

EDUCATION AND EXAMINATION REGULATIONS

MASTER'S DEGREE PROGRAMMES EEMCS

A. FACULTY SECTION

B. PROGRAMME-SPECIFIC SECTION

2022-2023 academic year

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

General

The Dutch Higher Education and Research Act (Dutch abbreviation: WHW) of 1993 requires a broad outline of the teaching programme and examining for each degree programme to be recorded in the Education and Examination Regulations (EER (Dutch: OER)).

In accordance with Section 7.13, Paragraph 1, of the WHW, the EER 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 EER with respect to procedures, rights and responsibilities relating to the education 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 EER.

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

The EER is part of the UT Student Charter, which governs the rights of students and the way we treat each other at the UT. It gives an overview of the rights and obligations of our students and of the academic provisions. The charter consists of two parts: 1) the institutional section which applies to all students, irrespective of the programme and 2) the programme section, which is different for each programme and can be found in the Education and Examination Regulations (EER).

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SECTION A: FACULTY SECTION

A1. General provisions

Article A1.1 Applicability of these Regulations

1. These Regulations apply to education and examinations for all students in the following Master's degree programmes: Applied Mathematics, Business Information Technology, Computer Science, Electrical Engineering, Embedded Systems, Interaction Technology, Internet Science and Technology, Systems & Control and Robotics (hereinafter referred to as: the Master's programmes) provided by the Faculty of Electrical Engineering, Mathematics and Computer Science (hereinafter referred to as: the faculty or EEMCS) of the University of Twente.
2. These Regulations consist of a faculty Section (Section A) and a programme-specific Section (Section B). Section A contains general provisions that apply to education and examinations for all the Master's programmes at EEMCS. Section B contains programme-specific provisions. Together, Sections A and B form the Education and Examination Regulations for the relevant programme.
3. The Regulations also apply *mutatis mutandis* to the joint Master's degree programmes and study units provided by the faculty, pursuant to Section 7.3c of the WHW.
4. These Regulations apply to anyone enrolled in the Master's programmes, irrespective of the academic year in which the student first enrolled in the programme.
5. Section B of these Education and Examination Regulations may include additional general provisions for the relevant programme.
6. The general provisions and the programme-specific provisions to the Education and Examination Regulations are determined by the Faculty Board.
7. For students attending study units organised by another programme¹ are subject to the assessment rules laid down in the assessment schedule of the study unit concerned, in the Education and Examination Regulations and in the Rules and Guidelines of the Examination Board of the programme that organises the study unit. Special facilities according to article A7 can only be granted by the programme for which the student is enrolled.
8. The Examination Board sets down rules with regard to the execution of its tasks and powers in accordance with Section 7.12b of the WHW. These regulations are specified in the Rules and Guidelines of the Examination Board and include provisions about the rules of order during tests and rules in case of emergencies.
9. The institute section of the [student charter](#) includes a definition of what the University of Twente considers to be academic misconduct (fraud). The Rules and Guidelines of the Examination Board for the Master's programme in question include additional rules about academic misconduct (fraud), such as which measures the Examination Board may take if it establishes misconduct (fraud).
10. Requests for exemptions in respect of provisions laid down in the Education and Examination Regulations should be submitted to the Examination Board or the Programme Director of the student's own programme, as laid down in the relevant articles of these Regulations.

¹ This does not apply, unless otherwise agreed, for units that are organised by a programme specifically for another programme, so-called service education.

Article A1.2 Definitions

The terms used in these Regulations should be interpreted as follows:

- a. **Academic year:** The period beginning on 1 September and ending on 31 August of the following calendar year.
- b. **Admissions Board:** The committee that assesses, on behalf of the Faculty Board, whether a candidate meets the requirements for admission to the Master's programme of their choice. If no Admissions Board has been appointed for the programme, the Programme director will function as the Admissions Board.
- c. **Assessment schedule:** a schedule showing the method of assessment for a study unit.
- d. **Combined Programme:** A programme of courses representing an amalgamation of two separate study programmes and covering the requirements and the programme intended learning outcomes of both individual Master's programmes, yielding two degrees.
- e. **Course catalogue:** The guide for the Master's programme concerned that provides further details of courses and other information specific to the programme. The course catalogue is available at www.utwente.nl/coursecatalogue.
- f. **Course:** A study unit of the programme, as defined in Article 7.3, paragraph 2 and 3 WHW.
- g. **Credit (EC):** A unit of 28 hours of study load, in accordance with the European Credit Transfer System, a full academic year consisting of 60 EC or 1680 hours (Article 7.4 WHW).
- h. **Curriculum:** The aggregate of required and elective study units constituting a degree programme as laid down in the programme-specific section B.
- i. **Double degree:** two degrees awarded by two institutions of higher education that offer a joint study programme; the joint programme covers the programme intended learning outcomes of both programmes.
- j. **Examination (also: exam):** An evaluation, performed to conclude a study unit, of the student's knowledge, understanding and skills as well as an assessment of the outcomes of that evaluation (Article 7.10 WHW); an examination may consist of a number of tests.
- k. **Examination programme:** All study units of a study programme counting towards the degree.
- l. **Examination Board:** The body that objectively and professionally assesses whether a student meets the conditions laid down in the education and examination regulations regarding the knowledge, understanding and skills required to obtain a degree (Article 7.12 WHW).
- m. **Examiner:** The individual appointed by the Examination Board to administer examinations and tests and to determine the results, in accordance with Article 7.12 paragraph c WHW.
- n. **Exemption:** The decision of the Examination Board that the student has knowledge and skills which are comparable in terms of content, scope and level with one or more study units or components of study units. An exemption is granted on the basis of acquired competencies, i.e. previously passed examinations in higher education or in view of knowledge and skills attained outside higher education.
- o. **Executive Board:** Executive Board of the University of Twente.
- p. **Faculty Board:** Head of the faculty (Article 9.12, paragraph 2 WHW).
- q. **Final Examination:** A degree programme is concluded with a final examination. If the study units in the degree programme have been completed successfully, then the final examination will be deemed to have been completed (Article 7.10 WHW).
- r. **Fraud and plagiarism:** Fraud is an act or omission by a student designed to partly or wholly hinder the accurate assessment of their own knowledge, understanding and skills, or those of another

person. Fraud includes plagiarism, which is the use of someone else's work without including a correct reference to the source. See the Student Charter of the UT for further details.

