

TEACHING AND EXAMINATION REGULATIONS

BACHELOR OF SCIENCE ELECTRICAL ENGINEERING

A. UNIVERSITY SECTION

B. PROGRAMME-SPECIFIC SECTION

2019-2020 academic year

Introduction to the Teaching and Examination Regulations for Bachelor's degree programmes at the Faculty of Electrical Engineering, Mathematics and Computer Science.

General

The Dutch Higher Education and Research Act (*Wet op het hoger onderwijs en wetenschappelijk onderzoek*, WHW) of 1993 requires a broad outline of the teaching programme and examining for each degree programme to be recorded in the Teaching and Examination Regulations (TER (Dutch: OER)).

In accordance with Section 7.13, Paragraph 1, of the WHW, the TER must contain sufficient and clear information about the degree programme or group of programmes to which they apply. Section 7.13, Paragraph 2, of the WHW lists those issues that must, as a minimum, be stipulated in the TER with respect to procedures, rights and responsibilities relating to the teaching and examinations that are part of each degree programme or group of programmes. The WHW also includes a number of separate obligations relating to the inclusion of rules within the TER.

The model TER is subdivided into two sections (Section A and Section B), which together form the TER. Section A, which can be seen as the university section, includes provisions that apply to all Bachelor's degree programmes. Section B contains the provisions that are specific to the particular Bachelor's degree programme.

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SECTION A: UNIVERSITY SECTION

SECTION 1 – General Provisions

Article 1.1 Applicability of these Regulations

1. The Teaching and Examination Regulations apply to all students who are enrolled in the educational programme in question.
2. Students attending courses offered by a different educational programme are subject to the assessment rules laid down in the relevant assessment schedule, in the TER of the relevant educational programme and in the rules and guidelines of the Examination Board of the relevant educational programme. The decision on special facilities in accordance with Article 6.2.5 may only be taken by the Examination Board of the relevant programme.
3. Each educational programme has its own programme-specific Appendix.
4. This general section of the Teaching and Examination Regulations and the programme-specific section jointly form the applicable Teaching and Examination Regulations for the relevant Bachelor's programme.
5. Both the general section and the programme-specific Appendix of the Teaching and Examination Regulations are adopted by the faculty board.
6. The institute section of the student charter includes a definition of what the University of Twente considers to be academic misconduct. The rules and guidelines of the Examination Board for the Bachelor's programme in question includes additional rules about academic misconduct, such as which measures the Examination Board may take if it establishes misconduct.
7. The rules and guidelines of the Examination Board of the educational programme includes provisions on order for tests and rules in case of emergencies.
8. The following applies to the language used in the general section and the programme-specific Appendix of the Teaching and Examination Regulations and the rules and guidelines of the Examination Board:
 - a) English versions of the programme-specific Appendix of the Teaching and Examination Regulations and the Examination Board's rules and guidelines should be available for English-taught Bachelor's programmes.
 - b) Where the programme-specific Appendix of the TER and the Examination Board's rules and guidelines are available in both Dutch and English, each version must, for the sake of clarity, state which version is binding.
 - c) An English translation of this general section is available for English-taught Bachelor's programmes. In case of uncertainty, the Dutch version of this general section is binding.
9. Requests for exemptions to provisions laid down in the Teaching and Examination Regulations may be submitted to the Examination Board or the Programme Board, depending on the subject matter. This depends on which body (Examination Board or Programme Board) is authorized or has the duty according to this regulation to take a decision on or make an exception to a provision in this regulation.
10. These regulations have been drawn up using the masculine personal pronouns 'he' and 'him' and 'his'. In these cases, 'she' 'her' and 'hers' may be substituted

Article 1.2 Definitions

The following definitions are used in these Regulations:

- a. **Binding student progress evaluation (BSA):** A student progress evaluation as referred to in Section 7.8 (b), subsections 1 and 2 of the Higher Education and Research Act involving expulsion from the programme in accordance with Section 7.8 (b), subsection 3 of that Act, issued by the Programme Board on behalf of the institutional administration;
- b. **Compulsory holiday:** Required day off work;
- c. **Canvas:** University of Twente's digital learning environment;
- d. **Personal Circumstances Committee:** A committee convened by the institutional administration to advise the institutional administration in individual cases regarding the validity, duration and severity of a specific student's extenuating personal circumstances;
- e. **Credit:** a unit of 28 study load hours, in accordance with the European Credit;
- f. **Transfer System.** A full-time academic year consists of 60 credits, equal to 1680 hours of study (Section 7.4 of the Higher Education and Research Act);
- g. **Examination:** A degree programme is concluded with an examination. If the study units in the degree programme have been completed successfully, then the examination will be deemed to have been completed. The Examination Board may require a supplementary examination;
- h. **Examination Board:** The Examination Board is the body that objectively and professionally assesses whether a student meets the conditions laid down in the Teaching and Examination Regulations regarding the knowledge, understanding and skills required to obtain a degree;
- i. **Examiner:** The individual appointed by the Examination Board to administer examinations and tests and to determine the results, in accordance with Section 7.12 (c) of the Higher Education and Research Act;
- j. **Faculty Board:** Head of the faculty (Section 9.12 of the Higher Education and Research Act);
- k. **Honours Programme:** Institution-wide Bachelor's Honours programme;
- l. **Institution:** University of Twente;
- m. **Institutional administration:** Executive Board, except as otherwise specified;
- n. **Module:** a study unit worth 15 credits;
- o. **Module coordinator:** The individual responsible for the module, as appointed by the Programme Board;
- p. **Module-examiner:** The individual appointed by the Examination Board to determine the results of the study unit;
- q. **Module component:** Component of a module;
- r. **Study unit:** A programme component as defined in Section 7.3, subsections 2 and 3 of the Higher Education and Research Act. Each study unit is concluded with an interim examination;
- s. **Curriculum:** The aggregate of required and elective study units constituting a degree programme as laid down in the programme-specific Appendix;
- t. **Programme:** Bachelor's degree programme as referred to in the programme-specific Appendix to these Teaching and Examination Regulations;
- u. **Programme Board:** The body appointed by the Faculty Board to administer the programme;
- v. **Programme Committee:** Programme Committee as referred to in Section 9.18 of the Higher Education and Research Act;
- w. **Osiris:** System designated by the institutional administration for registration and for providing information on all relevant data related to the students and the university, as described in the Higher Education and Research Act;

- x. **Practical exercise:** A practical exercise as referred to in Section 7.13, subsection 2 (d) of the Higher Education and Research Act is a study unit or a study unit component emphasizing an activity that the student engages in, such as:
 - a) carrying out literature research, completing an assignment or preparing a preliminary design, writing a thesis, article or position paper, or giving a presentation in public;
 - b) carrying out a design or research assignment, doing tests and experiments, participating in practical classes, practicing skills;
 - c) internship, fieldwork or excursions;
 - d) participating in other educational activities deemed necessary and aimed at achieving the required skills, such as targeted practice of clinical skills in a specifically equipped skills lab;
- y. **Student:** Anyone enrolled in a programme in accordance with Sections 7.34 and 7.37 of the Higher Education and Research Act;
- z. **Study Adviser:** Person appointed by the faculty board who acts as contact between the student and the university, and in this role represents the interests of the students, as well as fulfilling an advisory role;
- aa. **Study workload:** The study workload is expressed in course credits according to the European Credit Transfer System. The study workload for one academic year is 60 credits. 60 credits is equal to 1680 hours of studying;
- bb. **Interim examination:** an investigation of students' knowledge, understanding and skills, and an assessment of the outcomes of that investigation, (Section 7.10 of the Higher Education and Research Act); an interim examination may consist of a number of tests;
- cc. **Test:** Part of an interim examination. If the interim exam for a study unit consists of a single test, then the result of that test will count as the result of the interim exam. A test can be split into components and administered during multiple sessions;
- dd. **Test result:** A result that is part of the final result for a module;
- ee. **Assessment schedule:** A schedule showing the method of assessment for a module;
- ff. **UT:** University of Twente;
- gg. **Working day:** Any day from Monday to Friday with the exception of official holidays and the prearranged compulsory holidays ('brugdagen') on which the staff are free;
- hh. **Higher Education and Research Act:** The Higher Education and Research Act (abbreviated in Dutch to WHW), Bulletin of Acts and Decrees 1992, 593, and its subsequent amendments;

The definition of all other terms used in these regulations is in accordance with the definition accorded by statute.

