Examination Regulations (Rules) of the Faculty of Engineering at Kiel University for students of the Bachelor's and Master's degree programmes in Computer Science and Business Information Technology, as well as parts of degree programmes in Computer Science within the scope of the double-subject Bachelor's and Master's degrees leading to a Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Master of Arts (M.A.), Master of Science (M.Sc.) and Master of Education (M.Ed.) - 2019 (Computer Science and Business Information Technology Degree-Specific Examination Regulations - 2019 (FPO))

of 12 July 2019

Based on Section 52 (1) Sentence 1 of the Schleswig-Holstein Higher Education Act (HSG) of 5 February 2016 (GVOBl. Schl.-H., page 39), most recently amended of the Act 10 February 2018 (GVOBl. Schl.-H., page 68), after a resolution was passed by the Faculty Convention of the Faculty of Engineering at the Christian-Albrechts-Universität zu Kiel of 12 June 2019, the following Rules were issued:

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Annexes:

I. General regulations

Section 1
Scope of application

(1) In conjunction with the Examination Procedure Regulations of Kiel University for students of Bachelor's and Master's Degree Programmes (PVO), these degree-specific examination regulations apply to the 1-subject Bachelor's and Master's degree programmes in Computer Science and Business Information Technology. In addition, and in conjunction with the Examination Procedure Regulations (PVO) and Kiel University's Joint Examination Regulations for students of double-subject Bachelor's and Master's degree programmes (Double-Subject Examination Regulations), they also regulate studies in partial degree programmes in Computer Science within the scope of double-subject Bachelor's and Master's degree programmes.

(2) They apply to each module that is part of one of the degree programmes regulated in these examination regulations and for which no other degree-specific examination regulations apply.

Section 2
Examination Boards

Two Examination Boards are formed in accordance with the provisions in the Examination Procedure Regulations (PVO) in order to organise the examinations and the allocated tasks:

(1) The Examination Board for Computer Science is responsible for the 1-subject Bachelor's and Master's degree programmes in Computer Science, as well as for examinations for modules from the Department of Computer Science which are part of these Computer Science degree programmes or purely exported modules. These are the modules in accordance with Annexes 1.1, 1.3 and 1.4.

(2) The Examination Board for Business Information Technology is responsible for the Bachelor's and Master's degree programmes in Business Information Technology, as well as for examinations for modules from the Department of Computer Science which are part of these Business Information Technology degree programmes in accordance with Annex 1.2, but are not part of Computer Science degree programmes. One member of the Examination Board for Business Information Technology should be a member of the Faculty of Business, Economics and Social Sciences.

The Examination Office for Computer Science and Business Information Technology manages the day-to-day business of both Examination Boards.

Section 3
Modules

(1) A (partial) degree programme consists of compulsory modules and individual compulsory elective sections which have certain compulsory elective modules allocated to them. Each compulsory elective section has a minimum and possibly also a maximum number of ECTS credit points. The compulsory and compulsory elective modules for the degree programmes regulated in these examination regulations are set out in Annex 1.

(2) For every (partial) degree programme, examinations must be passed
   1. for all compulsory modules,
   2. in every compulsory elective section, for modules worth at least the minimum number of ECTS credit points and
   3. with an overall number of ECTS credit points to be obtained in the (partial) degree programmes.

(3) Compulsory elective sections can be combined. In this case, an additional minimum number of ECTS credit points is specified and modules from the combined section must be passed which are worth at least the respective minimum number of ECTS credit points.

(4) The responsible Examination Board makes updates to compulsory elective sections; the lecturer who will teach the module and the degree programme coordinator will be consulted before a new module is introduced.

Section 4
Examinations and examination prerequisites

(1) The examinations to be completed for the compulsory and compulsory elective modules regulated in these examination regulations are listed in Annex 1. Detailed information on examinations will be suitably announced at the beginning of the respective semester.

(2) The student may select an oral examination for each last possible examination attempt in a compulsory module for which a written examination is the type of examination.

(3) Additional academic achievements gained during a module can have a positive impact on the result of a written examination. This is only permitted if it is possible to pass the examination without the additional academic achievements and if the best grade can also only be obtained without the additional academic achievements. Individual details will be announced at the start of the module's lectures.

(4) In seminars, students are to demonstrate that they are able to work independently in a field of computer science or business information technology and convey the contents within the framework of a presentation.

(5) In addition, admission to examinations can also be made dependent on the performance of other prerequisites. The individual details can be found in Annex 1.

(6) Evidence of examination prerequisites in accordance with (5) does not need to be provided again for resits. Positive academic achievements in accordance with (3) may only be taken into account for the two examinations offered directly after the module is completed.

(7) For seminars, software projects, the project module, Master's projects, the project group, the research project or the IT security module, there is no opportunity to resit while completing the module at that time. Modules in these categories will be offered every semester, so that it is possible to resit in the following semester.

(8) The concluding project is not a module and may only be repeated once if failed.

Section 5
Teaching and examination language

The teaching and examination languages are German and English. They are specified in the module description. The language in modules for the English Master's programmes is only English. Theses can be written in German or English. Modules in Bachelor's degree programmes are predominantly offered in German. Examinations for compulsory modules in Bachelor's degree programmes must be offered in German.

Section 6
Mobility windows

A semester abroad is recommended during the fifth semester for students on Bachelor's degree programmes. A semester abroad is recommended during the second or third semester for students on Master's degree programmes. As a support measure, students carrying out a stay abroad in the suggested semester will be offered further examination options for the respective following semester, in addition to the compulsory modules to be completed during the semester abroad.

A learning agreement with the Examination Board can be made before the start of the stay abroad regarding recognition of examinations which are planned during a stay abroad.

Section 7
Missing academic achievements and admission to modules

(1) A student is missing a module in a semester if he or she has not yet passed it and the module is intended for a programme schedule that is earlier than his/her current semester (see the respective annex for the subject). Minor subject modules, interdisciplinary key skills and compulsory elective modules are excluded from this.

If a student is missing modules, he or she must attend these as a priority, insofar as they are offered in the current semester. In this case, he or she may attend modules worth a maximum of 35 ECTS credit points and complete examinations for them. Here, priority must be given to modules (especially missing modules) from an earlier semester according to the curriculum in the respective annex to the subject. Participation in examinations for modules that were taken and not missing is only permitted if the registrations for all missing modules in the same examination period are present or the missing modules have been passed in the meantime.

(2) The Examination Board may approve exceptions to the rules in (1) in justified exceptional cases at the student's request.

Section 8
Theses

Bachelor's and Master's theses are to be submitted to the Examination Office on time in digital form and in three written copies, according to the Examination Board's specifications.

Section 9
The Bachelor's thesis, concluding project and final presentation in 1-subject Bachelor's degree programmes

(1) Only students who have achieved at least 130 ECTS credit points in their Bachelor's degree programmes will be admitted to a Bachelor's thesis.

(2) Bachelor's theses can be carried out in the form of an individual paper or a concluding project. The results are presented in a written paper and a final presentation.

(3) In the concluding project, comprehensive issues are addressed by a group, whereby the supervisor must ensure that the issue is divided into parts in a transparent and balanced way. The student's individual share of the work should be worth at least seven ECTS credit points.

(4) The final presentation should present the results of the Bachelor's thesis and last approximately 30 minutes. This is followed by a brief discussion. Members of the Department of Computer Science can be part of the audience in the final presentation if the candidate does not object to this in the application for admission to the Bachelor's thesis.

(5) The Bachelor's thesis is completed in parallel to studies from the start of the lecture period until the end of the respective semester. The application for admission to the Bachelor's thesis must be made in writing to the Examination Office for Computer Science within the first two months of the semester, stating the name of the supervisor. The deadline for submitting the Bachelor's thesis and carrying out the final presentation is the last working day (Monday to Friday) of a semester. If a student takes part in the concluding project, the individual topics are specified by the supervisor two months before the end of the semester at the latest. When carrying out an individual Bachelor's thesis, the supervisor specifies the topic within the first two months of the semester. The specification of the topic is to be recorded on file at the Examination Office for both cases.