- s. **Higher Education and Research Act (abbreviated to 'WHW')**: The Dutch Higher Education and Research Act, Bulletin of Acts and Decrees 1992, 593, and its subsequent amendments.
- t. **Homologation**: Study units that can be offered to students who are admitted to the Master's programme but who nevertheless have insufficient knowledge, understanding or skills, according to Article 7.30b. WHW.
- u. **Learning Management System (LMS)**: System that supports online learning and teaching. In this case: Canvas.
- v. **Master's programme (also: programme)**: The Master's degree programme, as referenced in Article 7.3a Paragraph 1 subparagraph b WHW: the entirety of the course components, teaching activities/methods, contact hours, testing and examination methods and recommended literature.
- w. **Master's thesis project / final project**: A study unit comprising literature research and a contribution to scientific research, which always results in a written report.
- x. **Practical exercise**: A practical exercise as referred to in Article 7.13, paragraph 2d WHW is a study unit or a study unit component emphasising an activity that the student engages in, as described in the programme-specific section.
- y. **Pre-Master's programme (also: Bridging programme)**: A combination of study units that can be offered to students who cannot yet be admitted to the Master's programme due to insufficient knowledge, understanding or skills, in accordance with Article 7.30e. WHW.
- z. **Programme Committee (PC)**: Committee referred to in Article 9.18 WHW.
- aa. **Programme Director**: The person appointed by the Faculty Board to administer the programme (Article 9.17 WHW).
- bb. **Quarter (also: quartile)**: A part of a semester as specified in the academic calendar of the university.
- cc. **Semester**: Half an academic year, as specified in the academic calendar of the university.
- dd. **Senior Examiner**: Specific examiners, appointed by the Examination Board to take on the role as chair of an assessment committee for the Final Project.
- ee. **Student Information System (SIS)**: System designated by the Board of Executives for registration and for providing information on all relevant data related to students and the programme, as referred to in the WHW. In this case: Osiris.
- ff. **Student**: Anyone enrolled in a programme in accordance with Article 7.34 and 7.37 WHW.
- gg. **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 student, as well as fulfilling an advisory role.
- hh. **Study load**: The time an average student needs to learn the course material. The study load comprises project work, independent study, lectures and writing assignments, for example. The study load is expressed in credits according to the European Credit Transfer System.
- ii. **Study Programme**: All study units followed by the student as part of their Master's degree programme.
- jj. **Teaching Period**: The period in which a study unit is offered. This period starts in the first week in which an educational activity takes place for the study unit concerned and ends in the final week in which an educational activity takes place and/or a test is administered for the study unit

concerned. Resits are not part of the teaching period. This period may sometimes not be the same as a quartile (quarter of an academic year).

- kk. Test:** An evaluation of the student's knowledge, understanding and skills as well as an assessment of the outcomes of that evaluation. A test is part of an examination. If the examination for a study unit consists of a single test then the result of that test will count as the result of the examination.
- ll. UT:** The University of Twente (UT).
- mm. Working day:** Any day from Monday to Friday with the exception of official holidays and the prearranged compulsory holidays (compulsory days free of work) on which the staff are free.

The definition of all other terms used in these Regulations is in accordance with the definition accorded by the main text of this document, the programme-specific section of the EER, the student charter or the WHW.

A2. Previous education and admission

Article A2.1 Previous education

1. In order to qualify for enrolment in a Master's programme, either a Bachelor's degree obtained through academic higher education (WO) is required, or a Bachelor's degree from a university of applied sciences (HBO) in addition to the successful completion of an appropriate pre-Master's programme. The requirements that the Bachelor's degree must meet are specified in Section B.
2. The Admissions Board of the Master's programme will assess the candidate's suitability for admission to the programme on the basis of the requirements stipulated in Section B.
3. The Admissions Board can admit students who lack some prior knowledge, provided they judge that this will not reduce the student's likelihood of successfully completing the programme.
4. The Bachelor's degrees that entitle students to automatic admission are listed in Section B.
5. Additional admission requirements are stipulated in Section B.

Article A2.2 Language requirements

1. To be admitted to the programme, students must be proficient in English.
2. Proof of proficiency in English is required by the successful completion of one of the following examinations or an equivalent²:
 - a. IELTS (academic) with overall band score of at least 6.5 no older than two years
 - b. TOEFL internet-based test of at least 90 no older than two years
 - c. Cambridge C1 advanced, and C2 proficiency, formerly known as CAE or CPE (both with an A, B, or C grade)
3. The following students are exempt from the requirement to prove their proficiency in English; students who:
 - a. have obtained a relevant Bachelor's degree from an accredited academic institution in the Netherlands;
 - b. have obtained a three-year Bachelor's degree in one of the following countries: Australia, Canada (English-speaking part), Ireland, New Zealand, UK or USA. When your

² Article A2.2 reflects the language requirements for students entering the Master in September 2022-2023. For prospective students, these requirements will likely change to include sub-scores as of 1 October 2022. Check <https://www.utwente.nl/en/education/master/admission-requirements/language-requirement/#english-language-requirements> for the latest requirements.

awarding institution is in one of these countries, but your teaching institution was not, you are not exempted. The same rule applies to distance (online) education where the awarding institution is in one of the mentioned countries, but the student was not..

- c. Depending on the programme, have had English as an exam subject during their secondary education in some predetermined countries (according to the [country list](#)).

Article A2.3 Application and enrolment

1. The deadline for application for admission to the Master's programme is stipulated on the website www.utwente.nl/master. Different application deadlines apply to different types of applicants.
2. After admission, the student must enrol before 1 September or 1 February thereafter. The rules and regulations regarding enrolment are laid down in the [UT Enrolment Regulations](#).

Article A2.4 Admissions Board

Each programme has an Admissions Board, which is appointed by the Faculty Board. The Faculty Board will appoint this board after consulting with the Programme Directors and Examination Boards of the relevant Master's programmes.

Article A2.5 Admissions procedure

1. The Admissions Board is responsible for the admissions to the programme in relation to any students that cannot be admitted directly (see Paragraph A2.1.4).
2. With a view to admission to the programme, the Admissions Board assesses the candidate's knowledge, understanding and skills, including relevant language skills. The Board may request experts from inside or outside the University to test certain types of knowledge, understanding and skills, in order to supplement written evidence from the degree programmes the student has already completed.
3. In addition to the requirements, the Board will also assess requests for admission on the basis of the following documents:
 - a. motivation letter;
 - b. English proficiency scores according to Art. A2.2;
 - c. Diploma;
 - d. transcript of records;
 - e. curriculum vitae;
 - f. abstract of thesis;
 - g. course descriptions for programme-specific courses, research methodology courses, mathematics courses and a table of content for the course materials.
4. The Admissions Board may decide that particular units must be included in the student's study programme to compensate for lack of knowledge on the part of the student (homologation courses).
5. Candidates will receive either confirmation of their admission to the Master's programme, admission to a pre-Master's programme or a negative decision. An appeal against a decision can be lodged with the UT Complaints Desk within six weeks.

