V e r k ü n d u n g s b l a t t

of the University of Duisburg-Essen – Official Bulletin

Prov. Official Bulletin October 2004 Page 1

General Examination Regulations for a Bachelor of Science (B.Sc.) in COMPUTER ENGINEERING COMPUTER SCIENCE AND COMMUNICATIONS ENGINEERING CONTROL AND INFORMATION SYSTEMS ELECTRICAL AND ELECTRONIC ENGINEERING MATERIAL TECHNOLOGY MECHANICAL ENGINEERING and a Master of Science (M.Sc.) in COMPUTER ENGINEERING COMPUTER SCIENCE AND COMMUNICATIONS ENGINEERING CONTROL AND INFORMATION SYSTEMS ELECTRICAL AND ELECTRONIC ENGINEERING MECHANICAL ENGINEERING within the scope of the internationally oriented academic programme INTERNATIONAL STUDIES IN ENGINEERING (ISE) at the University of Duisburg-Essen 19 October 2004

(*Official Bulletin* 2, 2004, p. 351)
modified by Article I of the Regulations of 11 May 2005 (VBl, p. 173)

Pursuant to § 2, para. 4, as well as § 94, para. 1, of the Law for Universities of North Rhine-Westfalia (LU) of 14 March 2000 (GV. NRW, p. 190), last modified by the Act of 16 December 2003 (GV. NRW. 2003, p. 772), the Faculty of Engineering Sciences at the University of Duisburg-Essen hereby issues the following Examination Regulations:

Table of contents:

ATTENTION: Only the rules and regulations in their German form are legally binding.

I. General regulations

§ 1

Purpose and Goals of the Programmes in ISE

(1) The purpose of the consecutively designed B.Sc. and M.Sc. subjects in the internationally oriented academic programme 'International Studies in Engineering' (ISE) is to aid students in the acquisition of the requisite technical knowledge, abilities and methods common to the engineering sciences that will enable them to contribute to scientific research, critically assess work in the field and act in a responsible manner in the context of the growing international integration of the profession. In view of the international orientation of this programme, the training of engineers is being tailored to the globalization of markets and the needs of foreign students. Moreover, each of the degree programmes teaches specific knowledge and abilities that can be seen in the annexes of these Regulations describing the various B.Sc. and M.Sc. subjects.

(2) Students in the B.Sc. programme of ISE acquire a wide knowledge of the fundamentals of engineering science, the basic methods and theories relevant to the discipline, and the ability to apply them. One of the specific goals of the B.Sc. is to enable degree holders to enter the labour market as engineers, since the degree certifies that they possess basic engineering-science expertise, understand the underlying technical principles of the discipline and comprehend the operational methods and insights needed for the transition into professional practice. Furthermore, the B.Sc. authorizes students to enter an appropriate M.Sc. programme provided that the additional requirements are fulfilled. These are defined by the 'General Programme Regulations for ISE' ('Programme Regulations').

(3) The pursuit of a M.Sc. in ISE increases the scientific qualifications acquired in the B.Sc. programme. Briefly, this added expertise is developed by expanding already demonstrated knowledge in a candidate's field and practicing more complex scientific methods. The M.Sc., the second part of ISE, provides a second professional degree that considerably expands vocational perspectives in comparison to a B.Sc.

The M.Sc. demonstrates that holders of the degree have gained the additional expertise, ability, and command of scientific methods needed in integrating more complex technical issues in the field and that they have the ability to analyze problems inherent in engineering sciences in their respective branches of the discipline. In addition, the M.Sc. certifies that its holders can use, and apply independently, the scientific methods and insights needed for the successful practice of the engineering profession.

Finally, the M.Sc. enables its holders to proceed to the doctoral level and hence to an academic career.

§ 2

B.Sc. and M.Sc.

(1) After a candidate completes the requirements for the B.Sc., the Faculty of Engineering Sciences at the University of Duisburg-Essen shall grant him or her the degree of Bachelor of Science (B.Sc.).

(2) After a candidate completes the requirements for the M.Sc., the Faculty of Engineering Sciences at the University of Duisburg-Essen shall grant him or her the degree of Master of Science (M.Sc.).

§ 3

Subjects

(1) In ISE one of the following subjects can be chosen by candidates qualifying for a B.Sc.:

a) Computer Engineering,
b) Computer Science and Communication Engineering,
c) Control and Information Systems,
d) Electrical and Electronic Engineering,
e) Mechanical Engineering,
f) Material Technology.

(2) The following M.Sc. subjects are available:

a) Computer Engineering,
b) Computer Science and Communications Engineering,
c) Control and Information Systems,
d) Electrical and Electronic Engineering with the following Specializations
   - Communications Engineering,
   - Power and Automation,
e) Mechanical Engineering with the following Specializations
   - Mechatronics,
   - Production and Logistics,
   - Water Resources and Environmental Engineering,
   - General Mechanical Engineering.

§ 4

Admission to the Programme and Special Qualifications Relating to the Engineering Sciences

(1) The entrance requirements to the B.Sc. programme in ISE up to 31 December 2005 are a certificate of higher education entrance qualification (a general or subject-restricted higher education entrance qualification), a certificate of entrance qualification for institutes of technology (polytechnics) or a certificate of educational requirement confirmed by law or by a responsible public agency as comparable. As of 1 January 2006 only a certificate of higher education entrance qualification (a general or subject-restricted higher education entrance qualification) or a certificate of educational requirement confirmed as comparable by law or by a responsible public agency is accepted as an entrance requirement for the B.Sc. programme in ISE, apart from the exceptions mentioned in (3) below.

(2) Pursuant to § 66, para. 5, of the LU, a certified degree-programme related educational background is required in addition to the formal qualification for admission to one of the B.Sc. or M.Sc. programmes in ISE. Candidates for admission who have obtained their qualification for higher education from an educational institution inside the Federal Republic of Germany are required to

a) have achieved the final grade of 3.0 in a basic-course in mathematics, computer engineering, or any other natural-scientific or engineering-science technical course in the sixth form (*Gymnasium*, comprehensive school, or vocational school) or, preferably, have completed an intensive course in one of these subjects, or
b) prove equivalent knowledge by presenting appropriate documentation.

Prospective students who have obtained their qualification for admission to higher education from an educational institution outside of Germany must prove equivalent qualification by presenting appropriate documentation as covered in (2) above.

(3) Pursuant to § 66, para. 6, of the LU, the qualifications needed for a degree programme in ISE introduced in (1) and (2) can be waived if the prospective student provides evidence (such as an aptitude test) of a specific programme-related qualification and a general education conforming to the demands of the University of Duisburg-Essen. Full particulars are covered by the Programme Regulations.

(4) An applicant to the M.Sc. programme in ISE can—in addition to fulfilling course and examination requirements in a previous B.Sc. programme at another university as defined in § 15—be granted admission by completing any of the B.Sc. subjects listed in § 3, para. 1, as long as the conditions of (5) are fulfilled.

When changing the subject area within a degree programme in ISE, and in the case where a candidate has already completed a B.Sc. programme in another institution of higher learning, the Examination Committee shall investigate whether, and in some cases what, additional conditions have to be met. Full particulars are covered by the Programme Regulations.

(5) A candidate may be admitted to a M.Sc. programme in ISE who:

1. provides evidence of qualifications relating to the specific degree programmes as defined in (2), and
2. a) has completed a B.Sc. in ISE with a final grade point average (GPA; see § 12 below) of 2.5 or better, or
   b) has completed a B.Sc. or a comparable degree of three years' duration in a related engineering science or in computer engineering with a GPA of 2.5 (§ 12) or better at an accredited university as defined by the Framework Act for Universities (*Hochschulrahmengesetz*), provided this degree is recognized as comparable by the Examination Committee, or
   c) has completed a B.Sc. or a comparable degree of at least three years' duration in a related engineering science or in computer engineering with a GPA of 2.5 (§ 12) at a university outside the scope of the Framework Act for Universities (*Hochschulrahmengesetz*), provided this degree is recognized by the Examination Committee as comparable to a degree obtained in a) and b) above.

Graduates of an institution offering degrees of at least three years' duration may be admitted when their degrees can be shown to be comparable to subjects offered in ISE. Graduates with an appropriate B.Sc in ISE (see '(5) 2. a)' above) are not required to demonstrate additional qualifications for admission to the M.Sc. programme.

(6) In order to pursue a degree in ISE a candidate must possess the requisite language skills as defined in § 5 below or § 66, para. 5, sentence 2, of the LU.

(7) The Examination Committee (see § 14 below) is responsible for determining a candidate's admissibility as defined in (2) and (3), the relevance of the B.Sc. as defined in (5) and the quality of language skills as described (6).

(8) Where applicable, admission restrictions for particular subjects in ISE remain unaffected.

§ 5

Language skills

(1) Candidates who have acquired their qualifications for admission to higher education at an educational institution within the Federal Republic of Germany or at a comparable institution outside of Germany with German as the teaching language may enrol in a degree programme in ISE if they can demonstrate English proficiency acquired during at least five years of English-course instruction or the equivalent level as shown by appropriate documentation.

(2) The students admitted according to the paragraph immediately above must take a proficiency test in English at the beginning of their studies. Based on the results of this test, students must either take part in English-course instruction for

a) two semesters (an intermediate and an advanced course), or

b) one semester (an advanced course), or

c) require no additional English instruction.

(3) The above requirements, including taking a proficiency test or additional language instruction, may be waived for candidates with English skills based on at least six years of English-course instruction or the equivalent proficiency demonstrated by appropriate documents .

(4) Candidates who have not acquired their qualifications for admission to higher education at an educational institution within the Federal Republic of Germany or at a comparable institution outside of Germany in which the language of instruction was not German may enrol in ISE only if they demonstrate by presenting appropriate certification

1. a knowledge of the German language
   a) at least at the level of Grundstufe 2 at the Goethe Institute (approx. 240 units of instruction), or
   b) by a TestDaF-Certificate (*Test Deutsch als Fremdsprache*) at least at the level of TDN 3 in all subsections, and
2. a knowledge of the English language
   a) at least at the level of TOEFL 500 (paper-based test), or
   b) at least at the level of TOEFL 173 (computer-based test).

Necessary language skills can be demonstrated alternatively by presentation of equivalent certificates from other language schools or testing institutions or by other documentation, in particular the use of a language in the home country as the everyday language or as the language of instruction in an educational institution.

(5) Students admitted according to the provisions in (4) must take a proficiency test in English and German at the beginning of their studies. Based on these results, students must either take part in language instruction for

a) two semesters (an intermediate and an advanced course), or

b) one semester (an advanced course), or

c) require no further language instruction.

(6) The above requirements, including taking a proficiency test or additional language instruction, may be waived for candidates who

1. have learned one or both languages as their mother tongue,
2. have acquired German
   a) within the scope of a preparatory course (German *Studienkolleg*), or
   b) are in the possession of a DSH-certificate (*Zeugnis über die Deutsche Sprachprüfung für den Hochschulzugang ausländischer Studienbewerberinnen und Studienbewerber*) , or
   c) are in the possession of a TestDaF-certificate (*Test Deutsch als Fremdsprache*) of at least the level TDN 5 in all subsections, or
   d) are in the possession of an equivalent certificate, or
3. have
   a) reached the level of the general higher education entrance qualification in English, or
   b) achieved the level on a TOEFL of 600 (Paper-based Test), or
   c) achieved the level on a TOEFL of 250 (Computer-based Test), or
   d) an equivalent knowledge , or
   e) received 100% of their school education in English.

(7) Candidates with a B.Sc. from ISE are not required to demonstrate language skills for admission to the M.Sc. programme in ISE.

(8) The compulsory language courses referred to in (2) or (5) are part of the degree programme; passing such a language course simultaneously satisfies the requirement for a programme-specific non-technical subject as defined in the annexes of these Regulations.

§ 6

Standard Period of Study; Programme Scope and Curriculum Structure

(1) The standard period of study in the B.Sc. programme of ISE amounts to three years, including six weeks of industrial internship, completion of the B.Sc. Thesis and, in some cases, project work. The student can choose between completing a project or taking two technical electives as specified in the annexes of this document. The range of subjects spans the three years and consists, depending on the subject (see §3, para. 1), of compulsory courses (course=*Veranstaltung*) and electives in an amount between 121 and 124 credit hours (see § 11 below for an explanation of 'credits'). For full particulars see the relevant regulations in the annexes of this document or the Programme Regulations. In order to graduate a candidate must acquire 180 credits.

(2) The standard period of study in the M.Sc. programme in ISE is two years, including three weeks of industrial internship and the time spent in the completion of the M.Sc. thesis. The range of courses offered spans one and a half years and consists, depending on the chosen subject (see §3, para. 2), of compulsory and elective courses amounting to between 61 and 65 credit hours; for full particulars see the subject regulations in the annexe of this document or the Programme Regulations. In order to graduate a candidate must acquire 120 credits.

(3) Every subject (*Studiengang*) within ISE is modular. Modules are blocks of thematically organised teaching units to which a specific number of European Credit Transfer System (ECTS)-credits is awarded. The modules normally consist of 6 to 18 credits and span two to three semesters, or, in the case of non-technical subjects, up to four semesters. For full particulars refer to the subject regulations in the annexe of this document or to the Programme Regulations.

(4) The B.Sc. programme in ISE is made up of multiple technical modules, a technical elective module, a non-technical elective module, a project or two additional technical electives and the B.Sc. thesis.

(5) The M.Sc. programme in ISE includes modules to instruct basic knowledge, a module consisting of courses for the instruction of advanced fundamentals of mathematics, natural-science or engineering science, a technical elective module, a non-technical elective module and the M.Sc. thesis.