(6) The grade for the Bachelor's thesis takes into account the student's processing of the problem, the written paper and the final presentation including the subsequent discussion. In the case of a concluding project, the grading will also consider the involvement in the project phase. The assessment must be announced at the latest 4 weeks after submission of the Bachelor's thesis.

(7) Students may withdraw from a registered Bachelor's thesis once. This is possible within the first six weeks of the topic being issued for an individual Bachelor's thesis, and within the first six weeks of the project phase for a concluding project.

(8) If a Bachelor's thesis is graded 5.0, it may be repeated once. The repeated thesis must be completed during the semester following the failed attempt.

(9) If the repeated Bachelor's thesis is graded 5.0 or if the repeated concluding project is not completed by the deadline, the student has irrevocably failed the Bachelor's examination in Computer Science or Business Information Technology.

Section 10
Calculation of the overall grade in Bachelor's degree programmes

(1) The overall grade in 1-subject Bachelor's degree programmes is calculated from the arithmetic average of the module grades weighted with ECTS credit points and the grade for the Bachelor's thesis or concluding project. Grades in the interdisciplinary key skills section are not incorporated. The grades for the foundation modules of the respective degree programme (see Section 15 or Section 18, structure of curriculum) will only be counted as half of their ECTS credit points.

(2) The overall grade for the partial degree programme in Computer Science as part of the 2-subject Bachelor's degree programmes is calculated from the arithmetic average of all the module grades weighted with ECTS credit points.

(3) If the Bachelor's degree is completed within the standard period of study of six semesters, the lowest examination grades or concluding project grades worth 18 ECTS in the 1-subject Bachelor's degree programmes or 7 ECTS in the 2-subject Bachelor's degree programmes will not be included in the overall grade. Here, all examinations must actually have been completed within the six semesters, i.e. by 30 September (or by 31 March in exceptional cases). If achievements are recognised that were obtained before the start of the degree programme, the student makes an agreement with the Examination Board at the start of his/her studies which regulates the number of achievements he or she must complete by which time, so that the degree can be regarded as equivalent to a degree in the standard period of study. Here, an average of 30 ECTS credit points per semester are to be expected.

Section 11
Master's programmes in the 1-subject Master's degree programmes

In order to help students with their study choices, the university lecturers of the Department of Computer Science define specialization areas and corresponding Master's programmes that can be completed within the standard period of study and offer adequate preparation for a Master's thesis in the university lecturer's working group in the selected specialization area. At the start of their Master's degree programme, students should select a Master's programme that they can modify according to their personal interests. The (if necessary, modified) Master's programme serves as the basis for the Specialist Academic Advisors and the specific academic study advice with the university lecturer responsible for a Master's programme. Any agreements made concerning the selected modules are documented and binding both for the responsible university lecturer and for the students. Alternatively, students may also agree individual study plans with the Specialist Academic Advisors and a supervising university lecturer. Master's programmes will be offered only in German or only in English, for which all modules are held and examined in the respective language.

Section 12
Master's thesis and final presentation in the Master's degree programmes in Computer Science and Business Information Technology

(1) The topic of the Master's thesis is to be determined by the university lecturer responsible for the selected Master's degree programme and be suitable for the chosen specialization area. The choice of task must allow for the Master's thesis to be completed within six months. The topic is issued by the Examination Board and must be recorded. The period for completing the Master's thesis is six months. An extension shall not be longer than half of the preparation period. Section 11 (4) of the Examination Procedure Regulations (PVO) applies for all other purposes.

(2) Students convey the results of their Master's thesis in a presentation lasting 30 to 45 minutes. This is followed by a brief discussion. The presentation is to be held within the preparation period, but at the earliest two months before the end of this period. Members of the Department of Computer Science can be part of the audience in the final presentation if the candidate does not object to this in the application for admission to the Master's thesis.

(3) The grade for the Master's thesis takes into account the written paper, the student's processing of the problem as well as the final presentation including the subsequent discussion.

(4) Students may return the topic of the Master's thesis once within the first two months of the preparation period.

(5) If a Master's thesis is graded 5.0, it may be repeated once. The registration for a repeat attempt at the Master's thesis must be done at the latest three months after the announcement that the first Master's thesis has not been passed. If registration is not done within this time, the Examination Board will issue a topic.

(6) If the repeated Master's thesis is graded 5.0, the student has irrevocably failed the Master's examination in Computer Science.

II. Special provisions for the 1-subject degree programme in Computer Science leading to a Bachelor of Science degree

Section 13
Aim of the degree programme, purpose of the examination

The aim of this degree programme is to convey sound knowledge and skills in computer science. This should initially prepare graduates for work in industry, administration or the service sector, as well as provide the foundations for scientific work in computer science. The Bachelor's examination tests whether the learning targets stated in the Module Handbook have been achieved and determines whether the student has mastered the foundations and methods of the subject and its practical application.

Section 14
Academic title

The student is awarded the academic title of Bachelor of Science (B.Sc.) by the Faculty of Engineering if he or she has passed the Bachelor's examination.

Section 15
Structure of curriculum

(1) The standard period of study is six semesters and encompasses 180 ECTS credit points and approximately 120 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) Studies can only be started in a winter semester. Registration for a higher semester is possible if the required recognised achievements have been met - only into an odd-numbered semester for a winter semester or only into an even-numbered semester for a summer semester.

(3) The Bachelor's degree programme in Computer Science (see Annex 2 for the programme schedule, see Annex 1.1 for modules with examinations) is made up of the following sections:

1. Foundation modules (compulsory) worth 50 ECTS credit points:
   Programming (10 ECTS)
   Computer systems (8 ECTS)
   Mathematics for computer science A (8 ECTS), in accordance with Annex 1.4
   Algorithms and data structures (8 ECTS)
   Operating and communication systems (8 ECTS)
   Mathematics for computer science B (8 ECTS), in accordance with Annex 1.4

2. Advanced modules (compulsory) worth 60 ECTS credit points:
   Advanced programming (10 ECTS)
   Information systems (8 ECTS)
   Mathematics for computer science C (8 ECTS), in accordance with Annex 1.4
   Software engineering (7 ECTS)
   Software project (6 ECTS)
   Theoretical basics in computer science (8 ECTS)
   Logic in computer science (8 ECTS)
   IT security (5 ECTS)

3. Compulsory elective modules in computer science worth 26 to 31 ECTS credit points:
   The Module Handbook for Computer Science lists the compulsory elective modules for the Bachelor's degree programme in Computer Science. These modules are usually made up of a lecture course with an accompanying practical exercise.

4. Interdisciplinary key skills worth 5 ECTS credit points:
   This section includes (within the scope of available capacities) modules from the Key Skills Centre or other modules from the range on offer at Kiel University, after consultation with the academic advisor. Language courses which do not exceed upper

grammar school level (gymnasiale Oberstufe) and modules with computer science or business information technology content do not belong to this section.

5. Seminar module in computer science worth 7 ECTS credit points, in accordance with Annex 1.1.

6. Bachelor's thesis, individual or in a concluding project, worth 12 ECTS credit points in accordance with Section 9.

7. Minor subject worth 15 to 20 ECTS credit points:
Students select a minor subject from the subjects at Kiel University, in which they must complete modules worth 15 to 20 ECTS credit points. Annex 3 lists detailed descriptions of the minor subjects in Business, Electrical Engineering, Mathematics, Law and Economics. Other minor subjects may be agreed in consultation with the Examination Board of the chosen subject and the Examination Board for Computer Science.
The scope of the minor subject can vary between 15 and 20 ECTS credit points, depending on the department offering the course. The sum of the compulsory elective modules in computer science and the modules in the minor subject must be at least 43 in order to achieve the 180 ECTS credit points required for the Bachelor's degree.
If Mathematics is chosen as a minor subject, the modules Mathematics for computer science A to C are omitted. Mathematics modules worth 41 ECTS in accordance with Annex 3 must be completed. Accordingly, compulsory elective modules in computer science worth 26 ECTS must be completed.

III.   **Special provisions for the degree programme in Business Information Technology leading to a Bachelor of Science degree**

Section 16
Aim of the degree programme, purpose of the examination

The aim of this degree programme is to convey sound knowledge and skills in business information technology. This should initially prepare graduates for work in industry, administration or the service sector, as well as provide the foundations for scientific work in business information technology. The Bachelor's examination tests the learning targets stated in the Module Handbook and determines whether the student has mastered the foundations and methods of the subject and its practical applications.