Article A2.6 Refusal or termination of enrolment (unsuitability/judicium abeundi)

1. Based on the provisions of Section 7.42a of the WHW, the Faculty Board or the Examination Board may, in exceptional cases, ask the Executive Board to terminate or refuse a prospective student's enrolment in a programme, if that student's actions or words show that the student is unsuitable

either for practising one or more of the professions for which the programme in question would prepare the student or for practical preparations for professional practice.

2. If it is believed that a prospective student is unsuitable for the programme, as described in Paragraph 1, the Examination Board or the Faculty Board will initiate an inquiry, and the student will be informed of this promptly. The Examination Board or the Faculty Board will not issue any recommendation without carefully considering the interests involved and giving the prospective student the opportunity to be heard.

Article A2.7 Pre-Master's programme

1. The Admissions Board may decide to admit a candidate to the Master's programme on the condition that a pre-Master's programme is completed successfully before their admission.
2. A pre-Master's programme is a bridging programme with a study load of 15 or 30 ECs, to be decided by the Admissions Board. The courses in the pre-master are subject to the Bachelor Education and Examination Regulations.
3. The pre-Master's programme is assembled by the Admissions Board. A fixed programme may be defined for specific groups of students. However, a student may also be given a personalized programme.
4. Proof of the successful completion of the pre-Master's programme, together with the related Bachelor's degree, will serve as proof of admission to the relevant Master's programme, in the same and in the subsequent academic year.
5. Candidates are required to complete the pre-Master's programme within a year unless otherwise specified.
6. Students from Dutch Universities of Applied Sciences may be allowed to follow a pre-Master's programme during their Bachelor's programme. Paragraph 5 applies to these students. In this case, the relevant Bachelor's degree, together with the successfully completed pre-Master's programme, will serve as proof of admission to the relevant Master's programme.
7. Deviations from these regulations are to be decided upon by the admission board.

A3. Programme content, structure and rules

Article A3.1 Aim of the programme

The qualities relating to the knowledge, understanding and skills that the student should have acquired upon completing the programme (aims and learning outcomes) (Article 7.13 Paragraph 2 (a) of the WHW) are set out in the programme-specific Section B.

Article A3.2 Programme structure

1. The programme-specific Section B describes the Master's programme in accordance with Article 7.13, paragraph 2 WHW.
2. The scope of the Master's programme is at least 120 EC. These 120 credits must not include any credits which have constituted part of a previously completed Bachelor's degree audit.
3. If students are required to sign up to participate in a particular study unit, this is only possible during the periods designated for that purpose.

4. Every Master's programme has a nominal duration of two years, with each year divided into two semesters, both divided into two quarters³
5. Master's programmes are taught on a full-time basis.

Article A3.3 Language of Instruction

1. The language of instruction for all EEMCS Master's programmes is English.

Article A3.4 Exemptions

1. The Examination Board may grant an exemption to students at their request for one or more examinations or tests. To this end, the student should demonstrate having sufficient knowledge and skills in relation to the examination concerned or the test in question.
2. An exemption granted by the Examination Board will be registered in SIS under the study unit or study units, or components thereof, by means of an EX (exemption).
3. Students cannot be compelled to take additional study units or components of study units in their curriculum instead of an exemption that has been granted.
4. Exemptions may be granted to a maximum of 30EC.
5. Students may also be exempted from practical exercises if they can demonstrate that a required practical exercise will likely give rise to a personal moral dilemma. In such cases, the Examination Board will determine whether the component can be completed in another manner and in what way.

Article A3.5 Flexible-degree programme

1. The Examination Board decides on requests for permission to take an flexible-degree programme as referred to in Article 7.3j WHW. The Examination Board assesses whether an flexible-degree 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.
2. The content of the flexible-degree programme is determined and motivated by the student and must be equivalent to a regular Master's programme in terms of scope, breadth and depth.
3. The following requirements must be met in order to be eligible for the Master's degree:
 - a. the deviation from the regular Master's programme must be at least 30 ECs while still ensuring coherence in terms of content;
 - b. the level of the programme must match the objectives and programme intended learning outcomes that apply to the programme for which the student is enrolled.

Article A3.6 Combined programmes

A student can obtain diplomas for two UT Master's programmes on the basis of a combined study programme that satisfies the requirements of each individual programme, including the programme intended learning outcomes.

The following requirements apply to the combined programmes and their composition:

1. The student needs to be admitted and enrolled in both programmes in order to combine two programmes.
2. The student's programme of courses represents an amalgamation of two separate study programmes and satisfies the requirements relating to the programme intended learning

³ See <https://www.utwente.nl/en/ces/planning-schedules/academic-calendar/academic-calendars/> for a more detailed explanation of the academic calendar at the UT.

outcomes of both corresponding Master's programmes. Depending on the requirements of the two Master's programmes, there are four possibilities:

- a. A **combined final project** and **combined internship**, whereby both study programmes also incorporate a **maximum of 20 ECs from common courses**.
 - b. A **combined final project**, but with a **separate internship or no internship**, whereby both study programmes also incorporate a **maximum of 30 ECs from common courses**.
 - c. **Two separate final projects**, with a **separate internship or no internship**, whereby both study programmes incorporate a **maximum of 30 ECs from common courses**.
 - d. In case there is a **Standard Programme** for a combined study programme **defined by two UT Master's programmes**, the requirements laid down in the Standard Programme will apply
3. The combined programme as described in paragraph 2 includes not only study units that are part of both Master's programmes, but also courses for which an exemption has been granted for one Master's programme on the basis of results achieved as part of the other programme.
 4. If a single combined final project is included in and is relevant to both Master's programmes, as referred to in 2a and 2b, the study load of the final project must be at least 100% of the requirement in ECs for the final project of the programme that has the highest number of ECs plus at least 50% of the requirement in ECs for the final project of the other programme.
 5. If a single combined internship is included that satisfies the requirements of both programmes as referred to in 2a, the study load of the internship must equal the load of the internship with the highest number of ECs.
 6. Approval for the common courses is required from the Examination Boards of both Master's programmes.
 7. Students who complete a study programme as described take a combined final examination which they will pass if the assessments included in their file would result in a pass for the final examination of both programmes individually in accordance with the applicable regulations. The Examination Boards of the programmes involved will decide whether a student will pass the final examination. The Programmes will provide instructions concerning the date of a combined final colloquium.

