

**Education and Examination Regulations**  
**Master's degree programme in Electrical Engineering<sup>1</sup>**

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<sup>1</sup> This is a translation of the Dutch version of the Education and Examination Regulations. In case of differences between the Dutch text and this English translation, the Dutch text is leading.

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## CHAPTER 1 GENERAL PROVISIONS

### PARAGRAPH 1 CONCEPTS AND OBJECTIVES

#### Article 1.1 Definitions.

For the purposes of these regulations, the following definitions shall apply:

- a. the Act: the Higher Education and Research Act (dated 8 October 1992, with amendments that apply on 21 July 2014);
- b. the university: the University of Twente;
- c1. EWI faculty: the university's faculty of Electrical engineering, Mathematics and Informatics
- c2. the EE department: the EWI faculty's department of Electrical Engineering
- c3. chair: a chair as regulated in the faculty regulations of the EWI faculty
- c4. the examination committee: the committee named in article 7.12 of the Act for the study stated under d. below.
- c5. the professor in the final year: the professor as referred to in articles 2.8, paragraph and 3.9, paragraph 3 of these regulations
- d. the master's study in EE: the master's study in Electrical Engineering in accordance with article 7.3a of the Act, paragraph 1, under b
- e. learning unit: a learning unit as referred to in article 7.3. paragraph 2 of the Act;
- f. student<sup>2</sup>: a person who is registered as such for the study;
- g. external student: someone who is registered as such for the study;
- h. free study: the study that a student can put together by virtue of article 7.3b of the Act;
- i. practical exercise: a practical training  
writing theses,  
working on projects or test designs,  
carrying out research or design assignments,  
participating in work placements,  
participating in field work and excursions  
participating in other educational activities deemed necessary, and which focus on achieving the intended skills.
- j. the study prospectus: the university's study prospectus<sup>3</sup> or the electronic version thereof, containing the most recent descriptions of units as stipulated by the dean or the study director
- k. educational timetable: the timetables stipulating the periods and the times during which education will be given and interim examinations can be taken.
- l. EC: European Credit, study credit as referred to in article 7.4

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<sup>2</sup> a male form should be interpreted as gender-neutral.

<sup>3</sup> In 2015 the study prospectus will not be issued in paper form. The electronic version can be found at the educational pages of the EEMCS faculty. The course descriptions are available in the electronic course catalogue of the University

	of the Act
m. study director	the study director of the master's study in EE.
n. study advisors	those who are appointed as such by the dean of the EWI faculty.
o. mentor	a person appointed by a chair or a department for the general guidance of students who are studying or who shall study with that chair or section
p. work placement coordinator	person or persons appointed as such by the EWI faculty
q. admissions committee	committee created by the dean, with competency to act on behalf of the dean in matters relating to the admission of students to the study.
r. bridging programme	a study programme assembled by the admission committee that can be followed by a student as a part of a minor programme (during HBO/WO) or as a premaster programme.

Article 1.2 Applicability of the regulations.

These regulations apply to the education and examinations of the master's studies in Electrical Engineering at the university.

Article 1.3 Objective of the Master's degree programmes

The objective of the master's study in Electrical Engineering is to educate master students in a spectrum of professional and personal skills that will enable them to broaden their knowledge and methodology in designing, by analysis and research, innovative systems in a specific discipline. The objectives and final terms of the master's study in Electrical Engineering are summarised in appendix A.

**PARAGRAPH 2 PROGRAMMES AND EXAMINATIONS**

Article 1.4 Full-time studies.

The master's study EE is only available fulltime.

Article 1.5 Size of the studies

The master's study EE has a workload of 120 EC.

Article 1.6 Examinations and distinctions.

1. A master's examination is part of the master's study EE.
2. If the examination committee is of the opinion that the examinee has demonstrated exceptional qualities in his/her master's examination, the examination committee can decide to award the distinction "cum laude". The distinction "cum laude" will appear on the diploma relating to the examination concerned. The examination committee stipulates criteria for awarding the distinction.