Section 17
Academic title

The student is awarded the academic title of Bachelor of Science (B.Sc.) by the Faculty of Engineering if he or she has passed the Bachelor's examination.

Section 18
Structure of curriculum

(1) The standard period of study is three years and encompasses 180 ECTS credit points and approximately 120 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) Studies can only be started in a winter semester. Registration for a higher semester is possible if the required recognised achievements have been met - only into an odd-numbered semester for a winter semester or only into an even-numbered semester for a summer semester.

(3) The Bachelor's degree programme in Business Information Technology (see Annex 4 for the programme schedule, see Annexes 1.1 and 1.2 for modules with examinations) is made up of the following sections:
1. Foundation modules (compulsory) worth 50 ECTS credit points:
Introduction to business information technology (6 ECTS)
Standard business software (8 ECTS)

Algorithms and data structures (8 ECTS)
Mathematics for computer science A (8 ECTS), in accordance with Annex 1.4
Programming (10 ECTS)
Mathematics for computer science B (8 ECTS), in accordance with Annex 1.4
IT law (2 ECTS)

2. Advanced modules (compulsory) worth 49 ECTS credit points:
Introduction to functional programming (4 ECTS)
Introduction to operations research (8 ECTS)
Information systems (8 ECTS)
Theoretical basics in computer science - introduction (4 ECTS)
Software engineering (7 ECTS)
Operating and communication systems (8 ECTS)
Methods in statistics 1 (10 ECTS)

3. Specialization modules (compulsory) worth 16 ECTS credit points:
Software project (6 ECTS)
Private law (5 ECTS)
IT security (5 ECTS)

4. Business information technology project worth 6 ECTS credit points

5. Seminar module in business information technology worth 7 ECTS credit points, in accordance with Annex 1.2.

6. Business or Economics offers worth 40 ECTS credit points:
Business or Economics offers are alternatives. By selecting the first module that does not appear in both versions, the students define which version they choose. They can change to the other option at any time. For the Bachelor's degree, all modules from one of the two options must be successfully completed.

   a) Business offers, in accordance with Annex 1.6:
   - Introduction to business (5 ECTS)
   - External accounting (5 ECTS)
   - Decision accounting (5 ECTS)
   - Introduction to economics (10 ECTS)
   - Innovation management: processes and methods (5 ECTS)
   - Two modules from the business compulsory elective section (10 ECTS together):
     - Marketing (5 ECTS)
     - Production and logistics (5 ECTS)
     - Basics in technology management (5 ECTS)
     - Management (5 ECTS)
     - Project management (5 ECTS)
     - Business analytics (5 ECTS)
     - Operations research (5 ECTS)
     - Leadership in organizations (5 ECTS)

     If you complete compulsory elective modules, no additional modules can be taken (to improve your grade, for example).

   b) Economics offers, in accordance with Annex 1.6:
   - Introduction to business (5 ECTS)
   - Decision accounting (5 ECTS)
   - Introduction to economics (microeconomics) (5 ECTS)
   - Basic principles in theory of microeconomics (10 ECTS)
   - Basic principles in theory of macroeconomics (10 ECTS)
   - Compulsory elective module for economics (5 ECTS)

7. Bachelor's thesis, individual or in a concluding project, worth 12 ECTS credit points in accordance with Section 9.

IV. **Special provisions for the partial degree programme in Computer Science in the double-subject Bachelor's degree programme leading to a Bachelor of Science or Bachelor of Arts degree**

Section 19
Objective of the degree programme

Graduates have obtained a thorough understanding of the fundamental theories, principles, and methods in computer science as well as basic technological knowledge. They can successfully work in computer-related professional fields in which computer-based tasks or tasks which link computer science with another subject must be solved on a scientific basis. This includes understanding issues in context, generating suitable models, inferring short- and medium-term objectives, and producing and implementing solutions.

Section 20
Structure of curriculum

(1) The standard period of study is six semesters and encompasses 70 ECTS credit points and approximately 50 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) Studies can only be started in a winter semester. Registration for a higher semester is possible if the required recognised achievements have been met - only into an odd-numbered semester for a winter semester or only into an even-numbered semester for a summer semester.

(3) The partial degree programme in Computer Science is made up of the following compulsory modules (see Annex 5 for the programme schedule, see Annex 1 for modules with examinations) worth 70 ECTS credit points all together:

Computer systems (8 ECTS)
Computer science I (2-sub/minor) (8 ECTS)
Computer science II (2-sub/minor) (8 ECTS)
Programming (10 ECTS)
Algorithms and data structures (2-sub) (8 ECTS)
Software engineering (7 ECTS)
Information systems (8 ECTS)
Software project (2-sub) (5 ECTS)
Operating and communication systems (8 ECTS)

V.   Special provisions for the 1-subject degree programme in Computer Science leading to a Master of Science degree

Section 21
Aim of the degree programme, purpose of the examination

The Master of Science (M.Sc.) degree programme in Computer Science is based on the preceding Bachelor's degree programme in Computer Science. It is designed to teach students advanced computer science skills and methods, expand and solidify their academic knowledge and lay the foundations for the development of young researchers. This includes enabling students to master the principles and methods of computer science for independent work and forming the basis of ongoing and critical discussion of developments in the subject. The selection of teaching content takes developments in the subject of computer science into account and is defined in good time as a "Master's programme" or created individually for students in agreement with a department representative.

The Master's transcript and Master's certificate document a professional and academic qualification obtained on completion of the Computer Science degree programme. These documents prove that the holder grasps the contexts of the subject, is able to apply the academic methods and knowledge independently, and has acquired the necessary in-depth specialist knowledge of the subject for the transition to professional practice.

Section 22
Academic title

The student is awarded the academic title of Master of Science (M.Sc.) by the Faculty of Engineering if he or she has passed the Master's examination.

Section 23
Admission to the Master's degree programme

Admission to the Master of Science degree programme in Computer Science is only permitted if the candidate has a recognised, eligible Bachelor's degree that is comparable to the Bachelor of Science in Computer Science offered at Kiel University.

Section 24
Structure of curriculum

(1) The standard period of study for the Master's degree programme is four semesters. The degree programme encompasses 120 ECTS credit points and covers around 80 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) The degree programme may be started in a winter or a summer semester.

(3) The degree programme is made up of the following:
   1. Compulsory elective modules in computer science worth 60 to 65 ECTS credit points: In order to achieve sufficient breadth of subject matter in the degree programme, students must obtain at least twelve ECTS credit points in both theoretical computer science and practical computer science. The Examination Board makes decisions on the allocation of modules to theoretical and practical computer science after consultation with the lecturers for the respective areas, and documents this allocation in the Module Handbook (in the module database, modules in Annex 1).
   2. Master's seminar in computer science worth 5 ECTS credit points: The aim of the Master's seminar is to produce an independent analysis of the scientific themes of computer science, write scientific texts and present scientific findings. The Module Handbook for Computer Science lists the Master's seminars for the Master's degree programme in Computer Science.
   3. Master's project in computer science worth 10 ECTS credit points:

The aim of the Master's project is to produce an intensive and practical analysis of a current computer science topic. Its content should focus, in particular, on the fields of problem analysis, specification and implementation. The Master's project should normally be a group project so that aspects of group and project work are learnt in addition to specialist content. The results of the Master's project should be conveyed within the framework of a presentation.

4. As an additional option, students can choose one of the following two types of module (see Annex 1 for details):
   - Research project (involvement in a working group) worth up to 10 ECTS credit points
   - Project group worth up to 20 ECTS credit points.
   If students have not completed a project group, they can either attend a second Master's seminar, a second Master's project or a research project. The credit points obtained are allocated to the compulsory elective modules in computer science, but do not replace any modules from theoretical or practical computer science.

5. Optional section from another field worth 10 to 15 ECTS credit points:
   In this section, students may select modules offered at Kiel University that are not also available in another area of this degree programme. Language courses that do not go above upper secondary school level cannot be chosen.

