EDUCATION AND EXAMINATION REGULATIONS

MASTER'S DEGREE PROGRAMMES EEMCS

A. FACULTY SECTION
B. PROGRAMME-SPECIFIC SECTION

2024-2025 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 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. This Faculty Section A contains general provisions that 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, 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. Each Master's programme also has its own Section B.
3. Section B of these Education and Examination Regulations may include additions to the general provisions in Section A only applicable to that specific programme.
4. Together the Faculty Section A and the Programme-specific Section B form the Education and Examination Regulations for the Master's programme concerned.
5. The Education and Examination Regulations apply to anyone enrolled in the Master's programmes, irrespective of the academic year in which the student first enrolled in the programme.
6. The Education and Examination 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.
7. The general provisions and the programme-specific provisions to the Education and Examination Regulations are determined by the Faculty Board.
8. Students attending study units organised by another programme[1] 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.
9. 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.
10. 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).
11. 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.

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[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. **Admission 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 Admission Board has been appointed for the programme, the Programme director functions as the Admission 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 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 based on 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 is 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 assignment:** A practical assignment 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 Section B.

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 the role as chair of an assessment committee for the final Project.

ee. **Student Information System (SIS)**: System designated by the Executive Board 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, where 1 credit equals 28 hours.

ii. **Study Programme:** All study units followed by the student as part of their Master's degree programme.

jj. **Study unit:** A programme component as defined in Article 7.3, Paragraph 2 and 3 WHW. Also referred to as course.

kk. 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).

ll. 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 in accordance with Article 4.7 WHW.

mm.   UT: The University of Twente (UT).

nn. Working day: Any day from Monday to Friday with the exception of public holidays and the prearranged compulsory holidays ('brugdagen') 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 Admission Board of the Master's programme assesses the candidate's suitability for admission to the programme on the basis of the requirements stipulated in Section B.
3. The Admission Board can admit students who lack a limited amount of credits on a topic regarding required prior knowledge, provided they judge that this does 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 equivalent:
   a. IELTS (academic) certificate, not older than two years, with an overall band score of at least 6.5, and a minimum score on each section of at least 6.0.
   b. TOEFL iBT (internet-based) certificate, not older than two years, with an overall score of 90, and a minimum score on each section of at least 21[2].
   c. Cambridge C1 Advanced, formerly known as; Cambridge English Advanced (CAE) from 2015 onwards (when the subscores were introduced) and Cambridge C2 Proficiency,

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[2] By exception, you can also take the TOEFL iBT (Special) Home Edition test (only valid for the September 2024 and February 2025 intake). This is only the case when you cannot use a regular language test as listed in this table because the onsite language test centre is closed because of unsafe situations in your country.

formerly known as; Cambridge English Proficiency (CPE) from 2015 onwards (when the subscores were introduced). Obtained an A, B or C grade, with an overall score of at least 176 and a minimum score on each section of at least 169.
3. Any exemptions to the Language requirement can be found at the UT Master website.

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 Admission Board

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

Article A2.5 Admissions procedure

1. The Admission 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 Admission 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 Admission Board also assesses requests for admission on the basis of the following documents:
   a. motivation letter;
   b. English proficiency scores according to Article A2.2;
   c. Diploma;
   d. transcript of records;
   e. curriculum vitae;
   f. abstract of (Bachelor) thesis;
   g. course descriptions for programme-specific courses, research methodology courses, mathematics courses and a table of content for the course materials.
4. The Admission 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 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 is informed of this promptly. The Examination Board or the Faculty Board does 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 Admission 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 Admission 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 Admission 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, serves 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 attend 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, serves as proof of admission to the relevant Master's programme.

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 Section B.

Article A3.2 Programme structure

1. 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 courses for which credits have been obtained during a previous UT Bachelor's programme.
3. Registration is required prior to participating in a study unit, this is only possible for students 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 quarters[3]
5. Master's programmes are taught on a full-time basis.