SECTION 2 – ADMISSION

Article 2.1 Prerequisites

Admission will be granted to the programme if the prerequisites for enrolment in university education have been met in accordance with the Higher Education and Research Act, Sections 7.24, 7.25 and 7.28. Further details are available on the University of Twente website¹.

¹ <https://www.utwente.nl/onderwijs/bachelor/toelating-en-inschrijving/> or <http://www.utwente.nl/en/education/bachelor/admission/>

Article 2.2 Bachelor's programme language requirement for holders of a non-Dutch qualification

Applicants in possession of qualifications obtained outside the Netherlands may only enrol:

1. If the programme is taught in Dutch: after complying with the Dutch language proficiency requirement by passing the state examination in Dutch as a second language, level 2, or earning the certificate Dutch as a Foreign Language, 'Profiel Academische Taalvaardigheid' (PAT) or 'Profiel Taalvaardigheid Hoger Onderwijs' (PTHO), and
2. If the programme is taught in English: after complying with the English language proficiency requirement, involving proficiency at a level commensurate with the Dutch pre-university (VWO) exam. Passing one of the following tests also serves as proof of the required proficiency:
 - IELTS (International English Language Testing System), academic module. The minimum required IELTS score (overall band) is: 6.0;
 - TOEFL (Test Of English as a Foreign Language). The minimum required TOEFL score is: 80 (internet-based test);
 - Cambridge EFL (English as a Foreign Language) Examinations, with one of the following certificates:
 - Cambridge Certificate in Advanced English;
 - Cambridge Certificate of Proficiency in English;
3. The educational programme may impose additional requirements for Dutch or English language proficiency. These additional requirements are specified in the programme-specific Appendix.

Article 2.3 Entrance Examination ('Colloquium Doctum')

If the applicant fails to meet the requirements set in Articles 2.1 and 2.2, the institution may provide an exemption based on an entrance examination in accordance with Section 7.29 of the Higher Education and Research Act. Further details are available on the University of Twente website²

SECTION 3 – CONTENTS AND STRUCTURE OF THE PROGRAMME

Article 3.1 Aim of the Programme

The aims and attainment targets (Section 7.13 subsection 2c Higher Education and Research Act) are described in the programme-specific Appendix.

Article 3.2 Structure of the Programme

1. The programme consists of 180 credits:
 - a. In addition to a core programme of up to 120 credits, students also take minors totalling at least 30 credits and they complete a graduation phase of a total of 15 credits. The programmes Advanced Technology and Technical Medicine are an exception;
 - b. The educational programme consists of modules;
 - c. A module is a study unit of 15 credits, in which the student develops his programme-specific knowledge, skills and attitudes in a coherent manner;
 - d. A module is a study unit of 15 credits, in which the student develops his programme-specific knowledge, skills and attitudes in a coherent manner;
 - e. The programme offering the minor module may set prerequisites for admission to the minor module;

- f. The student's own programme may set conditions for the number of credits to be earned for admission to the minor module. These conditions are specified in the relevant programme-specific Appendix;
 - g. The student is limited in his choice of minor by the provisions of (e) and (f). The range of programmes can be consulted on the website <https://www.utwente.nl/onderwijs/keuzeruimte/minor/>
 - h. Generally speaking, the second semester of the third year of studies is devoted to the graduation phase (which comprises a minimum of 15 credits);
 - i. The student is to complete the core of the Bachelor's programme prior to embarking on the graduation phase;
 - j. The Examination Board² is authorized to deviate from Article 3.2.1 (f), (g) and (h) if strict adherence to those provisions would result in an unacceptable delay in study progress. In consultation with the Study Advisor, the student may submit a proposal to the Examination Board;
2. The programme-specific Appendix to these Teaching and Examination Regulations describes the degree programme in accordance with Section 7.13, subsection 2 (a to e, g, i, l, s, t, v) of the Higher Education and Research Act.

Article 3.3 Programme's Language of Tuition

1. The educational programme's language of tuition is specified in the programme-specific Appendix;
2. If programme components deviate from the language of tuition, then this is to take place in accordance with the UT Code of Conduct for Languages of the UT and Section 7.2 of the Higher Education and Research Act;
3. Bachelor's programmes taught in Dutch will generally use study materials in English or Dutch, and study units or components of study units may be taught and assessed in English, if:
 - a. a lecturer or tutor in the unit of study does not speak Dutch, or;
 - b. students from the relevant Bachelor's programme take the module together with student's from an English-taught Bachelor's programme, or;
 - c. educational programme the degree programme considers it necessary in order to fulfil one of its aims in the area of English language communication skills.

Article 3.4 Exemption

1. The Examination Board may grant an exemption to a student at his request for one or more full study units. To this end, the student must demonstrate completion of a component of a higher education programme that is equivalent in content, scope and level, or that he has acquired expertise and skills through work or professional experience with regard to the relevant study unit;
2. The Examination Board has the authority to make exceptions to the provision in paragraph 1 and to grant an exemption to a student for components of a study unit;
3. A student may also be exempted from practical exercises if he can demonstrate that a required practical exercise will likely give rise to a personal moral dilemma. In such cases the Examination

² It is important that the student is still able to achieve the attainment targets of the programme. In light of this consideration, this authorization has been formally conferred to the Examination Board, as they are the ones to ensure that only students who achieve the attainment targets are able to graduate. It is conceivable that a programme / faculty may opt to confer the authorization referred to in (j) to the Programme Board.

Board will decide whether the component can be completed in another manner to be determined by the Examination Board.

Article 3.5 Elective Programme

The Examination Board of the programme decides on requests for permission to take an elective programme as referred to in Section 7.3 (d) of the Higher Education and Research Act. The Examination Board assesses whether an elective programme is appropriate and consistent within the domain of the educational programme and whether the level is high enough in light of the attainment targets of the programme.

SECTION 4 – TEACHING AND ASSESSMENT

Article 4.1 General

1. The institutional administration is responsible for the practical organization of interim and other examinations;
2. Each study unit concludes with an interim examination;
3. The interim exam may consist of a number of tests³;
4. A test can be split into components and administered during multiple sessions. The results of these components are not included in Osiris but must be announced to the students through the Gradebook in Canvas;
 - a. The student has the right to inspect recent model test questions or model tests, or old tests and their keys, along with the norm for assessment;
 - b. The time allotted to administering a test may not exceed three hours⁴⁵;
 - c. If the examiner wishes to use a form of assessment that takes more than three hours, he may ask the Examination Board for approval to deviate from the preceding paragraph. The request must be submitted at least four weeks before the start of the course period in order to comply with the provisions of paragraph 11 about timely notification of various aspects of teaching and testing;
5. Test results are expressed as a whole number from 1 to 10 or a number from 1 to 10 with a single decimal, or as 'pass' / 'fail';
6. Interim exam results are rounded to the nearest whole number;
7. Interim exam results are expressed as a whole number from 1 to 10. Interim exam results of 6 or higher are a pass;
8. The module examiner consults with any other examiners involved in the module prior to determining the interim exam results for the module (Article 4.2). This consultation should preferably take place during a module assessment meeting;
9. The 15 credits will be awarded only once a module has been passed. No credits are awarded for components of a module;
10. If more than one authorized result has been established for one and the same unit of study, the highest result will apply. This also applies to tests and components of tests;

³ A test may take the following forms: a written test, an assignment, an oral test, the assessment of practical exercises as referred to in Article 1.2 or a combination of the above.

⁴ If a test consists of several components, administered during multiple sessions, the maximum time applies to each component.

Article 7.1 paragraph 10 includes a provision on the maximum extra time allotted to students with dyslexia.