6. In addition to a free choice of any module students may also select a coordinated minor subject in the optional section from another field. The minor subject may either be consecutive in character, continuing the same minor subject taken from the Bachelor's degree programme, or it may be a completely new minor subject. The Module Handbook lists possible minor subjects together with the modules to be completed. Other minor subjects may be agreed in consultation with the Examination Board of the chosen subject and the Examination Board for Computer Science. The minor subject should be decided prior to allocation of the first module of the minor subject. The minor subject is stated on the certificate.

7. The total of 75 ECTS credit points must be obtained in the compulsory elective section of computer science and the optional section from another field.

8. Master's thesis worth 30 ECTS credit points:
   Students produce a Master's thesis to complete their Master's degree programme. Details are provided in Section 12.

Section 25
Calculation of the final grade

The overall grade is calculated from the arithmetic average of the module grades weighted with ECTS credit points, excluding grades from optional subjects outside the field of computer science. Ungraded modules, such as the research project, are also not included in the final grade.

VI. **Special provisions for the degree programme in Business Information Technology leading to a Master of Science degree**

Section 26
Aim of the degree programme, purpose of the examination

The Master of Science (M.Sc.) degree programme in Business Information Technology is based on the preceding Bachelor's degree programme in Business Information Technology. The aim of the consecutive degree programme is to convey sound knowledge and skills in business information technology. This prepares graduates for work in industry, administration or the service sector, as well as for scientific work in business information technology. This includes enabling students to master the principles and methods of business information technology for independent work and forming the basis of ongoing and critical discussion of developments in the subject. The selection of teaching content takes developments in the subject of business information technology into account and is defined in good time as a "Master's programme" (see also Section 11) or created individually for students in agreement with a department representative.

The Master's transcript and Master's certificate document a professional and academic qualification obtained on completion of the Business Information Technology degree programme. These documents prove that the holder grasps the contexts of the subject, is able to apply the academic methods and knowledge independently, and has acquired the necessary in-depth specialist knowledge of the subject for the transition to professional practice.

Section 27
Academic title

The student is awarded the academic title of Master of Science (M.Sc.) by the Faculty of Engineering if he or she has passed the Master's examination.

Section 28
Admission to the Master's degree programme

Admission to the Master of Science degree programme in Business Information Technology is only permitted if the candidate has a recognised, eligible Bachelor's degree that is comparable to the Bachelor of Science in Business Information Technology offered at Kiel University. Related Bachelor's degrees (such as Computer Science with Business as a minor subject or an Economics and Business degree with Computer Science as a minor subject) can entitle a student to admission, if the modules that need to be made up do not exceed 30 ECTS credit points, under consideration of the modules from the Bachelor's degree programme which are to be recognised for the Master's degree. The Chairperson of the Examination Board decides whether admission requirements have been met, and especially whether a proper qualification exists, on the basis of an individual assessment.

Section 29
Structure of curriculum

(1) The standard period of study for the Master's degree programme in Business Information Technology is four semesters. The degree programme encompasses 120 ECTS credit points and covers around 80 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) The degree programme may be started in a winter or a summer semester.

(3) Compulsory elective modules worth 90 ECTS credit points in total must be successfully completed in the consecutive Master's degree programme in Business Information Technology. Here, modules in accordance with Annex 1 must be completed in the following sections with the corresponding number of ECTS credit points:

1. Compulsory elective modules in business information technology worth at least 20 ECTS

2. Master's seminar in business information technology worth at least 5 ECTS

3. Master's project in business information technology worth at least 10 ECTS (see Annex 1.2 for modules)

4. Compulsory elective modules in computer science worth at least 20 ECTS and no more than 28 ECTS. Students who have not completed the following modules in the Bachelor's degree programme:
   ▪ Theoretical basics in computer science - introduction (4 ECTS)
   ▪ Introduction to functional programming (4 ECTS)
   or other comparable modules, must successfully complete these modules in this section.

5. Foundations and background worth no more than 8 ECTS

6. Economics and Business worth exactly 20 ECTS.
   Several course options are offered as alternatives in this section. These are described in Annex 6. It is not necessary to specify the options. For the Master's degree, one of the options must be successfully completed.

7. As an additional option, students can choose one of the following two types of module (see Annex 1.2 for details):
   ▪ Research project (involvement in a working group) worth up to 10 ECTS credit points
   ▪ Project group worth up to 20 ECTS credit points.
   If students have not completed a project group, they can either attend a second Master's seminar, a second Master's project or a research project. The ECTS credit points gained will be counted towards the compulsory elective modules in the business information technology section.

8. The written Master's thesis marks the conclusion of the Master's degree programme. It encompasses 30 ECTS credit points. Details are provided in Section 12.

Section 30
Calculation of the overall grade

The overall grade is calculated from the arithmetic average of the module grades weighted with ECTS credit points, excluding grades from the foundations and background section. Ungraded modules, such as the research project, are also not included in the final grade.

VII. **Special provisions for the partial degree programme in Computer Science in the 2-subject Master's degree programme leading to a Master of Education or Master of Science (Business Education) degree**

Section 31
Objective of the degree programme

Graduates possess a solid knowledge of computer science itself and are familiar with its approaches to thinking and working. The contents of the degree programme are oriented towards the requirements for lessons at grammar schools, secondary schools and vocational schools, but also enable graduates to independently improve their skills continuously and to adapt to a changing work environment. Graduates are also skilled in comprehensive computer science lesson planning. They can use this specialist knowledge for planning, conducting and evaluating lessons in computer science.

Section 32
Structure of curriculum

(1) The standard period of study is four semesters and encompasses 33 ECTS credit points and approximately 25 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) The degree programme may be started in a winter or a summer semester.

(3) The partial degree programme (see Annex 7 for the programme schedule, see Annex 1 for modules with examinations) is made up of the following modules:
   1. Designing computer science lessons (3 ECTS)
   2. A topic of computer science and preparing it for teaching (10 ECTS)
   3. Teaching and learning in computer science - consolidation (5 ECTS)
   4. IT security (5 ECTS)
   5. Compulsory elective modules in computer science worth at least 10 ECTS credit points, of which at least 2 ECTS must address the field of "IT-people-society". Potential compulsory elective modules for this section are listed in the Department of Computer Science's module database.

VIII. **Special provisions for the partial degree programme in Computer Science in the 2-subject Master's degree programme leading to a Master of Arts or Master of Science degree**

Section 33
Objective of the degree programme

Graduates have acquired a critical, in-depth understanding of a specific area of computer science, encompassing its theories, principles, and methods, as well as the corresponding technological knowledge. They can successfully work in computer-related professional fields in which computer-based tasks or tasks which link computer science with another subject must be solved on a scientific basis. This includes understanding more complex issues in the corresponding subject area in context, generating suitable models, inferring short- and medium-term objectives, and producing and implementing solutions.

Section 34
Structure of curriculum

(1) The standard period of study is four semesters and encompasses 45 ECTS credit points and approximately 29 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS).

(2) The degree programme may be started in a winter or a summer semester.

(3) The partial degree programme (see Annex 8 for the programme schedule, see Annex 1 for modules with examinations) is made up of the following:

1. A general optional section worth 18 ECTS. The Module Handbook for Computer Science lists the compulsory elective modules for computer science. These modules are usually made up of a lecture course with an accompanying practical exercise. Modules that have already been completed in the Bachelor's degree programme may not be repeated.

   The aim of the Master's seminar (2-sub) is to produce an independent analysis of the scientific themes of computer science, write scientific texts and present scientific findings. The Module Handbook for Computer Science lists the Master's seminars for the Master's degree programme in Computer Science.

2. A Master's seminar (2-sub) in computer science worth 7 ECTS credit points.

3. A Master's project in computer science worth 10 ECTS credit points.
   The aim of the Master's project is to produce an intensive and practical analysis of a current computer science topic. Its content should focus, in particular, on the fields of problem analysis, specification and implementation. The Master's project should normally be a group project so that aspects of group and project work are learnt in addition to specialist content. The results of the Master's project should be conveyed within the framework of a presentation.