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

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 is 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 30 EC.
5. Students may also be exempted from practical assignment if they can demonstrate that a required practical assignment will likely give rise to a personal moral dilemma. In such cases, the Examination Board determines 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 a flexible-degree programme as referred to in Article 7.3j WHW. The Examination Board assesses whether a 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 EC 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 Combining programmes

1. A student can obtain diplomas for two UT Master's programmes on the basis of a combined programme.
2. Students need to be admitted and enrolled in both programmes in order to combine two programmes.
3. Approval for the programme and overlap in courses is required from the Examination Boards of both Master's programmes
4. The following requirements apply to the composition of a combined programme:
    a. The programme of courses represents an amalgamation of the separate degree programmes and satisfies the requirements of each individual programme, including the programme intended learning outcomes .
    b. The study load in EC of the combined programme must be at least 180 credits for two two-year programmes, or 150 credits for a combination of a one-year and two-year programme.
    c. The maximum overlap in courses outside of the Master's final project(s) is 40 credits.
    d. The combined programme must include two separate Master's final projects, or one larger combined Master's final project.

e. Two separate Master's final projects may only be combined into one larger one, if the topic is relevant to both Master's programmes. The study load of this combined Master's final project must be at least 100% of the requirement in EC for the Master's final project of the programme that has the highest number of EC plus at least 50% of the requirement in EC for the Master's final project of the other programme.[4]

f. 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 apply.

5. The requirements on examiners and supervision for the internship and Master's final project of both programmes must be met.

6. Students who complete a study programme as described take a combined final examination which they 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 decide whether a student passes the final examination. The Programmes 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 schedule 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 consists of at least two examiners, of which at least one is senior examiner; it is chaired by a senior examiner.

2. The examiners must belong to at least two different UT 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

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[4] For some EEMCS programmes graduation is divided into a 10EC preparatory study unit and 30EC thesis project. For the purpose of this rule A3.6.4d only, they are considered one single 40EC project.

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 EC 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 EC of their examination programme.
   b. additional requirements may apply for each programme and are stipulated in Section B.
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 day-to-day 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 day-to-day supervisor.
7. During the internship, the student writes a report about their work. At the end of the internship period, this report is submitted to the company supervisor. The company supervisor assesses the internship using the relevant assessment form. The assessment is 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 bases 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 after finishing the internship. The internship report is *not* publicly available.

Article A3.10 Duration of the internship

1. According to the study load of 20 EC, 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 falls 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 is made public unless confidentiality has been deemed necessary.
2. The Programme director may declare a 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 as soon as possible, but no later than four weeks before the end of the final project.
   b. A confidential report remains accessible to 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 Paragraph 2b are required to respect the confidentiality of the report.
3. The confidentiality period is by default set at 2 years up to a maximum of 5 years.
4. If confidentiality is deemed necessary as described in Paragraph 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.

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, Programme committee, Examination Board or Programme Director
   - External sources
     - National Student Survey (NSE)
     - National Alumni Survey
     - International Student Barometer
4. 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. A test or examination can have various forms[5] and can be administered online or offline.
4. The time allotted to administering a test may not exceed three hours. Exceptions in this regard are listed in Article 7.2.
5. If the examiner wishes to use a form of assessment that requires more than three hours, the examiner must, with due regard for Article 4.2.3, ask the examination board for approval to deviate from the above.
6. A student has the right to inspect recent model test questions, model tests, or old tests that are representative of the test or examination, as well as the associated answer keys, along with the norm for assessment and time estimated for answering the example test.
7. If an examination or test is administered online using *online surveillance*[6] or *online proctoring*[7], the Examination Board may set further rules and conditions for online (*proctored*) assessment.

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[5] A test or exam can have the following forms: a written test, an assignment, an oral test, a presentation, practical assignment, or a combination of these forms.

[6] Camera surveillance of the student or students during an *unrecorded* test, using for example Canvas, Teams, etc.

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

General information and detailed rules on online assessment is presented at 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, intended learning outcomes 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 intended learning outcomes 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 are announced via the 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 consults 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 informs the Examination Board of the decision as soon as possible.
   c. Students must 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.

Article A4.3 Examination and test 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 is provided in the year subsequent to discontinuation to take the examination or parts thereof, and a transitional arrangement must 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 students participating in the test agree.

Article A4.4 Registering for courses, tests and examinations

1. Registration in SIS is required prior to participating in a course[8]. It is also mandatory to register before every test 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 tests, unless the course description specifies otherwise. Only if as student has passed a test and the student still wants to take part in the subsequent test, the student has to register in SIS manually prior to the test opportunity.
3. Before the start of a study unit, the student must meet the prior knowledge prerequisites for that study unit
4. With respect to possible prior knowledge requirements of subsequent study units a student is allowed to assume that they passed an examination at the examination date, as long as the result of the examination is pending.
5. Notwithstanding Paragraph 4, if the pending result turns out to be a fail and because of that the student violates the prior knowledge requirements of a subsequent unit, the Examination Board can decide that the student must interrupt their participation in this subsequent unit pending a repair of the fail.

Article A4.5 Examination date

1. The examination date of a study unit, mentioned in the SIS, is the date on 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 leads to a new examination date, being the date of the submission of this additional material.

