- (5) If the candidate attempts to influence the result of an examination or study performance by cheating or using unauthorised aids, the examination or study performance in question is deemed to have been assessed as "insufficient" (5.0) or "failed". The determination is made by the respective examiner or by the person responsible for the supervision and is recorded in the records. The assessment is made by the examination board. In the case of multiple or other serious attempts at cheating, the candidate can be excluded from taking further examinations and exmatriculated after a prior hearing. A fine of up to € 50,000 may be imposed. A candidate who disrupts the orderly conduct of the examination may, as a rule, be excluded from continuing the examination performance by the respective examiner or the supervisor after a warning. In this case, the examination performance in question is deemed to have been assessed as "insufficient" (5.0). The reasons for the exclusion are to be recorded.
- (6) The software-supported examination of written examinations, including the Master's thesis, shall be carried out as a rule if there is a suspicion of plagiarism. For this purpose, the Master's thesis is to be submitted in examinable electronic form in accordance with § 19 Para. 1. Other written examination papers (term papers, etc.) must also be submitted in examinable electronic form at the request of the examiner.
- (7) The software-supported examination is carried out by the examiner. Plagiarism is detected by the examination board. The students are only informed about the software-supported examination of the written work in the case of suspected plagiarism if plagiarism is detected.
- (8) A plagiarism check of written coursework (term papers etc.) is carried out according to paragraphs 6-7.
- (9) The candidate shall be informed immediately in writing of any adverse decisions, the reasons for them and an appeal notice.

**§ 14 Crediting and recognition of periods of study,  
Course and examination achievements, placement in higher semesters**

- (1) Examination results obtained in study programmes at other state or state-recognised institutions of higher education, at state or state-recognised universities of cooperative education, in study programmes at foreign state or state-recognised institutions of higher education or in another study programme at the same institution of higher education shall be recognised upon application, provided that there is no substantial difference between the acquired competences and the achievements which are being replaced; an examination of equivalence shall not take place. Recognition within the meaning of sentence 1 shall serve the purpose of continuing studies and taking examinations.
- (2) Significant differences exist in particular if the competences acquired do not meet the requirements of the Master's degree programme in Computer Science. In this case, no schematic comparison is to be made, but rather an overall consideration and evaluation. For the recognition or crediting of periods of study, coursework and examinations completed outside the area of application of the Basic Law, the equivalence agreements approved by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany as well as agreements within the framework of university partnerships must be observed. Insofar as agreements and conventions of the Federal Republic of Germany with other states on equivalences in higher education (equivalence agreements) favour students of foreign states in derogation of paragraph 1, the provisions of the equivalence agreements shall take precedence. In case of doubt, the International Office and the Central Office for Foreign Education may be consulted.
- (3) On application, other knowledge and qualifications acquired outside of higher education may be recognised to the extent of a maximum of 50 % of the credit points provided for this degree programme if this knowledge and qualification is equivalent in content and level to the examination achievements which it is intended to replace.
- (4) The examination board is responsible for credits or recognitions according to paragraphs 1 to 3. As a rule, a subject representative shall be heard before determining whether there are significant differences. The student shall submit the documents required for the recognition. After submission of the complete documents, a decision is issued, which is to be provided with instructions on how to appeal, usually within 6 weeks. If the recognition sought on the basis of an application within the meaning of paragraph 1 is refused, the applicant may apply for a review of the decision by the rectorate without prejudice to the procedural deadlines.
- (5) If study and examination achievements are credited, the grades - insofar as the grading systems are comparable - are to be adopted and included in the calculation of the overall grade. In the case of incomparable grading systems, the remark "passed" shall be included. This credit is marked on the transcript and in the Diploma Supplement.
- (6) If the requirements of paragraphs 1 and 2 are met, there is a legal entitlement to credit or recognition.
- (7) On the basis of an application in accordance with paragraph 1 and on additional application by the student, a classification shall be made in the subject semester whose number results from the extent of the LP acquired through recognition in relation to the 120 LP that can be acquired in the Computer Science degree programme. If the first decimal place is smaller than five, the number shall be rounded down to whole semesters, otherwise it shall be rounded up.