4. The compulsory module "Theoretical basics in computer science (2-sub)". If evidence of achieving the learning targets of this module has been provided in the Bachelor's degree programme (e.g. due to a degree being completed in accordance with older examination regulations), then the compulsory module "Inf-TGI-2F" is omitted, and the minimum number of ECTS credit points for the compulsory elective section increases to 30 ECTS.

IX.   Final provisions

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Section 35
Transitional provisions

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Students who started their degrees before the winter semester 2019/20 can complete their studies in accordance with the respectively valid degree-specific examination regulations until the end of the winter semester 2022/23. Students who have not completed their degree programme by this time will automatically switch to the new degree-specific examination regulations. Accomplished achievements are recognised in accordance with the Recognition Rules if a student changes to these degree-specific examination regulations. Failed attempts at examinations in modules which are to be recognised do not lapse, but are still counted.

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Section 36
Entry into force and expiry

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(1) These rules enter into force on 1 October 2019. They apply to all students of Computer Science and Business Information Technology who start their degrees as from the winter semester 2019/2020.

(2) At the same time, the following Examination Regulations (Rules) for students of Computer Science and Business Information Technology within the 1-subject and 2-subject Bachelor's and Master's degree programmes at Kiel University cease to be in force:

1. Degree-specific examination regulations for Computer Science (1-subject, Bachelor) of 10 June 2015 (NBl. HS MSGWG Schl.-H. p. 137).

2. Degree-specific examination regulations for Computer Science (1-subject, Master) of 10 June 2015 (NBl. HS MSGWG Schl.-H. p. 129).

3. Examination Regulations (Rules) of the Faculty of Engineering at Kiel University for students of the partial degree programmes in Computer Science within the scope of the double-subject Bachelor's and Master's degrees leading to a Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Master of Arts (M.A.), Master of Science (M.Sc.) and Master of Education (M.Ed.) degrees of 28 June 2017 (NBl. HS MSGJFS Schl.-H. p. 53).

4. Degree-specific examination regulations for Business Information Technology (1-subject, Bachelor) - 2017 of 24 November 2017 (NBl. HS MBWK Schl.-H. p. 95).

5. Degree-specific examination regulations for Business Information Technology (1-subject, Master) of 10 June 2015 (NBl. HS MSGWG Schl.-H. p. 129).

The University Board at Kiel University granted its approval in accordance with Section 52 (1) 1 of the Schleswig-Holstein Higher Education Act in its letter dated 11 July 2019.

Kiel, 12 July 2019

Prof. Dr Hermann Kohlstedt
Dean of the Faculty of Engineering
at Kiel University

Annexes

Annex 1: Modules from the degree programmes at the Department of Computer Science

The following list shows all the modules at the Department of Computer Science which are used in a degree programme at the department or exported to other degree programmes. The module lists are organised as follows:

Module code: Module title (list of the degree programmes the module is used in[1])
Number of ECTS, duration, types of course with number of hours
Type of examination, graded/not graded (prior requirements: if one is needed, it will be specified here)

The following abbreviations are used in the list of degree programmes:
BSc-Inf = 1-subject Bachelor's degree programme in Computer Science
BSc-WInf = 1-subject Bachelor's degree programme in Business Information Technology
2F-BSc = 2-subject Bachelor's degree programme in Computer Science
MSc-Inf = 1-subject Master's degree programme in Computer Science
MSc-WInf = 1-subject Master's degree programme in Business Information Technology
E-Technik = Bachelor's degree programme in Electrical Engineering and Information Technology
WIng-ETIT = Bachelor's degree programme in Electrical Engineering, Information Technology and Business Management
2F-MED = 2-subject Master of Education
2F-MSc-WP = 2-subject Master of Science Business Education
2F-MA/MSc = 2-subject Master of Arts/Science
Export = important exported modules for other departments at the university. More and other modules are also exported for the optional sections.

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

1.1 List of modules for Computer Science

Inf-ADS: Algorithms and data structures (BSc-Inf, BSc-WInf)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework, programming tasks)

Inf-ADS: Algorithms and data structures (2F) (BSc-Inf, BSc-WInf)
8 ECTS, 2 semesters, V3 Ü3
Written examination, graded (prior requirements: homework, programming tasks)

Inf-BSKS: Operating and communication systems (BSc-Inf, BSc-WInf, 2F-BSc)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-CompSys: Computer systems (BSc-Inf, BSc-WInf, 2F-BSc, Export (E-Technik, WIng-ETIT))
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

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1 Some modules can also be used as compulsory elective modules in other degree programmes to the ones given here. The lists of potential modules in the compulsory elective sections are listed in the Department of Computer Science's module database.

Inf-ITSec5: IT security (BSc-Inf, BSc-WInf, 2F-MED, 2F-MSc-WP)
5 ECTS, 1 or 2 semesters, PÜ6 and V2, students on BSc Inf can also complete a work experience placement (P2) on the topic of IT security at an IT company instead of the lecture on data protection (V2).
Certificates for the experiments (prior requirements: attendance at the work experience placement, 6 SWS) and a written examination on the data protection lecture or a report on the work experience placement if this is selected, not graded

Inf-FortProgP: Advanced programming (BSc-Inf, MSc-WInf)
10 ECTS, 1 semester, V4 Ü2 PÜ1 written examination, graded (prior requirements: certificates, homework, attendance at the practical exercise)

Inf-EinfFP: Introduction to functional programming (BSc-WInf)
4 ECTS, 1 semester, V2 Ü1
Written examination, graded (prior requirements: homework)

Inf-I2-2F: Computer science II (2F) (2F-BSc)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-InfRecht: IT law (BSc-WInf)
2 ECTS, 1 semester, V2
Written examination, graded

Inf-IS: Information systems (BSc-Inf, BSc-WInf, 2F-BSc, Export)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-LogInf: Logic in computer science (BSc-Inf)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-ProgOO: Programming (BSc-Inf, BSc-WInf, 2F-BSc, Export (Mathematics))
10 ECTS, 1 semester, V4 Ü2 PÜ2 written examination, graded (prior requirements: certificates, homework, attendance at the practical exercise)

Inf-SP: Software project (BSc-Inf, BSc-WInf)
6 ECTS, 1 semester, PÜ3S1
Regular approval of the software development tasks as well as the pro-seminar presentation and a concluding presentation of the software system created, graded (prior requirements: involvement in the project)

Inf-SP2F: Software project (2F) (2F-BSc)
5 ECTS, 1 semester, PÜ3
Regular approval of the software development tasks as well as the concluding presentation of the software system created, graded (prior requirements: involvement in the project)

Inf-ST: Software engineering (BSc-Inf, BSc-WInf, 2F-BSc)
7 ECTS, 1 semester, V3 Ü2
Written examination, graded (prior requirements: homework)

Inf-TGI: Theoretical basics in computer science (BSc-Inf, MSc-WInf)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-TGIE: Theoretical basics in computer science - introduction (BSc-WInf)
4 ECTS, 1 semester, V2 Ü1
Written examination, graded (prior requirements: homework)

Inf-TGI-2F: Theoretical basics in computer science (2F) (2F-MA/MSc)
12 ECTS, 2 semesters, V6 Ü3
Assessment interview, graded (prior requirements: homework)

Compulsory elective modules for computer science (BSc-Inf, MSc-Inf, MSc-WInf, 2F-MED, 2F-MSc-WP, 2F-MA/MSc)
6 -10 ECTS, 1 semester, V2-4 Ü1-2 PÜ0-2
Oral examination (also as a group exam) or written examination, graded (potential prior requirements: homework)
Continually varying selection, which can be taken from the Module Handbook (module database) for the Department of Computer Science. Examinations and necessary prior requirements are also listed there in detail.

Compulsory elective modules for theoretical computer science (MSc-Inf)
6-10 ECTS, 1 semester, V2-4 Ü1-2
Oral examination (also as a group exam) or written examination, graded (potential prior requirements: homework)
Continually varying selection, which can be taken from the Module Handbook (module database) for the Department of Computer Science. Examinations and necessary prior requirements are also listed there in detail. These modules are special compulsory elective modules on contents of theoretical computer science.