Article A4.6 Oral tests

1. If the student or the examiner wishes a third party to be present when administering an oral test, then a request to this end must be submitted to the Programme director at least fifteen working days prior to the oral test. The student and the examiner are 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 test, then the Examination Board must make this known to the examiner and the student at least one working day before the oral test.

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 10.0[9] or as *'pass' / 'fail'*. With grades only being rounded in the final phase[10] of the assessment of a study unit and in accordance with the schedule

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

[9] In SIS, a comma is used based on the Dutch grading system (e.g., 7.0).

[10] Final phase: the calculation of the examination result after all test results have been announced.

below:

If digit 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 digit 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. Examination results of 6.0 or higher respectively '*pass'* are a pass.
4. Examination results, if a pass, obtained at foreign universities are registered as a P (*pass*). Examination results obtained at Dutch universities are 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 applies.

Article A4.8 Determining and announcing results

1. The result of a written test or practical assignment is published via SIS within 20 working days.
   a. The examiner determines the result of a written test within 15 working days after the test.
   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 test results published on the LMS or communicated via any medium other than SIS.
2. The examiner has 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 counts 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 possible, whereby a new deadline for the result is also determined. If the Examination Board concludes that the examiner has not met their obligations, it may appoint another examiner to ascertain the result of the examination.
5. Notwithstanding Paragraph 1, the results of the first test have to 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 examination that has been passed is unlimited. The validity of an examination result can only be restricted if the tested knowledge, insight, or skills are proven to be out of date. The Examination Board ensures that these results are invalidated.
2. Test results are only valid in the academic year in which they were obtained unless they are aggregated into an examination result or the assessment schedule explicitly states otherwise.
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. Students are entitled to discuss and review their test together with the examiner, and the examiner has to explain the assessment. This can be done individually or in a group setting, either in person or by using an online tool. The examiner chooses the setting of methods and tools for discussion.
2. Individual and group discussions must take place no later than five weeks after the publication of the test results, but at least five working days prior to the next test opportunity, in the (online) presence of the examiner or a substitute designated for that purpose.
3. 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 has to take place no later than five working days prior to the next test opportunity.
4. If there is no group discussion of the test scheduled by the day of the publication of the results, 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 has to take place no later than five working days prior to the next test opportunity.
5. 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 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 examinations in the Master's programme. The examination board may find, under conditions that it has set, that not every examination has to be passed to determine that the master's final examination has been successfully completed (Article 7.12b paragraph 3 WHW).
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 cases[11], 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 is 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 are awarded a Master of Science (MSc) degree.
7. The degree conferred is stated on the diploma.

Article A5.2 Diploma

1. The Examination Board awards a diploma as proof that the student has satisfied all the requirements of the examination 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 is 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 is in English and complies with the European format for such diplomas and WHW Article 7.11.
4. An International Diploma Supplement is 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 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, 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 states the results of the examinations the student 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 is stated on the diploma and the diploma supplement.
2. The *judicium Cum Laude* can be awarded provided the following requirements are met:
   a. The precise weighted average[12] 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 8.00; Results for study units outside the examination programme, are not taken into account.

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

[12] The weighted average is proportional to the number of credits.

b. Those parts of the examination programme for which an exemption was granted, or which were not graded with a number[13] are not considered when calculating the average grade.
c. Exemptions within the examination programme may be granted to a maximum of 15 ECs.
d. The study unit of 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. Students who have been found guilty of academic misconduct in academic activities related to the programme for which the cum laude is to be awarded, are excluded from the judicium cum laude.
4. In individual cases the Examination Board may grant the judicium Cum Laude even if not all requirements are met due to extenuating circumstances. It is noted that the distinction of cum laude is never awarded automatically, but only following individual assessment of the student's academic achievements.

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 'decentralised' 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.

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[13] With the exception of EIT Digital Master school programmes

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 records 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 aimed at removing individual barriers in attending the degree 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 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 has 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 participates 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 decides on the admissibility of the request and informs 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 is also indicated.
   b. If the request is not granted, or only partly granted, the study adviser informs 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, are granted a maximum of 15 extra minutes for each hour that a test or exam is officially scheduled.
5. The study adviser informs the relevant parties in due time about the facilities that have been granted.
6. The applicant and the study adviser 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 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 adopts a transitional arrangement, as necessary.
2. The transitional arrangement must to published on the degree programme's website or published in Section B of these regulations.
3. The following principles are 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 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 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 is 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 2024 and replace the Regulations dated 1 September 2023.