(6) The contents of the curriculum (*Studienplan*) for the individual programmes are displayed in tabular form in the various annexes at the end of this document.

(7) The first year for all students in the B.Sc. programme in ISE is identical. Depending on the number of students in each subject, a change in the subjects mentioned in § 3, para. 1, is possible up to the end of the first year without extra examination and study credits being required and therefore without extending the overall time spent finishing a degree.

(8) With reference to the Programme Regulations, students choose their courses in such a way that the degree can be finished within the standard period of study. This stipulation ensures that students can tailor their programmes to match their own preferences and interests and that compulsory and elective courses assume a balanced proportion to their independent research and voluntary attendance of additional courses in subjects differing from their own.

§ 7

Internship

(1) B.Sc. students in ISE must demonstrate, at the very latest prior to applying for permission to begin the B.Sc. thesis (see § 35), that they have served industrial internships of a minimum of fourteen weeks.

(2) During their B.Sc. studies students have to complete internship activities amounting to at least six weeks. These activities are part of the degree programme.

(3) Prior to their admission to the B.Sc. programme students will be expected to have completed internship activities of at least eight weeks. These are not part of the programme. Students who have not satisfied the eight-week requirement may be nevertheless admitted to the programme, but they will be obligated to complete all fourteen weeks of their internship activities during their studies.

(4) M.Sc. candidates in ISE have to demonstrate, at the latest prior to applying for permission to prepare the M.Sc. thesis (see § 43), that they have served industrial internships amounting to a minimum of six weeks.

(5) During their M.Sc. studies students must complete internship activities of at least three weeks. These activities are part of the degree programme.

(6) Prior to their M.Sc. studies students will be expected to have completed internship activities of at least three weeks. These activities are not part of the degree programme. Students who have not completed internship activities as mentioned in the first sentence of this paragraph will be admitted to the programme, but they will be obligated to finish these activities during their studies.

(7) The form and content of the internship activities are regulated by the Industrial Internship Regulations for ISE. The Examination Committee, in cooperation with the trainees' office of the Faculty of Engineering Sciences, ensures compliance with these regulations.

§ 8

Experience Abroad

(1) Students who acquired their qualifications for admission to higher education at an educational institution with German as the teaching language must spend time abroad during their studies in ISE. For students beginning their studies in a B.Sc. programme in ISE, time spent abroad is compulsory. For students, who have acquired a B.Sc. from ISE and are continuing on to the M.Sc., a stay abroad is optional.

(2) The time spent abroad should be between three and six months.

(3) With reference to (1) the stay abroad can be used for

a) taking courses at a university and thereby acquiring a minimum number of 15 credits, or

b) development of the final thesis, or

c) completing an industrial internship.

For full particulars refer to the Programme Regulations.

§ 9

General Structure of the B.Sc. and M.Sc. Programmes

(1) The programme for each subject comprising the B.Sc. in ISE is composed of the continuous assessment examinations (as described in §17 and § 32) in the compulsory and electives courses listed in the regulations relevant to each subject in the annexes of this document, of the project work in some subjects (as described in § 33) and the B.Sc. thesis (as described in § 35).

(2) The programme for each subject comprising the M.Sc. in ISE is composed of the examinations in the compulsory and elective courses (see §17) listed in the subject regulations in the annexes of this document (as described in § 42) and the M.Sc. thesis (as described in § 43).

(3) Examinations ('continuous assessment exami–nations' as described in §17) in the B.Sc. and M.Sc. programmes in ISE are given at the conclusion of each course; the concluding B.Sc. or M.Sc. thesis rounds out the programmes.

(4) The Faculty of Engineering Sciences guarantees, by means of the Programme Regulations and the range of courses on offer, that all degree programmes can be completed within the standard period of study. This is further described in § 6, paras. 1 and 2. The continuous assessment examinations, in compliance with § 32 or § 42, can be completed before expiration of the respective recommended deadlines as long as all requirements relating to registration for examinations are met.

§ 10

Credit-Point System

The credit-point system enables the calculation of the total amount of study time that students expend in accumulating credits in the process of completing their programmes, as well as of the recognition of credits from other degree programmes (the transfer principle). Based on the credit points acquired by passing examinations as described in § 11 and the grade points acquired in the process, the credit points and the grade point averages (GPAs, see § 12 below) for a single course as well as for the modules are calculated as explained in § 12.

§ 11

Credits

(1) Every course is given an ECTS-credit number that corresponds to the amount of time a student spends in completing the course requirements. Every credit corresponds to a workload of 20 hours of effective study time. The extent and the appropriate credits for each individual course can be found in the appropriate subject regulations in the annexes of this document.

(2) Credits will be awarded in ISE only for courses where a course examination has been passed and participation in the corresponding labs can be proved by lab protocols or attendance certificates. For every examination or lab protocol or certificate for a course, credit points can only be counted once towards completing the degree.

(3) Credits are stipulated following ECTS procedures. The number of credits is merely a quantitative measurement and does not imply any qualitative judgement of the courses or the credits assigned.

(4) Students must earn 60 credits per year. Students who acquire fewer than 45 credits within the first academic year in a B.Sc. or M.Sc. programme shall be required to meet with their programme advisor(s).

(5) A B.Sc. programme in ISE is considered completed when a total of 180 credits have been acquired. These are distributed as follows

- 159 credits from the modules, from the compulsory and elective courses as defined in § 32, including a project as mentioned in § 33 or two technical electives, consisting of
  - 56 credits from the technical compulsory courses from the first year (which are identical for all B.Sc. subjects),
  - 83 credits from the remaining technical compulsory courses that are taken in the second and third years,
  - 8 credits for a project done in the framework of one of the compulsory technical modules in the second or third year or for two technical electives that can be chosen as an alternative,
  - 12 credits from the module for non-technical electives;
- 6 credits for the internship (as discussed in § 7, para. 2) and
- 15 credits for the B.Sc. thesis (as discussed in § 35).

(6) An M.Sc. programme in ISE is considered completed when a total of 120 credits have been acquired. These are distributed as follows

- 87 credits for the modules, both those compulsory and elective as discussed in § 42, consisting of
  a) in the M.Sc. subjects 'Computer Engineering', 'Electrical and Electronic Engineering' and 'Mechanical Engineering'
     - 37 credits from the technical compulsory modules,

- 32 credits for technical elective modules depending on a student's declared focus,
- 12 credits for the technical elective module,
- 6 credits for the non-technical elective module;

b) in the M.Sc. subjects 'Computer Science and Communications Engineering' and 'Control and Information Systems'

- 69 credits for technical compulsory modules,
- 12 credits for the technical elective modules,
- 6 credits for the non-technical elective module;

- 3 credits for the internship as defined in § 7, para. 5, and
- 30 credits for the M.Sc. thesis as described in § 43.

§ 12

**Grade Points,
Credit Points and Grade Point Average**

(1) A student's achievements can be measured not only quantitatively but also qualitatively by means of a grade point average (GPA), a system of continuous assessment examinations evaluated in the manner as described in § 20. From the grade points and credits acquired by passing examinations, credit points are accumulated. Thus, the acquired credits awarded for a successfully completed course are multiplied by the grade points for that particular course.

(2) The GPA of a module is evaluated according to § 23; the GPA specified on the certificate for the B.Sc. or M.Sc. is calculated by the method described in § 25.

§ 13

Credit-Point Account

(1) For all students in a B.Sc or M.Sc. programme in ISE an ECTS-credit account that documents their continuous progress shall be opened and maintained by the Examination Committee. As modules are successfully completed, the number of ECTS-credits shall be entered into the students' accounts. The credit point account includes the grade points, credit points and the GPAs of completed modules.

(2) At any point in their studies, students shall have access to their accounts.

§ 14

Examination Committee

(1) The Faculty of Engineering Sciences is responsible for the formation of an Examination Committee that oversees the organization of examinations and examination activities for the academic programmes in ISE.

(2) The Examination Committee consists of the Chairperson, his or her Vice-Chairperson and seven additional members. The Chairperson, his or her Vice-Chairperson and three additional members shall be drawn from the group of professors, two members from the group of the academic staff and two members from the group of students, all of whom will be elected by the Faculty Council from the nominations supplied by the executive organs of the respective groups. With the exception of the Chairperson and his or her Vice-Chairperson, alternates for all members of the Examination Committee will be elected. The term of office for the members from the groups of professors and the academic staff is three years, whereas for the members from the group of students the term is one year only. Re-election is possible. The election of the members and their alternates is designed to ensure parity for all the engineering sciences in ISE.

(3) The Examination Committee is an administrative body as defined by administrative law and the law on administrative procedure.

(4) The Examination Committee assures that the provisions of the Examination Regulations are adhered to and is responsible for the proper supervision of examinations. The Examination Committee grants permission for students to sit examinations and recognises course and examination credits as defined in § 15. It is especially responsible for adjudicating matters in which appeals are lodged against decisions made in the course of examinations. In addition, the Committee is obligated to report to the Faculty Council regularly, at least once a year, on the development of examinations and the durations of study. The Committee shall suggest, where necessary, reforms in the Examination Regulations and the programme and publish the breakdown of examination results. In all normal cases it can delegate these duties to the Chairperson or the Vice-Chairperson; this does not apply, however, to decisions taken on appeals and to the annual report to the Faculty Council.

(5) The Chairperson convenes the Examination Committee. He or she must do so when it is demanded by one member of the Examination Committee or by the Dean of the Faculty of Engineering Sciences.

(6) The Examination Committee is quorate when, besides the Chairperson or his or her Vice-Chairperson, two members from the group of professors and two additional members eligible to vote are present. Resolutions are passed when a simple majority is reached. In the case of a tie vote, the decision is left to the Chairperson. The student members of the Examination Committee have no role in the evaluation and recognition of course or examination credits .

(7) The members of the Examination Committee have the right to be present at examinations.

(8) The meetings of the Examination Committee are not public. Its members and their alternates are bound by an oath of confidentiality. If they are not already, because of a contractual obligation accruing to the status of civil servants or the like, bound by such an oath, the Chairperson of the Examination Committee is obligated by the law governing the formal obligation pertaining to non-civil servants (Law of Obligation) to require them to comply with this obligation.

(9) The Examination Committee decides, based on recommendations made by the professors responsible for such matters in the Faculty Council, on the recognition of internship activities as well as appeals lodged against such decisions. It is also possible to delegate recognition of internship activities to a Practical Training Office.

(10) For assistance in performing the duties of the Examination Committee in accordance with § 4, para. 7, the Dean can establish an Assessment Committee and appoint its members.

(11) The Assessment Committee consists of the Chairperson, his or her Vice-Chairperson, two members from the group of professors and two members from the group of the academic staff. Alternates are designated for the members of the Committee, with the exception of the Chairperson and his or her Vice-Chairperson; para. (2), sentences 4 – 6, are in force here. At least one of the members of the Assessment Committee must be a member of the group of professors from the Examination Committee as described in (2), sentence 2. The Chairperson shall be a member of the group of professors in the Examination Committee pursuant to (2), sentence 2.

(12) The Assessment Committee is quorate when, besides the Chairperson or his or her Vice-Chairperson, two members from the group of professors as well as one additional member eligible to vote are present. With respect to other substantive matters, (5), (6), sentences 2-4, and (8) in this section are in force.

§ 15

Recognition of Previous Academic Work (Course and Examination Credits); Advanced Placement

(1) Duration of study, course and examination credits from the same or a comparable degree programme in the fields of the engineering sciences, computer engineering or natural sciences at the University of Duisburg-Essen or other universities in the Federal Republic of Germany or in foreign institutions of higher learning with ECTS-rating systems will be recognized without equivalency verification.

(2) Duration of study, study credits and examination credits in other programmes of study at other universities within the Federal Republic of Germany shall be recognised if equivalency is established. Duration of study, study credits and examination credits acquired at a foreign institution of higher learning that do not correspond to (1) shall be recognised upon application if equivalency is established. Equivalency is established if duration of study, study credits and examination credits fundamentally correspond in content, scope and requirements to those in the curriculum of the B.Sc. or the M.Sc. programmes in ISE. Here a point-for-point comparison should not be undertaken but rather an appraisal and evaluation of the whole programme. In establishing equivalency of duration of study, study credits and examination credits at foreign institutions of higher learning the equivalency agreements achieved by the Standing Conference of the Ministers of Education and Cultural Affairs and the German Rectors' Conference as well as agreements reached by partner universities are to be observed. In addition, in cases where doubt as to equivalency occurs, the Central Office for Foreign Education can be consulted.

(3) Pursuant to the recognition of duration of study, study credits and examination credits acquired in officially recognised integrated institutions of campus and distance learning or in similar institutions established in North Rhine-Westphalia in cooperation with other federal states or the federal government, paras. (1) and (2), where appropriate, apply. In addition, (2) applies also for the duration of study, study credits and examination credits acquired at other educational institutions, especially at state or officially recognised institutions of cooperative education as well as technical colleges, schools of engineering and military academies in the former German Democratic Republic.

(4) Credits earned by completing a course in the experimental 'Advanced Course Bielefeld' (*Oberstufenkolleg Bielefeld*) that corresponds to an elective course in the student's chosen B.Sc. subject in ISE will be recognised for this programme when equivalency is established. Credits earned by completing a course in the 'Advanced Course Bielefeld' (*Oberstufenkolleg Bielefeld*) at the University of Bielefeld that corresponds to an elective course in the student's chosen B.Sc. subject in ISE can be recognised for this programme when a relevant cooperation agreement with the Oberstufenkolleg at the University of Bielefeld exists and when equivalency is established.