Compulsory elective modules for practical computer science (MSc-Inf)
6-10 ECTS, 1 semester, V2-4 Ü1-2
Oral examination (also as a group exam) or written examination, graded (potential prior requirements: homework)
Continually varying selection, which can be taken from the Module Handbook (module database) for the Department of Computer Science. Examinations and necessary prior requirements are also listed there in detail. These modules are special compulsory elective modules on contents of practical computer science.

Seminar modules in computer science (Bsc-Inf)
7 ECTS, 2 semesters, V1 Ü1 S2
Seminar presentation (or several short presentations) and preparation of a portfolio, graded (prior requirements: homework from the lecture on scientific work)
Continually varying selection of seminar topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Master's seminars in computer science (MSc-Inf)
5 ECTS, 1 semester, S2
Seminar presentation (or several short presentations) and preparation of a portfolio, graded
Continually varying selection of seminar topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Master's seminars in computer science (2F) (2F-MA/MSc)
7 ECTS, 2 semesters, V1 Ü1 S2
Seminar presentation (or several short presentations) and preparation of a portfolio, graded (prior requirements: homework from the lecture on scientific work)

Continually varying selection of seminar topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Master's projects in computer science (MSc-Inf, 2F-MA/MSc)
10 ECTS, 1 semester, PÜ4
Involvement in the project and presentation of the project, graded
Continually varying selection of project topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Research project (Msc-Inf)
1-10 ECTS, 1-2 semesters, no lectures
Research work and producing a project report and project journal, not graded
Involvement in a research group at the department, no concrete module as the research work is individually discussed.

Project group (MSc-Inf)
15-20 ECTS, 2 semesters, PÜ6-8
Involvement in the project and presentation of the project, graded
Version of the Master's project which spreads over two semesters. Continually varying selection of project topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Inf-ProgTech: Programming techniques (Export (Physics))
4 ECTS, 1 semester, V2 Ü1
Written examination, graded (prior requirements: homework)
Exported module, particularly for the Physics BSc.

1.2 List of modules for Business Information Technology

WInf-BetrStan: Standard business software (BSc-WInf)
8 ECTS, 1 semester, V2 PÜ3
Written examination, graded (prior requirements: certificates, homework, attendance at the practical exercise)

WInf-EinfWInf: Introduction to business information technology (BSc-WInf)
6 ECTS, 1 semester, V3 Ü2
Written examination, graded (prior requirements: homework)

WInf-EinfOR: Introduction to operations research (BSc-WInf)
8 ECTS, 1 semester, V2 Ü2 PÜ1
Written examination, graded (prior requirements: homework, attendance at the practical exercise, programming tasks)

Project on business information technology (Bsc-WInf)
6 ECTS, 1 semester, PÜ3 S1
Regular approval of the project process as well as the concluding presentation and documentation of the project results, graded (prior requirements: involvement in the project)

Seminar modules in business information technology (Bsc-Inf)
7 ECTS, 2 semesters, V1 Ü1 S2
Seminar presentation (or several short presentations) and preparation of a portfolio, graded (prior requirements: homework from the lecture on scientific work)
Continually varying selection of seminar topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Compulsory elective modules in business information technology (MSc-WInf)
6 -10 ECTS, 1 semester, V2-4 Ü1-2 PÜ0-2
Oral examination (also as a group exam) or written examination, graded (potential prior requirements: homework)
Continually varying selection, which can be taken from the Module Handbook (module database) for the Department of Computer Science. Examinations and necessary prior requirements are also listed there in detail.

Master's seminars in business information technology (MSc-WInf)
5 ECTS, 1 semester, S2
Seminar presentation (or several short presentations) and preparation of a portfolio, graded
Continually varying selection of seminar topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Master's projects in business information technology (MSc-WInf)
10 ECTS, 1 semester, Ü1 PÜ4
Involvement in the project and presentation of the project, graded
Continually varying selection of project topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Research project (Msc-WInf)
1-10 ECTS, 1-2 semesters, no lectures
Research work and producing a project report and project journal, not graded
Involvement in a research group at the department, no concrete module as the research work is individually discussed.

Project group in business information technology (MSc-WInf)
15-20 ECTS, 2 semesters, PÜ6-8
Involvement in the project and presentation of the project, graded
Version of the Master's project which spreads over two semesters. Continually varying selection of project topics, which can be taken from the Module Handbook (module database) for the Department of Computer Science.

Modules in the foundations and background section (MSc-WInf)
5-8 ECTS, 1 semester, various forms of teaching
Oral examination (also as a group exam) or written examination, graded (potential prior requirements: homework)
Continually varying selection, which can be taken from the Module Handbook (module database) for the Department of Computer Science. Examinations and necessary prior requirements are also listed there in detail.

1.3 List of modules on education for Studies in Secondary Education (Profil Lehramt) for the 2-subject Bachelor's degree programme in Computer Science:

Inf-FD-LeLe: Basics of subject-based teaching and learning (2F-BSc Profil Lehramt/Wirtschaftspädagogik)
2.5 ECTS, 1 semester, V1 S1
Portfolio, graded

Inf-FD-DiPro: Planning, carrying out and analysing lessons in computer science (2F-BSc Profil Lehramt/Wirtschaftspädagogik)
3 ECTS, 1 semester, S2
Portfolio

1.4 List of modules on education for the 2-subject Master's degree programme leading to a Master of Education or Master of Science (Business Education) degree:

Inf-FD-Kombi: A topic of computer science and preparing it for teaching (2F-MED, 2F-MSc-WP)
10 ECTS, 1 semester, V4Ü2S1
Assessment interview, graded (prior requirements: homework)

Inf-FD-LeLeV: Teaching and learning in computer science - consolidation (2F-MED, 2F-MSc-WP)
5 ECTS, 1 semester, V1S2
Portfolio, graded

Inf-FD-IUG: Designing computer science lessons (2F-MED, 2F-MSc-WP)
3 ECTS, 1 semester, PÜ2, compulsory attendance
Portfolio or oral examination, graded

1.5 Imported modules from Mathematics, which are used as compulsory modules in degree programmes at the Department of Computer Science:

Inf-MathA: Mathematics for computer science A (BSc-Inf, BSc-WInf)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-MathB: Mathematics for computer science B (BSc-Inf, BSc-WInf)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

Inf-MathC: Mathematics for computer science C (BSc-Inf, MSc-WInf)
8 ECTS, 1 semester, V4 Ü2
Written examination, graded (prior requirements: homework)

1.6 Imported modules from Economics and Business, which are used as compulsory modules[2] in degree programmes at the Department of Computer Science:

BWL-EinfBWL: Introduction to business (BSc-WInf)
5 ECTS, 1 semester, V2Ü1
Written examination, graded

VWL-EVWL: Introduction to economics (BSc-WInf)
10 ECTS, 1 semester, V4Ü2
Written examination, graded

BWL-ER: Decision accounting (BSc-WInf)
5 ECTS, 1 semester, V2Ü1
Written examination, graded

BWL-ERW: External accounting (BSc-WInf)
5 ECTS, 1 semester, V2Ü1
Written examination, graded

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2 Some of these modules are not compulsory modules because they only appear in one of the two economics and business versions or modules can only be selected in the versions.