### **PARAGRAPH 3 STUDY AND INTERIM EXAMINATIONS**

#### Article 1.7 Frequency, times, registering, cancelling registrations.

1. There will be opportunities to take written and oral interim examinations twice a year. Practical exercises can be completed at least once a year.
2. For all units of learning there will be at least one opportunity to take an interim examination at the end of the educational period in which the tuition for the educational unit concerned was given.
3. Contrary to what is stipulated in paragraph 1 of this article, there will be at least one opportunity a year to take the interim examination of a unit of learning that is part of the educative programme, but for which no tuition is provided in that study year.
4. In exceptional cases the examination committee can allow departures from the number of times that interim examination can be taken and the way in which they can be taken.
5. The timetable will be published with the dates and times of interim examinations for that semester at least one month before the start of a semester.
6. An interim examination may only be rescheduled to a different time than indicated in the timetable after obtaining permission from the study director. Students will be kept informed about such an alteration. The study director must inform the examination committee during the first subsequent examination meeting about any decision to reschedule.
7. Students must register via the student information system for units of learning they want to participate in.
8. By registering for a unit of learning the student also registers for all regular tests during this unit of learning including the final interim examination.
9. The student should register separately for all interim examinations and tests for which participation in a learning unit is not required.
10. The right to participate in a particular test or interim examination lapses if a student fails to register within the stipulated period of time.
11. Students have the right to withdraw, via the student information system, up to 24 hours before an interim examination.
12. The failure of a student to turn up for an interim examination for which he had registered via the student information system, but from which he had not withdrawn at the latest within 24 hours before the interim examination, will be registered in the student information system and will count as a fail.

#### Article 1.8 Type of examination.

1. The way in which units can be taken is regulated in Chapter 2.
2. In individual cases, an examiner for a unit of learning can allow a departure from that which is stipulated in paragraph 1; the examination committee can allow departures in other exceptional cases.
3. Irrespective of what is stipulated in paragraph 1, students with physical or sensory handicaps or external candidates will be offered alternative ways of taking interim examinations that are adapted as far as possible to their handicap. The examination committee or the examiner shall obtain expert advice before making a decision.

#### Article 1.9 Oral examinations.

1. Oral interim examinations are conducted publicly, unless the examination committee

- has stipulated otherwise in an exceptional case.
2. A student or examiner who allows third parties to be present when administering an oral interim examination must report this fact to the examination committee at the latest by 10 weekdays prior to the oral interim examinations.
  3. If the examination committee has determined that members of the examination committee or an observer shall attend an oral interim examination on behalf of the examination committee, the examination committee shall inform the examiner and the student of this at least one weekday before the interim examination.

#### Article 1.10 Term of validity of interim examinations

1. A unit of learning that has been completed is valid for 6 years. A student can apply to the examination committee to have the validity of an examination result extended. The examination committee must have valid reasons for rejecting such a request. If a request is rejected, the examination committee shall indicate its reasons in writing.
2. Interim examinations that are comprised of a number of test results are only valid during the study year in which they were obtained. The examiner of a unit of learning can adopt a different system. In that case the examiner must inform the examination committee. The system must be announced via the electronic Blackboard-site.

#### Article 1.11 Right of insight

1. Students have a right to discuss their interim examinations 'post mortem' with the examiner, whereby the examiner explains his grounds for his assessment. If no post mortem discussion is held, students have two weeks after the results of an interim examination during which they can apply to the examiner for a post mortem discussion. This discussion or a collective post mortem discussion must be held, at the latest, within five weeks after the results of the interim examination were announced. After this five-week period, students have no further right to a post mortem discussion of their interim examination, nor to grounds from the examiner regarding his assessment of the interim examination.
2. An examiner who has assessed a student's written interim examinations shall ensure that this work is retained in the relevant chair or department administration for at least two years after the marks were determined. Students can access their assessed work during this period.
3. The examination committee can allow departures from that which is stipulated in paras. 1 and 2.