## § 15 Examination Board

- (1) For the organisation of the examinations and the tasks assigned by these examination regulations, the Faculty of Computer Science shall form an examination board. The examination board consists of the chairperson, his/her two deputies and six other members with voting rights. The chairperson, the deputies and two further members are elected from the group of professors of the Faculty of Computer Science, one member is elected from the group of academic staff and three members are elected from the group of students. Representatives are elected for the members of the examination board. The term of office of the members from the group of professors and from the group of academic staff is three years, the term of office of the student members is one year. Re-election is permitted. The head of the examination office is an advisory member of the examination committee by virtue of his or her office.
- (2) The examination board is an authority in the sense of administrative procedure and administrative process law.
- (3) The examination board ensures that the provisions of the examination regulations are observed and that the examinations are conducted properly. In particular, it is responsible for deciding on appeals against decisions made in examination procedures and for ensuring that deadlines are met. In addition, the examination board shall regularly, but at least once a year, report to the faculty on the development of examinations and study times and, upon request, on the distribution of module and overall grades. This report shall be published in an appropriate form. It shall provide suggestions for reforming the examination regulations and the study schedule and disclose the distribution of grades and overall grades. The examination board may delegate the performance of its duties to the chairperson and their deputies for all regular cases. This does not apply to decisions on appeals and the report to the faculty.
- (4) The examination board has a quorum if, in addition to the chairperson or one of his/her deputies, two other professors with voting rights or their deputies and at least two other members with voting rights or their deputies are present. It shall decide by simple majority. In the event of a tie, the vote of the chairperson or his/her deputy shall be decisive. The student members of the examination board do not participate in the crediting of study and examination achievements, the setting of examination tasks and the appointment of examiners and assessors.
- (5) The members of the examination board have the right to attend the taking of the examinations.
- (6) The meetings of the audit committee are not public. The members of the examination board and the representatives are subject to official secrecy. If they are not in public service, they shall be sworn to secrecy by the chairperson of the examination board. Minutes shall be taken of the deliberations of the examination board.
- (7) The Examination Committee may avail itself of the administrative assistance of the Examination Office in the performance of its duties.
- (8) The examination board may call in staff members involved in examination administration or the degree programme on a permanent basis or for individual meetings. In this case, the employees have the right to speak but no right to vote.

## **§ 16 Examiners and assessors**

- (1) The examination committee appoints the examiners and the assessors. It may delegate the appointment to the chairperson. Only persons who have acquired at least the academic

qualification corresponding to the respective examination subject may be appointed as examiners and assessors.

- (2) As a rule, examiners should have exercised an independent teaching activity in the subject area to which the examination relates.
- (3) As a rule, a module examination is taken by the examiner who has taught in the module or a course associated with the module. Deviations from this rule are decided by the examination board. The candidate may propose the examiner for examinations for which several examiners can be considered and for the Master's thesis. The candidate's suggestions shall be taken into consideration as far as possible. However, the suggestions do not constitute a claim.
- (4) The chairperson of the examination board shall ensure that the names of the examiners are announced to the candidates in good time, at least two weeks before the date of the respective examination. Announcement by notice board or electronic means of communication is sufficient. The principles of data protection must be observed.
- (5) The examiners are independent in their examination activities.
- (6) Section 15, paragraph 6, sentences 2 and 3 shall apply accordingly to the examiners and assessors.

## **II. Master's examination and Master's thesis**

### **§ 17 Type and scope of the Master's examination**

The Master's examination consists of:

- successfully completed modules according to the curriculum and
- of the Master's thesis including a colloquium presentation.

There is no separate final examination.

### **§ 18 Admission to the thesis**

- (1) Students may be admitted to the thesis if they
  - is enrolled in the Master's programme in Computer Science at the RUB or is admitted as a second student,
  - has registered for the Master's thesis,
  - is not in a similar examination procedure at another higher education institution and has not definitively passed or failed a similar examination,
  - can provide evidence of successfully completed modules amounting to at least 70 LP.
- (2) The application for admission must be submitted in writing to the Examinations Office together with the required evidence in accordance with paragraph 1.
- (3) If the requirements in paragraphs 1 and 2 are not fulfilled, no admission to the thesis shall be granted.