Article A3.7 Master's final Project

1. Requirements for starting the final project:
 - a. Students must have no more than 10 ECs still to complete, other than the final project;
 - b. As an exception to the rule above, if the programme allows for a combined final project and internship, 10 ECs in unfinished courses other than the internship and final project are allowed.
2. The student and examiner(s) must agree on the start date and completion date for the Master's final project.
3. This agreement is to be documented in a plan that takes into account the nominal length of the final project, a reasonable holiday period and any uncompleted study units.
4. The timetable for completion must be approved by the examiner and signed by the student.
5. The Final project is concluded with an oral presentation in public at the University of Twente unless the project is carried out at another university as part of the exit year of a double degree programme.
6. Programme-specific regulations regarding the final project are stipulated in Section B.

Article A3.8 Composition of the assessment committee for the Final Project

1. The committee contains at least two examiners, at least one of which is senior examiner; it is chaired by a senior examiner
2. The examiners must belong to (at least) two different research groups
3. All supervisors of the project are members of the assessment committee. Supervisors who are not examiners serve on the committee in an advisory capacity.
4. The examiners are collectively responsible for grading the thesis. In case of different opinions among the examiners, the chair of the assessment committee takes the ultimate decision on the grade
5. In the event that the assessment committee cannot meet the above specifications, a motivated request to the Examination Board may be made by the Programme Director. The approval for the particular assignment remains valid during the academic year in which the request was granted or the duration of the final project in question with the maximum of one year.

Article A3.9 Internship

1. The internship is a period of study-related professional practice amounting to 20 ECs and is carried out by the student at a company, university or organization outside the University of Twente.
2. Requirements for starting the internship:
 - a. students must already have obtained at least 45 ECs of their examination programme;
 - b. additional requirements may apply for each programme, which will be stipulated in Section B where applicable.
3. A description of the internship must be drawn up and approved by a member of UT staff appointed as examiner. This approval must be obtained before commencing the internship.
4. Students must contact the internship office for an intake at least three months before their preferred start date of the internship.
5. The daily supervisor for the internship is the company supervisor: a member of the organization where the internship is carried out. This supervisor must be named in the project description, mentioned in Paragraph 3.
6. The UT supervisor mentioned in Paragraph 3 supervises the student remotely during the internship. If, in the opinion of this UT supervisor, adequate supervision by the company supervisor is not – or no longer – possible, the UT supervisor may decide to take over as the student's daily supervisor.
7. During the internship, the student will write a report about their work. At the end of the internship period, this report will be submitted to the company supervisor. The company supervisor will assess the internship using the relevant assessment form. The assessment will be based on the supervisor's observations of the student and on the report submitted by the student.
8. The UT supervisor acts as the examiner for this unit and will base their grade on the assessment made by the company supervisor, the report written by the student and a discussion with the student. The student must submit the report to the UT supervisor within two months of finishing the internship.

Article A3.10 Duration of the internship

1. According to the study load of 20EC the duration of an internship is the equivalent of 14 weeks of full-time work including writing a report. An extension with two weeks of this period is allowed to compensate for unforeseen delays.

2. If the host organisation and the student want to maintain a working relation after this period, the student must complete the internship first. After completion of the internship, the working relation between the student and the company will fall outside the scope of the student's study programme and outside the responsibility of the University of Twente.

Article A3.11 Confidentiality

1. The final thesis report and internship report will be made public unless confidentiality has been deemed necessary.
2. The Programme director may declare an internship report and/or final thesis report to be confidential for a limited period upon receiving a motivated request to do so.
 - a. A confidentiality request must be made by the examiner preferably before the start of the final project or internship, but no later than four weeks before the end of the final project or internship.
 - b. A confidential report remains accessible for the supervisor, the Programme director, and any members of bodies with the authority to assess the quality of the grading of the entire programme.
 - c. All parties mentioned in 2b are required to respect the confidentiality of the report.
3. The confidentiality period will by default be set at 2 years up to a maximum of 5 years.
4. If confidentiality is deemed necessary as described in 2, the contents of the public final thesis presentation may be adapted to avoid making public those matters that are considered confidential.
5. Section B of these Education and Examination Regulations may include additional provisions for the relevant programme.

Article A3.12 Evaluation

1. The Programme director is responsible for monitoring the quality of the educational programme.
2. The Programme director is responsible for evaluating the programme.
3. To monitor and to improve the quality of teaching, the EEMCS MSc programmes use information about the students' learning experiences obtained from:
 - Internal evaluations
 - Periodic course evaluations at the end of each course
 - Additional panel evaluations, on request from lecturer, students, or Programme Director
 - External sources
 - National Student Survey (NSE)
 - National Alumni Survey
 - International Student Barometer
4. The programme-specific section B can include further details on how the education in the programme is evaluated.

A4. Teaching and assessment

Article A4.1 Examinations

1. Each study unit concludes with an examination.
2. The examination consists of one or more tests.

3. Exams and tests can have the following various forms⁴ and can be administered online or offline.
4. A student has the right to inspect recent model test questions or model tests, or old tests and the associated answer keys, along with the standards for assessment.
5. If an examination or test is administered online using *online surveillance*⁵ or *online proctoring*⁶, the Examination Board may set further rules and conditions for online (*proctored*) assessment. Further information and detailed rules on online assessment can be found on the university's [website](#).

Article A4.2 Course Catalogue and Assessment Schedule

1. The Programme director publishes at least the following details of the study units in SIS not less than four weeks in advance: scope, learning objectives and content, language of tuition and assessment, prerequisites, required and recommended study materials, design of teaching methods and assessment.
2. The assessment schedule of a study unit is drawn up by the examiner or examiners and is determined by the Programme director. The Examination Board provides advice on the assessment schedule
3. At least two weeks prior to the start of the study unit an assessment schedule must be published in the Learning Management System (LMS).
4. The assessment schedule includes at least all items as included in the course catalogue yet shall also include:
 - a. The learning objectives of the study unit and how they are assessed and when they are attained;
 - b. when examinations, tests and resits are held (the precise times and dates will be announced via *my-timetable*);
 - c. the relative weighting of the tests;
 - d. any required minimum grade per test; a minimum grade for a test may not be set higher than 5.5;
 - e. if applicable: information on resits (such as conditions, compensation options and grading periods).
5. The Programme director may modify the assessment schedule during the study unit:
 - a. The assessment schedule may only be changed in consultation with the examiners of the study unit.
 - b. The Programme director will consult the Examination Board before any changes to the form or manner of administering an examination or one or more tests. If the change only involves moving tests to a timeslot other than as shown in the timetable, the Programme director will inform the Examination Board of the decision as soon as possible.
 - c. Students are to be informed immediately of the change.
6. Changes to the assessment schedule may not put students at an unreasonable disadvantage. The Examination Board may take special measures in individual cases .