#### Article 1.12 Conclusion and publication of examination results.

1. Results are published for the benefit of students, via the student information system, within 20 weekdays after a written examination took place or after a practical exercise was completed.
2. Examiners shall provide students with an authorised certificate indicating students' results within one weekday after the completion of oral interim examinations.
3. That which is stipulated in paragraph 2 does not apply to an oral interim examination that is part of a series of oral examinations for the same unit of learning and which are spread over a time-period exceeding one weekday. In that case examiners establish the results within one weekday following completion of the series of oral interim examinations.
4. If the assessment of a unit of learning is obtained by completing one or more projects,

writing a report or a thesis, the date on which the project, report or thesis was submitted, or the date on which the last project was submitted shall apply as the date of the interim examination.

5. If circumstances hinder an examiner from complying with the periods stipulated in paragraph 1 and 2, he shall report this to the examination committee, giving reasons. The examination committee shall immediately inform the student concerned, thereby indicating the period within which the results will be published. If the examination committee feels that the examiner is in default, they can order a different examiner to determine the mark.
6. If a second opportunity to take interim examinations is planned soon after an initial one, the results of the interim examinations shall be available at a time that will allow students at least 10 weekdays in which to prepare for the second opportunity.
7. Students are at liberty to obtain a certified summary of their study progress from the information desk at Student Services in the Vrijhof.
8. If more than one valid assessment has been established for a student in relation to the same unit of learning, the highest assessment shall apply.

#### Article 1.13 Exemptions.

1. The examination committee can grant a student exemption, at the student's request, from an interim examination or practical exercise, where applicable, after obtaining advice from the examiner concerned.
2. The grounds on which the examination committee can grant exemption from taking a given interim examination relate solely to the level, the content and the quality of earlier interim examinations passed by the student, or examinations or knowledge, insight and skills obtained other than via higher education.
3. The examination committee can grant exemption from the obligation to participate in practical exercises to a student who can feasibly prove that he or she expects to face a moral dilemma if obliged to carry out a practical exercise. In that case the examination committee determines whether the practical exercise can be carried out in some other way, which they shall determine.

### **PARAGRAPH 4 DETAILED ARRANGEMENTS**

#### Article 1.14 Detailed Arrangements.

A chair or department can establish detailed rules relating to the implementation of the education and examination system, insofar as they relate to the field of the chair or department.

### **PARAGRAPH 5 LANGUAGE**

#### Article 1.15 Language

1. The master's study EE shall be given in the English language. Interim examinations shall be held in English, unless, in response to a student's request, the examiner allows the interim examination to be held in Dutch. The work placement report shall be written in English, unless the company concerned emphatically expresses the desire that it is written in Dutch. The master's project shall be written in English. Lectures shall be held in English.

2. Students must be sufficiently fluent in English in order to be accepted into the study. The admissions committee shall test the language skills of candidates according to the guidelines of the UT, with the addition as depicted in paragraph 3, below.
3. If, according to the rules of the University of Twente, a candidate should have sit for a language test, then for the part scores the following minimum requirements have been defined:  
IELTS: 6.5. Internet Based TOEFL: 22.
4. The dean shall implement a regulation relating to testing the English skills of staff-members responsible for giving lectures for this study and of those who provide study support. Staff-members must comply with the language requirements of that regulation. Courses shall be offered to staff-members so they can improve their skills in the English language.

## **PARAGRAPH 6 SANCTIONS**

### Article 1.16 Sanctions.

1. In the event organisations or persons repeatedly fail to comply with this regulation, sanctions can be imposed by the dean, or by the examination committee - where its competence is involved.
2. In the event that sanctions are being considered, the dean shall enter into discussions with the examination committee before sanctions are actually imposed.