### **§ 19 Thesis**

- (1) The module Final Thesis has a scope of 30 LP and consists of the Master's thesis (27 LP)



and the colloquium (3 LP).

- (2) The Master's thesis is a written examination paper. It is intended to show that the candidate is able to work independently on a demanding problem within a given period of time using scientific methods.
- (3) The Master's thesis can be issued and supervised by any person authorised to conduct examinations in the Computer Science degree programme. Supervision by a person who is not a member of the degree programme is permitted; this requires the consent of the chairperson of the examination committee or his/her deputy.
- (4) The person authorised to examine who issues the topic of the Master's thesis defines the focus in which the thesis falls. This is determined when the thesis is registered. It is possible that a Master's thesis is not assigned to a focus area.
- (5) The student has the right to propose the task and the supervisor of the Master's thesis. The right to propose does not constitute a claim. The topic of the Master's thesis must be registered in writing with the examination board before the start of the processing period. The exact topic is determined by the supervisor of the Master's thesis. The assignment is issued by the chairperson of the examination committee. The time of issue is to be recorded. After registration, a redefinition of the assignment is not permitted. A change of title requires written confirmation by the examiner and the examination committee.
- (6) Upon request, the chairperson of the examination board shall ensure that the candidate receives a topic for a Master's thesis.
- (7) The processing time for the Master's thesis is 6 months. The task and scope of the Master's thesis are to be limited in such a way that the deadline for writing the Master's thesis and the scope of 27 LP can be met.
- (8) The assignment can only be returned once and only within the first 4 weeks of the processing period. In the case of a repetition of the Master's thesis, the return of the topic is only permitted if the candidate did not make use of this option at the first attempt. In individual cases, the examination committee may, upon justified application by the candidate, exceptionally extend the processing time by a grace period of usually up to 4 weeks. In the case of illness, the deadline for submission can be extended by a maximum of 4 weeks. This requires the submission of a medical certificate, in cases of doubt a certificate from a medical officer, at the latest one week after the onset of the illness. The extension corresponds to the period of illness. If the duration of illness exceeds 4 weeks, the candidate will be given a new topic. In total, the processing time can thus be extended by a maximum of eight weeks as a rule. The examination board decides on exceptions.
- (9) The Master's thesis must be written in English.
- (10) colloquium for the Master's thesis is a 30 to 45-minute disputation, which introduced by a short presentation by the candidate in which the results of the Master's thesis are summarised The candidate answers questions about his or her Master's thesis as well as more in-depth topics or questions. The colloquium is part of the thesis. The date of the colloquium is set in consultation with the two examiners. It should be no later than 14 days after the submission date of the Master's thesis. Admission to the colloquium takes place after the master's thesis has been submitted on time.
- (11) As a rule, Master's theses are individual projects. It is possible for several students to work on a topic together. The prerequisite for this is the joint registration of the thesis. In this case, the students jointly prepare a written examination paper. In this document, it must be clearly marked who has done which work. The marking must be sufficiently detailed to be able to identify and assess the individual performance of each student.