⁵ An interim exam result of 5.49 is rounded down to 5 (fail). An interim exam result of 5.50 is rounded up to 6 (pass).

11. The Programme Board publishes the following details in Osiris: scope, course objectives and content of the study unit, language of tuition, language of assessment, prerequisites, required and recommended study materials, design of teaching methods and assessment.

Article 4.2 Modules

1. Each module has a module coordinator and a module examiner. This is preferably the same person;
2. The Examination Board appoints the examiners for the module components and a module examiner for each module.

Article 4.3 Registration for study units and tests

1. Registration in Osiris is required prior to participating in the study unit;
2. Upon registering for the study unit, the student will automatically be registered for the regular assessments associated with the study unit;
3. Information on registration for resits is indicated in the assessment schedule.

Article 4.4 Description of modules and assessment schedule

1. The programme-specific Appendix contains a description of each module
2. The module description must include:
 - a. the learning objectives of the module and the module components;
 - b. the module components;
 - c. the number of credits and weighting ratio of the module components;
 - d. the language of tuition and assessment;
3. After the module coordinator has drawn up the assessment schedule, it will be adopted by the Programme Board. The Examination Board issues its advisory opinion on the assessment schedules;
4. The assessment schedule must be published in Canvas at least two weeks prior to the start of the module;
5. The assessment schedule must include:
 - a. under which conditions the module can be passed;
 - b. how the learning objectives of the module and the module components are assessed;
 - c. the period of validity of the result of the test or tests for a module component;
 - d. when the tests are taken;
 - e. any required minimum mark per test; a minimum mark for a test may not be set higher than 5.5;
 - f. when the resit options take place and which conditions are attached to take part; each module component must offer at least one resit option within the same academic year. An exception may be made for practical exercises⁶;
 - g. any compensation schemes for test results within the module;
 - h. any pass-fail regulation for test results from different modules⁷;
 - i. the marking period for each test; this must not exceed 10 working days with due observance of Article 4.6.8 of this regulation;
6. The Programme Board may modify the assessment schedule during the study unit;

⁶See the definition of terms in Article 1.2. These include projects and practical classes.

⁷The Examination Board has the legal right to determine that a student may pass while not have achieved only passes. This is referred to as the 'pass/fail regulation'.

- a. The assessment schedule may only be changed in consultation with the module coordinator. Students are to be informed immediately of the change;
 - b. If the change involves nothing more than moving tests or test components to a timeslot other than as shown in the timetable, the Programme Board will inform the Examination Board of the decision to make the change at the next examination meeting;
7. Changes to the assessment schedule may not put students at an unreasonable disadvantage. The Examination Board may take special measures in individual cases.

Article 4.5 Oral Examinations

1. Oral examinations are to be administered in public, unless the Examination Board decides otherwise due to extraordinary circumstances;
 - a. If the student or the examiner actually wishes a third party to be present when administering the oral examination, then a request to this end must be submitted to the Board of Examiners at least fifteen working days prior to the oral examination. The student and the examiner are notified of the Programme Board's decision no later than 5 working days in advance. The Programme Board must inform the Examination Board of the decision at the next examination meeting. Public graduation symposia, public presentations and group tests are excluded from this provision;
 - b. If the Examination Board has decided that members of the Examination Board or an observer on behalf of the Examination Board is to be present during the administration of an oral examination, then the Examination Board is to make this known to the examiner and the student at least two working days prior to the oral examination.

Article 4.6 Assessment deadline, interim examination and test date

1. The examiner is to inform the student of the result of an oral examination within one working day;
2. The provisions of paragraph 1 do not apply if the oral examination is part of a series of oral examinations of the same study unit which are administered on more than one working day. In that case, the examiner is to determine the result within one working day following the conclusion of the series of oral examinations;
3. The deadline for determining and disclosing the results of a written test (or other kind of assessment) is to be included in the assessment schedule of the study unit;
4. The examination result of a study unit, determined in accordance with Article 4.1.8, is to be disclosed to the student within ten working days after the conclusion of the teaching period during which the study unit is offered. If the student fails an interim exam and the module examiner has determined that the student meets the conditions for participation in the repair option (in accordance with Article 4.4.5 (f), then this decision is to be made known the student within ten working days after the conclusion of the teaching period;
5. This interim exam date is the date on which the test is taken with which the student definitively passes the interim exam;
6. The test date is the date on which a written or oral test is taken;
7. If a test assessment is dependent on completing one or more assignments or writing a paper or thesis, then the test date will be the deadline of submission of the final component;
8. If a second test is planned shortly after the first, the results of the first test will be published at least five working days prior to the second test to give the student time to prepare;

9. Should the examiner not be able to meet the deadline as stated in Article 4.6, paragraphs 1, 2, 4 and 8 due to exceptional circumstances, then he is to notify the Programme Board and the Examination Board, providing reasons for the delay. The Programme Board is to inform the students involved of the delay immediately, and of the term within which the results will be made known. If the Examination Board is of the opinion that the Examiner has not met his/her obligations, it may appoint another Examiner to ascertain the result of the exam at the request of the Programme Board.

Article 4.7 Period of validity

1. The results of an exam that has been passed remain valid indefinitely. The period of validity of an interim examination that was passed may only be limited if the tested knowledge or understanding is demonstrably outdated or the tested skills are demonstrably outdated;
2. The period of validity of the result of the test or tests for a module component is set out in the programme-specific Appendix and in the assessment schedule of the module.

Article 4.8 Right of inspection and discussion

1. The student is entitled to inspect and discuss his test together with the examiner, and the examiner is to explain the assessment;
2. If the examiner holds a group discussion of the assessment, the student must use that opportunity as his right to discussion as referred to in paragraph 1. If the student cannot attend the group discussion or if the student is not given the opportunity at the group discussion to discuss the reasons for the examiner's assessment of his test with the examiner, the student may submit a request for individual discussion with the examiner within five working days after the group discussion. The individual discussion must take place no later than three working days prior to the next test opportunity;
3. If there is no collective discussion of the test, then a student may submit a request to the examiner for an individual discussion within ten days after publication of the results. The individual discussion must take place no later than three working days prior to the next test opportunity;
4. Individual and group discussions must take place no later than five weeks after the publication of the test results, but at least three working days prior to the next test opportunity, in the presence of the examiner or a designated substitute;
5. The student has a right to inspect his assessed work for a period of two years following the assessment.

Article 4.9 Retention period of tests

1. The retention period for test assignments, keys and the assessments of written tests is two years;
2. De retention period for final Bachelor's projects is a minimum of seven years.

Article 4.9 Teaching evaluation

1. The Programme Board is responsible for monitoring the quality of the educational programme;
2. The Programme Board is responsible for evaluating the programme;
3. The programme-specific Appendix details how the tuition in the programme is evaluated.

SECTION 5 - EXAMINATIONS

Article 5.1 Examination Board

1. The Faculty Board appoints an Examination Board for each educational programme or group of programmes;
2. The Faculty Board convenes the Examination Board and appoints the members based on their expertise in the field of the relevant programme or group of programmes;
3. It is the responsibility of the Faculty Board to ensure that the Examination Board is independent and functions as an expert professional body;
4. Examination Boards determine the rules and guidelines for the examiners, interim examinations and examinations without further consultation (Higher Education and Research Act, Section 7.12b). These are set out in a separate document 'Examination Board Rules and Guidelines';
5. The statutory authority of the Examination Board applies to all study units comprising the student's degree programme.