## CHAPTER 2 MASTER'S STUDY ELECTRICAL ENGINEERING

### Paragraph 1 Contents of the study and relevant regulations

#### Article 2.1 Size and content of the master's study

1. The master's study comprises the following units, with a workload as indicated in the form of study points:
  - a. the practical exercises:
    - Company work placement  
20 EC
    - Master's project  
40 EC
  - b. non-technical units  
10 EC
  - c. obligatory units  
20 EC
  - d. optional units  
30 EC
2. The unit Philosophy of Engineering, worth 5 EC is part of the subjects in 1b. Students can choose the other 5 ECs themselves from non-technical units with a workload of at least 3 EC provided by any university. If students so desire, they can also complete 5 ECs in a technical subject. The examination committee can, in response to a written request from a student, allow 10 EC to be completed entirely or partially in some other way, in the event of grounds based on the student's previous education or other knowledge and experience obtained.
3. The compilation of the package of obligatory units depends on the chair under which the final project is carried out. Each chair has a standard package of 20 EC that will be published in the study prospectus and which are definitely available from the professor responsible for the final project. Any departure from this will require the permission of the examination committee.
4. Optional units are units which each have a workload of 3 or more EC. Students shall choose their optional units, after consultation with the professor responsible for their final year, from the following list:
  - University of Twente: the master's subjects, offered by the studies in Electrical Engineering, Embedded systems, Computer Science, Applied Mathematics, Mechanical Engineering, Applied Physics and Nanotechnology.
  - The Technical University in Delft and the Technical University in Eindhoven: the master's subjects, as listed for the study in Electrical Engineering.If subjects are included that do not fulfil the above, then permission will have to be obtained from the examination committee.
5. The examination committee can decide to oblige foreign students and students who have completed a degree in applied sciences to carry out an individual project instead of the work placement mentioned in paragraph 1 under a, and/or to prescribe or allow departures from that which is stipulated in paragraph 1 for the above-mentioned categories of students.

Article 2.2 Specificities relating to units.

1. The study prospectus states which units as referred to in article 2.1, paragraph 1 under b, c and d include a practical exercise. If such a unit involves a practical exercise, the examiner will give an assessment, by the latest, at the end of the period in which the subject is scheduled. This will be used to arrive at the final mark for that unit. If the results for the practical exercise are unsatisfactory, then the student has until the end of the next quarter to complete the exercise with a satisfactory result. If satisfactory results have still not been obtained, then the student can only obtain satisfactory results for the exercise by doing it over in full.
2. The assessments of the practical exercises mentioned in article 2.1, paragraph 1, under a, or referred to in the previous paragraph 1, can only be obtained after the student has participated in the exercise concerned.

Article 2.3 Prior knowledge required.

1. Participation in work placement can only take place if the obligatory subjects (Article 2.1.1c) and the unit Philosophy of Engineering (Article 2.1.2) have been completed with satisfactory results. Students must earn at least 45 EC from units in the master's phase.
2. Students can only participate in the Master's project after they have completed the work placement satisfactorily. If work placement is not required, then it is not possible to participate in the master's final project until the condition for participation in work placement, as referred to in paragraph 1, has been fulfilled. If an Individual Project is part of the study programme, it shall be finished before the start of the Master's project.
3. If the requirement for completing a unit referred to in Article 2.1 under c and d is that another unit must have been completed successfully, this requirement will appear in the study prospectus under the heading "necessary previous knowledge".
4. In exceptional individual cases, the examiner of a unit can decide to depart from this provision relating to having successfully completed one or more other units.

Article 2.4 Times of interim examinations and practical exercises.

1. The units referred to in Article 2.1 paragraph 1 under b, c and d can be completed immediately after the period in which the preparatory education was completed, but also at a later date in the same study year.
2. The work placement can be completed, in consultation with the student and the institute involved, in a period determined by the placements coordinator. The student should submit to the supervisor named in Article 2.6.3. a written report about his work placement referred to in article 2.5.2. within two months after this period ends.
3. The Master's final project can be completed in a period, determined by the chair, subject to whose accountability the project will be done, in consultation with the student. For further regulations regarding the period and the planning see Article 2.13.
4. Examiners can decide to set an interim examination for a unit, whether or not on the grounds of a student's motivated request, at times not referred to in paragraph 1 of this article.

Article 2.5 Type of examination.

1. The units mentioned in Article 2.1 paragraph 1 under b, c and d can be completed via written examinations or orally if the examiner concerned so determines. The examiner concerned can determine that such a unit must be completed by means of a written thesis or by writing a report about a research topic that he shall determine.

2. The assessment of work placement shall be obtained on the grounds of achievements during the work placement and on a written report about the tasks carried out.
3. The assessment of the Master's final project shall be obtained on the grounds of achievements during the project, from a report on the tasks carried out and from a lecture on the project.