## **§ 20 Acceptance and Assessment of the Thesis**

- (1) The Master's thesis must be submitted to the Examinations Office in due time in examinable electronic form in pdf or pdfA format . The date of submission shall be recorded in the records. When handing in the Master's thesis, the candidate must assure in writing that he/she has written his/her thesis independently and has not used any sources and aids other than those indicated and has marked citations. If the Master's thesis is not handed in on time, it is deemed to have been assessed as "insufficient" (5.0). In this case, the colloquium is omitted. In exceptional cases, the thesis may also be submitted in triplicate as a printout.
- (2) The Master's thesis is to be assessed independently by two examiners according to § 15. One of the examiners is the person responsible for the topic and the supervision of the Master's thesis. The second person authorised to examine is appointed by the chairperson of the examination committee. The candidate has the right to propose the second examining person. Each examining person examines and evaluates the Master's thesis. The assessment of the Master's thesis is to be justified in writing by both examiners. The overall assessment of the Master's thesis is formed from the arithmetic mean of the individual assessments. If there is a difference of at least 2.0 or if one grade is "not sufficient" but the other is "sufficient" or better, the examination committee shall appoint a third examiner from among the examiners. In this case, the grade of the Master's thesis is the arithmetic mean of the three grades of the examiners. The mean is rounded as described in § 9.
- (3) The colloquium should generally be assessed by both examiners of the thesis. The grade is then calculated as the arithmetic mean of the grades of the two examiners.
- (4) The grade of the module Final Thesis is calculated as the arithmetic mean of the grades of the Master's thesis and the colloquium weighted with the credit points. The grades of both individual performances must be at least "sufficient" (4.0).
- (5) As a rule, the duration of the assessment procedure of the thesis should not exceed 4 weeks.

## **§ 21 Repetition of the Master's Thesis and the Colloquium**

- (1) The Master's thesis can be repeated once if the performance is insufficient. A new topic must be submitted. The application must be made in the semester following the failure at the latest. In justified exceptional cases, the examination committee may extend the above-mentioned deadline appropriately. Suitable evidence must be enclosed with the application. This applies to
  1. for the care and upbringing of minor children within the meaning of Section 25(5) of the Federal Training Assistance Act by three semesters per child,
  2. for participation as an elected representative in bodies of the university, the student body, the student representative bodies of the student body or the student unions for a total of up to a maximum of four semesters,
  3. for the office of Equal Opportunities Officer by up to a maximum of four semesters,
  4. by the time of the study time-extending effects of a disability or a serious illness,
  5. by up to three semesters for the time during which students assume responsibility for close relatives with care and support needs .

- (2) If the Master's thesis is passed, the colloquium can be repeated once if the performance is insufficient.
- (3) A second repetition is excluded. Failed attempts at other universities are to be credited.
- (4) The module Final Thesis is definitively not passed if either the Master's thesis or the colloquium has been assessed as "insufficient" (5.0) in the second or is deemed to have been assessed as "not sufficient".

### **§ 22 Passing the Master's examination**

- (1) The Master's examination is passed when all required modules have been successfully completed, the final thesis has been passed with at least "sufficient" (4.0) and 120 LP have been achieved.
- (2) The Master's degree programme is completed when the Master's examination is passed.
- (3) The overall grade of the Master's examination is the arithmetic mean of all graded module examinations including the final thesis, weighted with LP.

When calculating the overall grade, only the first decimal point after the comma is taken into account; all other decimal points are deleted without rounding. The grade to be shown on the certificate is:

- With an average up to and including 1.5 = very good
  - With an average of 1.6 up to and including 2.5 = good
  - With an average of 2.6 up to and including 3.5 = satisfactory
  - With an average of 3.6 up to and including 4.0 = sufficient
- (4) The Master's examination is definitively not passed if modules are definitively not passed or if the Master's thesis was assessed with "not sufficient" (5.0) in the second attempt or is deemed to be assessed with "not sufficient". A decision is issued on the failed Master's examination, which must be accompanied by instructions on how to appeal.

## **III. Final provisions**

### **§ 23 Certificate, Diploma Supplement and Certificates**

- (1) As a rule, the graduate will receive a certificate in German and a copy in English within 4 weeks of passing the Master's examination. The certificate shall include:
  - the overall grade of the Master's examination with the average grade as well as the grade designation,
  - the designation of the specialisation according to § 5, if a specialisation has been completed,
  - the topic of the Master's thesis, its assessment and the grade designation,
  - the designations and scope of the individual modules, the assessment of the modules and the grade designation.

The certificate bears the date of the last examination performance. In the case of the final thesis, this is the date of the last partial examination of the module. It also bears the date of

issue. The certificate shall be signed by the chairperson of the examination board or his/her deputy and shall bear the seal of the examination board of the Faculty of Computer Science.