(5) Applicants who on the basis of an aptitude test as described in § 67 of the LU are entitled to begin their studies in an advanced subject-semester shall be granted as study and examination credits the knowledge and skills established by the test for their chosen B.Sc. subject in ISE. The confirmation in official documentation of the results of the aptitude test is binding on the Examination Committee.

(6) Upon application by the student, appropriate vocational training or comparable vocational activities can be recognised as satisfying the requirement for internship activities as defined in § 7, paras. 1 and 4. Full particulars are covered by the Programme Regulations.

(7) Responsibility for recognizing credits as defined in §15, paras. 1 to 6, rests with the Examination Committee. Prior to deciding equivalency, specialists in the fields in which credits are in question must be consulted.

(8) When study and examination credits are recognised, the grades, insofar as the grading systems are comparable, are to be accepted and, consequently, the corresponding ETCS-credits awarded. These grades are to be averaged into the subject grade and the final grade. When, however, the grading systems do not permit comparing grades, the notation 'passed' shall be used. This evaluation shall not be used in calculating a grade and shall not be averaged into the final grade. The recognition shall be entered into the official documentation as a footnote.

(9) Insofar as the prerequisites in (1) through (6) above are fulfilled, a legal right to have these credits recognised exists. The recognition of duration of study, study credits and examination credits acquired in the Federal Republic of Germany must be decided by the appropriate official bodies. Students are required to present to the Examination Committee the documents relevant for the recognition.

§ 16

Examiners and Assessors

(1) Only persons who have acquired an M.Sc. or a comparable degree related to the subject being tested and who have already taught courses in the appropriate subject can be appointed to become examiners. Only persons who have acquired the relevant M.Sc. or a comparable degree in the subjects being examined can serve as assessors.

(2) As an exception to (1), sentence 1, when written examinations are evaluated by two examiners, it suffices when at least the first examiner has taught courses in the appropriate subject.

(3) The Examination Committee appoints the examiners and assessors. It can delegate the appointing to the Chairperson. Normally, the person teaching the course for which the examination is set shall be appointed examiner in conformity with (1), sentence 1. Exemptions must be approved by the Examination Committee if a qualified examiner as defined in paras. (1) and (2) is not available. In the case of core courses taught by visiting professors or other visiting specialists, the member of staff who regularly offers these courses shall be appointed examiner.

(4) Examiners work independently in their function as examiners.

(5) Students may propose the first examiner or advisor for their B.Sc. thesis or M.Sc. thesis. When possible, these proposals should be granted, but they do not constitute a legal right.

(6) The Chairperson of the Examination Committee is responsible for publishing the names of the examiners punctually, at least two weeks before the appropriate examination, on the Examination Committee's bulletin board.

(7) For the examiners and assessors § 14, 8, is binding.

§ 17

Continuous Assessment Examinations

(1) Continuous assessment examinations are tests administered at the conclusion of every course and represent an immediate confirmation of the successful completion of a course and of the acquisition of knowledge and skills it embraced. On these examinations students must demonstrate their understanding of the course material and its interrelationships to other basic concepts in the field of engineering sciences.

(2) Continuous assessment examinations in the compulsory and elective subjects (as described in the annexes to these Regulations) are normally taken in the semester break (*vorlesungsfreie Zeit*) immediately following the semesters in which the courses were attended.

(3) Electives have to be chosen from the catalogue of electives for ISE established by the Faculty of Engineering Sciences. This catalogue can be updated, if necessary, when so recommended by the Examination Committee and ratified by the Faculty Council. At least one course from the non-technical subjects chosen from the course catalogue must be in Business Administration (*Betriebswirtschaftslehre*, *BWL*). An additional compulsory language course (as defined in § 5, para. 2 or 5) must also be completed.

(4) The continuous assessment examinations are taken either in written form (in compliance with § 18) or as oral examinations (in compliance with § 19). Credit for laboratory work is given on the basis of lab reports and certificates whose form, scope and number are determined by the member of staff in charge of the lab work. Exceptions must be approved by the Examination Committee. The course examinations must comply with the regulations found in the annexes to these Regulations.

(5) The Examination Committee fixes the dates for the continuous assessment examinations, except for lab reports and certificates (as defined in §17, para. 4, sentence 2), and announces these dates on its bulletin board in a timely fashion, but at least six weeks before the individual examinations. Students are responsible for informing themselves as to the dates of examinations.

(6) Students must register in writing at least four weeks before the date of each examination with the Examination Committee. The first registration of an examination has to be coordinated with an application to be admitted to the B.Sc. programme as defined in § 31, para. 2, or the M.Sc. programme as defined in § 41, para. 2.

(7) Continuous assessment examinations are normally conducted in the language of the course they test. Full particulars are covered by the Programme Regulations. Exceptions have to be approved by the Examination Committee.

(8) The auxiliary aids (dictionaries and the like) permitted for the examination are decided by the examiner in each course.

(9) If an additional oral examination accompanies a written examination (in compliance with § 22) the date of that oral examination will be arranged by the examiner and the students, and the Examination Committee shall be notified. The period of time between the announcement of the grades for a written examination and the date for an oral examination shall normally be at least seven days, but shall not exceed four weeks.

(10) If a student submits valid medical documentation that convincingly demonstrates his or her long-standing or chronic incapacity to sit an examination in the

prescribed manner or in the prescribed scope, the Chairperson of the Examination Committee may grant this student, upon his or her application, the opportunity to present comparable work in another form.

§ 18

Written examinations

(1) On the written examinations students must demonstrate, within the specified time limitations, that on the basis of the requisite knowledge and with the help of auxiliary aids, they can identify a given problem from the relevant field of engineering sciences and, using the appropriate methods pertaining to that subject, reach a solution to the problem.

(2) Written examinations are to have a duration of between one and two hours. Exceptions have to be approved by the Examination Committee.

(3) Written examinations shall be evaluated according to the grading scale in § 20, para. 1, by the examiner responsible for conducting the examination. The criteria for test grades should be made clear. An exception to the first sentence in this paragraph is presented by the second resit (make-up examination), in which case § 21, para. 5, is valid.

(4) The grading of written examinations shall normally not exceed four weeks. Deviations from this regulation are permitted only in extreme circumstances, and the reasons are to be officially documented. The grade assigned to a written examination is to be communicated in writing to the Examination Committee immediately after the grades are determined .

§ 19

Oral examinations (Vivas)

(1) During the oral examinations, students demonstrate their ability to recognise the inter-relationships in their subject areas and to evaluate questions posed in these contexts. Moreover, the oral should additionally establish that candidates have mastered the proposed educational goals in their courses.

(2) Oral examinations normally involve the testing of an individual by one examiner in the presence of an assessor. Exceptions are allowed only in unusual circumstances and only with the authorization of the Examination Committee; these reasons must be officially documented. Prior to the calculation of grade points as defined in § 20, para. 1, the assessor must be consulted. An exception to the first sentence in this paragraph is posed in case of the second repetition of a written examination, in which case § 21, para. 5, is valid.

(3) Oral examinations should last between 30 and 60 minutes.

(4) The main points covered in an oral and the results are to recorded in minutes to the oral. At the conclusion of the oral, students are to be informed of their grade. The grade given for any oral must be communicated in writing to the Examination Committee immediately after, but within one week at the latest following the announced date of the examination.

(5) Students who wish to take the equivalent oral at a later date are allowed, space permitting, to observe the proceedings prior to their own oral, unless the student being examined objects. However, this privilege does not extend to the discussion or announcement of the examination results.

§ 20

Assessment of Examinations; Determination of Examination Grades; Passing and Failing

(1) Grades for the individual continuous assessment examinations are assigned by the appropriate examiners. For this assessment the following grades are to be used:

1) very good = a superior performance;
2) good = a better than average performance;
3) satisfactory = an average performance;
4) sufficient = a flawed but still acceptable performance;
5) insufficient = a seriously flawed, unacceptable performance.

Lowering or raising individual grades by 0.3 results in a more precise grade in the range between 1.0 and 4.0.

(2) If a continuous assessment examination is evaluated by more than one examiner, then the grades, should they differ, shall be calculated from the arithmetic average of the individual grades. The grades shall be calculated to the first decimal place; all additional decimal places shall be disregarded. The grading scale is as follows:

very good = an average of and including 1.5
good = an average of 1.6 to and including 2.5
satisfactory = an average of 2.6 to and including 3.5
sufficient = an average of 3.6 to and including 4.0
insufficient = an average of 4.1 and lower

(3) A continuous assessment examination has been passed when it has been awarded the grade of 4.0 or better. For every passed examination the student earns the appropriate number of credits for that particular course. The number of credits to be awarded for any given course is indicated in the subject annexes at the end of these Regulations.

(4) A continuous assessment examination has definitively been failed if it has been given a grade of 5.0 and all the possibilities to repeat it as defined in § 21 have been exhausted. In this case the B.Sc. or the M.Sc. has definitively not been attained as well.

(5) Laboratory experiments and non-technical subjects are evaluated with either a pass or fail.

§ 21

Resits (Make-up Examinations)

(1) A failed continuous assessment examination (as defined in § 17) can be repeated twice.

(2) If the second resit has been failed, the corresponding continuous assessment examination has been definitively failed and either the B.Sc. programme or the M.Sc. programme terminated.

(3) To resit a continuous assessment examination the student must sit the next scheduled examination following the date of the failed examination; a separate registration for a resit is unnecessary.

(4) The Examination Committee is to guarantee that every continuous assessment examination is available at least once in every semester.

(5) The second, and last, resit of a continuous assessment examination, pursuant to § 18, shall be generally graded by two examiners; the second, and final, repetition of an oral continuous assessment examination, pursuant to § 19, shall be generally conducted by two examiners. The second examiner is appointed by the Examination Committee. The grading is done pursuant to § 20, para. 2, by taking the arithmetic average of both examiners (if, in fact, a discrepancy exists), as described in § 20, para. 1. Exceptions are allowed only in unusual circumstances and only with the authorisation of the Examination Committee; these reasons must be officially documented.

(6) If the student resits a continuous assessment examination in written form (as described in § 17) for the first time and achieves a grade of lower than 4.0, then the student must be allowed to take an oral examination in the same exam period (as defined in § 22) before a failing grade is given.

§ 22

Additional Oral Examinations

(1) An additional oral examination resulting from failing a written continuous assessment examination (as mentioned in § 21, para. 6) enables students to demonstrate that they have, in fact, mastered the essentials taught in the course whose written examination they failed.

(2) Based on the result of an additional oral examination, the continuous assessment examination is graded either as 'sufficient' (4.0) or 'insufficient' (5.0). The result of the oral is to be communicated to the student immediately afterwards.

(3) For additional oral examinations § 19, paras. 2 to 4 are valid. As an exception to § 19, para. 2, sentence 1, additional oral examinations can be conducted as individual or group tests.

§ 23

Determining Module Grades; Passing and failing

(1) A module has been completed when all the continuous assessment examinations comprising the modules have been passed.

(2) Every module, with the exception of internship activities as defined in § 7, paras. 2 and 5, shall be given a module grade. Module grades are expressed as a Grade Point Average (GPA).

(3) To calculate the GPA, the ECTS-credits allocated for every passed continuous assessment examination (see § 11, paras. 1-3) are multiplied by the grade points (see § 20, paras. 1 and 2) earned for the examination; the result is a certain number of credit points. (This operation can be expressed as a formula: CP=ECTS-credits x grade points.) The sum of all credit points earned for any module divided by the sum of all ECTS-credits possible for the module results in the GPA of a module. In this calculation only the first decimal place is relevant; all other decimal places are to be disregarded.

(4) With reference to § 20, para. 5, laboratory experiments are not considered in the calculation of module grades and do not receive any grade points. The same holds for non-technical modules.

(5) In addition to grade points a student's relative academic performance can be expressed by an ECTS-grading scale and can be included in the diploma supplement.

Students can receive the following ECTS passing grades:

1.0 to 1.5	= A	= Excellent
1.6 to 2.0	= B	= Very Good
2.1 to 3.0	= C	= Good
3.1 to 3.5	= D	= Satisfactory
3.6 to 4.0	= E	= Sufficient
4.1 or worse	= F	= Fail

§ 24

Subject Changes

(1) In each elective module students can change any subject concluded by a continuous assessment examination, but the record of the number of attempts to pass any such examination in the previous module will carry over to the new subject. This regulation applies regardless of whether any of the previous examinations has been passed or not. The prerequisites for changing the subject are that

1. the previous subject has been taken at the University of Duisburg-Essen,
2. the substituted subject belongs to the same module as the previous subject;
3. the previous subject has not already been definitively failed.

This kind of substitution may be used to

a) change a subject in a compulsory, technical module that, with respect to the corresponding examination, offers a chance to choose between various courses;
b) change a subject within a technical elective module, including a change from a project to two electives or vice versa;
c) change a subject within one of the two non-technical modules.

(2) Paragraph (1) above applies also to any given M.Sc. subject in an M.Sc. programme in ISE.

§ 25

Determining Final Grades for the B.S. and M.Sc.

(1) To evaluate a student's total performance in acquiring the B.Sc., a grade point average is calculated on the basis of the grade point averages of the modules (see § 23), the grade on the project work, (see § 33) or the two technical electives taken instead, and the grade on the B.Sc. thesis (see § 35). Internship activities as well as non-technical subjects, which do not receive grades, are not included in establishing the overall GPA.

(2) Likewise for the M.Sc. a GPA is calculated on the basis of the GPAs of the modules (§ 23) and the grade on the M.Sc. thesis (§ 43). The remarks in (1) on internship activities apply to the M.Sc. as well.