#### Article 2.6 Guidance during work placement

1. A description of the project a student will be doing during the work placement must have been drawn up and approved by an appropriately expert member of the scientific staff who has a permanent position in the EL department.
2. The daily supervision of the work placement is in the hands of the institute where work placement is being done.
3. An appropriately expert member of the scientific staff who has a permanent position in the EL department supervises the student from a distance. If adequate supervision is not - or no longer - possible, in the opinion of this supervisor, the latter can decide to take over the daily supervision. Once the work placement has ended, this supervisor shall act as examiner for this unit, as stated in Article 2.5.2.

#### Article 2.7 Supervision when carrying out the Master's project

1. A description of the Master's project that a student is going to do must have been drawn up and approved by an appropriately expert member of the scientific staff of the chair for which the project is to be done and who is permanently employed in the EL department.
2. The Master's project will be carried out subject to the accountability of the chairs of the EL department.
3. The committee that supervises the Master's project is formed by a minimum of 4 persons, at least two of whom are members of the scientific staff and have a permanent position in the EL department and one is responsible for day-to-day guidance. Of these two members, one is a professor of the chair subject to whose accountability the project will take place. The supervisory committee shall also include one member of the permanent scientific personnel of a different chair than that under which the student is studying.
4. The committee referred to in paragraph 3 appoints a daily supervisor.
5. The Master's project shall take place in conformity with a plan as stipulated in Article 2.13.
6. The Master's project will normally be carried out within the chair that is, in accordance with Article 2.7.2., responsible for the project. A Master's project may only be carried out external to one of the chairs of the EL department subject to the accountability of one of the chairs of the EL department. The chair concerned carries out supervision as described in the paragraphs of this article and Article 2.13. The study regards the project as being carried out by the chair concerned. If a project is carried out external to the chair, then this should be reported in advance to the examination committee.

#### Article 2.8 Earning two diplomas with a single (extended) programme

In some cases a student can earn two master's diplomas based on a combined course programme satisfying the requirements of each single programme.

1. The combined programme should satisfy the following requirements:
  - a. The course programme consists of the two course programmes, necessary to satisfy the requirements for the individual course programmes.
  - b. Outside the company work placement and the master's project, courses for not more

than 20EC should be common to both course programmes. These 20EC also include courses for which an exemption was granted in one course programme, based on a result earned as a part of the other programme.

- c. If both programmes contain a company work placement, these placements can be combined into a single placement if this single placement satisfies the requirements of both individual programmes. This placement should have a study load not less than 20EC.
  - d. If the master's projects of both programmes are combined, the combined project must involve an exceptional study load, equaling at least 75% of the sum of the study loads of the master's projects of the individual programmes.
2. The student completes the combined programme by completing the two course programmes from which it has been assembled. For completing these two course programmes the rules from the respective Education and Examination Regulations apply.

## **Paragraph 2 Admission to the Master's study**

### Article 2.9 Admission to the Master's study Electrical Engineering

1. A candidate is admitted to the Master's study Electrical Engineering if the requirements regarding prior education are satisfied by the candidate, in agreement with the Act art. 7.30a and art. 7.30b.
2. Insofar as a candidate cannot be admitted to the Master's study Electrical Engineering on the grounds of Article 7.30a of the Act, upon request the admission committee shall draw up a statement, as proof of admission, showing that the candidate does fulfil the admission requirements.
3. Insofar as a candidate cannot be admitted to the Master's study Electrical Engineering on the grounds of Article 7.30a of the Act, at least one of the following admission requirements shall apply to this master's study:
  - a bachelor's degree or a bachelor's diploma in a scientific study at a Dutch university which, in the opinion of the admissions committee, suggests perspective of completing the master's study in the nominal time.
  - a master's degree or master's diploma in a scientific study at a Dutch university which, in the opinion of the admissions committee, suggests perspective of completing the master's study in the nominal time.
  - a bachelor's or master's diploma obtained for a scientific study at a foreign university which, in the opinion of the admissions committee, suggests perspective of completing the master's study in the nominal time.
  - if a candidate does not have a diploma as described above but his/her previous education, in combination with knowledge and experience subsequently gained, is such that, in the opinion of the admissions committee, they can be said to constitute the equivalent of one of the said diplomas, the admissions committee can decide that the candidate does fulfil the admissions requirements after all, if, in the opinion of the admissions committee, perspective exists of completing the master's study in the nominal time.
4. When drawing up the statement referred to in paragraph 1, the admissions committee can determine that units they shall stipulate must be included in the master's study or that exemption must be obtained for certain units of the master's study, other than the Master's final project.