⁴ A test or exam can have the following forms: a written test, an assignment, an oral test, practical exercises, or a combination of these forms.

⁵ Camera surveillance of the student or students during an unrecorded test, using for example Canvas, Teams, etc.

⁶ Surveillance of the student or students using special *proctoring* software, such as Proctorio.

Article A4.3 Examination opportunities

1. There will be an opportunity to take written or oral tests at least twice a year. Other forms of examination can be completed at least once a year.
2. In the event that a study unit is discontinued, at least one opportunity will be provided in the year subsequent to discontinuation to take the examination(s) or parts thereof, and a transitional arrangement will be included in Section B for the subsequent period.
3. At the student's request, the Examination Board may permit a different form of examination than that stipulated in the course catalogue. The examiner may ask the Examination Board to permit a different form of examination on condition that all participants agree.

Article A4.4 Registering for courses and examinations

1. Registration in SIS is required prior to participating in a course⁷. It is also mandatory to register before every examination opportunity.
2. Notwithstanding Paragraph 1, any student who has correctly registered to participate in the instruction/classes for a particular course and has been admitted will also automatically be registered for the subsequent examination, unless the course description specifies otherwise. For each examination after that, the student has to register in SIS manually prior to the examination opportunity.

Article A4.5 Examination date

1. The examination date of a study unit, mentioned in the SIS, is the date upon which the student fulfilled the last obligation, necessary for an assessment of the unit.
2. If a student agrees with an examiner about an examination date for a certain unit, the submission of additional material by the student after this date will lead to a new examination date, being the date of the submission of this additional material.
3. With respect to possible prior knowledge requirements of subsequent study units a student is allowed to assume that the student has passed an examination at the examination date, as long as the result of the examination is pending.
4. If the result of an examination is a fail and if because of this fail a student violates prior knowledge requirements of a subsequent unit in which the student participates, the Examination Board can decide that a student must interrupt this subsequent unit pending a repair of this fail.

Article A4.6 Oral examinations

1. If the student or the examiner wishes a third party to be present when administering an oral examination, then a request to this end must be submitted to the Programme director at least fifteen working days prior to the oral examination. The student and the examiner will be notified of the Programme director's decision not less than five working days in advance. The Programme director must inform the Examination Board of the decision. Public graduation colloquia, public presentations and group tests are excluded from this provision.
2. 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 one working day before the oral examination.

⁷ The applicable registration deadlines are mentioned on the webpage www.utwente.nl/en/education/student-services/education/courses-and-modules/.

Article A4.7 Examination results

1. The examination result of a study unit, as determined by the examiner, is expressed in half grades from 1.0 to 5.0 and from 6.0 to 10.0⁸ or as 'pass' / 'fail'. With grades only being rounded in the final phase⁹ of the assessment of a study unit and in accordance with the schedule below:

If figure before the decimal (n) ≠5	
Grade ≥n.00 and <n.25	⇒ n.0
Grade ≥n.25 and <n.75	⇒ n.5
Grade ≥n.75 and <(n+1).00	⇒ (n+1).0
If figure before the decimal =5:	
Grade ≥5.00 and <5.50	⇒ 5.0
Grade ≥5.50 and <6.00	⇒ 6.0

2. Test results are expressed in a grade from 1 to 10 with a single decimal, or as 'pass' / 'fail'.
3. Exam results of 6.0 or higher are a pass.
4. Examination results, if a pass, obtained at foreign universities will be registered as a P (pass). Examination results obtained at Dutch universities will be adopted one-to-one, with due regard for the provisions in paragraph 1.
5. Credits may only be issued for a study unit if the study unit has been completed with a pass mark.
6. If more than one examination or test result has been recorded in SIS for one and the same unit of study, the highest grade will apply .

Article A4.8 Determining and announcing results

1. The result of a written examination or practical exercise is published via SIS within 20 working days.
 - a. The examiner will determine the result of a written examination within 15 working days after the examination.
 - b. The examiner needs to pass on the result to the examination office or process the results in SIS within 5 working days of determining the result.
 - c. No rights can be derived from examination results published on the LMS or communicated via any medium other than SIS.
2. The examiner is to inform the student of the result of an oral examination within one working day, unless, for the examiner, 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 and announce the result within one working day following the conclusion of the series of oral examinations.
3. In case the result for a study unit is based on multiple tests, the date of completion of the final test will count as the examination date.
4. In case the examiner is unable to meet the terms described in Paragraphs 1 and 2 due to extraordinary circumstances, they must inform the Examination Board of this, providing reasons for this situation. The student is then informed of the delay by the Examination Board as soon as

⁸ In SIS, a comma is used, based on the Dutch grading system (e.g. 7,0).

⁹ Final phase: when all grades are known.

possible, whereby a new deadline for the result will also be made known. If the Examination Board is of the opinion that the examiner has not met their obligations, it may appoint another examiner to ascertain the result of the examination.

5. If a test resit is planned shortly after the first test, the results of the first test will be published at least five working days before the resit to give the student time to prepare..

Article A4.9 Period of validity

1. The period of validity for the results of an exam that has been passed is unlimited. The validity of an exam result can only be restricted if the tested knowledge, insight or skills are proven to be out of date.
2. Test results are only valid in the academic year in which they were obtained unless they are aggregated into an exam result.
3. The Examination Board may extend the validity of test results in individual cases at the request of the student.

Article A4.10 Post-examination right of inspection and discussion

1. Student are entitled to discuss and review their 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 to exercise the right to discussion referred to in paragraph 1. If a student is not given the opportunity at the group discussion to discuss the reasons for the examiner's assessment of the 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 is to take place no later than three working days prior to the next test opportunity.
3. If there is no group 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 is to take place no later than three working days prior to the next test opportunity.
4. The student has the right to inspect their work for a period of two years after the assessment.