(3) The calculation of the overall GPA for the B.Sc. and the M.Sc. follows the same procedures as those used in determining the module grades. Thus § 23, paras. 2 and 3 apply here also.

(4) In addition to the assignment of a GPA for the B.Sc. and the M.Sc., ECTS-grades are also provided, as described in § 23, para. 5.

(5) If the GPA for either the B.Sc. or the M.Sc. is 1.3 or better, the notation 'Passed with Distinction' ('cum laude') will be entered on the Certificate or Diploma Supplement, as described in § 38 and § 46.

§ 26

Additional subjects

(1) Students can take examinations in additional subjects (*Zusatzfächer*) beyond those in the compulsory and elective-compulsory course groups .

(2) The results of an examination in such an additional subject shall not be averaged into the module grades nor in the final grade. The results shall be recorded in the Supplement to the Diploma.

§ 27

Cancellation, Absence, Withdrawal, Deception, Statutory Violations

(1) A test or examination is deemed 'insufficient' (5.0) if a student fails, without previous justification, to appear at a test for which his or her name has been entered or if he or she withdraws with insufficient justification from an examination after it has begun. The same applies to examinations that are not submitted within the designated time.

(2) Students have the option to cancel their registration for an examination up to one week before the examination.

(3) Should a student be prevented by illness from sitting an examination and has documented this incapacity by means of a medical certificate, then his or her absence at the examination shall not be deemed a failure. In such a case he or she shall take the examination at the next available opportunity. This certificate must be presented to the Examination Committee without delay, at least within three working days following the date of the examination. Pursuant to the reasons for the non-participation on examinations or for the non-compliance with other examination deadlines according to (1), a student's illness or that of a child for whose care he or she bears the chief responsibly is deemed equally applicable.

(4) Should a student attempt to influence his or her results by deception or the use of impermissible auxiliary aids, then the resulting work shall receive the grade of 'insufficient' (5.0). This determination shall be made by the respective examiner or assessor and officially recorded. A student who disturbs the ordinary course of an examination can be excluded from further participation in the examination by the responsible examiner or invigilator; in such a case the resulting work shall receive the grade of 'insufficient' (5.0). In serious cases the Examination Committee can forbid the student to sit additional examinations.

(5) The student so implicated can demand, within fourteen days following the examination date, that the decisions taken according to (3) be reviewed by the Examination Committee. The decisions made by the Examination Committee affecting the student, the reasons for making them and an explanation of legal remedies must be communicated in writing to the student.

§ 28

Invalid B.Sc. and M.Sc.; Annulment of the B.Sc. and M.Sc.

(1) Should a student have been guilty of practicing deception on an examination and should this information become known only after the issuance of the Certificate, the Examination Committee can retroactively adjust the grades for the examination results achieved by means of deception and declare the degree totally or partially as not attained.

(2) If the conditions for the eligibility for an examination have not been fulfilled and should this circumstance become known only after the issuance of the Certificate, this deficit—assuming that the student is innocent of deception—can be remedied by the student's passing the examination. If the eligibility was intentionally and unjustly obtained, the Examination Committee shall decide upon the legal consequences pursuant to the Administrative Procedure Act for the federal state of North Rhine-Westphalia.

(3) Before any decision is made the student in question must be heard.

(4) All incorrect examination reports are to be collected and the examination regraded if necessary. A decision pursuant to (1) and (2), sentence 2, is not possible once five years following the issuance of the degree certificate have elapsed.

(5) If the degree in toto has been declared as not attained, then the granted degree is to be invalidated and the issued Diploma confiscated.

§ 29

Access to Examination Records

Upon application a student, following individual examinations (course or module examinations), shall be granted access to his or her written examination results. This right can be exercised up to one year after the entire examination procedure has concluded.

II. B.Sc. in Engineering Sciences

§ 30

Subject and Structure

The B.Sc. consists of

1. the continuous assessment examinations as defined in § 32 and the corresponding regulations in the subject annexes of these Regulations,
2. a project as described in § 33 or the two electives to be chosen in its place,

   and
3. the B.Sc. thesis as described in § 35.

§ 31

Admission to the B.Sc. Programme

(1) Students can enrol in the B.Sc. programme in ISE only if they are enrolled in a degree programme at the University of Duisburg-Essen or are registered as guest students in compliance with § 71, para. 2, of the LU.

(2) A written application for admission to a programme in ISE must be made to the Examination Committee at least four weeks before the date of the first continuous assessment examination in the first semester in compliance with the subject annexes of these Regulations.

The following must be attached to the application form:

1. verification of the prerequisites as mentioned in (1) above and
2. a statement as to whether the student has already definitively failed to qualify for a B.Sc. or an equivalent degree (*Diplomprüfung*) in a programme equivalent to the chosen subject in ISE and whether the student is currently enrolled in another degree programme.

(3) If verification as described in (2) cannot be presented in the specified way, the Examination Committee may recognise other documentation.

(4) Admission to participation in a programme is to be denied, if

a) the requirements mentioned in (1) are not fulfilled, or
b) the documentation is incomplete, or
c) the student has definitively failed to qualify for a B.Sc. or a M.Sc. in a degree programme within the Federal Republic of Germany or outside of Germany comparable to the proposed degree programme in ISE, or
d) the student is currently enrolled in a degree programme in the same subject or a comparable subject as that proposed in ISE.

§ 32

Continuous Assessment Examinations in Compulsory and Elective Subjects

Such examinations in the compulsory and elective courses of the respective degree subjects are to be conducted pursuant to §17 and the respective subject annexes of these Regulations.

§ 33

The Project

(1) As part of every B.Sc. subject in ISE a project has to be completed unless two technical electives are chosen in its stead. Before the beginning of every semester the feasibility of choosing between a project and two technical electives pursuant to § 17, para. 3, will be established in every subject and announced on the bulletin board.

(2) A project serves as a means to develop practical knowledge, to practise and polish engineering skills and abilities and to exploit the division of labour. Students must demonstrate in the project, which is designed as a cooperative undertaking, that they can deal with various interdisciplinary practical tasks within a limited time period together with a team of their fellow students.

(3) A project must be sited in a technical module of the respective degree subject for which the student is enrolled.

(4) The project is proposed and supervised by a professor, a permanent member of staff authorised to examine students independently (*Privatdozent*), a visiting professor, a visiting member of the academic staff or a resident member of the academic staff who teaches courses in the module in which the project is sited. The date on which the project commences is to be recorded by the Chairperson of the Examination Committee.

(5) The time allocated for the project is five weeks. Upon written application by students involved in the project to the Chairperson of the Examination Committee at least two weeks before the original deadline, the Examination Committee can, in exceptional cases, extend this period up to four weeks. The project is to be so designed that it can be completed on time.

(6) The project report must be written in German or English on a word processor (DIN A4 format) and submitted punctually to the tutor in bound form. Normally, the report should be 10-20 pages in length. The deadline has to be recorded by the Chairperson of the Examination Committee. Failure to deliver the project report on time will result in the grade of 'insufficient' (5.0).

(7) The project is to be evaluated by the supervisor (as described in (4), sentence 1). The grading scale to be used is explained in § 20, para. 1.

(8) Grading the project must generally not exceed six weeks. Exceptions are allowed only in unusual circumstances, and the reasons must be officially documented. The Examination Committee is to notified in writing immediately after the grade is determined.

§ 34

Resubmitting the Project

(1) A project (as described in §33) that receives a failing grade (5.0) can be resubmitted twice.

(2) If the second resubmission of the project has been failed or is regarded as failed, the project has been definitively failed and thus the B.Sc. terminated.

(3) In principle the second (and final) resubmission of the project shall be evaluated by two examiners. The second examiner is to be appointed by the Examination Committee. The grade on the second resubmission of the project is calculated (pursuant to § 20, paras. 1 and 2) by taking the arithmetic average of the grades of both examiners (in accordance with § 20, para. 2). Exceptions, which are allowed only in unusual circumstances, must be approved by the Examination Committee and the reasons officially documented.

(4) Changing between the project and the two alternative technical electives is possible only when neither the project nor the two technical electives has been repeated twice.

§ 35

B.Sc. Thesis

(1) The B.Sc. thesis is an independent piece of research that concludes the academic education in every B.Sc. subject in ISE. It is used to show that a student is capable of independently identifying a problem from a recognised field of the engineering sciences and, using the methods in this field, to solve the problem and present these findings within a given period of time.

(2) Permission to submit the B.Sc. thesis is granted only to those candidates who

1. have passed a sufficient number of continuous assessment examinations as described in § 32 and the relevant annexes of these Regulations and have therefore accumulated at least 120 credits;
2. have satisfied the internship requirements described in § 7, para. 2, and have therefore accumulated these 6 credits; and
3. have successfully participated in the requisite language courses as described in § 5, para. 2, when such are deemed necessary on the basis of the relevant placement tests.

(3) The topic of a B.Sc. thesis must be thematically related to the corresponding subject in ISE that a candidate has chosen as his or her major. The thesis is normally proposed and supervised by a professor, a member of the academic staff, or a member of the academic staff authorised to examine students independently (*Privatdozent*) from the Faculty of Engineering, or a visiting professor currently employed in the Faculty of Engineering or a visiting member of the academic staff who teaches courses in ISE. If the B.Sc. thesis is to be done at an institution outside of the University, the Examination Committee must approve this undertaking. The student has the right to suggest a thesis topic.

(4) In response to an application by a student the Chairperson of the Examination Committee is, in reasonable time, to provide her or him with a topic for the B.Sc. thesis and to record the date of its issue.

(5) The time a students normally devotes to the thesis is three months. In exceptional cases and in response to a written application to the Chairperson of the Executive Committee by the student at least two weeks before the expiration of the deadline, this period can be extended by up to three weeks. The topic and the purpose statement of the thesis have to be such that the deadline for the project can be met. The topic can be changed only once and only within the first month following the date of issue of the topic.

(6) The B.Sc. thesis can in adequately substantiated cases be completed as a group project when the performance under examination for each student is so clearly demarcated by means of the identification of sections or pages or other objective criteria that the evaluation of the individual contributions can be made and the requirements in (1) fulfilled.

(7) The B.Sc. thesis, normally of 30 to 40 pages, must be drafted in German or English and submitted to the Examination Committee in triplicate, printed and bound in DIN A4 format, on or before the deadline. Significant detailed results can, where appropriate, be summarised in an annexe. When submitting the B.Sc. thesis, students must guarantee in writing that they alone wrote the thesis or, in the case of a joint project, their own part of the thesis, and used no other sources or auxiliary aids than those acknowledged and no quotations other than those cited. The date of submission should be registered officially. Should the B.Sc. thesis not be submitted on time, it shall be graded as 'Insufficient' (5.0).

(8) The B.Sc. thesis is normally to be graded and commented upon by two examiners; the first examiner should be the member of staff who proposed the topic of the thesis. Exceptions to this rule must be approved by the Examination Committee, which appoints the second examiner. At least one of the examiners has to be a member of the Faculty of Engineering Sciences at the University of Duisburg-Essen. The individual grading is to be carried out in conformity with the grading scale in § 20, para. 1. The grade on the B.Sc. thesis is a arithmetic average of the two examiners' grades, should they disagree, as long as the difference is not more than 2.0. When, however, the difference is greater than 2.0 the Examination Committee shall appoint a third examiner to grade the thesis. In this case the grade shall be computed by averaging the two best grades. However, the thesis can be graded as 'sufficient' (4.0) or better only when at least two grades are 'sufficient' (4.0) or better.

(9) The grading of the thesis normally is not to exceed six weeks. Only in extreme circumstances are deviations from this regulation acceptable, and the reasons must be recorded officially. The grade on the B.Sc. thesis must be communicated to the Examination Committee directly after the grade has been determined.

§ 36

Resubmitting the B.Sc. Thesis

(1) A failed B.Sc. thesis can be resubmitted once. During this process the topic can be changed only once and only within the first month following the date of issue of the topic (see § 35, para. 5, the last sentence). This option is possible, however, only if the student did not exercise it while preparing the failed thesis.

(2) A second resubmission of the B.Sc. thesis is not permissible.

§ 37

Qualification and Non-Qualification for a B.Sc.

(1) A B.Sc. is attained when

1. all continuous assessment examinations according to § 32 and the relevant annexes of these Regulations,
2. the project according to § 33 or the two alternate technical electives,
3. the B.Sc. thesis as defined in § 35, and
4. the internship according to § 7, para. 2,

have been successfully completed and 180 credits have been acquired.

(2) A B.Sc. has definitively not been attained when one of the requirements specified in (1), 1. to 3., has not been met and a repetition of the corresponding requirement is not possible.

(3) When a B.Sc. has definitively not been attained, the Examination Committee, upon receipt of an application from the student so affected and of the appropriate documentation, as well as the certificate of exmatriculation, shall certify the failure to qualify for the degree and specify the tests passed, their grades and the ECTS-credits accumulated.

(4) The certificate of a completed B.Sc is equivalent to a Certificate of General Higher Education Entrance Qualification, as defined in § 3, para. 4, of the Regulations Governing University Qualification (*Qualifikationsverordnung*). Accordingly, students with entrance qualifications for a polytechnic (*Fachhochschule*) automatically gain the entrance requirement by acquiring the B.Sc.