Article 5.2 Examination

1. In accordance with Section 7.10, subsection 2 of the Higher Education and Research Act, the Bachelor's examination is considered to be complete when the student has passed all study unit exams in the Bachelor's programme;
2. The Examination Board will issue a degree certificate as proof that the student has satisfied all the requirements of the Bachelor's exam once the institutional administration has confirmed that the procedural requirements for issuing the degree certificate have been met. The Examination Board will append a supplement to the degree certificate. The date indicated on the degree certificate (i.e. the date of the examination) is the day on which the student completed the final study unit of his degree programme (Section 7.11 of the Higher Education and Research Act);
3. A student may submit a written request to the Examination Board to postpone the examination, and thus to delay the awarding of the degree certificate. The student should indicate the duration of the postponement in his request. The requested postponement may not exceed 12 months;
4. If the student has requested postponement based on the provisions of paragraph 3, then the date of the examination will be the date on which the Examination Board decides that the student has passed the examination subsequent to the postponement;

Article 5.3 Degree

1. Students who have successfully met all requirements for the Bachelor's examination will be awarded a Bachelor of Science (BSc) degree;
2. The degree conferred is stated on the degree certificate. The student's average mark (GPA) is mentioned on the degree supplement. An annex to the degree supplement indicates how the GPA is calculated.

Article 5.3 Degree certificate

1. The Examination Board will award a degree certificate as evidence that the student has met all of the requirements of the Bachelor's examination. The degree certificate will be signed by the Chair of the Examination Board. If the Chair is absent, one of the members of the Examination Board may also sign the degree certificate;
2. The following information is to be mentioned on the certificate (in accordance with Section 7.11 of the Higher Education and Research Act):

- a. the student's name and date of birth;
 - b. the name of the institution and the degree programme as stated in the register as referred to in Section 6.3 of the Higher Education and Research Act;
 - c. the date on which the examination was completed;
 - d. the components⁸ of the Bachelor's examination;
 - e. If the student has successfully completed an honours programme while on the Bachelor's programme, then this fact will be stated on the degree supplement as an extracurricular programme;
 - f. the degree conferred (in accordance with Section 7.10 (a) of the Higher Education and Research Act);
 - g. where appropriate, the specific qualifications associated with the degree (with due consideration for Section 7.6, subsection 1 of the Higher Education and Research Act);
 - h. the date on which the programme was last accredited or the date on which the programme passed the new programme assessment as referred to in Article 5a.11, paragraph 2;
3. An International Diploma Supplement is to be appended to the degree certificate (Section 7.11, subsection 4 of the Higher Education and Research Act). This supplement is intended to provide insight into the nature and content of the degree programme to promote the international recognition of the programme, among other aspects. The supplement is to include the following minimum information:
- a. the name of the programme and the name of the university;
 - b. that the programme was offered at an institution for academic education;
 - c. a description of the programme content; an indication of any specialization and/or minor, if applicable;
 - d. the study load of the programme;
 - e. the modules, the module components and their assessment;
 - f. interim exams passed by the student that are not part of the final examination;
4. If the Examination Board⁹ has awarded a specific distinction (e.g. cum laude) to the student, then this is to be mentioned on the degree certificate;
5. Students who have successfully completed more than one exam but cannot be awarded a degree certificate as referred to in paragraph 1, will receive, at their own request, a statement prepared by the Examination Board which in any case will state the results of the exams the student has passed (Section 7.11, subsection 5 of the Higher Education and Research Act).

⁸Components' in the Act means the study units of which the Bachelor's examination consists. At the University of Twente these are almost always the modules of which Bachelor's programme consists.

⁹ There has long been discussion about the question if the Programme Board or the Examination Board should award the designation 'with distinction'. Both situations exist and minimum conditions / guidelines have been drawn up either in the Examination Board's rules or in the TER itself. a. Many of the faculties consent with the current text. b. A degree programme / faculty may modify the text if they wish. c. An alternative phrasing might be 'If a specific distinction has been awarded to the student, etc.'.

SECTION 6 – STUDENT GUIDANCE AND BINDING RECOMMENDATION

Article 6.1 Study progress overview

1. If needed, the student can request a certified study progress report from the Student Services desk.

Article 6.2 Student guidance

1. The Faculty Board is responsible for student guidance, including informing students of opportunities for academic endeavour within the programme and via extracurricular avenues;
2. Each student is appointed a Study Adviser;
3. The Study Adviser supervises the student and advises him on study-related matters, as well as personal problems that may be affecting the student's studies;
4. If a student wishes to make use of his right to specific supervision or special facilities, they must contact the Study Adviser. The Study Adviser records the agreements made with the student;
5. The following applies to the entitlement to special facilities:
 - a. demonstrable circumstances beyond the student's control or extenuating personal circumstances;
 - b. if necessary and where possible, dispensation from participation in exams or tests and/or the availability of special facilities for exams and tests. Such dispensation and additional opportunities for tests may only be granted by the Examination Board;
6. An introductory interview will be held with each student before 1 November of the first year of enrolment in the programme;
7. Each student will receive a preliminary student progress evaluation by week 52 at the latest of his first year of enrolment in the programme. This also applies to students in their second year of enrolment in the degree programme whose student progress evaluation has been postponed. This preliminary student progress evaluation is not binding;
8. Each student will receive a second student progress evaluation on the continuation of studies by week 10 at the latest of their first year of enrolment in the programme. This also applies to students in their second year of enrolment in the degree programme whose student progress evaluation has been postponed. This preliminary student progress evaluation is not binding;
9. Students who receive a negative preliminary progress evaluation will be invited for an interview with the Study Advisor to discuss their study methods and review their choice of specialization.

Article 6.3 Binding recommendation

1. Each student receives a written student progress evaluation at the end of the first year of enrolment in the programme about continuing his studies within the programme, notwithstanding Article 6.4. This progress evaluation is based on the student's results. The student may be allowed to continue on the programme, or may be required to leave the programme, with due regard to Articles 6.4 and 6.5;
2. The institutional administration mandates the Programme Board to issue student progress evaluations, as referred to in paragraph 1;
3. The student progress evaluation includes the results of the module components that remain valid the following academic year:
 - a. Only the credits from modules and module components in the first year of the programme count toward the threshold for the student progress evaluation;

- b. The exemptions for components of the first year awarded to the student count towards determining the number of credits;
 - c. The Programme Board may set down subject-specific requirements which must be met. These requirements are specified in the programme-specific Appendix¹⁰;
4. The student progress evaluation as referred to in paragraph 1 may include a rejection, if the student in the opinion of the Programme Board is not deemed suitable for the degree programme because the student has passed fewer than three modules in which:
 - a. the student has passed in total less than 75% of the study load of the first year, or;
 - b. the student has passed 75% or more of the study load of the first year but does not meet the programme-specific requirements (as referred to in paragraph 3 (c) of this Article). A student progress evaluation that involves expulsion is referred to as a binding student progress evaluation (BSA);
5. When considering a BSA involving expulsion, the Programme Board will take the student's personal circumstances into account at the student's request. The Programme Board will only take personal circumstances into account that have been reported to the Study Advisor as soon as can reasonably be expected following their onset;
 - a. Personal circumstances include illness, physical, sensory or other functional disability or pregnancy of the student involved, extenuating family circumstances, participation in top-level sports or arts and membership of the University Council, Faculty Council, Programme Committee or a Category 3 or 4 board in accordance with the FOBOS Regulations;
 - b. In consultation with the academic adviser, the personal circumstances are to be submitted to the Personal Circumstances Committee (CPO) and accompanied by supporting documentation;
 - c. The CPO will assess the validity and severity of the personal circumstances. The CPO will report its findings to the Programme Board and the relevant Study Adviser;
 - d. The Programme Board will take the CPO's findings into account when assessing the student's request;
6. Before issuing a BSA, the Programme Board must first issue a warning to the student giving him a reasonable term in which to improve the course results, to the Programme Board's satisfaction. In addition, students have the right to a hearing with the Programme Board prior to receiving a BSA (Higher Education and Research Act Section 7.8b, subsection 4);
7. The Programme Board's decision regarding the BSA will make mention of the applicable appeals procedure. Expulsion following a BSA may be appealed within six weeks by lodging an appeal with the Examination Appeals Board;
8. If a student receives a BSA, he/she may not enrol in the same degree programme for a period of three consecutive academic years;

¹⁰ Subject-specific requirements may not state that all module components of a certain type must be completed. 'The student must pass all mathematics module components from the B1 programme' is not permitted, whereas 'The student must pass three of the four mathematics components from the B1 programme' is permitted.