Article A4.11 Retention period for tests

1. The retention period for test assignments, keys, papers and the assessments of written tests is two years.
2. The retention period for final thesis reports is a minimum of seven years.

A5 Final Examination

Article A5.1 Master's final examination and degree

1. The Master's final examination is considered to be complete when the student has passed all study unit exams in the Master's programme.
2. The date of the final examination is the date on which the student completes the final study unit of the degree programme .
3. A diploma can only be awarded after the student has received formal approval for their study programme as described in Section B.
4. A student may submit a written request, giving reasons, to the Examination Board to postpone the final examination, and thus to postpone the awarding of the diploma. The maximum duration

of any postponement that can be granted is twelve months, in principle. In exceptional cases¹⁰, the student may have valid reasons for requesting that the awarding of the diploma be postponed for more than twelve months.

5. If the student has requested postponement based on the provisions of paragraph 4, then the date of the examination will be the date on which the Examination Board decides that the student has passed the final examination subsequent to the postponement.
6. Students who have successfully met all requirements for the Master's final examination will be awarded a Master of Science (MSc) degree.
7. The degree conferred is stated on the diploma.

Article A5.2 Diploma

1. The Examination Board will award a diploma as proof that the student has satisfied all the requirements of the exam once the Executive Board has confirmed that the procedural requirements for awarding the diploma have been met. The date indicated on the diploma (i.e. the date of the final examination) is the date on which the student completed the final study unit of the degree programme.
2. The diploma 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 diploma.
3. The diploma will be in English and comply with the European format for such diplomas and WHW Article 7.11.
4. An International Diploma Supplement is to be appended to the diploma. This supplement is intended to provide insight into the nature and content of the degree programme to promote the international recognition of the programme (WHW, Article 7.11, Paragraph 4).
5. If the Examination Board has awarded a specific distinction (e.g. cum laude) to the student, then this is to be mentioned on the diploma.
6. Students who have successfully completed more than one examination but cannot be awarded a diploma as referred to in paragraph 1, will receive, at their own request, from the Student Services Desk a statement prepared by or on behalf of the Examination Board which in any case will state the results of the examinations the student in question has passed.

Article A5.3 Cum Laude

1. The Examination Board checks whether the student has fulfilled all requirements. If the *judicium Cum Laude* ('with distinction') applies, this will be stated on the diploma and the diploma supplement.
2. The *judicium Cum Laude* can be mentioned on the Master's certificate provided the following requirements are met:
 - a. The weighted average¹¹ of the grades for all study units of the Master's examination programme, excluding the Master's thesis (final project) and the internship (if applicable), is at least 8.0;
 - b. Those parts of the examination programme for which an exemption was granted or which were not graded with a number are not considered when calculating the average grade;

¹⁰ Some examples (by way of illustration, not to exclude other situations): the student follows a double degree or combined degree programme, or an extensive extra-curricular activity requires more than twelve months.

¹¹ The weighted average is proportional to the number of credits.

- c. Exemptions within the examination programme may be granted to a maximum of 15 ECs;
 - d. The Master's thesis (final project) is graded at 9.0 or higher;
 - e. If an internship is part of the examination programme, it is graded at 8.0 or higher.
 - f. No more than one study unit of the examination programme has been graded lower than 7.0;
 - g. The study programme has been completed within 125% of the nominal duration, starting from the start date recorded in SIS.
3. In individual cases the Examination Board may grant the *judicium Cum Laude* even if not all requirements are met.

A6. Student guidance and study progress

Article A6.1 Study progress report

1. Every student can access their list of the results achieved in SIS. The student can request a certified study progress overview from the Student Services Desk if required.

Article A6.2 Student guidance

1. The Faculty Board is responsible for student guidance.
2. Student support and guidance includes 'decentralized' guidance, as provided within study programmes, and 'central' guidance, as provided by the Centre for Educational Support.
3. Student guidance includes guidance with questions or problems with regard to career orientation and career choices and guidance with problems that affect study progress. Students are offered personal and professional student (career) guidance for optimal study progress. Where possible, needs for specific guidance are met.
4. Each student is assigned a study adviser.
5. The study adviser supervises students and advises them on all aspects of the studies, also on personal circumstances that may be affecting the student's studies.
6. A systematic method on how students are monitored and obstruction in study progress is signalled is documented by the programme (for example in a policy plan or an annual cycle).
7. Information about the guidance facilities of the study programme is in any case available on the website of the study programme.

Article A6.3 Special Facilities

1. If students wish to exercise their right to specific supervision or special facilities, they should contact the study adviser. The study adviser will record the agreements made with the student in SIS.
2. A student is entitled to special facilities in case of demonstrable circumstances beyond the student's control or extenuating personal circumstances. The facility may provide for dispensation from or an additional opportunity to sit examinations or tests to be granted and/or for specific facilities to be made available. Such dispensation and additional resits may only be granted by the Examination Board.

A7. Studying with a functional impairment

Article A7.1 Studying with a functional impairment

1. A functional impairment is defined as having an illness, condition, impairment or handicap that might impede or otherwise constitute a barrier to the student's academic progress.
2. Facilities are to be aimed at removing individual barriers in the teaching programme and/or when it comes to taking examinations and tests. These facilities may be related to access to infrastructure (buildings, classrooms and teaching facilities) and study materials, adjustments to the form of assessment, alternative learning pathways or a customised study plan.

Article A7.2 Request for facilities

1. The study adviser and the student concerned will discuss the most effective facilities that can be provided for the student as referred to in Article 2 of the Equal Treatment of Disabled and Chronically Ill People Act (WGB h/cz).
2. Based on the discussion referred to in paragraph 1, the student is to submit a request for facilities. This request should be submitted to the study adviser, who has been mandated by the Faculty Board, preferably three months before the student is to participate in classes, exams and tests for which the facilities are required.
3. The request should be supported by documents that are needed to enable an assessment to be made.
4. The study adviser will decide on the admissibility of the request and will inform the student of the decision within twenty working days after receipt of the request, or sooner if the urgency of the request dictates.
 - a. Should the request be granted, the period of validity will also be indicated.
 - b. If the request is not granted, or only partly granted, the study adviser will inform the student of the justification for not granting the request as well as the possibilities for filing an objection and an appeal with the Complaints Desk.
 - c. Students who are dyslexic, will be granted a maximum of 15 extra minutes for each hour that a test or exam is officially scheduled.
5. The study adviser shall inform the relevant parties in good time about the facilities that have been granted.
6. The applicant and the study adviser will evaluate the facilities before the end of the period for which they have been granted. During this evaluation, the parties discuss the effectiveness of the facilities provided and whether they should be continued. No evaluation takes place of facilities granted to students because of the functional impairment dyslexia.