§ 38

Certificate and Diploma Supplement

(1) If the student has acquired the B.Sc., he or she receives a Certificate which contains the following data:

- name of the University and the Faculty,
- name, first name, date and place of birth of the student,
- name of the degree programme and information about the standard period of study,
- the names and GPAs of the passed modules together with the acquired credits and the assigned ECTS-grades,
- the names and grades of the passed continuous assessment examinations together with the acquired credits,
- the topic and the grade of the completed project together with the acquired credits and the assigned ECTS-grade, if applicable,
- the topic and the grade of the B.Sc. thesis together with the acquired credits and the assigned ECTS-grade,
- the final grade on the degree programme together with the number of acquired credits and the assigned ECTS-grade,
- the period of time needed to complete the degree,
- upon request of the student, the grades on additional examinations, if applicable,
- the date of the last examination,
- the signature of the Chairperson of the Examination Committee together with the signature of the Dean of the Faculty with the date of issue of the Certificate, and
- the seal of the University.

(2) Together with the Certificate the graduate also receives a Diploma Supplement from the University. Besides the personal data and general information about the degree, the name and location of the University, the degree programme, the Supplement also includes detailed information about study and examination credits, as well as the corresponding grades. The Diploma Supplement shall bear the same date as the Certificate.

(3) The Certificate, pursuant to (1), and the Diploma Supplement, pursuant to (2), are issued in German. Upon request, the graduate also shall receive a copy of the Certificate and the Diploma Supplement in English.

§ 39

B.Sc. Diploma

(1) Upon receiving the Certificate and the Diploma Supplement, the graduate shall receive a Diploma with the same date as that of the Certificate and the Diploma Supplement. The Diploma shall certify the awarding of the B.Sc. as specified in § 2, para. 1. The Diploma shall bear the signatures of the Chairperson of the Examination Committee and the Dean of the Faculty of Engineering Sciences and the seal of the University of Duisburg-Essen.

(2) Upon request, the graduate shall receive an English version of the B.Sc. Diploma.

III. Master of Science (M.Sc.) in Engineering

§ 40

Subject and Structure

The M.Sc. programme consists of

1. the continuous assessment examinations as described in § 42 and the subject annexes of these Regulations and
2. the M.Sc. thesis as described in § 43.

§ 41

Admission to the M.Sc. Programme

(1) Students may be admitted to study a subject in the M.Sc. programme in ISE (see § 3, para. 2) only if they are registered for the M.Sc. programme in ISE or qualify as guest students in compliance with § 71, para. 2, of the LU.

(2) The written application for admission to the M.Sc. programme has to be presented to the Examination Committee at least four weeks before the date of the first continuous assessment examination in the first semester as described in the appropriate subject annexes of these Regulations.

The following is to be included in the application:

1. A verification of the prerequisite mentioned in (1), and
2. a statement as to whether the student has definitively failed to attain a M.Sc. or comparable degree (*Diplomprüfung*) in the proposed subject or a similar one and as to whether the student is currently enrolled in another degree programme.

(3) If verification as described in (2) cannot be presented in the specified way, the Examination Committee may recognise other documentation.

(4) Admission to study a degree subject is to be denied when

a) the prerequisite mentioned in (1) is not fulfilled, or
b) the documentation is incomplete, or
c) the student has definitively failed to qualify for a M.Sc. or a comparable degree *(Diplomprüfung*) in the Federal Republic of Germany or outside Germany that is comparable to the proposed degree subject in ISE, or
d) the student is currently enrolled in a degree programme in the same or a similar subject.

§ 42

Continuous Assessment Examinations in Compulsory and Elective Subjects

Pursuant to § 17, examinations in the compulsory and elective subjects of the respective degree course are set in agreement with the subject annexes of these Regulations.

§ 43

M.Sc. Thesis

(1) The M.Sc. thesis is an examination paper which concludes the academic education in every M.Sc. subject in ISE. The purpose of the thesis is to demonstrate, by the student's use of recognised scientific methods, that he or she is capable within a defined period of time of dealing independently with a problem from the field of engineering sciences.

(2) Permission to submit an M.Sc. thesis shall be granted only to those candidates who

1. have acquired 60 credits by satisfying the requirements as stated in § 42,
2. have acquired 3 additional credits by satisfying the internship requirements as described in § 7, para. 5, and
3. have successfully satisfied the requisite language requirements as defined in § 5, paras. 2 and 5.

(3) A M.Sc. thesis can be assigned without thematic restrictions anywhere within the Faculty of Engineering Sciences. The thesis is normally proposed and supervised by a professor, a member of the academic staff, or a member of the academic staff authorised to examine students independently (*Privatdozent*) from the Faculty of Engineering, or a visiting professor currently employed in the Faculty of Engineering or a visiting member of the academic staff who teaches courses in ISE. If the M.Sc. thesis is to be done at an institution outside of the University, the Examination Committee must approve this undertaking. The student has the right to suggest a thesis topic.

(4) In response to an application by a student the Chairperson of the Examination Committee is, in reasonable time, to provide her or him with a topic for the M.Sc. thesis and to record the date of its issue.

(5) The time a student normally devotes to the thesis is six months. In exceptional cases and in response to a written application to the Chairperson of the Executive Committee by the student at least two weeks before the expiration of the deadline, this period can be extended by up to six weeks. The topic and the purpose statement of the thesis have to be such that the deadline for the project can be met. The topic can be changed only once and only within the first month following the date of issue of the topic.

(6) The M.Sc. thesis can in adequately substantiated cases be completed as a group project when the test performance under examination for each student is so clearly demarcated by means of the identification of sections or pages or other objective criteria that the evaluation of the individual contributions can be made and the requirements in (1) fulfilled.

(7) The M.Sc. thesis, normally of 40 to 60 pages, must be drafted in German or English and submitted to the Examination Committee in triplicate, printed and bound in DIN A4 format, on or before the deadline. Significant detailed results can, where appropriate, be summarised in an annexe. When submitting the B.Sc. thesis, students must guarantee in writing that they alone wrote the thesis or, in the case of a joint project, their own part of the thesis, and used no other sources or auxiliary aids than those acknowledged and no quotations other than those cited. The date of submission should be registered officially. Should the B.Sc. thesis not be submitted on time, it shall be graded as 'Insufficient' (5.0).

(8) The M.Sc. thesis is normally to be graded and commented upon by two examiners; the first examiner should be the member of staff who proposed the topic of the thesis. Exceptions to this rule must be approved by the Examination Committee. The Examination Committee appoints the second examiner. At least one of the examiners has to be a member of the Faculty of Engineering Sciences at the University of Duisburg-Essen. The individual grading is to be carried out in conformity with the grading scale in § 20, para. 1. The grade on the M.Sc. thesis is a arithmetic average of the two examiners' grades, should they differ, as long as the difference is not more than 2.0. When, however, any difference is greater than 2.0 the Examination Committee shall appoint a third examiner to grade the thesis. In this case the grade shall be computed by averaging the two best grades. However, the thesis can be graded as 'sufficient' (4.0) or better only when at least two grades are 'sufficient' (4.0) or better.

(9) The grading of the thesis normally is not to exceed six weeks. Only in extreme circumstances are deviations from this regulation acceptable, and the reasons must be recorded officially. The grade on the M.Sc. thesis must be communicated to the Examination Committee directly after the grade has been determined.

§ 44

Resubmitting the M.Sc. Thesis

(1) A failed M.Sc. thesis can be resubmitted once. During this process the topic can be changed only once and only within the first month following the date of issue of the topic (see § 43, para. 5, the last sentence). This option is possible, however, only if the student did not exercise it while preparing the failed thesis.

(2) A second resubmission of the M.Sc. thesis is not permissible.

§ 45

Qualifying and Failing to Qualify for a M.Sc.

(1) An M.Sc. is attained when

1. all continuous assessment examinations according to § 42 and the relevant annexes of these Regulations,
2. the M.Sc. thesis as defined in § 43, and
3. the internship according to § 7, para. 5,

have been successfully completed and 120 credits have been acquired.

(2) An M.Sc. has definitively not been attained when one of the requirements specified in (1), 1. to 3., has not been met and a repetition of the corresponding requirement is not possible.

(3) When an M.Sc. has definitively not been attained, the Examination Committee, upon receipt of an application from the student so affected and of the appropriate documentation, as well as the certificate of exmatriculation, shall certify the failure to qualify for a degree and specify the tests passed, their grades and the ECTS-credits accumulated.

§ 46

Certificate and Diploma Supplement

(1) If the student has acquired the M.Sc., he or she receives a Certificate which contains the following data:

- name of the University and the Faculty,
- name, first name, date and place of birth of the student,
- name of the degree subject, chosen focus if applicable and information about the standard period of study,
- the names and GPAs of the passed modules together with the acquired credits and the assigned ECTS-grades,
- the names and grades of the passed continuous assessment examinations together with the acquired credits,
- the topic and the grade of the M.Sc. thesis together with the acquired credits and the assigned ECTS-grade,
- the final grade on the degree together with the number of acquired credits and the assigned ECTS-grade,
- the period of study needed to complete the degree course,
- upon request of the student the grades of additional examinations, if applicable,
- the date of the last examination,
- the signature of the Chairperson of the responsible Examination Committee together with the signature of the Dean of the Faculty with the date of issue of the Certificate, and
- the seal of the University.

(2) Together with the Certificate the graduate also receives a Diploma Supplement from the University. Besides the personal data and general information about the degree, the name and location of the University, the degree programme, the Supplement also includes detailed information about study and examination credits, as well as the corresponding grades. The Diploma Supplement shall bear the same date as the Certificate.

(3) The Certificate, pursuant to (1) and the Diploma Supplement, pursuant to (2), shall be issued in German. Upon request, the graduate shall also receive a copy of the Certificate and the Diploma Supplement in English.

§ 47

M.Sc. Diploma

(1) Upon receiving the Certificate and the Diploma Supplement, the graduate shall receive a Diploma bearing the same date as that of the Certificate and the Diploma Supplement. The Diploma shall certify the awarding of an M.Sc. as specified in § 2, para. 1. The Diploma shall bear the signatures of the Chairperson of the Examination Committee and the Dean of the Faculty of Engineering Sciences and the seal of the University of Duisburg-Essen.

(2) Upon request, the graduate shall receive an English version of the M.Sc. Diploma.

IV. Final and Transitional Regulations

§ 48

Period of Validity

(1) These Examination Regulations apply to all students who register for the first time for a B.Sc. or M.Sc. programme in ISE in the winter semester of 2004/2005 or later.

(2) All applicants who wish to be admitted for the first time in the winter semester of 2003/2004 or later to study B.Sc. or M.Sc. subjects in ISE listed in § 3 are affected by § 4, paras. 2 and 6, as well as § 5, paras. 1 to 3.

§ 49

Transitional provisions

(1) For the following subjects offered by the Faculty of Engineering Sciences at the University of Duisburg-Essen, first-semester enrolments have, as of the winter semester of 2002/2003, been discontinued:

1. the M.Sc. subject ‘Computer Science and Communications Engineering’ leading to the M.Sc. or the degree Diplom-Ingenieurin/Diplom-Ingenieur (Dipl.-Ing.),
2. the B.Sc. subject ‘Mechanical Engineering’ leading to the degree Bachelor of Engineering (B.E.),
3. the M.Sc. subject ‘Mechanical Engineering’ with the specializations in ‘Mechatronics’, ‘Water Resources’ and ‘Logistics’ leading to the M.Sc.

(2) Students who prior to the winter semester of 2002/2003 enrolled in one of the subjects mentioned in (1), nos. 1. to 3., shall take their examinations

1. in 'Computer Science and Communications Engineering' pursuant to the Examination Regulations for the subject 'Computer Science and Communications Engineering' of 14 February 2002, published in the *Official Bulletin of the University of Duisburg-Essen* of 15 February 2002,
2. in 'Mechanical Engineering' pursuant to the Examination Regulations for 'Mechanical Engineering' from 10 May 1999, published in the *Official Bulletin of the University of Duisburg-Essen* of 21 June 2000,
3. in the M.Sc. subject 'Mechanical Engineering' pursuant to the Transitional Regulations for the M.Sc. subject 'Mechanical Engineering' adopted by the Faculty of Engineering Sciences.

(3) Pursuant to the Examination Regulations valid in the summer semester of 2002 for 'Computer Science and Communications Engineering', first-time applications for the following semesters must not be submitted later than

- the winter semester of 2003/2004 for subject examinations on the pre-degree examination for higher education,
- the winter semester of 2006/2007 for subject examinations on the final examination for higher education,
- the winter semester of 2007/2008 for the thesis.

(4) Pursuant to the Examination Regulations valid in the summer semester of 2002 for the B.Sc. subject 'Mechanical Engineering', first-time applications for the following semesters must not be submitted later than

- the winter semester of 2003/2004 for the B.Sc. ,
- the winter semester of 2006/2007 for the B.Sc. thesis.

(5) Pursuant to the Transitional Regulations valid for the M.Sc. subject 'Mechanical Engineering', first-time applications for the following semesters must not be submitted later than

- the winter semester of 2003/2004 for the M.Sc.
- the winter semester of 2005/2006 for the M.Sc. thesis.

(6) If applicable, necessary resit examinations pursuant to (3) to (5) have to be completed at least one year after the initial attempt.

(7) Students who have enrolled in one of the degree subjects mentioned in (1) to (3) before the winter semester of 2002/2003 have the option of transferring to a similar subject in ISE where acquired subject and examination credits can be accredited pursuant to § 15.

(8) The following Examination Regulations or Transitional Regulations valid in the summer semester of 2002 expire on the following dates:

1. the Examination Regulations for 'Computer Science and Communications Engineering' in the winter semester of 2008/2009,
2. the Examination Regulations for the B.Sc. subject 'Mechanical Engineering' in the winter semester of 2007/2008,
3. the Transitional Regulations adopted by the Faculty of Engineering Sciences and valid for examinations within the M.Sc. subject 'Mechanical Engineering' in the winter semester of 2006/2007.

The corresponding Examination Committees are dissolved on the same dates.