9. If a student re-enrols in the relevant Bachelor's programme after the period referred to in paragraph 8, this enrolment is designated as a first-year enrolment and the relevant provisions of this section apply in full.

Article 6.4 Discontinuation of the programme

1. The programme is considered to be discontinued if the student stops taking courses or any form of tests for the programme, and where the student:
 - a. submits a request with the University of Twente to terminate the enrolment, or;
 - b. de-enrols for the programme at the University of Twente, with the student enrolling in another programme at the University of Twente and thus switching to another programme at the University of Twente, or;
 - c. continues his studies at another institute of higher education with a proof of tuition fees paid;
2. If in his first year of enrolment for the degree programme a student submits a request through Studielink by 31 January to terminate enrolment and he is de-enrolled before or on 1 February and he does not re-enrol for the same programme in that same academic year, a student progress evaluation as referred to in paragraph 1 of Article 6.3 will not be issued. If this student does re-enrol in the relevant Bachelor's programme, this enrolment is designated as his first-year enrolment;
3. Students who are de-enrolled after 1 February for the degree programme at the University of Twente, will receive a student progress evaluation as referred to in Article 6.3 paragraph 1 from the programme they discontinued.

Article 6.5 Postponement of student progress evaluation

1. The student progress evaluation as referred to in Article 6.3 paragraph 1 may be postponed if:
 - a. the student has enrolled in the degree programme on or after 1 October of the relevant academic year and on 31 August at the latest has not met the norm set in Article 6.3, paragraph 3, or;
 - b. if personal circumstances preclude an assessment of a student's academic capacities at the end of the first year of enrolment in the degree programme, or;
 - c. the student switches from one degree programme at the University of Twente to another on or after 1 October of the first year, whereby the student de-enrols for one programme (discontinuation in the sense of Article 6.4, paragraph 1 under b) and enrolls in another programme;
2. If this student, whose progress evaluation as referred to in Article 6.3 (1) has been postponed based on that article, re-enrols in a subsequent academic year in the relevant programme, then a student progress evaluation will be issued at the end of that subsequent academic year. The same norm as set out in Article 6.3 (3) applies to this progress evaluation;
 - a. The student whose progress evaluation as referred to in Article 6.3 (1) has been postponed based on Article 6.5 (1)(a), will be notified in writing within 6 weeks of the date of enrolment before which date the programme will issue the final progress evaluation;
 - b. The student whose progress evaluation as referred to in Article 6.3 (1) has been postponed based on Article 6.5 (1)(b), will be notified in writing within 6 weeks of the

- date of enrolment before which date the programme will issue the final progress evaluation;
- c. For students whose progress evaluation as referred to in Article 6.3 (1) has been postponed based on Article 6.5 (1)(c), the end of the second year of enrolment in the relevant programme applies as the new deadline for the final student progress evaluation. The student progress evaluation is issued by the degree programme in which the student is newly enrolled;
3. If a student transfers to another UT degree programme prior to 1 October, then the norm will not be adjusted as referred to in Article 6.3, paragraph 3 and the evaluation will not be postponed based on transfer.

SECTION 7 – STUDYING WITH A FUNCTIONAL IMPAIRMENT

Article 7.1 Studying with a functional impairment

1. A functional impairment is a physical, sensory or other functional disorder that might limit the student's academic progress.
2. The Study Advisor and the student will discuss the most effective facilities for the student as referred to in Article 2 of the Equal Treatment of Disabled and Chronically Ill People Act (WGB h/cz).
3. Facilities are to be aimed at removing specific barriers in the teaching programme or when it comes to taking exams. Where necessary, these facilities may be related to access to infrastructure (buildings, classrooms and furnishings) and study materials, adjustments to the form of assessment, alternative learning pathways or a customized study plan. The facilities are to ensure the student's chances of achieving the programme intended learning outcomes.
4. Based on the interview referred to in paragraph 2, the student is to submit a request for facilities to the Faculty Board, preferably three months before the student is to participate in classes, exams and practical exercises for which the facilities are required.
5. The request is to be submitted along with supporting documentation that is reasonably necessary for assessing the request (such as a letter from a doctor or psychologist registered in the BIG register, or in the case of dyslexia from a healthcare psychologist or special education needs expert, also registered in the BIG register).
6. The Faculty Board will decide on the admissibility of the request as referred to in paragraph 4 and will inform the student and the Study Advisor of the decision within 20 working days after receipt of the request, or sooner as the urgency of the request dictates.
7. The Study Adviser will ensure that the relevant parties are informed in good time about the facilities granted to a student with a functional impairment.
8. Should the Faculty Board reject the request in full or in part, the Faculty Board is to inform the student of the justification for the rejection and the possibilities for lodging an objection and an appeal. A written objection must be submitted in writing within six weeks after the decision has been communicated to the student. The objection is to be submitted to the objections, appeals and complaints office via the Student Services desk.
9. Should extra facilities be granted, the period of validity will also be indicated. The applicant and the Study Advisor will evaluate the facilities before the end of this period. During this evaluation, parties will discuss the effectiveness of the facilities provided and whether they should be continued.

10. If a student is dyslexic, he/she will be granted a maximum of 15 extra minutes for each hour that a test or exam is officially scheduled.

SECTION 8 – AMENDMENTS, TRANSITIONAL ARRANGEMENTS, APPEALS AND OBJECTIONS

Article A8.1 Conflicts with the regulations

If other additional regulations and/or provisions pertaining to education and/or examinations conflict with these Teaching and Examination Regulations, the provisions in these Teaching and Examination Regulations will prevail.

Article A8.2 Administrative errors

If, following the publication of an exam result, a marks sheet, or a student's progress report, an alleged error is discovered, the discoverer, be it the university or the student, is required to make this known to the other party immediately upon finding the error and to cooperate in rectifying the error.

Article A8.3 Amendments to the regulations

1. Substantive amendments to these Teaching and Examination Regulations are enacted by the Faculty Board in a separate decree;
2. In principle, substantive amendments to these regulations do not apply to the current academic year. Amendments to these regulations may apply to the current academic year if the interests of the student are not prejudiced within reasonable bounds, or in situations of force majeure;
3. Amendments to these regulations have no effect on earlier decisions by the Examination Board.

Article A8.4 Transitional arrangements

1. In the case of amendments to the Teaching and Examination Regulations, the Faculty Board may decide to put a transitional arrangement in place.
2. Any such transitional arrangement will be published on the degree programme's website.
3. General principles for the transitional arrangement in the case of changes to the curriculum:
 - a. Changes to the curriculum are to be announced prior to the academic year in which the changes take effect;
 - b. No guarantee can be made that all programme study units that were part of the curriculum when a student enrolled in a programme will continue to be part of the curriculum. The final Bachelor's exam is to be based on the curriculum most recently adopted by the Faculty Board;
4. The transitional arrangement will always include:
 - a. the study units that are equivalent to study units or components of study units from the current curriculum as indicated in the programme-specific Appendix;
 - b. an indication that if a teaching unit that does not involve a practical is dropped from a programme, then students are to have at least two opportunities in the following year to take a written or oral exam or to undergo another form of assessment;
 - c. an indication that if a study unit with practical exercises is dropped from the programme and there is no opportunity in the subsequent academic year to complete the practical exercise, then at least one study unit will be designated that may be completed as a substitute for the study unit that has been dropped;
 - d. the period of validity of the transitional arrangement;

5. The transitional arrangement must be approved by the Examination Board with regard to the provisions of paragraphs 4a and 4c;
6. In exceptional cases and to the student's benefit, the Examination Board may deviate from the prescribed number of opportunities to sit exams related to study units that have been dropped from the curriculum.

Article 8.5 Assessment of the Teaching and Examination Regulations

1. The Faculty Board is responsible for the regular assessment of the Teaching and Examination Regulations and is to take into account the time involved for the student for the purposes of monitoring and adjusting the study load, if necessary;
2. Based on Section 9.18 of the Higher Education and Research Act, the Programme Committee has a partial right of approval of and a partial right to be consulted on the Teaching and Examination Regulations;
3. The Programme Committee is responsible for the annual assessment of the manner in which the Teaching and Examination Regulations are implemented.