### Article 2.10 Bridging programme

1. The admission committee can decide to admit a candidate to the master study Electrical Engineering on the condition that before the final admission a bridging programme is completed successfully.
2. A bridging programme contains a study load of 15 or 30EC.
3. The bridging programme is assembled by the study director together with the admission committee.
4. From the start, candidates shall complete the bridging programme within a period not longer than two times the period according to the study load. For the examination of each part of the programme two occasions are given.

## **Paragraph 3 Planning, procedures and guidance during the Master's study**

Article 2.11 Specialisation and subject combination

1. Before starting the master's study, students choose one of the chairs of the EL department for their specialisation. The student determines his package of subjects, together with the mentor of the chair, and draws up a schedule for attending the subjects, and for carrying out the work placement and the Master's project.
2. The consultation referred to in paragraph 1 results in a study plan that will be signed by both the student, and the person with whom the consultation took place.
3. The package of subjects is submitted to the registry of the examination committee, at the latest by six months after the start of the master's study.
4. An alteration in the package of subjects may only be made with the mentor's agreement. If the package of subjects has already been submitted to the registry of the examination committee then any alterations should be reported to the Registry immediately.

Article 2.12 Work placement

1. The student shall report to the faculty's work placement office, at the latest by six months before the planned start of the work placement, in order to prepare for the work placement in accordance with the work placement office's procedures.
2. The student must submit a report on the work placement to the supervisor of the EL department within two months after the work placement period ends.

Article 2.13 Master's project

1. The student and the (day-to-day) supervisor of the chair must make an appointment about the starting and finishing dates of the Master's project.
2. The finishing date is obtained on the basis of a planning, whereby time shall be set aside not only for the Master's project but possibly also for attending subjects and for taking resits (taking into consideration prior knowledge requirements: Article 2.3, paras. 1 and 2).
3. The planning must be approved by the supervisor and signed by the student.
4. No more than the nominal amount of time may be planned for working on the Master's project.
5. Students should report illness immediately to the secretariat of the chair. Time that is missed due to illness shall be added to the time available for the Master's project in the study plan.
6. The supervisor should approve any extra time required for re-taking an interim examination and incorporate it into the study plan. Time that has to be spent on a resit shall be added to the time available for the Master's project.
7. In the study plan the student and the supervisor should make appointments about how the student should spend his time during any academic holiday periods.
8. Sufficient time should be added to the study plan to compensate any delays that arise due to reasons for which the student is not to blame.
9. Immediately after the final date of the project as recorded in the study plan (including any adjustments as described in paragraphs 5 to 8), the supervisory committee shall issue an opinion on how the project was carried out and determine the final mark.
10. If this final mark is a fail then the student must carry out a supplement to the project within a period of two months, after which the supervisory committee will state its opinion again, which will lead at the most to a 6.
11. This new final mark will be regarded as the result of a resit.

12. If the result of a resit is a fail, then the student shall have to carry out another, new, Master's project.

Article 2.14 Study guidance

1. Apart from the mentor of the chair, students also have access to a study adviser to whom they can apply with questions and more general problems.
2. Every year the study director of the master's study mentioned in these regulations shall keep himself informed about the progress of students who are registered for the master's study.

## **CHAPTER 3 SPECIAL OPPORTUNITIES**

### **Paragraph 1 Extended examination**

#### Article 3.1 Extended examinations.

1. Whosoever, either before or after passing the final examination of an EE master's study, has successfully taken interim examinations for units that are not or were not considered part of this study or a different study, but which could have been part of the said master's studies, will be examined, upon request, subject to the approval of the examination committee, in the form of an extended examination.
2. As proof that the extended examination has been completed successfully, the examination committee can, upon request, issue a separate statement.