(9) Resit examinations have to be taken pursuant to the relevant Examination Regulations that define the time limit mentioned above.

§ 50

Effective Date and Publication

These Examination Regulations shall come into force on 1 October 2004. They shall be announced in the *Official Bulletin of the University of Duisburg-Essen*.

Drawn up pursuant to the resolution of the Faculty Council of the Faculty of Engineering Sciences of 7 July 2004.

Duisburg and Essen, 19 October 2004

The Rector,
The University of Duisburg-Essen,
Prof. Dr. Lothar Zechlin

Annexes to the Examination Regulations:

Subject Regulations for Continuous Assessment Examinations in B.Sc. and M.Sc. Programmes in ISE

Annexe 1:

Legend for the Annexes 2 and 3

Sem.	=	Semester in which a course is taken
P	=	Compulsory course
WP	=	Elective course
V	=	Lecture
Ü	=	Exercise
Pr.	=	Laboratory exercise
SWS	=	Credit hours
Cr.	=	Credits

B.Sc. Programme

Annexe 2.1:

Continuous Assessment Examinations in the Common First Year

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Natural Sciences/ Naturwissenschaften	1	Mathematics 1 (P)	Mathematik 1 (P)	4	2	0	7
	2	Mathematics 2 (P)	Mathematik 2 (P)	3	2	0	6
	1	General Chemistry (P)	Allgemeine Chemie (P)	2	1	0	4
	2	Physics (P)	Physik (P)	2	1	1	5
Mechanical Engineering/ Maschinenbau	1	Mechanics 1 (P)	Mechanik 1 (P)	2	1	0	4
	2	Mechanics 2 (P)	Mechanik 2 (P)	2	1	0	4
	2	Design Theory 1 (P)	Konstruktionslehre 1 (P)	1	1	0	3
Electrical Engineering/ Elektrotechnik	1	Fundamentals of Electrical Engineering 1 (P)	Grundlagen der Elektrotechnik 1 (P)	2	1	0	4
	2	Fundamentals of Electrical Engineering 2 (P)	Grundlagen der Elektrotechnik 2 (P)	2	1	0	4
Computer Engineering/ Computer Engineering	1	Fundamentals of Computer Engineering 1 (P)	Grundlagen Computer Engineering 1 (P)	2	1	0	4
	2	Fundamentals of Computer Engineering 2 (P)	Grundlagen Computer Engineering 2 (P)	2	1	0	4
Fundamental Labs/ Grundlagen Labore	1	Introduction to CAx (P)	Einführung in CAx (P)	0	0	2	3
	1	Interdisciplinary Labs (P)	Interdisziplinäres Labor (P)	0	0	2	2
	2	Computer-Based Problem Solving (P)	Computergestützte Problemlösung (P)	0	0	2	2
Non-Technical Subjects 1/ Nicht technische Fächer 1	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	2	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
Summe				**28**	**13**	**7**	**60 Cr.**
				48 SWS			

Annexe 2.2.1:

Continuous Assessment Examinations in the Second and Third Year for 'Computer Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Computer Science Mathematics/ Informatik Mathematik	3	Mathematics C1 (Discrete Mathematics) (P)	Mathematik C1 (Diskrete Mathematik) (P)	2	2	0	6
	4	Computer Based Engineering Mathematics (P)	Computergestützte Ingenieurmathematik (P)	1	1	1	4
Fundamentals of Informatics/ Grundlagen der Informatik	3	Modelling Methods in Informatics (P)	Modellierungsmethoden der Informatik (P)	3	1	0	6
	3	Algorithms and Data-Structures (P)	Algorithmen und Datenstrukturen (P)	2	1	0	4
	4	Human Computer Interaction (P)	Mensch-Computer-Interaktion (P)	4	0	0	5
Electronic Components/ Elektronische Komponenten	3	Signals and Systems 1 (P)	Signale und Systeme 1 (P)	3	2	0	6
	5	Basic Electronic DeVices (P)	Elektronische Bauelemente (P)	2	1	1	5
	5	Components of Digital Systems (P)	Bauelemente und Grundschaltungen (P)	2	1	0	4
Multimedia and Internet/ Multimedia und Internet	5	Internet Technology (P)	Internet-Technologie	2	1	0	4
	5	Designing Multimedia Applications (WP) *OR* Data Models and Databases (WP)	Entwurf von Multimedia-Applikationen (WP) *ODER* Datenmodelle und Datenbanken (WP)	2	0	2	5
Fundamentals of Software Engineering 1/ Grundlagen der Programmentwurfstechnik 1	3	Fundamentals of Programming 1 (Programming in C) (P)	Grundlagen der Programmierung 1 (Programmieren in C) (P)	2	1	0	4
	4	Fundamentals of Software Engineering 1 (Structured Analysis) (P)	Grundlagen der Programmentwurfstechnik 1 (Strukturierte Analyse) (P)	2	0	2	5
Fundamentals of Software Engineering 2/ Grundlagen der Programmentwurfstechnik 2	4	Fundamentals of Programming 2 (OO Programming in C++) (P)	Grundlagen der Programmierung 2 (OO-Programmieren in C++) (P)	2	1	0	4
	5	Fundamentals of Software Engineering 2 (P)	Grundlagen der Programmentwurfstechnik 2 (P)	2	0	1	4
Computer Systems and Networks/ Computer-Systeme und Netzwerke	4	Logical Design of Digital Systems (P)	Logischer Entwurf digitaler Systeme (P)	2	1	1	5
	5	Microcomputer Systems (P)	Mikrocomputer-Systeme (P)	2	1	2	6
	6	Computer Networks Lab (P)	Computer-Netzwerke-Labor (P)	0	1	2	4
	6	Operating Systems and Computer Networks (P)	Betriebssysteme und Computer-Netzwerke (P)	2	1	0	4
Non-Technical Subjects 2/ Nicht technische Fächer 2	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
	3	Non-Technical Subject 4 (WP)	Nicht technisches Fach 4 (WP)	2	0	0	2
	4	Non-Technical Subject 5 (WP)	Nicht technisches Fach 5 (WP)	2	0	0	2
	4	Non-Technical Subject 6 (WP)	Nicht technisches Fach 6 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	6	Project (WP) *OR* 2 Electives (WP)	Projekt (WP) *ODER* 2 Wahlpflichtfächer (WP)	0	6	0	6
Summe				**45**	**22**	**12**	**99 Cr.**
				79 SWS			

Annexe 2.2.2:

Continuous Assessment Examinations in the Second and Third Year for 'Computer Science and Communications Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Computer Science Mathematics/ Informatik Mathematik	3	Mathematics C1 (Discrete Mathematics) (P)	Mathematik C1 (Diskrete Mathematik) (P)	2	2	0	6
	4	Computer Based Engineering Mathematics (P)	Computergestützte Ingenieurmathematik (P)	1	1	1	4
Fundamentals and Auxiliary Engineering Disciplines/Grundlagen und Hilfswissenschaften	3	Algoritms and Data-Structures (P)	Algorithmen und Datenstrukturen (P)	2	1	0	4
	4	Signals and Systems 2 (P)	Signale und Systeme 2 (P)	2	2	0	5
	5	Basic Electronic DeVices (P)	Elektronische Bauelemente (P)	2	1	1	5
Multimedia and Internet/Multimedia und Internet	5	Internet Technology (P)	Internet-Technologie (P)	2	1	0	4
	5	Designing Multimedia Applications (WP) *OR* Data Models and Databases (WP)	Entwurf von Multimedia-Applikationen (WP) *ODER* Datenmodelle und Datenbanken (WP)	2	0	2	5
Signals/Signale	3	Signals and Systems 1 (P)	Signale und Systeme 1 (P)	3	2	0	6
	4	Digital Filters (P)	Digitale Filter (P)	2	1	0	3
	5	Radio Propagation Channels (P)	Wellenausbreitung und Funkkanäle (P)	2	1	0	4
Communications and Microwave Engineering/ Nachrichten- und Mikro-wellentechnik	4	Microwave and RF-Technology (P)	Hochfrequenztechnik (P)	2	1	1	5
	5	Analog Filters (P)	Analoge Filter (P)	2	1	0	3
	6	Mobile Communications (WP) *OR* Transmission and Modulation (WP)	Mobilkommunikationstechnik (WP) *ODER* Signalübertragung und Modulation (WP)	2	1	0	3
Computer Systems and Networks/ Computer-Systeme und Netzwerke	4	Logical Design of Digital Systems (P)	Logischer Entwurf digitaler Systeme (P)	2	1	1	5
	5	Microcomputer Systems (P)	Mikrocomputer-Systeme (P)	2	1	2	6
	6	Computer Networks Lab (P)	Computer-Netzwerke-Labor (P)	0	1	2	4
	6	Operating Systems and Computer Networks (P)	Betriebssysteme und Computer-Netzwerke (P)	2	1	0	4
Fundamentals of Software Engineering 1/ Grundlagen der Programmentwurfstechnik 1	3	Fundamentals of Program-ming 1 (Programming in C) (P)	Grundlagen der Programmierung 1 (Programmieren in C) (P)	2	1	0	4
	4	Fundamentals of Software Engineering 1 (Structured Analysis) (P)	Grundlagen der Programmentwurfstechnik 1 (Strukturierte Analyse) (P)	2	0	2	5
Non-Technical Subjects 2/ Nicht technische Fächer 2	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
	3	Non-Technical Subject 4 (WP)	Nicht technisches Fach 4 (WP)	2	0	0	2
	4	Non-Technical Subject 5 (WP)	Nicht technisches Fach 5 (WP)	2	0	0	2
	6	Non-Technical Subject 6 (WP)	Nicht technisches Fach 6 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	3	Project (WP) *OR* 2 Electives (WP)	Projekt (WP) *ODER* 2 Wahlpflichtfächer (WP)	0	6	0	6
Summe				**44**	**26**	**12**	**99 Cr.**
				82 SWS			

Annexe 2.2.3:

Continuous Assessment Examinations in the Second and Third Year for 'Control and Information Systems'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Supplements to Fundamentals of Mathematics/Erweiterung zu Grundlagen der Mathematik	3	Mathematics 3 (P)	Mathematik 3 (P)	2	2	0	5
	4	Computer Based Engineering Mathematics (P)	Computergestützte Ingenieurmathematik (P)	1	1	1	4
Supplements to Fundamentals of Electrical Engineering/Erweiterung zu Grundlagen der Elektrotechnik	3	Fundamentals of Electrical Engineering 3 (P)	Grundlagen der Elektrotechnik 3 (P)	2	1	0	4
	3	Electrical Engineering Lab (P)	Elektrotechnik Labor (P)	0	0	3	4
Thermodynamics/[1] Thermodynamik	3	Thermodynamics 1 (P)	Thermodynamik 1 (P)	2	1	0	4
	4	Thermodynamics 2 (P)	Thermodynamik 2 (P)	2	2	0	5
Technological Fundamentals/Technologische Grundlagen	4	Materials Engineering (P)	Materialtechnik (P)	2	0	0	3
	5	Basic Electronic DeVices (P)	Elektronische Bauelemente (P)	2	1	1	5
Fundamentals of Automation and Control/ Grundlagen der Automatisierungs- und Reglungstechnik	4	Introduction to Automation (P)	Einführung in die Automatisierungstechnik (P)	2	1	1	5
	5	Systems and Control 1 (P)	Systemtheorie und Regelungstechnik 1 (P)	2	1	0	4
	6	Systems and Control 2 (P)	Systemtheorie und Regelungstechnik 2 (P)	2	1	1	5
Fundamentals of Software Engineering 1/ Grundlagen der Programmentwurfstechnik 1	3	Fundamentals of Programming 1 (Programming in C) (P)	Grundlagen der Programmierung 1 (Programmieren in C) (P)	2	1	0	4
	4	Fundamentals of Software Engineering 1 (Structured Analysis) (P)	Grundlagen der Programmentwurfstechnik 1 (Strukturierte Analyse) (P)	2	0	2	5
Fundamentals of Extended Software Engineering/ Grundlagen der erweiterten Programmentwurfstechnik	5	Internet Technology (P)	Internet-Technologie (P)	2	1	0	4
	4	Fundamentals of Programming 2 (OO Programming in C++) (P)	Grundlagen der Programmierung 2 (OO-Programmieren in C++) (P)	2	1	0	4
Control Engineering, Modelling and Simulation/Engineering der Prozess-automatisierung, Modellbildung und Simulation	5	Process Control Engineering (P)	Prozessautomatisierung (P)	2	1	0	4
	5	Process Control Engineering Lab (P)	Prozessautomatisierung Labor (P)	0	0	1	1
	5	Modelling and Simulation of Dynamic Systems (P)	Modellbildung und Simulation dynamischer Systeme (P)	2	1	1	5
Computer Systems and Networks/Computer-Systeme und Netzwerke	3	Microcomputer Systems (P)	Mikrocomputer-Systeme (P)	2	1	2	6
	4	Operating Systems and Computer Networks (P)	Betriebssysteme und Computer-Netzwerke (P)	2	1	0	4
Non-Technical Subjects 2/ Nicht technische Fächer 2	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
	5	Non-Technical Subject 4 (WP)	Nicht technisches Fach 4 (WP)	2	0	0	2
	5	Non-Technical Subject 5 (WP)	Nicht technisches Fach 5 (WP)	2	0	0	2
	6	Non-Technical Subject 6 (WP)	Nicht technisches Fach 6 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	6	Project (WP) *OR* 2 Electives (WP)	Projekt (WP) *ODER* 2 Wahlpflichtfächer (WP)	0	6	0	6
Summe				**43**	**24**	**13**	**99 Cr.**
				80 SWS			