Article 8.6 Appeal and objections

An objection against a decision by the Examination Board or by an examiner or an appeal against a decision by the Faculty Board based on these Regulations must be submitted in writing within six weeks after the decision has been communicated to the student. The objection is to be submitted to the objections, appeals and complaints office via the Student Services desk.

Article 8.7 Hardship clause

The Examination Board or the Programme Board may allow derogation from the provisions of these Regulations in the event of demonstrably compelling unreasonableness or unfairness. This depends on which body (Examination Board or Programme Board) is authorized or has the duty according to this regulation to take a decision on or make an exception to a provision in this regulation.

Article 8.8 Notification

The Teaching and Examination Regulations and the Examination Board's rules and guidelines are to be published on the degree programme's website.

Article 8.9 Entry into force

These regulations enter into force on 1 September 2019 and replace the regulations dated 1 September 2018.

Adopted by the faculty board of the Faculty of Electrical Engineering, Mathematics & Computer Science, having regard to Section 9.5, 9.15, first subsection under a, Section 7.13, first and second subsection, Sections 9.38, under b, and 9.18, first subsection under a, and Section 7.59 of the Higher Education and Research Act, in due consideration of the recommendations of the Programme Committee, and following approval or advice from the Faculty Council.

Enschede, August 31, 2019

SECTION B: PROGRAMME-SPECIFIC SECTION

BACHELOR ELECTRICAL ENGINEERING (B-EE)

About this Section

The Teaching and Examination Regulations (TER) are subdivided into two sections (Section A and Section B), which together form the TER. Section A, which can be seen as the university section, includes provisions that may apply for all EEMCS Bachelor's degree programmes. Section B contains the provisions that are specific to the particular degree programme, in this case the Bachelor's programme in Electrical Engineering.

SECTION B – PROGRAMME-SPECIFIC SECTION ELECTRICAL ENGINEERING

CHAPTER A – GENERAL PROVISIONS

Article A1 Applicability

The following regulations form the programme-specific part of the university-wide Education and Examination Regulations as referred to in Article 7.13 of the Higher Education and Research Act (WHW), and apply to the Bachelor's degree programme in Electrical Engineering, from now on referred to as "the programme".

Article A2 Attainment targets of the programme

The general attainment targets for graduates of the Bachelor's degree programme in Electrical Engineering are listed below.

Knowledge:

- 1 Have knowledge and understanding in the field of Electrical Engineering, in particular analogue and digital electronics, Maxwell theory, control engineering, communication science and analogue and digital signal processing.
- 2 Have knowledge and understanding of programming, digital logic and computer systems.
- 3 Have knowledge and understanding of calculus, linear algebra, differential and difference equations, linear systems, and probability.
- 4 For those who choose the module Device Physics: Have knowledge and understanding of the physics of basic quantum mechanics, electronic components, transducers and optical devices.
- 5 For those who choose the module Network Systems: Have knowledge and understanding of basic principles and key protocols in communication systems, networks, and networked applications.
- 6 Have knowledge on academic level of key theories, methods and practices in the fields mentioned above.
- 7 Can understand and reflect on theories, methods and practices in the field of electrical engineering.
- 8 Have knowledge of methods for planning and management of individual and team-based projects.

Skills:

- 9 Can use modern methods and tools in research and design to describe, analyse, model, implement, test and document systems in the domain of electrical engineering on a scientific basis.
- 10 Can assess theoretical and practical issues and substantiate and select appropriate solutions based on literature studies, models, analyses, simulations and / or test.

Competences:

- 11 Can work systematically and methodically.
- 12 Have ability to handle complex development-oriented and research-oriented situations.
- 13 Have ability of carrying out studies and draw valid conclusions on a scientific basis.
- 14 Can independently function in a disciplinary as well as in an interdisciplinary collaboration with a professional attitude.
- 15 Is able to communicate academic problems and solutions to peers and non-specialists or partners and users.
- 16 Can translate academic knowledge and skills into practical problem solving.
- 17 Is able to study another academic field and is able to identify research and/or design in that field.
- 18 Can identify own learning needs and structure their own learning in different learning environments.
- 19 Have insight into another academic field and can use different approaches for research or design.
- 20 Takes account of the temporal and social context of science and technology and is able to integrate this into his or her scientific work.

Article A3 Structure of the programme
All students must follow the programme full-time.

Article A4 Scope of the programme
The programme has a study load of 180 credits.

Article A5 Language of the programme

A 5.1

The Electrical Engineering programme will be taught in English.

A 5.2

1. The examinations of the programme will be held in English. Examinations may be held in a language other than English, with the permission of the Examination Board.
2. Having regard to the University's Code of Conduct for Working Languages, the provisions of Paragraphs 1 and 2 may be dispensed with, with the permission of the Examination Board.
3. Students do not need to know Dutch.

A 5.3

Students must be able to demonstrate that they have an adequate command of English, both oral and written.

- a. Students from countries that are signatories to the Treaty of Lisbon and who had English in their school-leaving examination meet this requirement.
- b. Students with a different previous education are required to pass a recognized test in order to obtain admission to the programme –at least 6.5 in the IELTS test for both the active level of English (writing, speaking) as well as the passive level (reading, listening) or at least 84 in the Internet-based TOEFL test. Students with a diploma from a country where English is the only official language of education are exempted from this language requirement.

Article A6 Laptop

Students should have a notebook (laptop) when they start their studies. The Notebook Service Centre (NSC) of the University of Twente will inform the future students about the minimum requirements for the laptop.

Article A7 Enrolment for exams and tests

1. Every student must sign up in the student information system for participation in a module. It is also mandatory to register beforehand for every intermediate test.
2. By way of exception to the provisions of paragraph 1, any student who has correctly signed up for participation in the instruction/classes for a particular course and has been admitted will also be signed up for the subsequent interim examination, unless the degree programme stipulates a different approach.

Article A8 Registration of results

1. The value 'VR' will be assigned to exemptions. In modules an exemption does not get a numerical value. In courses of the old curriculum an exemption counts as a 6.
2. The highest grade always counts, also for the intermediate tests in the modules.

Article A9 Rules regarding BSA

1. The programme makes use of the BSA (Binding Study Advice or binding recommendation) module in OSIRIS
2. The BSA is based on the obtained results in the first four modules. In article B.5 an overview is given of the parts of each module of which the results will be kept, even if the module is not completed.
3. A positive BSA is given - if the student has successfully completed at least 45 EC in the first year.
4. Additional conditions for a positive BSA is that
 - a. three of the four mathematics grades should be at least 5.5
 - b. three of the four electronics core (IEEE, Electric Circuits, Electronics, Fields&Waves) grades should be at least 5.5
 - c. three of the four project grades (IEEE project, Electric Circuits project, Electronics project, Fields&Waves project) should be at least 5.5
5. After the first module a positive, neutral or negative interim advice will be given.
6. The official advices are the interim and final advices.
7. The official advice is provided by the programme director.
8. The BSA is sent by e-mail and is signed digitally.

Article A10 Evaluation and safeguarding of education

1. Within 2 weeks after the closure of a module, each student participating in a module will receive an invitation to participate in the UT – Student Experience Questionnaire (UT-SEQ). The UT-SEQ is a centrally organised online evaluation addressing various aspects of the respective module.
2. The programme has installed an independent evaluation committee. On request of the programme committee, the programme director, or via the student organization Scintilla, this evaluation committee will organize an evaluation, consisting of at least two panel discussions. A panel discussion consists of five to ten students participating in the module that is being evaluated, the module coordinator and / or lecturers involved in the module that is being evaluated and a chair from the evaluation committee.