### **Paragraph 2 The free Master's study**

#### Article 3.2 Concepts

1. The free master's study refers to a programme in which, with the permission of the examination committee deemed most eligible, the student chooses units from those offered by an institution and which are subject to an examination in accordance with Article 7.3c of the law.
2. When granting permission as referred to in the first paragraph, the examination committee indicates to which study the programme thus compiled by the person concerned is supposed to belong.

#### Article 3.3 Permission of the Examination Committee

The examination committee shall draw up guidelines for granting permission as referred to in Article 3.2 on the understanding that the free study is a coherent study with a level comparable with that of the master's study referred to in chapters 2 or 3 and that it fulfils the rules mentioned in Article 3.4.

#### Article 3.4 Size and composition of the free master's study

1. The free master's study shall include at least one unit comparable with the Master's final project of the EE master's study; this unit shall have a workload of no less than 30 EC and no more than 50 EC.
2. The free master's study can include a unit that is comparable with the Company work placement of the EE master's study; this unit shall have a workload of no less than 20 EC and no more than 30 EC.
3. The free study can include a short individual project amounting to 10 or 15 EC.
4. The examination committee can decide not to grant permission if both units referred to in paras. 2 and 3 exist in the proposed programme.
5. One unit of the free study, unlike a practical exercise, has a workload of 3 EC or more, but no more than 10 EC.

#### Article 3.5 Term of validity of rules

1. The rules that apply to this study, with respect to times at which interim examinations can be taken and their frequency, and regarding prior knowledge requirements of units, as well

- as the method of setting examinations and how assessments shall be given, are those that apply to the study to which the unit normally belongs.
2. If the rules are incompatible or if they lead to insurmountable problems for students, the examination committee that grants permission can allow departures from the rules.
  3. Units the successful completion of which is a condition, by virtue of paragraph 1, of admission to units that are part of the free study, do not necessarily belong solely to the free study.
  4. With a view to possible conditions relating to completing the individual research task, as referred to in article 3.4, paragraph 3, or the master's final project, as referred to in article 3.4, paragraph 1, which are undecided at the moment of requesting permission, the examination committee shall not withhold its permission solely on the grounds of the fact that the programme does not include a number of as yet undefined units with a combined workload of 10 EC at the most.
  5. In exceptional, individual cases, the examiner of a unit can decide to depart from the provision that taking a unit is subject to having successfully completed a different unit.

Article 3.6 Sequence in which units can be completed.

1. A person who submits a request for permission for a self-compiled free study shall indicate the sequence in which the units shall be completed.
2. The examination committee encumbered with granting permission can decide that units must be completed in a different sequence than that indicated by the applicant.
3. a. The examination committee that grants permission can determine that specific units may only be completed if other specifically named units have been completed successfully.  
b. The Master's final project may only commence if:
  - a unit equivalent to or largely equivalent to the work placement, if the free study includes such a unit, has been successfully completed  
and
  - a number of units, with a combined workload of 60 or more EC, have been successfully completed.
- c. The chair under whose accountability a given individual research project or Master's final project is carried out can, by way of supplementing that which is stipulated under a, and b., on the grounds of the contents of the project, stipulate that a number of specifically named units with a combined workload of at the most 10 EC, have been successfully completed, the project may be started.

## **CHAPTER 4 FINAL PROVISIONS AND INTRODUCTION PROVISIONS**

### Article 4.1 Hardship clause

1. In case of a demonstrable and predominant unconscionableness or unfairness the examination board can allow deviation from the rules in this regulation.