[1] emended by Statute dated 11.05.05

Annexe 2.2.4: Continuous Assessment Examinations in the Second and Third Year for 'Electrical and Electronic Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Supplements to Fundamentals of Mathematics/ Erweiterung zu Grundlagen der Mathematik	3	Mathematics 3 (P)	Mathematik 3 (P)	2	2	0	5
	4	Computer Based Engineering Mathematics (P)	Computergestützte Ingenieurmathematik (P)	1	1	1	4
Supplements to Fundamentals of Electrical Engineering/Erweiterung zu Grundlagen der Elektrotechnik	3	Fundamentals of Electrical Engineering 3 (P)	Grundlagen der Elektrotechnik 3 (P)	2	1	0	4
	3	Electrical Engineering Lab (P)	Elektrotechnik Labor (P)	0	0	3	4
Fields and Materials/ Feldtheorie und Materialtechnik	3	Introduction to Materials of Electrical Engineering (P)	Einführung in die Werkstoffe der Elektrotechnik (P)	2	1	0	4
	4	Introduction to Materials of Electrical Engineering Lab (P)	Einführung in die Werkstoffe der Elektrotechnik Labor (P)	0	0	1	1
	5	Electromagnetic Field Theory 1 (P)	Theoretische Elektrotechnik 1 (P)	2	1	0	4
Control Engineering/ Regelungstechnik	4	Introduction to Automation (P)	Einführung in die Automatisierungstechnik (P)	2	1	1	5
	5	Systems and Control 1 (P)	Systemtheorie und Regelungstechnik 1 (P)	2	1	0	4
Electronics/ Technische Elektronik	4	Introduction to Solid State Electronics (P)	Einführung in die Festkörperelektronik (P)	2	2	0	5
	5	Optoelectronics (WP) *OR* Microelectronics (WP)	Optoelektronik (WP) *ODER* Mikroelektronik (WP)	2	1	0	3
	5	Basic Electronic DeVices (P)	Elektronische Bauelemente (P)	2	1	1	5
Communications Engineering/ Nachrichtentechnik	6	Microwave and RF-Technology (P)	Hochfrequenztechnik (P)	2	1	1	5
	5	Communications 1 (P)	Nachrichtentechnische Systeme 1 (P)	2	1	1	5
	6	Mobile Communications (WP) *OR* Transmission and Modulation (WP)	Mobilkommunikationstechnik (WP) *ODER* Signalübertragung und Modulation (WP)	2	1	0	3
Auxiliary Engineering Disciplines/ Hilfswissenschaften	3	Microcomputer Systems (P)	Mikrocomputer-Systeme (P)	2	1	0	4
	3	Fundamentals of Programming 1 (Programming in C) (P)	Grundlagen der Programmierung 1 (Programmieren in C) (P)	2	1	0	4
Electrical Power Engineering/ Elektrische Energietechnik	3	Fundamentals of Electrical Energy Technology (P)	Grundlagen der elektrischen Energietechnik (P)	2	1	1	5
	4	Electrical Power Systems (P)	Elektrische Energieversorgung (P)	2	0	1	4
	5	High-Voltage Engineering (P)	Hochspannungstechnik (P)	2	0	1	4
	6	Electromagnetic Compatibility (P)	Elektromagnetische Verträglichkeit (P)	2	1	0	3
Non-Technical Subjects 2/ Nicht technische Fächer 2	4	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
	4	Non-Technical Subject 4 (WP)	Nicht technisches Fach 4 (WP)	2	0	0	2
	5	Non-Technical Subject 5 (WP)	Nicht technisches Fach 5 (WP)	2	0	0	2
	6	Non-Technical Subject 6 (WP)	Nicht technisches Fach 6 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	4	Project (WP) *OR* 2 Electives (WP)	Projekt (WP) *ODER* 2 Wahlpflichtfächer (WP)	0	6	0	6
Summe				**45**	**25**	**12**	**99 Cr.**
				82 SWS			

Annexe 2.2.5:

Continuous Assessment Examinations in the Second and Third Year for ' Mechanical Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Engineering Fundamentals/ Ingenieur-Grundlagen	3	Mathematics C2 (Numerical Mathematics) (P)	Mathematik C2 (Numerische Mathematik) (P)	2	2	0	6
	3	Statistics for Engineers (P)	Statistik für Ingenieure (P)	1	1	0	3
	4	Computer Based Engineering Mathematics (P)	Computergestützte Ingenieurmathematik (P)	1	1	1	4
	3	Mechanics 3 (P)	Mechanik 3 (P)	2	2	1	6
Thermodynamics/ [2] Thermodynamik	3	Thermodynamics 1 (P)	Thermodynamik 1 (P)	2	1	0	4
	4	Thermodynamics 2 (P)	Thermodynamik 2 (P)	2	2	0	5
Machine Technology/ Maschinentechnik	4	Fluid Mechanics (P)	Strömungsmechanik (P)	2	1	0	3
	5	Fluid Machines (WP) *OR* Machine Tools (WP)	Strömungsmaschinen (WP) *ODER* Werkzeugmaschinen (WP)	2	0	1	4
Materials and Manufacturing/Werkstoffe und Fertigung	3	Materials Science 1 (P)	Werkstoffkunde 1 (P)	4	0	1	5
	4	Materials Science 2 (P)	Werkstoffkunde 2 (P)	2	0	1	4
	4	Manufacturing (P)	Fertigungslehre (P)	2	1	0	4
Engineering Design/Konstruktionstechnik	3	Design Theory 2 (P)	Konstruktionslehre 2 (P)	2	2	0	5
	4	Design Theory 3 (P)	Konstruktionslehre 3 (P)	2	2	0	5
	5	CAD/CAE (P)	CAD/CAE (P)	2	0	1	3
Engineering I/ Engineering I	5	Modelling and Simulation (WP) *OR* Computational Fluid Dynamics (WP)	Modellbildung und Simulation (WP) *ODER* Numerische Fluiddynamik (WP)	2	1	0	3
	5	Control Technique (P)	Regelungstechnik (P)	3	2	0	6
	6	Energy Engineering (WP) *OR* Mechatronics (WP)	Energietechnik (WP) *ODER* Mechatronik (WP)	2	1	0	3
Engineering II/ Engineering II	5	Production Management (P)	Produktionsmanagement (P)	2	1	0	4
	6	Product Engineering (WP) *OR* Process Engineering (WP)	Produktentwicklung (WP) *ODER* Verfahrenstechnik (WP)	2	1	0	4
	5	Material Flow and Logistics (WP) *OR* Waste Treatment (WP)	Materialfluss und Logistik (WP) *ODER* Abfallbehandlung (WP)	2	1	0	4
Non-Technical Subjects 2/ Nicht technische Fächer 2	4	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
	4	Non-Technical Subject 4 (WP)	Nicht technisches Fach 4 (WP)	2	0	0	2
	5	Non-Technical Subject 5 (WP)	Nicht technisches Fach 5 (WP)	2	0	0	2
	5	Non-Technical Subject 6 (WP)	Nicht technisches Fach 6 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	6	Project (WP)	Projekt (WP)	0	6	0	6
Summe				**49**	**28**	**6**	**99 Cr.**
				83 SWS			

[2] berichtigt durch Ordnung v. 10.05.2005 (VBl S. 173)

Annexe 2.2.6:

Continuous Assessment Examinations in the Second and Third Year for 'Material Technology'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Mathematical and Natural Science Fundamentals/ Naturwissenschaftliche und mathematische Grundlagen	3	Mathematics C2 (Numerical Mathematics) (P)	Mathematik C2 (Numerische Mathematik) (P)	2	2	0	6
	3	Statistics for Engineers (P)	Statistik für Ingenieure (P)	1	1	0	3
	4	Computer Based Engineering Mathematics (P)	Computergestützte Ingenieurmathematik (P)	1	1	1	4
	3	Anorganic Chemistry (P)	Anorganische Chemie (P)	2	0	1	3
	4	Physical Chemistry (P)	Physikalische Chemie (P)	2	0	1	3
Engineering [3] Fundamentals/ Ingenieurwissenschaftliche Grundlagen	3	Thermodynamics 1 (P)	Thermodynamik 1 (P)	2	1	0	4
	3	Design Theory 2 (P)	Konstruktionslehre 2 (P)	2	2	0	5
	4	Design Theory 3 (P)	Konstruktionslehre 3 (P)	2	2	0	5
Applied Engineering Science/ Angewandte Ingenieurwissenschaften	3	Materials Science 1 (P)	Werkstoffkunde 1 (P)	4	0	1	5
	4	Materials Science 2 (P)	Werkstoffkunde 2 (P)	2	0	1	4
	5	Heat Transfer (P)	Wärmeübertragung (P)	2	0	0	2
	6	Fundamentals of High Temperature Technology (P)	Grundlagen der Hochtemperaturtechnik (P)	1	1	0	3
Metallurgy/ Metallerzeugung	4	Fundamentals of Metallurgy (P)	Grundlagen der Metallurgie (P)	1	1	1	4
	5	Iron Making (P)	Eisengewinnung (P)	2	1	0	4
	5	Steelmaking 1 (P)	Stahlerzeugung 1 (P)	2	1	0	4
	6	Steelmaking 2 (P)	Stahlerzeugung 2 (P)	1	1	1	4
	6	Non Ferrous Metallurgy (P)	NE-Metallerzeugung (P)	1	1	0	3
Metals and Metal [4] Forming/ Metalle und Metallumformung	3	Metal Physics 1 (P)	Grundlagen der Metallkunde 1 (P)	2	0	0	2
	4	Metal Physics 2 (P)	Grundlagen der Metallkunde 2 (P)	2	0	1	4
	5	Theory of Plasticity (P)	Plastomechanik (P)	2	1	0	4
	5	Metal Forming 1 (P)	Umformtechnik 1 (P)	2	1	1	5
	6	Metal Forming 2 (P)	Umformtechnik 2 (P)	1	1	1	4
Non-Technical Subjects 2/ Nicht technische Fächer 2	4	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
	4	Non-Technical Subject 4 (WP)	Nicht technisches Fach 4 (WP)	2	0	0	2
	4	Non-Technical Subject 5 (WP)	Nicht technisches Fach 5 (WP)	2	0	0	2
	5	Non-Technical Subject 6 (WP)	Nicht technisches Fach 6 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	5	Project (WP) *OR* 2 Electives (WP)	Projekt (WP) *ODER* 2 Wahlpflichtfächer (WP)	0	6	0	6
Summe				**47**	**24**	**10**	**99 Cr.**
				82 SWS			

[3] berichtigt durch Ordnung v. 11.05.2005 (VBl S. 173

[4] berichtigt durch Ordnung v. 11.05.2005 (VBl S. 173)

M.Sc. Programme

Annexe 3.1:

Continuous Assessment Examinations in 'Computer Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Advanced mathematical and informatics Theories/ Fortgeschrittene mathematische und informationstechnische Theorien	1	Mathematics C2 (Numerical Mathematics) (P)	Mathematik C2 (Numerische Mathematik) (P)	2	2	0	6
	2	Information Theory (P)	Informationstheorie (P)	2	2	0	5
	3	Embedded Systems (P)	Embedded Systems (P)	2	1	1	6
Advanced Computer Engineering/Fortgeschrittene Computertechnik	1	Computer Architecture (P)	Computer-Architektur (P)	2	1	0	5
	2	Advanced Computer Architecture (P)	Fortgeschrittene Computer-Architektur (P)	2	1	0	5
Advanced Software and Multimedia Engineering/Fortgeschrittene Software- und Multimediatechnik	1	Multimedia (P)	Multimedia (P)	2	2	0	5
	2	Computervision (P)	Computervision (P)	2	2	0	5
Advanced Network Technology/ Weiterführende Netzwerk-Technologie	1	Security, Safety and Reliability of Digital Systems (P)	Sicherheit und Zuverlässigkeit digitaler Systeme (P)	2	1	0	5
	2	Switched Networks (P)	Switched Networks (P)	2	2	0	6
	2	Security in Computer Networks (P)	Sicherheit in Computernetzen (P)	2	1	0	4
Advanced Software Technology/ Weiterführende Software-Technologie	2	Software Technology (P)	Software-Technologie (P)	2	1	0	5
	3	Distributed Systems (P)	Verteilte Systeme (P)	2	1	1	6
	3	CSCW and Software Engineering (P)	CSCW und Programmentwurfstechnik (P)	2	0	2	6
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	1	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**38**	**20**	**4**	**87 Cr.**
				62 SWS			

Annexe 3.2:

Continuous Assessment Examinations in
'Computer Science and Communications Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Advanced mathematical and communication Theories/ Fortgeschrittene mathematische und nachrichtentechnische Theorien	1	Mathematics C2 (Numerical Mathematics) (P)	Mathematik C2 (Numerische Mathematik) (P)	2	2	0	6
	2	Communications 2 (P)	Nachrichtentechnische Systeme 2 (P)	2	2	0	5
	2	Information Theory (P)	Informationstheorie (P)	2	2	0	5
Advanced Computer Engineering/Fortgeschrittene Computertechnik	1	Computer Architecture (P)	Computer-Architektur (P)	2	1	0	5
	2	Advanced Computer Architecture (P)	Fortgeschrittene Computer-Architektur (P)	2	1	0	5
Advanced Communications Engineering/ Fortgeschrittene Nachrichtentechnik	1	Communication Networks (P)	Kommunikationsnetze (P)	2	1	0	5
	3	Communications 3 (P)	Nachrichtentechnische Systeme 3 (P)	2	1	0	4
	3	Advanced Mobile Communications (P)	Moderne Mobilkommunikation (P)	2	1	0	4
	3	Distributed Systems (P)	Verteilte Systeme (P)	2	1	1	6
Coding/Kodierung	2	Coding Theory (P)	Kodierungstheorie (P)	2	1	0	4
	3	Multidimensional Signals (P)	Mehrdimensionale Signale (P)	2	1	0	5
Advanced Network Technology/ Weiterführende Netzwerk-Technologie	1	Security, Safety and Reliability of Digital Systems (P)	Sicherheit und Zuverlässigkeit digitaler Systeme (P)	2	1	0	5
	2	Security in Computer Networks (P)	Sicherheit in Computernetzen (P)	2	1	0	4
	2	Switched Networks (P)	Switched Networks (P)	2	2	0	6
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	1	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**40**	**21**	**1**	**87 Cr.**
				62 SWS			