CHAPTER B – VARIOUS TYPES OF ASSESSMENT OF THE DEGREE PROGRAMME

Article B1 The content of the programme

1. The first year consists of the following units of study, with the indicated study load in credits:
 - a. IEEE (Introduction to Electrical and Electronic Engineering) 15 credits
 - b. Electric Circuits 15 credits
 - c. Electronics 15 credits
 - d. Fields and Waves 15 credits

2. The second year consist of the following units of study, with the indicated study load in credits:
 - a. The compulsory modules:

Computer Systems	15 credits
Systems and Control	15 credits
Signal Processing and Communications	15 credits
 - b. The elective modules (one of them to be chosen):

Device Physics	15 credits
Network Systems	15 credits

3. The third year consist of the following units of study, with the indicated study load in credits:
 - a. Two elective minor modules of 15 credits each 30 credits
 - b. Electronic Systems Design 15 credits
 - c. The Bachelor thesis project 15 credits

A more detailed description of each module is given in Appendix B.

Article B2 Special features of the modules

1. Projects form an integral part of all modules.
2. Lab work forms an integral part of all modules.
3. Projects and lab work are carried out individually or by groups of students according to the regulations of the individual modules.

Article B3 The procedure for examinations

1. Modules will be assessed by means of intermediate tests, which may be oral or written.
2. For an oral test, there must be proof that the student was treated properly and that the assessment is valid. This can be shown by, e.g., the presence of a second expert or a video recording of the sitting of the oral test. The assessment is documented through a form that shows that the intended learning outcomes are met.
3. A single grade will be given for each module. The grade shall be based on the results of tests, papers and lab work. The rules will be made clear to all students before the start of the module. An assessment of all parts of the module by the team of teachers at the end of the module leads to the final grade.
4. There are two opportunities to take written test. When a larger topic is divided over multiple smaller tests, the re-sit opportunity may be one integral test. The resit opportunity takes place within 10 weeks after the finishing of the module.-
5. The Examiner may deviate from the provisions of Paragraphs 1 to 4 in individual cases in agreement with the Examination Board.
6. In the case of a minor, the Education and Examination Regulations of the department teaching that minor shall apply.
7. The assessment of lab work and projects being part of the modules, referred to in Article B2, may require a logbook to be kept during the lab work and/or a written and/or an oral report on the lab work and project. Lab work and a project are assessed on the basis of the performance shown during the exercise, and on the basis of the logbook, the report and/or the presentation on the exercise if they are demanded.
8. Assessment of group assignments have an individual component
9. A report or paper must be written and a presentation must be given on the activities involved in the Bachelor thesis project. The Examiners for these units of study may also require interim presentations to be given.

Article B4 Prior knowledge requirements

1. Students are entitled to start with the two elective modules in the third year without limitation on the number of completed modules. Elective modules may have prior knowledge requirements, which can be found in the Osiris description of these modules.
2. Students are strongly advised to have completed module 3, the programming part of module 5 and the linear systems part of module 6 as well as the signal processing part in module 8 prior to starting the Electronic Systems Design module (module 11).
3. Students are entitled to start with the Bachelor thesis project (module 12) only after successfully completing all modules of the first and second year.

Article B5 Period of validity for intermediate tests

1. In the EE curriculum the validity of intermediate tests of failed modules is valid until the start of the given module the next academic year.
2. The period of validity for a sufficient module grade is infinite
3. Each module consists of a core activity (or a couple of related core activities). In some modules, some satellite activities are identified as well. If the core activity or the satellite activity is finished with a positive result (higher or equal 5.5), this result can be reused. The validity of the core or satellite results is the same as the validity of module grades.
4. For each of the 10 modules in the curriculum the core activities and satellite activities are defined as:
 - a. Module 1 : Satellite = Calculus 1 (4EC); Core = the rest of the module (11EC)
 - b. Module 2 : Satellite = Calculus 2 (3EC); Core = the rest of the module (12EC)
 - c. Module 3 : Satellite = Vector Calculus (3EC); Core = the rest of the module (12EC)
 - d. Module 4 : Satellite = Linear Algebra (3EC); Core = the rest of the module (12EC)
 - e. Module 5 : Satellite = Linear Difference and Differential Equations (5EC); Core = the rest of the module (10EC)
 - f. Module 6 : Satellite = Linear Systems (4EC); Core = the rest of the module (11EC)
 - g. Module 7A : Complete module is core activity (15EC)
 - h. Module 7B : Complete module is core activity (15EC)
 - i. Module 8 : Satellite = Probability Theory (4EC); Core = the rest of the module (11EC)
 - j. Module 11 : Complete module is core activity (15EC)
 - k. Module 12 : Complete module is core activity (15EC)
5. Individual requests other than mentioned in this article can be sent to the Examination Board if well motivated with a study planning and after advice of the study advisor.

Article B6 The Minor

1. A student who is enrolled for the Bachelor's degree programme in Electrical Engineering and who meets the admission requirements referred to in Article B4 Paragraph 1, may take any minor offered by the University, with the exception of those minors listed in the 'Minor admission review', for which the Examination Board has stated that these may not be chosen by the student. The Examination Board shall update the 'Minor admission overview' annually.
2. In addition to the provisions of Paragraph 1, a student can make a proposal for a minor by combining his own selection of the units of study offered by any university ("free minor"). Guidelines for the proposal of a free minor are available from the Examination Board. To be accepted as a free minor, approval of the free minor proposal by Examination Board is required.

Article B7 The Bachelor thesis project

1. When the prior knowledge requirements referred to in Article B4 Paragraph 3 are met, the student may select a chair at any university as the site where the student will carry out the Bachelor thesis project. If the assignment is performed outside the department of Electrical Engineering of the University of Twente, the permission of the Programme Director is required prior to starting the thesis project. In any case one of the chairs of the department of Electrical Engineering at the University of Twente is responsible for the assignment. 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 bio-mechatronics
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 Science	OS	integrated optical microsystems
Nano Electronics	NE	nanoelectronics
Data Management and Biometrics	DMB	machine learning, computer vision and biometrics
Integrated Devices and Systems	IDS	devices for integrated circuits, micro sensors and systems
Telecommunication Engineering	TE	telecommunication engineering

2. The chair, not the student, shall appoint a supervisory committee consisting of at least three persons. The committee consists of the daily supervisor, an assistant professor or associate professor or full professor of the chosen research chair and a member not being a member of the research chair involved (sometimes called an external member).

3. The supervisory committee shall include at least two examiners. The third member must be an expert in the field, PhD candidate, postdoc, assistant professor, associate professor or full professor.
4. The Bachelor thesis project has a study load of 15 credits. The project should be finished within the module.
5. The student's performance shall be assessed on the closing date, irrespective of the stage his work has reached.
6. If the grade for any of the 3 rubrics for the BSc-thesis work is insufficient, the overall grade is insufficient. In other cases, the overall grade is a weighted average of the grades for the rubrics.
7. If the grade for the assignment is below a pass grade, the chair may give the student the opportunity to continue working on the assignment so as to meet the requirements for a pass grade. The extra time allowed shall however be limited to a study load equivalent to 3 credits. The grade for the assignment may not exceed a 6 in this case.
8. The Programme director (OLD) decides about additional time in cases that a delay is not caused by the student.
9. If the student's performance is still unsatisfactory after extra time has been allowed, the student will have to do a new assignment with another theme and a different supervisory committee or under the authority of a different chair.

Article B8 Extracurricular Activities

For those students who are looking for more than the usual academic challenges, extracurricular activities are organised in the Honours programme. The Honours programme is designed for talented, interested and highly motivated students. The student is offered a 30 EC programme. The programme typically starts in the first year.

If the honours programme is completed successfully, this will be stated on the degree supplement as an extracurricular programme.

Article B9 Cum Laude

The Bachelor Electrical Engineering examination can be taken with the designation 'cum laude'. This will be mentioned on the diploma. The guidelines for awarding this designation are that each of the following conditions must be fulfilled:

- a. The 180 EC of the bachelor programme is finished within 3.5 years (time limits requirement);
- b. The average module grade is 8.0 or higher;
- c. No exemptions were granted.
- d. The assessment of the final project (Module 12 for the TOM curriculum) is 8.5 or higher.