- (2) At the same time as the Master's degree certificate, the graduate receives the Master's degree certificate in German and English. This certifies the award of the Master's degree in accordance with § 2. It bears the date of the last examination and the date of issue. The Master's certificate is signed by the Dean of Studies of the Faculty of Computer Science and bears the seal of the Faculty of Computer Science.
- (3) Together with the certificate, the graduate receives a Diploma Supplement written in English, including a Transcript of Records. The Diploma Supplement provides information on the individual subject profile of the completed degree programme. The Diploma Supplement is signed by the chairperson of the examination board or his/her deputy and bears the seal of the examination board of the Faculty of Computer Science.
- (4) Students who leave the university without a degree will receive a document on the total study and examination achievements (Transcript of Records) upon application.

#### **§ 24 Invalidity of the Master's examination, withdrawal of the academic degree**

- (1) If the candidate has cheated in an examination and this fact only becomes known after the certificate has been issued, the examination board may subsequently correct the marks for those examination performances in the performance of which the candidate cheated and declare the examination failed in whole or in part.
- (2) If the requirements for admission to an examination were not fulfilled without the candidate intending to deceive about this, and if this fact only becomes known after the certificate has been issued, this defect is cured by passing the examination. If the candidate has intentionally obtained admission unlawfully, the examination board shall decide on the legal consequences in compliance with the Administrative Procedure Act for the State of North Rhine-Westphalia.
- (3) Before a decision is taken, the person concerned shall be given the opportunity to state his or her case.
- (4) The incorrect examination certificate shall be withdrawn and, if necessary, a new one issued. A decision pursuant to sub-section 1 and sub-section 2 sentence 2 is only permissible within five years from the date of the award of the degree. The period between the initiation and termination of administrative proceedings to examine the withdrawal of the degree award shall not be included in the five-year period pursuant to sentence 2.
- (5) If the examination as a whole has been declared failed, the academic degree shall be withdrawn by the Faculty of Computer Science and the certificate confiscated.

#### **§ 25 Inspection of the examination files**

- (1) The candidate shall be granted access to the examination documents on request for up to one year after completion of the examination procedure. Time limits within the framework of an appeal procedure remain unaffected by this.
- (2) The application must be submitted to the chairperson of the examination committee. The chairperson shall determine the place and time of inspection in consultation with the person examined. § Section 32 of the Administrative Procedure Act for the State of North

Rhine-Westphalia on restitutio in integrum shall apply accordingly.

### **§ 26 Entry into force and publication**

These examination regulations come into force on the day after their publication in the Official Announcements of the RUB.

Issued on the basis of the resolution of the Faculty Council of the Faculty of Computer Science dated 05.07.2023.

Bochum, the 01. October 2024

The Rector  
of the Ruhr University Bochum

University Professor Dr. Dr. h.c. Martin Paul

## Appendix 1

### Study Plan Master Computer Science Ruhr-University Bochum

Nr.	Module	Size (CP)	Recommended semester	Rating
<b>Compulsory elective area</b>				
1	Compulsory elective modules**	a*	1-3	graded
2	Specialisation modules***	b*	1-3	graded
3	Specialised practical course	c*	1-3	ungraded
4	Specialised seminar	3	1-3	graded
5	Project	10	2-3	graded
<b>Free Elective area</b>				
6	Free elective modules****	20	1-3	ungraded
<b>Final Thesis</b>				
7	Master thesis and colloquium	27+3	4	graded
Total:		120		

\*  $a \geq 15, b \geq 35, 3 \leq c \leq 5; a+b+c \geq 57$

\*\* Here, modules from the compulsory elective catalogue "Basic/Foundation" must be taken. The modules that can be selected are listed in the current module handbook.

\*\*\* Here, modules from the specialisation areas are to be taken. The modules that can be selected are listed in the current module handbook.

\*\*\*\* Here, (almost) all courses of the RUB course catalogue, as well as courses within the framework of the University Alliance Ruhr can be selected, taking into account §4 (2).

## Appendix 2: Procedure for determining the special eligibility