### Article 4.2 Implementing and amending these regulations.

1. Amendments to these regulations shall be approved by the dean in a separate decision and announced in Article 4.2, paragraph 2.
2. Amendments to rules and provisions that are formulated elsewhere in these regulations shall also be made by the dean, or by the study director in cases involving his competence, in a separate decision, and announced in Article 4.2, paragraph 2.
3. No amendments to these regulations shall take place which apply to the current study year, except where such amendments do not reasonably harm the interest of students or external students. Amendments shall be announced, where possible, six months before coming into effect.
4. The replacement of the old regulations and amendments by these new regulations may not have any disadvantageous effect for students or external students on:
  - the period of validity approved by the examination committee.
  - the approval granted by the examination committee in respect of the self-compiled free study of a student or external student.
  - any other decision made by the examination committee, by virtue of these regulations or the former regulations, in respect of a student or an external student.
5. Where necessary, where these regulations or rules or provisions formulated elsewhere based on these regulations have been amended, a transition regulation shall be determined, stipulating in any case the circumstances in which, and/or the period during which, matters can be arranged based on the original regulations.

### Article 4.3 Coming into force

1. This regulation shall come into force on 1 September 2015

### Article 4.4 Publication.

The study director shall ensure publication of these regulations, or any amendments, as well as the rules, guidelines and instructions that the examination committee has approved or issued by virtue of Article 7.12 of the law.

### Article 4.5 Official title

These regulations are the education and examination regulations as referred to in Article 7.13 of the law and can be cited as the master-OER EE.



## **APPENDIX A OBJECTIVES AND FINAL TERMS OF THE MASTER'S STUDY IN ELECTRICAL ENGINEERING**

### **Goals and learning outcomes**

The general goal of the master's programme is to train students to obtain the degree of Master of Science in Electrical Engineering.

The Department of Electrical Engineering aims to train master students in a spectrum of professional and personal competencies to enable them to expand their knowledge and methodology in design, through analysis and research, of innovative systems in a specific discipline.

The following research groups (chairs) take part in the Electrical Engineering programme:

Name of the chair	Abbreviation	Specialisation
Biomedical and Environmental Sensorsystems	BIOS	lab-on-a-chip systems for biomedical and environmental applications
Biomedical Signals and Systems	BSS	neurotechnology and biomechatronics
Computer Architecture for Embedded Systems	CAES	dependable integrated systems
Robotics & Mechatronics	RAM	robotics and mechatronics
Design and Analysis of Communication Systems	DACS	communication networks
Integrated Circuit Design	ICD	integrated circuit design
Optical Systems	OS	integrated optical microsystems
NanoElectronics	NE	nanoelectronics
Services, Cybersecurity and Safety	SCS	computer vision and biometrics
Semiconductor Components	SC	devices for integrated circuits
Telecommunication Engineering	TE	Telecommunication Engineering
Transducers Science and Technology	TST	transducers science and technology

There is only one master's programme in Electrical Engineering and the field of specialization determines the contents of the programme. This specialisation is defined by the chair where the master thesis is carried out. The course programme corresponds to the specialisation. In this way graduates maintain a broad Electrical Engineering qualification while being specialized in one of the specific fields. The field of specialization is indicated in the addendum of the degree diploma.

The level of Master of Science in Electrical Engineering is illustrated in the following general competencies:

- 
- A master has specialized advanced knowledge in at least one of the specialisations of Electrical Engineering as described above.
  - A master has experience in working in industry-related projects and has acquired the ability to be effective in a multidisciplinary environment.
  - A master is able to work at the frontier of research and design, and is innovative, contributing to breaking the frontiers of current technology or understanding.
  - He/she defines his/her own design/research goals within the limits of his/her project, judges which parts of the problem need further analysis, carries out these analyses on an abstract level, proposes experiments and carries them out in a methodologically correct way.
  - A master is able to understand, on a general level, areas adjacent to his/her own area of specialization and use this understanding in the context of his/her own work. He/she is able to appreciate new knowledge of other disciplines (if necessary also of non-technical areas) and to integrate this in his/her work.
  - A master can carry responsibility as a leading member of a multidisciplinary design (or research/development) group and develops a broad scope, e.g., with respect to the economic aspects of his/her work, or the impact of technological innovation on society. He/she is a serious partner in discussions on aspects regarding the setting and societal environment of his/her work.

Compared to the bachelor level, a master has more specialized knowledge and abilities, more industrial experience and has skills to independently solve relatively complex problems.