A8. 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 education and examination regulations, the provisions in these education and examination regulations will prevail.

Article A8.2 Administrative errors

If, following the publication of a result, a marks sheet, or a student's progress report a manifest 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 Education and Examination Regulations are enacted by the Faculty Board in a separate decision.
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 students 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 Education and Examination Regulations, the Faculty Board will adopt a transitional arrangement, as necessary .
2. The transitional arrangement is to be published on the degree programme's website or published in Section B of these regulations.
3. The following principles will be applicable to any transitional arrangement if a Master's programme is changed:
 - 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 students enrolled in a programme will continue to be part of the curriculum. The final Master's examination is to be based on the curriculum most recently adopted by the Faculty Board.
4. Transitional arrangements will always include:
 - a. which discontinued study units are equivalent to study units or components thereof in the revised Master's programme that is included in Section B;
 - b. if a study unit without practical exercises is discontinued, there will be at least one opportunity in the subsequent academic year to take a written or oral examination or to ensure assessment by some other means;
 - c. if a study unit that involves practical exercises is removed from the programme, and during the subsequent academic year no opportunities are provided to complete these practical exercises, at least one study unit will be designated as a suitable replacement for the discontinued study unit;
 - d. the term of validity of the transitional arrangement.
5. The transitional arrangement must be approved by the Examination Board.
6. In exceptional cases and to the student's benefit, the Examination Board may deviate from the prescribed number of opportunities to sit exams and/or tests related to study units that have been dropped from the curriculum.

Article A8.5 Assessment of the Education and Examination Regulations

1. The Faculty Board is responsible for the regular assessment of the Education and Examination Regulations, with specific emphasis on the study load.

2. In accordance with article 9.18 of the WHW, the programme committee has a partial right of consent of and a partial right to be consulted on parts of the education and examination regulations.
3. The Programme Committee is responsible for the annual assessment of the manner in which the education and examination regulations are implemented .

Article A8.6 Appeal and objections

An appeal and objections must be submitted in writing to the [University of Twente Complaints Desk](#) within six weeks after notification of a decision to the student.

Article A8.7 Hardship clause

In cases of demonstrable unreasonableness and unfairness of a predominant nature, the Examination Board or the Programme director may allow the provisions in these Regulations to be deviated from. This depends on which body is authorised or has the duty according to these Regulations to take a decision on or make an exception to a provision in these Regulations.

Article A8.8 Publication

The education and examination regulations and the Examination Board's Rules and Guidelines are to be published on the degree programme's website .

Article A8.9 Entry into force

These Regulations enter into force on 1 September 2022 and replace the Regulations dated 1 September 2021.

SECTION B: PROGRAMME-SPECIFIC SECTION EMBEDDED SYSTEMS

About this Section

The Education and Examination Regulations (EER) are subdivided into two sections (Section A and Section B), which together form the EER. Section A, which can be seen as the faculty section, includes provisions that apply to all EEMCS Master's degree programmes. Section B contains the provisions that are specific to the particular degree programmes, in this case the Master's programme Embedded Systems.

B1. General provisions

Article B1.1 Definitions

In addition to definitions in Article A1.2, the following definitions are used in this Section B:

1. Programme mentor: a staff member, who is appointed by the examination board, to supervise students until they start their Master's thesis project.
2. The individual study programme is the examination programme of a student that is approved according to the rules of the master Embedded Systems.

B2. Programme objectives and final attainment targets

Article B2.1 Aim of the programme

This Master's programme is intended to impart sufficient knowledge, skills and a clear understanding of the area of Embedded Systems in order that the graduate is able to perform independent professional and scientific activities in the area at an academic level.

Article B2.2 Final attainment targets

1. The graduate has an all-embracing view on embedded systems, their design and their application in systems of various sizes (e.g. from small robots to cyber physical and networked systems) including their evolution over time, demonstrated by an integration approach in system design.
2. The graduate is capable of analysing the functional behaviour of complex embedded systems in a structural way using appropriate abstractions.
3. The graduate is able to describe and study the non-functional aspects of embedded systems, e.g. resource boundedness and dependability.
4. The graduate has a thorough knowledge of state-of-the-art methods and techniques for embedded systems design such as requirements engineering, hardware-software integration, performance modelling and analysis, validation and testing.
5. The graduate is able to design embedded systems that satisfy the functional and non-functional requirements, taking into account the performance of the system during its lifetime. The graduate is also aware of costs and environmental issues making optimal use of the available resources.
6. The graduate has the ability and attitude to include other disciplines or involve practitioners of these disciplines in his work, where necessary. As an engineer the graduate is therefore able to work in a multidisciplinary setting.
7. The graduate is able to conduct research and design independently and has a scientific approach to complex problems and ideas.
8. The graduate possesses intellectual skills that enable him to reflect critically, reason and form opinions.
9. The graduate has the ability to communicate the results of his learning, thinking and decision-making processes at an international level.

10. The graduate is aware of the temporal and social context of science and technology (comprehension and analysis) and can integrate this context in his scientific work.

B3. Further admission requirements

Article B3.1 Additional admission requirements

1. Students in possession of a Bachelor degree in Electrical Engineering (*Elektrotechniek*) or Computer Science (*Technische Informatica, Telematica* or *Informatica*) from a Dutch university are eligible for direct admission to the programme.
2. Students in possession of another Bachelor’s degree issued by a Dutch university are eligible for admission to the programme if their knowledge and skills are comparable to section 3.1.1 after following a pre-master programme.
3. Students in possession of a relevant Dutch Bachelor’s degree issued by a University of Applied Sciences can gain admission after first successfully completing a pre-master programme.