In exceptional cases, in response to a student's request, the Examination Board can award the designation "cum laude" if the student had pardonable grounds for non-compliance with the time limits requirement. This could be the case, for instance, when delay has been acknowledged in accordance with the provisions stipulated by the institution.

CHAPTER C – MASTER’S PROGRAMMES FOLLOWING BACHELORS IN ELECTRICAL ENGINEERING

Article C1 Master’s programmes following Bachelors in Electrical Engineering

Students with a Bachelor’s degree in Electrical Engineering from the University of Twente are entitled to take the following Master’s degree programmes:

- The Master’s degree programmes in Electrical Engineering at the University of Twente, Delft University of Technology and Eindhoven University of Technology
- The Master’s degree programme in Systems & Control offered jointly by the University of Twente, Delft University of Technology and Eindhoven University of Technology.
- The Master’s degree programme in Embedded Systems offered jointly by the University of Twente, Delft University of Technology and Eindhoven University of Technology.
- The Master’s degree programme in Nanotechnology at the University of Twente

CHAPTER D – FREE-CHOICE BACHELOR’S DEGREE PROGRAMME

Article D1 Relevant concepts

1. The free-choice Bachelor’s degree programme is a programme as referred to in Article 7.3c of the Higher Education and Research Act (WHW). A student can put such a programme together by selecting from the units of study offered by an institution. Since a diploma is also awarded for successful completion of a free-choice programme, the programme requires permission from the most relevant Examination Board.
2. When giving such permission, the Examination Board shall determine which degree programme the free-choice programme compiled by the students in question shall be deemed to belong to.

Article D2 Permission of the Examination Board

The Examination Board shall draw up guidelines for granting the permission referred to in Article D1, with the provision that the free-choice degree programme must be coherent, must have a level comparable with that of the Bachelor’s programme referred to in Chapter B, and must meet the requirements stated in Article D3.

Article D3 Examinations and structure of the free-choice Bachelor’s degree programme

1. The free-choice Bachelor’s degree programme has a final assessment for the Bachelor’s degree.
2. The free-choice Bachelor’s degree programme must be followed full-time, and has a study load of 180 credits.

Article D4 The composition of the free-choice Bachelor’s degree programme

The free-choice Bachelor’s degree programme shall contain at least one component that is comparable with the Bachelor thesis project referred to in Article B7. This component shall have a study load of 15 credits.

Article D5 Validity of arrangements

1. The Education and Examination Regulations applying to the degree programme to which the unit of study in question normally belongs is leading. This concerns the periods during which examinations can be taken, the frequency of the examinations, the prior knowledge requirements for the various units of study, the way in which examinations are held and the form in which the examination results are announced.

2. If the regulations conflict or lead to insuperable problems for students, the Electrical Engineering Examination Board may permit departures from the regulations.
3. Units of study that have to be successfully completed in accordance with the provisions of Paragraph 1 before a student can proceed to units of study that form part of the free-choice degree programme need not necessarily belong to the free-choice degree programme themselves.
4. In exceptional circumstances, the examiner for a unit of study that must be successfully completed before another unit of study is started may decide that this condition may be waived.

Article D6 Sequence of the various parts of the free-choice Bachelor's degree programme

1. A student who has submitted a request for approval of a free-choice Bachelor's degree programme, shall include the sequence in which the various parts of the programme shall be taken.
2. The Examination Board may decide that certain parts of the programme shall be taken in another sequence than that specified by the applicant.
3.
 - a. In particular, the Examination Board may decide that certain named parts of the programme may not be taken until other named parts of the programme have been successfully completed.
 - b. The assignment referred to in Article D4, may not be started until at least 120 EC have been successfully completed.
 - c. The chair under whose authority the unit of study referred to in Article D4 is performed may determine, in addition to the provisions of a. and b. above, that if the content of the assignment demands this, at most two named units of study with a study load of at most 15 credits shall be successfully completed before the assignment may be started.

CHAPTER E – FINAL AND INTRODUCTORY PROVISIONS

Article E1 Hardship clause

If these regulations give rise to evidently unfair or otherwise unintended consequences, the Programme Director or the Examination Board (depending on which is competent to deal with the issue in question) may authorize a departure from these regulations.

Article E2 Introduction and amendment of these regulations

1. Amendments to these regulations are approved by the Dean in a separate decree and recorded in Article E3 Paragraph 2.
2. Amendments to arrangements and guidelines relating to these regulations but formulated elsewhere are approved by the Dean in a separate decree, and recorded in Article E3 Paragraph 2.
3. No amendment to these regulations will become active during the current academic year, unless they can be reasonably assumed not to have any adverse effect on the interests of students (including external students). Amendments shall if possible be announced six months before they take effect.
4. The replacement of the old regulations and the amendments introduced in these new regulations shall further not adversely influence the interests of students (including external students) as regards:
 - the period of validity of the regulations as determined by the Examination Board,
 - the approval by the Examination Board of a free-choice degree programme or a free-choice minor put together by students (including external students),
 - any other decision concerning students (including external students) taken by the Examination Board pursuant to these regulations or the preceding regulations.
5. When these regulations or arrangements and guidelines relating to these regulations but formulated elsewhere are amended, transitional arrangements shall be approved to determine in any case under what circumstances and/or during which period use can still be made of the original regulations.

Article E3 Date of commencement

These regulations will be active on 1 September 2019

APPENDIX A. TRANSITIONAL ARRANGEMENT FOR NEW EDUCATION AND EXAMINATION REGULATIONS FOR 2019/20

ARTICLE 1

deals with the general concepts of the transitional arrangements.

Article 1.1 General concepts

1. After a course is terminated in the old curriculum, there will be test-opportunities for two additional years.
2. The test opportunities can be written exams in the same quartile as in the old curriculum, but also oral exams might be scheduled if only a few students need to take the resit.
3. Two years after termination of the course, no extra tests will be offered. Students who did not complete all the courses in the old curriculum will be transferred to the most recent curriculum (which can result in re-doing parts which were finished before).

ARTICLE 2

deals with arrangements for courses from the old Electrical Engineering curriculum.

Article 2.1 Arrangements for first year courses:

No possibilities for old first year courses are given anymore. Students who did not complete the first year's courses in the old curriculum will be transferred to the TOM-module curriculum (which can result in re-doing parts which were finished before).

Article 2.2 Arrangements for second year courses:

No possibilities for old second year courses are given anymore. Students who did not complete the second year's courses in the old curriculum will be transferred to the TOM-module curriculum (which can result in re-doing parts which were finished before).

Article 2.3 Arrangements for third year courses:

No possibilities for old third year courses are given anymore. Students who did not complete the third year's courses in the old curriculum will be transferred to the TOM-module curriculum (which can result in re-doing parts which were finished before).

Two exceptions are in place:

- For the minor, students can choose existing minor modules.
- For the Bachelor thesis project arrangements see Article B7.

APPENDIX B. DETAILED DESCRIPTION OF THE EE MODULES

In this appendix, an overview of the 11 Electrical Engineering modules is given. Detailed description of the modules, including learning aims and workload breakdown is given on their respective Osiris pages. For all modules the language of instruction and testing is in English. As presented in Article B5 of this document, the mathematics parts of modules 1-6 and 8 is allowed for separated assessment. All other parts, as well as the remaining four modules are considered as core activity.

In summary:

Module	Name:	Parts	ECs
1	IEEE	IEEE	11
		Calculus 1	4
2	Electric Circuits	Electric Circuits	12
		Calculus 2	3
3	Electronics	Electronics	12
		Vector Calculus	3
4	Fields & Waves	Fields & Waves	12
		Linear Algebra	3
5	Computer Systems	Computer Systems	10
		Linear Difference and differential equations	5
6	Systems & Control	Systems & Control	11
		Linear Systems	4
7A	Device Physics		15
7B	Network Systems		15
8	Signal Processing & Communications	Signal Processing & Communications	11
		Probability Theory	4
11	Electronic System Design		15
12	Bachelor thesis project		15