VWL-EVWL-Mikro: Introduction to economics - microeconomics (BSc-WInf)
5 ECTS, 1 semester, V2Ü1
Written examination, graded

VWL-MAKRO: Basic principles in macroeconomic theory (BSc-WInf)
10 ECTS, 1 semester, V4Ü2
Written examination, graded

VWL-MIKRO: Basic principles in microeconomic theory (BSc-WInf)
10 ECTS, 1 semester, V4Ü2
Written examination, graded

BWL-InnoMProz: Innovation management: processes and methods (BSc-WInf)
5 ECTS, 1 semester, V2Ü1
Written examination, graded

VWL-STAT1: Methods in Statistics I (BSc-WInf)
10 ECTS, 1 semester, V4Ü2
Written examination, graded

1.7 Imported modules from Law, which are used as compulsory modules in degree programmes at the Department of Computer Science:

BWL-JuPriv: Private law (BSc-WInf)
5 ECTS, 1 semester, V4
Written examination, graded

Annex 2: Programme schedule for the Bachelor's degree programme in Computer Science

Sem.	Module code	Module name	SWS	Type of examination	(C/CE)	ECTS
1	Inf-ProgOO	Programming	V4Ü2PÜ2	Written examination	Compulsory	10
1	Inf-CompSys	Computer systems	V4Ü2	Written examination	Compulsory	8
1	Inf-MathA	Mathematics for computer science A	V4Ü2	Written examination	Compulsory	8
2	Inf-ADS	Algorithms and data structures	V4Ü2	Written examination	Compulsory	8
2	Inf-BSKS	Operating and communication systems	V4Ü2	Written examination	Compulsory	8
2	Inf-MathB	Mathematics for computer science B	V4Ü2	Written examination	Compulsory	8
2		Interdisciplinary key skills				5
3	Inf-FortProgP	Advanced programming	V4Ü2PÜ1	Written examination	Compulsory	10
3	Inf-IS	Information systems	V4Ü2	Written examination	Compulsory	8
3	Inf-MathC	Mathematics for computer science C	V4Ü2	Written examination	Compulsory	8
4	Inf-ST	Software engineering	V3Ü2	Written examination	Compulsory	7
4	Inf-SP	Software project	PÜ3S1	Project work, presentation	Compulsory	6
4	Inf-TGI	Theoretical basics in computer science	V4Ü2	Written examination	Compulsory	8
4		Compulsory elective module in computer science			Compulsory elective	4
4		Bachelor's seminar (part: scientific work)	V1Ü1	Prior requirements for the Bachelor's seminar	Compulsory	3
5	Inf-ITSec5	IT security	PÜ6 and V2 / P2	Certificates, written examination or project report	Compulsory	5
5	Inf-LogInf	Logic in computer science	V4Ü2	Written examination	Compulsory	8
5		Bachelor's seminar (2nd part)	S2		Compulsory	4
5		Compulsory elective module in computer science			Compulsory elective	8
6		Compulsory elective module in computer science			Compulsory elective	15
6		Bachelor's thesis (individual or project)		Preparation, presentation	Compulsory	12

In addition, modules must be completed for a minor subject worth 15 to 20 ECTS credit points.

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

Annex 3: Study plans for selected minor subjects in the 1-subject Bachelor's degree programme in Computer Science

Business as a minor subject

The following 20 ECTS credit points must be obtained in Business as a minor subject:

> Introduction to business (5 ECTS)
> External accounting (5 ECTS)
> Decision accounting (5 ECTS)
> Compulsory elective section (5 ECTS) with one of the following modules:
>
> > Marketing (5 ECTS)
> > Production and logistics (5 ECTS)
> > Basics in technology management (5 ECTS)
> > Management (5 ECTS)
> > Project management (5 ECTS)
> > Operations research (5 ECTS)
> > Leadership in organizations (5 ECTS)
> > Business analytics (5 ECTS)

Electrical Engineering as a minor subject

The following 20 ECTS credit points must be obtained in Electrical Engineering as a minor subject:
Fundamentals of electrical engineering I (7 ECTS)
Fundamentals of electrical engineering II (7 ECTS)
Theoretical basics of information technology (6 ECTS)

One of the following modules can be selected as an alternative to the theoretical basics of information technology module:

Electrical power technology (4 ECTS) or
Signals and systems I (7 ECTS) or
Fundamentals of electrical engineering III (7 ECTS)

If this results in more than 20 ECTS credit points, the extra credit points from the module with the lowest mark will not be calculated towards the overall grade. If the student selects 'Electrical power technology' and only ends up with 18 ECTS credit points, two additional credit points must be obtained from the compulsory elective modules in computer science.

Mathematics as a minor subject

In Mathematics as a minor subject, the modules Mathematics for computer science A, B and C are omitted. The following modules must be completed instead or as well:

> Linear algebra I (8 ECTS)
> Linear algebra II (8 ECTS)
> Analysis I (8 ECTS)
> Analysis II (8 ECTS)
> One additional module from the Bachelor's degree programme in Mathematics worth 9 ECTS, such as Introduction to numerics (9 ECTS)

Law as a minor subject

The following 18 ECTS credit points must be obtained in Law as a minor subject:

Introduction to public law (5 ECTS)
Private law (5 ECTS)
IT law and data protection (4 ECTS)
Copyright law (4 ECTS)

The lecture on data protection can also be used instead of an IT security work experience placement, as part of the IT security module (5 ECTS). In this case, students only obtain 16 ECTS credit points for Law as a minor subject.

Economics as a minor subject

Students can choose between the following three versions with 20 ECTS credit points each in Economics as a minor subject:

Version 1:
Basic principles in theory of microeconomics (10 ECTS)
Basic principles in theory of macroeconomics (10 ECTS)

Version 2:
Basic principles in theory of microeconomics (10 ECTS)
Courses in the field of "microeconomics & financial science" (10 ECTS)

Version 3:
Basic principles in theory of macroeconomics (10 ECTS)
Courses in the field of "macroeconomics & labour markets" (10 ECTS)

The Department of Computer Science lists additional minor subjects in the module database and websites.

Annex 4: Programme schedule for the Bachelor's degree programme in Business Information Technology

Sem.	Module code	Module name	SWS	Type of examination	C/CE	ECTS
1	WInf-EinfWInf	Introduction to business information technology	V3Ü2	Written examination	Compulsory	6
1	Inf-ProgOO	Programming	V4Ü2PÜ2	Written examination	Compulsory	10
1	Inf-MathA	Mathematics for computer science A	V4Ü2	Written examination	Compulsory	8
2	WInf-BetrStan	Standard business software	V2 PÜ3	Written examination	Compulsory	8
2	Inf-ADS	Algorithms and data structures	V4Ü2	Written examination	Compulsory	8
2	Inf-MathB	Mathematics for computer science B	V4Ü2	Written examination	Compulsory	8
2	Inf-InfRecht	IT law	V2	Written examination	Compulsory	2
3	WInf-EinfOR	Introduction to operations research	V2Ü2PÜ1	Written examination	Compulsory	8
3	Inf-EinfFP	Introduction to functional programming	V2Ü1	Written examination	Compulsory	4
3	Inf-IS	Information systems	V4Ü2	Written examination	Compulsory	8
3	BWL-JuPriv	Private law	V2Ü1	Written examination	Compulsory	5
4	Inf-ST	Software engineering	V3Ü2	Written examination	Compulsory	7
4	Inf-BSKS	Operating and communication systems	V4Ü2	Written examination	Compulsory	8
4	Inf-TGIE	Theoretical basics in computer science - introduction	V2Ü1	Written examination	Compulsory	4
4		Bachelor's seminar (part: scientific work)	V1Ü1	Prior requirements for the Bachelor's seminar	Compulsory	3
5	Inf-ITSec5	IT security (data protection part)	V2	Written examination	Compulsory	2
5		Project module	PÜ3S1	Project work, presentation	Compulsory	6
5	Inf-SP	Software project	PÜ3S1	Project work, presentation	Compulsory	6
5		Bachelor's seminar (2nd part)	S2	Term paper and presentation	Compulsory	4
6	Inf-ITSec5	IT security (work experience part)	PÜ6	Certificates	Compulsory	3
6	VWL-STAT1	Methods in statistics I	V4Ü2	Written examination	Compulsory	10
6		Bachelor's thesis (individual or project)		Preparation, presentation	Compulsory	12

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

Additional modules in the programme schedule for the BSc in Business Information Technology in the business version:

Sem.	Module code	Module name	SWS	Type of examination	C/CE	ECTS
1	BWL-EinfBWL	Introduction to business	V2Ü1	Written examination	Compulsory	5
2		Compulsory elective module in business	V2Ü2	Written examination	Compulsory	5
3	BWL-ERW	External accounting	V2Ü1	Written examination	Compulsory	5
4	BWL-ER	Decision accounting	V2Ü1	Written examination	Compulsory	5
4		Compulsory elective module in business	V2Ü1	Written examination	Compulsory	5
5	VWL-EVWL	Introduction to economics	V4Ü2	Written examination	Compulsory	10
6	BWL-InnoMProz	Innovation management: processes and methods	V2Ü1	Written examination	Compulsory	5

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

Additional modules in the programme schedule for the BSc in Business Information Technology in the economics version:

Sem.	Module code	Module name	SWS	Type of examination	C/CE	ECTS
1	BWL-EinfBWL	Introduction to business	V2Ü1	Written examination	Compulsory	5
2	BWL-ER	Decision accounting	V2Ü1	Written examination	Compulsory	5
3	VWL-EVWL-Mikro	Introduction to economics - microeconomics	V2Ü1	Written examination	Compulsory	5
4	VWL-MIKRO	Basic principles in theory of microeconomics	V4Ü2	Written examination	Compulsory	10
5	VWL-MAKRO	Basic principles in theory of macroeconomics	V4Ü2	Written examination	Compulsory	10
6		Compulsory elective module in economics	V2Ü1	Written examination	Compulsory	5

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

Annex 5: Programme schedule for the 2-subject Bachelor's degree programme in Computer Science

Sem.	Module code	Module name	SWS	Type of examination	C/CE	ECTS
1	Inf-I1-2FNF	Computer science I (2F/NF)	V4Ü2	Written examination	Compulsory	8
1	Inf-CompSys	Computer systems	V4Ü2	Written examination	Compulsory	8
2	Inf-I2-2F	Computer science II (2F)	V4Ü2	Oral examination	Compulsory	8
3	infADS2F-01a	Algorithms and data structures (mathematical preparation)	Ü1		Compulsory	2
3	Inf-ProgOO	Programming	V4Ü2PÜ2	Written examination	Compulsory	10
4	infADS2F-01a	Algorithms and data structures (2nd part)	V3Ü2	Written examination	Compulsory	6
4	Inf-ST	Software engineering	V3Ü2	Written examination	Compulsory	7
5	Inf-IS	Information systems	V4Ü2	Written examination	Compulsory	8
5	Inf-SP-2F	Software project (2F)	PÜ3	Preparation	Compulsory	5
6	Inf-BSKS	Operating and communication systems	V4Ü2	Written examination	Compulsory	8

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

Annex 6: Economics and business versions in the Master's degree programme in Business Information Technology

Students can choose between the following two versions for the economics and business section:

1. Business offers

A total of 20 ECTS credit points must be completed. 15 ECTS credits must be completed from the special Business section (e.g. SBWL A). The selected SBWL is made up of 3 modules, whereby at least one lecture module (V+Ü) must be selected. Completing a research seminar is not absolutely necessary.
The remaining 5 ECTS credits in the compulsory elective section must be completed from a module which is not part of the selected SBWL A.

Sem.	Section	Module	SWS	ECTS	ECTS
1.	Special Business section A	SBWL A / 1	V2 + Ü1	5	15
		SBWL A / 2	V2 + Ü1 or S2	5	
2.		SBWL A / 3	V2 + Ü1 or S2	5	
3.	Compulsory elective section	Module from SBWL **(not A)**	V2 + Ü1 or S2	5	

Explanations:
CE: compulsory elective, ECTS: ECTS credit points, V: Vorlesung / lecture, Ü: Übung / exercise, S: research seminar, SBWL: Spezielle Betriebswirtschaftslehre / special Business section

The following SBWL can be selected:
  Marketing
  Start-up and innovation management
  Technology management
  Supply chain management
  Organisation
  Staff and organisation
  Company taxation (only modules from the compulsory elective section)
  Service analytics

The associated modules can be found in Annex 2 "2. Modules for the SBWL" from the FPO 2014 for the Master's in Business.
The modules for the compulsory elective section may also only be chosen from this SBWL.

2. Economics offers

Students must obtain 20 ECTS credit points:

Version I: Volkswirtschaftslehre/Economics

Four lectures (no seminars) worth 5 ECTS credit points each are to be chosen at will from the range offered below:

- B.Sc. VWL:
  Microeconomics and public finance section
  Macroeconomics and labour markets section

- M.Sc. Economics:
  Applied microeconomics section
  Environmental and resource economics section
  Financial economics section
  International economics section
  Macroeconomics and growth section
  Public economics section
  Spatial economics section

You can combine modules from the B.Sc. VWL with modules from the M.Sc. Economics. Further details can be found in the degree-specific examination regulations for the B.Sc. VWL and the M.Sc. Economics.

Basic knowledge of microeconomics is required for the sections on **applied microeconomics, environmental and resource economics, international economics** and **spatial economics**, like that which is conveyed in the introductory courses in microeconomics in many economics and business Master's degree programmes. In particular, the student should possess existing knowledge of the contents of the "advanced microeconomics" course. We recommend selecting this lecture as part of a corresponding specialised focus. The lecture, with 10 ECTS takes the place of two courses with 5 ECTS each. The contents and learning targets of the course can be found in the Module Handbook for Master's degree programmes at the Department of Economics.

Basic knowledge of macroeconomics is required for the section on **macroeconomics and growth**, like that which is conveyed in the introductory courses in macroeconomics in many economics and business Master's degree programmes. In particular, the student should possess existing knowledge of the contents of the "advanced macroeconomics I and II" courses. We recommend selecting this lecture as part of a corresponding specialised focus. The contents and learning targets of the courses can be found in the Module Handbook for Master's degree programmes at the Department of Economics.

Version II: Quantitative economic research

One of the following modules from the B.Sc. VWL must be completed:
- Introduction to econometrics (5 ECTS)
- Empirical economic research (5 ECTS)

In addition, three of the following modules (B.Sc. VWL or M.Sc. Economics) must be completed:
- Methods of empirical regional research (5 ECTS)
- Multivariate methods (5 ECTS)
- Data mining (5 ECTS)
- Statistical computing (5 ECTS)

Recommendations for students:

The M.Sc. in Business Information Technology, economics version, offers a wide range of specialization options which go beyond the sub-areas of economics. The students are generally responsible for their own lecture compositions.

Particular synergy effects with a computer science degree can be achieved with the following specialised focus:

Focus in the **macroeconomics and growth** section: Modern macroeconomic theories address the numerical solution of comprehensive systems of difference equations or differential equations for analysing overall economic development.

Focus in the **financial economics** section: The complexity of trading actions on financial markets and the complexity of modern financial products (so-called derivatives like options, swaps, etc.) require a wealth of instruments of numerical solution approaches in modelling price formation on financial markets.

Focus in the **quantitative economic research** section: Modern statistical processes frequently use numerical or simulation-based procedures, the availability of 'big data' also requires new intensive computing procedures of data mining for analysing the characteristics of such data.

Annex 7: Programme schedule for the MEd and MSc in Business Education

Sem.	Module code	Module name	SWS	Type of examination	C/CE	ECTS
1	Inf-FD-Kombi	A topic of computer science and preparing it for teaching	V4Ü2S2	Oral examination	Compulsory	10
1	Inf-ITSec5	IT security (data protection part)	V2	Written examination	Compulsory	2
2	Inf-ITSec5	IT security (work experience part)	PÜ6	Certificates	Compulsory	3
2	Inf-FD-LeLeV	Teaching and learning in computer science - consolidation	V1S2	Portfolio	Compulsory	5
2		Compulsory elective section of computer science			Compulsory elective	4
3	Inf-FD-IUG	Designing computer science lessons	PÜ2	Portfolio	Compulsory	3
4		Choice of module			Compulsory elective	6

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise, S = Seminar

Annex 8: Programme schedule for the 2-subject MA and 2-subject MSc

Sem.	Module code	Module name	SWS	Type of examination	C/CE	ECTS
1		Choice of module			Compulsory elective	8
1	Inf-TGI-2F	Theoretical basics in computer science (2F), Mathematics A part	V4Ü2		Compulsory	8
2	Inf-TGI-2F	Theoretical basics in computer science (2F), part 2	V2Ü1	Oral examination	Compulsory	4
2		Choice of module			Compulsory elective	8
2		Master's seminar (2F) scientific work	V1Ü1		Compulsory	2
3		Master's seminar (2F)	S2	Term paper and oral presentation	Compulsory elective	5
3		Choice of Master's project	PÜ4	Presentation incl. oral examination	Compulsory elective	10

The following abbreviations are used for these types of course:
V = Vorlesung/Lecture, Ü= Übung/exercise, PÜ = Praktische Übung/practical exercise,
S = Seminar