Annexe 3.3:

Continuous Assessment Examinations in 'Control and Information Systems'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Mathematics, Numerics and Physics/ Mathematik, Numerik und Physik	1	Mathematics 4 (P)	Mathematik 4 (P)	2	2	0	5
	1	Fluid Dynamics (P)	Fluiddynamik (P)	2	1	0	5
	2	Informatics and Numerical Methods 1 (P)	Informatik und numerische Methoden 1 (P)	2	1	0	5
	3	Informatics and Numerical Methods 2 (P)	Informatik und numerische Methoden 2 (P)	2	1	0	5
Advanced Systems and Control Theory/ Fortgeschrittene System- und Regelungstheorie	1	Nonlinear Control Systems (P)	Nichtlineare Regelungssysteme (P)	2	2	1	7
	2	Stochastic Estimation and Control (P)	Stochastische Verfahren der Regelungstechnik (P)	2	1	0	4
	2	Advanced Systems and Control Theory (P)	Höhere System- und Regelungstheorie (P)	2	1	0	4
	3	Robust Control (P)	Robuste Regelung (P)	2	1	0	4
Advanced Control Technology and Applications/ Fortgeschrittene Technologien und Anwendungen der Automatisierungstechnik	2	Human Machine Systems (P)	Mensch-Maschine-Systeme (P)	3	0	0	4
	2	Advanced Control Lab (P)	Regelungstechnisches Aufbaupraktikum (P)	0	0	3	5
	3	Fault Diagnosis and Tolerance in Technical Systems (P)	Fehlerdiagnose und -toleranz in technischen Systemen (P)	2	1	0	5
Advanced Computer Systems Technology/ Fortgeschrittene Computersystem-Technologie	1	Security, Safety and Reliability of Digital Systems (P)	Sicherheit und Zuverlässigkeit digitaler Systeme (P)	2	1	0	5
	2	Software Technology (P)	Software-Technologie (P)	2	1	0	5
	3	Distributed Systems (P)	Verteilte Systeme (P)	2	1	1	6
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	1	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	2	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**39**	**17**	**5**	**87 Cr.**
				61 SWS			

Annexe 3.4.1:

Continuous Assessment Examinations in 'Electrical and Electronic Engineering' with a Major in 'Communications Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Advanced mathematical and eletrical Theories/ Fortgeschrittene mathematische und elektrotechnische Theorien	1	Mathematics C2 (Numerical Mathematics) (P)	Mathematik C2 (Numerische Mathematik) (P)	2	2	0	6
	1	Mathematics 4 (P)	Mathematik 4 (P)	2	2	0	5
	2	Electromagnetic Field Theory 2 (P)	Theoretische Elektrotechnik 2 (P)	2	2	0	6
Cross Section Module/ Querschnittsmodul	1	Computer Architecture (P)	Computer-Architektur (P)	2	1	0	5
	2	Basic Electronic Circuits (P)	Grundlagen elektronischer Schaltungen (P)	2	1	1	5
	2	Communications 2 (P)	Nachrichtentechnische Systeme 2 (P)	2	2	0	5
	2	Systems and Control 2 (P)	Systemtheorie und Regelungstechnik 2 (P)	2	1	1	5
Fundamentals/ Grundlagen	3	Microwave Theory and Techniques (WP) *OR* Multidimensional Signals (WP)	Mikrowellentechnik (WP) *ODER* Mehrdimensionale Signale (WP)	2	1	1 *oder* 0	5
	2	Coding Theory (P)	Kodierungstheorie (P)	2	1	0	4
	3	Communications 3 (P)	Nachrichtentechnische Systeme 3 (P)	2	1	0	4
Applications/ Anwendungen	1	Communication Networks (P)	Kommunikationsnetze (P)	2	1	0	5
	2	Mobile Communication Equipment (P)	Mobilkommunikationsgeräte (P)	2	1	0	4
	3	Distributed Systems (P)	Verteilte Systeme (P)	2	1	1	6
	3	Optical Communications Technology (WP) *OR* Ultrawideband Communications (WP)	Optische Kommunikationstechnik (WP) *ODER* Ultrabreitband-Übertragungssysteme (WP)	2	1	0	4
Non-Technical Subjects/Nicht technische Fächer	3	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	3	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	1	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**40**	**21**	**3 *oder* 4**	**87 Cr.**
				64 *oder* 65 SWS			

Annexe 3.4.2:

Continuous Assessment Examinations for 'Electrical and Electronic Engineering' with a Major in 'Power and Automation'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Advanced mathematical and eletrical Theories/ Fortgeschrittene mathematische und elektrotechnische Theorien	1	Mathematics C2 (Numerical Mathematics) (P)	Mathematik C2 (Numerische Mathematik) (P)	2	2	0	6
	1	Mathematics 4 (P)	Mathematik 4 (P)	2	2	0	5
	2	Electromagnetic Field Theory 2 (P)	Theoretische Elektrotechnik 2 (P)	2	2	0	6
Cross Section Module/Querschnittsmodul	1	Computer Architecture (P)	Computer-Architektur (P)	2	1	0	5
	2	Basic Electronic Circuits (P)	Grundlagen elektronischer Schaltungen (P)	2	1	1	5
	2	Communications 2 (P)	Nachrichtentechnische Systeme 2 (P)	2	2	0	5
	2	Systems and Control 2 (P)	Systemtheorie und Regelungstechnik 2 (P)	2	1	1	5
Automation/ Automatisierung	1	Modelling and Simulation of Dynamic Systems (P)	Modellbildung und Simulation dynamischer Systeme (P)	2	1	1	5
	3	Power System Operation and Control (P)	Dynamik und Regelung elektrischer Netze (P)	2	1	1	6
	3	Nonlinear Control Systems (P)	Nichtlineare Regelungssysteme (P)	2	2	1	7
Power/ Energie	1	Power System Analysis (P)	Berechnung elektrischer Netze (P)	2	1	0	5
	2	Power Electronics and Drives (P)	Leistungselektronik und Antriebe (P)	2	1	0	5
	2	DeVices for Power Transmission (P)	Betriebsmittel für den elektrischen Energietransport (P)	2	1	0	4
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	1	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	3	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**38**	**21**	**5**	**87 Cr.**
				64 SWS			

Annexe 3.5.1:

Continuous Assessment Examinations for 'Mechanical Engineering' with a Major in 'Mechatronics'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Production Technology/Produktionstechnik	1	Machine Lab (P)	Maschinenlabor (P)	0	0	3	5
	2	Production Technology (P)	Produktionstechnik (P)	2	1	0	5
Fluidflow and Combustion/Strömung und Verbrennung	1	Fluid Dynamics (P)	Fluiddynamik (P)	2	1	0	5
	1	Combustion Science (P)	Verbrennungslehre (P)	2	1	0	5
Advanced Engineering/Weiterführende Ingenieurwissenschaften	2	Computational Methods (P)	Computergestützte Berechnungsmethoden (P)	0	0	4	6
	2	Control Theory (P)	Regelungstheorie (P)	3	1	1	7
	3	Project Management (P)	Projektmanagement (P)	2	1	0	4
System Dynamics/ Systemdynamik	1	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Mathematical Methods/Mathematische Methoden	1	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Mechatronical Applications/ Mechatronische Anwendungen	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Selected Topics/ Wahlpflichtfächer	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	3	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**39**	**16**	**8**	**87 Cr.**
				63 SWS			

Annexe 3.5.2:

Continuous Assessment Examinations for 'Mechanical Engineering' with a Major in 'Production and Logistics'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Production Technology/Produktionstechnik	1	Machine Lab (P)	Maschinenlabor (P)	0	0	3	5
	2	Production Technology (P)	Produktionstechnik (P)	2	1	0	5
Fluidflow and Combustion/Strömung und Verbrennung	1	Fluid Dynamics (P)	Fluiddynamik (P)	2	1	0	5
	1	Combustion Science (P)	Verbrennungslehre (P)	2	1	0	5
Advanced Engineering/ Weiterführende Ingenieurwissenschaften	2	Computational Methods (P)	Computergestützte Berechnungsmethoden (P)	0	0	4	6
	2	Control Theory (P)	Regelungstheorie (P)	3	1	1	7
	3	Project Management (P)	Projektmanagement (P)	2	1	0	4
Logistics and Material Flow/ Logistik und Materialfluss	1	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Product Engineering/Produkt Engineering	1	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Production Technology and Management/ Produktionstechnik und Management	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Selected Topics/ Wahlpflichtfächer	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	3	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**39**	**16**	**8**	**87 Cr.**
				63 SWS			

Annexe 3.5.3:

Continuous Assessment Examinations for 'Mechanical Engineering' with a Major in 'Water Resources and Environmental Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Production Technology/Produktionstechnik	1	Machine Lab (P)	Maschinenlabor (P)	0	0	3	5
	2	Production Technology (P)	Produktionstechnik (P)	2	1	0	5
Fluidflow and Combustion/Strömung und Verbrennung	1	Fluid Dynamics (P)	Fluiddynamik (P)	2	1	0	5
	1	Combustion Science (P)	Verbrennungslehre (P)	2	1	0	5
Advanced Engineering/ Weiterführende Ingenieurwissenschaften	2	Computational Methods (P)	Computergestützte Berechnungsmethoden (P)	0	0	4	6
	2	Control Theory (P)	Regelungstheorie (P)	3	1	1	7
	3	Project Management (P)	Projektmanagement (P)	2	1	0	4
Energy Engineering/ Energietechnik	1	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Water Resources Management/ Management von Wasserressourcen	1	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Environmental Protection Management/ Umweltschutzmanagement	2	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Selected Topics/ Wahlpflichtfächer	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
	3	Subject to be selected from catalogue (WP)	Veranstaltung aus dem Wahlpflichtkatalog (WP)	2	1	0	4
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	3	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**39**	**16**	**8**	**87 Cr.**
				63 SWS			

Annexe 3.5.4:

Continuous Assessment Examinations for 'Mechanical Engineering' with a Major in 'General Mechanical Engineering'

Module	Sem.	Course Title	Lehrveranstaltung/ Prüfungsgebiet	SWS			Cr.
				V	Ü	Pr.	
Production Technology/Produktionstechnik	1	Machine Lab (P)	Maschinenlabor (P)	0	0	3	5
	2	Production Technology (P)	Produktionstechnik (P)	2	1	0	5
Fluidflow and Combustion/Strömung und Verbrennung	1	Fluid Dynamics (P)	Fluiddynamik (P)	2	1	0	5
	1	Combustion Science (P)	Verbrennungslehre (P)	2	1	0	5
Advanced Engineering/ Weiterführende Ingenieurwissenschaften	2	Computational Methods (P)	Computergestützte Berechnungsmethoden (P)	0	0	4	6
	2	Control Theory (P)	Regelungstheorie (P)	3	1	1	7
	3	Project Management (P)	Projektmanagement (P)	2	1	0	4
Fundamentals and Methods/Grundlagen und Methoden	2	Advanced Dynamics (WP)	Höhere Dynamik (WP)	2	1	0	4
	2	Heat- and Mass-Transfer (WP)	Wärme- und Stoffübertragung (WP)	2	1	0	4
Production and Materials/ Produktion und Werkstoffe	1	Subject to be selected from Catalogue PM1 (WP)	Veranstaltung aus dem Katalog PM1 (WP)	2	1	0	4
	3	Subject to be selected from Catalogue PM2 (WP)	Veranstaltung aus dem Katalog PM2 (WP)	2	1	0	4
Energy and Process Engineering/ Energie und Verfahrenstechnik	1	Subject to be selected from Catalogue EPE1 (WP)	Veranstaltung aus dem Katalog EPE1 (WP)	2	1	0	4
	3	Subject to be selected from Catalogue EPE2 (WP)	Veranstaltung aus dem Katalog EPE2 (WP)	2	1	0	4
Mechatronics/Mechatronik	2	Subject to be selected from Catalogue M1 (WP)	Veranstaltung aus dem Katalog M1 (WP)	2	1	0	4
	3	Subject to be selected from Catalogue M2 (WP)	Veranstaltung aus dem Katalog M2 (WP)	2	1	0	4
Non-Technical Subjects/Nicht technische Fächer	1	Non-Technical Subject 1 (WP)	Nicht technisches Fach 1 (WP)	2	0	0	2
	3	Non-Technical Subject 2 (WP)	Nicht technisches Fach 2 (WP)	2	0	0	2
	3	Non-Technical Subject 3 (WP)	Nicht technisches Fach 3 (WP)	2	0	0	2
Electives/ Wahlpflichtfächer	1	Elective 1 (WP)	Wahlpflichtfach 1 (WP)	2	1	0	4
	3	Elective 2 (WP)	Wahlpflichtfach 2 (WP)	2	1	0	4
	3	Elective 3 (WP)	Wahlpflichtfach 3 (WP)	2	1	0	4
Summe				**39**	**16**	**8**	**87 Cr.**
				63 SWS			