Article B3.2 Pre-Master’s programme

For students with an ‘HBO degree’ *Elektrotechniek* the pre-master programme is:

Course code	Name	Credits	Period
202001171	Calculus A	5	Semester 1
202001173	Calculus B	4	Semester 1
202001178	Linear Algebra A	3	Semester 1
202001185	Linear Systems	6	Semester 1
202001183	Algorithms, Datastructures and Complexity for EmSys	4	Semester 1
2015000252	Digital Logic and Computer Organization	3	Semester 1
201500051	Self-tuition project (programming)	5	Quarter 1B

For students with an ‘HBO degree’ (*Technische*) *Informatica*, *Embedded Systems* the pre-master programme is:

Course code	Name	Credits	Period
202001171	Calculus A	5	Semester 1
202001173	Calculus B	4	Semester 1
202001178	Linear Algebra A	3	Semester 1
202001185	Linear Systems	6	Semester 1
202001185	Algorithms, Datastructures and Complexity for Emsys	4	Semester 1
201500252	Digital Logic and Computer Organization	3	Semester 1

191210001	Instrumentation for Embedded Systems	5	Quarter 1B
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B4. Curriculum structure

Article B4.1 Composition of programme

The 120 EC programme consists of the following components:

- a. compulsory courses
- b. homologation
- c. electives
- d. optional Internship/Multi-Disciplinary Project
- e. final project preparation and final project

Article B4.2 Compulsory units of study

The compulsory courses are:

Year 1

Course code	Name	Credits
192130240	Embedded Computer Architecture 1	5
192140122	System Validation	5
201200006	Quantitative Evaluation of Embedded Systems	5
192130200	Real-time Systems	5
201000168	Embedded Systems Laboratory	5

Year 2

Course code	Name	Credits
201600017	Final Project Preparation	10
201900200	Final Project	30

Article B4.3 Homologation

Due to the interdisciplinary character of the Embedded Systems programme, most students will not have all necessary prior knowledge. A maximum of 10 EC may be included in the individual study programme.

1. Students who have completed a Dutch university Bachelor's degree programme in computer science are required to include the following course in the homologation part of the master programme:

Course code	Name	Credits
191210001	Instrumentation for Embedded Systems	5

2. Students who have completed a Dutch university Bachelor's degree programme in electrical engineering without sufficient programming, i.e. bachelor UT students that did not complete the module network systems (201600197), are required to include the following course in the homologation part of the master programme:

Course code	Name	Credits
201800335	Programming 2	5

3. Students with a Bachelor's degree awarded by a University of Applied Sciences are required to include the following course in the homologation part of the master programme:

Course code	Name	Credits
201800126	Distributed Energy Management for Smart Grids	5

4. For admitted students not mentioned in paragraph 1, 2 and 3 an individual homologation programme is made by the examination board.

Article B4.4 Electives

Specialization courses totaling at least 15 credits should be selected. An individual study programme containing courses that are not in the list, e.g. relevant courses from the TU-Delft and TU-Eindhoven, require approval from the examination board. See Article B5 for approval of the Individual Study Programme.

Course code	Name	Credits
192135310	Modeling & Analysis of Concurrent Systems	5
191211590	System-on-chip-Design for Embedded Systems	5
201700075	Internet of Things	5
191210750	System-on-chip-Design	10
191211030	Mobile Radio Communications	5
192130112	Distributed Systems	5
191612680	Computer Ethics	5
201100137	Philosophy of engineering: Ethics	2.5
201900007	Perspectives on Engineering Design	2.5
192130250	Embedded Computer Architectures 2	5
201800126	Distributed Energy Management for Smart Grids	5
201500040	Introduction to Biometrics	5
201000231	Computer Arithmetic	5
192130022	Design of Digital Systems	5
191210950	Implementation of Digital Signal Processing	5
191210910	Image Processing and Computer Vision	5
202100244	Pervasive Computing	5
192620010	Mobile and Wireless Networking	5
202001472	Software Testing and Risk Assessment	5
191210850	Advanced Analog IC electronics	5
191211090	Real-time software Development	5
192130210	Real-Time Systems 2	5
201700082	Principles of Programming, Processes and Patterns	5

201100254	Advanced Computer Vision & Pattern Recognition	5
201700073	Ad-Hoc Networks	5
191211060	Modern Robotics	5
191210840	A/D Converters	5
201400177	Cloud Networking	5
201600070	Machine Learning 1	5
201600071	Machine Learning 2	5

Article B4.5 Internship and Multi-Disciplinary Design Project

1. The students can complete an internship worth 20 credits, or a multi-disciplinary design project (191211650) worth 10 credits, but not both, only after an agreement with the programme mentor. The missing 10EC should be covered by extra electives.
2. Students with a diploma of a Dutch university of applied sciences are not allowed to do an internship.

Article B4.6 Thesis Project

1. A student will carry out an embedded systems related thesis project in a chair of Electrical Engineering or Computer Science.
2. The thesis project will normally be carried out within the chair, mentioned in paragraph 1. A thesis project may only be carried out external to one of the chairs with the explicit approval of the intended chairman of the assessment committee.
3. The thesis project cannot be carried out in the same organization as the internship.
4. The thesis project of 40 credits consists of a Final Project Preparation (201600017) and a Final project (201900200).
5. The Final Project Preparation consists of literature survey, feasibility study and detailed planning for the graduation project. The preparation has to be finished before the start of the graduation project.
6. In addition to the composition of the assessment committee (Article A3.8) an examiner of this committee can also be an examiner of the TU Delft or the TU Eindhoven.
7. Four weeks before the final audit of the thesis project the chair of the graduation committee must co-sign the application form for the master examination. With this sign the graduation committee entitles the student to give a final presentation and receive a final grade for the final project (“green light” declaration)
8. All compulsory courses shall be finished before starting a master thesis.

B5. Study Programme

1. Students must draw up their individual study programme at latest six month after the start of the master’s study and discuss it with the programme mentor. On behalf of the examination board the programme mentor has the right to approve the individual study programme.
2. The composition of the thesis committee and the thesis description have to be submitted to the examination board at the start of the final project.
3. Each individual amendment to an approved study programme has to be approved by the programme mentor.

4. Each individual amendment to an approved thesis committee must be resubmitted to the examination board for approval.

B6. Degree

Students who have successfully completed their Master's final examination are awarded a Master of Science degree. The degree awarded is stated on the diploma.

B7. Transitional and final provisions

Article B7.1 Transitional provisions

Notwithstanding the current Teaching and Examination Regulations, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:

- A maximum of 15 EC of homologation may be included in the individual study programme for students that started this master programme prior to September 2018.
- Students that completed the course Energy Efficient Embedded Systems (192130122) cannot take the course Distributed Energy Management for Smart Grids (201800126) in their individual study programme.

Article B7.2 Publication

1. The dean will ensure the appropriate publication of these Regulations and any amendments to them.
2. The Teaching and Examination Regulations will be posted on the faculty website.

Article B7.3 Effective date

These Regulations enter into force with effect from 1 September 2022.