SECTION B: PROGRAMME-SPECIFIC SECTION
MASTER COMPUTER SCIENCE (CS)

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 in Computer Science with the underlying specialisations Cyber Security (CybSec), Data Science and Technology (DST), Software Technology (ST) and Internet Science and Technology (IST).

B1   General provisions

Article B1.1   Definitions
In addition to the definitions in Section A the following definitions and abbreviations are used:

a. **Course programme:** examination programme
b. **CybSec:** Cyber Security
c. **DST:** Data Science and Technology
d. **Graduation supervisor**: an examiner for the Final Project from one of the responsible research groups of the graduate's specialisation
e. **IST:** Internet Science & Technology
f. **Programme mentor**: individual mandated by the Examination Board to approve course programmes for their specific specialisation
g. **ST**: Software Technology

B2   Programme objectives and final attainment targets

Article B2.1   Aim of the Computer Science Master's programme
The Master's programme in Computer Science aims to combine a scientific mindset with specialist technical knowledge, enabling graduates to analyze, design, validate and implement state-of-the-art Information and Communications Technology (ICT) systems in their operational context. Graduates of the Master's programme are trained to take a scientific, ethical and socially responsible approach to conducting and contributing to research in their specific area of study and to international trends in and related to their field of study.

Article B2.2   General attainment targets
The degree programmes have the following general scientific attainment targets

a. Graduates have an extensive knowledge of and understand the issues relevant to their specific field of study (i.e. domain specific attainment targets) described in Art. B2.4.
b. Graduates can contribute to scientific research, and independently design, conduct and present the results of small-scale research.
c. Graduates can provide an original contribution to the development and/or application of the field of study. 'Original' is understood to mean 'demonstrative of a creative contribution'.
d. Graduates can analyze complex problems relevant to the field of study and obtain the required knowledge and information.
e. Graduates can design, validate and implement solutions/systems in their operational context; identify and apply relevant advanced knowledge, methods and techniques from their field of study.
f. Graduates can assess solutions/systems and their applications according to their properties and potential to solve problems even if they are new to or unfamiliar with the situation or lack information and/or reliable information; they can use their assessment as a basis for (substantiation of) decisions.
g. Graduates understand the ethical, social, cultural and public aspects of problems and solutions in their field of study; apply this insight in their international role as scholar.

h. Graduates can work as part of and play a leading role in a team; manage and plan a development process; document development and research processes.
i. Graduates can substantiate research results, designs and applications in writing and verbally; critically assess and participate in debates regarding the same.
j. Graduates can independently acquire new knowledge and skills; reflect on trends in their field of study, responsibilities and roles and use this insight as a guide for and integrate it into their own personal development.
k. Graduates can integrate information from other disciplines into their own work if necessary.
l. Graduates take a critical approach to reading, incorporating information presented in and participating in debates regarding international scientific literature relevant to their field of study.

Article B2.3   Domain specific attainment targets

a. Cyber Security

1. CybSec graduates have a profound understanding of security and privacy risks and mitigations in cyber space and are able to model and evaluate these risks and mitigations.
2. CybSec graduates have understanding and skills of applying the relevant foundations of cyber security, such as cryptography, formal methods, statistics, machine learning, and data analytics.
3. CybSec graduates have understanding and skills of cyber security engineering methodologies in the small and in the large.
4. CybSec graduates have understanding and skills of methods and approaches for practical security evaluation of ICT systems such as penetration testing, risk assessment, and monitoring & analytics.
5. CybSec graduates have specialist knowledge and understanding of one or more sub-fields or aspects of cyber security, typically acquired via research in the final year project.
6. CybSec graduates have practical experience conducting scientific research into cyber security, contributing to such research, applying the results, following the trends of this sub-field and contributing to its further development.

b. Data Science and Technology

1. DST Graduates have thorough knowledge of, and are able to design solutions for, the management of large volumes of structured, semi-structured and unstructured data, such as sensor data, multimedia data, textual data, geographic data, and social data.
2. DST Graduates are able to analyze large volumes of generated data and make scientific decisions based on such data sets.
3. DST Graduates understand algorithms underlying data science techniques in terms of their fundamental basis in theory (probability theory, statistics, information theory, etc).
4. DST Graduates have thorough knowledge of methods and techniques for the design and analysis of smart services, including those applicable to all stages of an information system's life cycle (requirement analysis, architecture design, realization and maintenance) and subsystems that make up information systems.

c. Software Technology
1. ST graduates have a thorough knowledge and understanding of the different phases of the software lifecycle (ranging from requirements engineering over architectural and detailed design to construction and quality assurance) as a scientific and design discipline.
2. ST graduates have a thorough knowledge and understanding of, as well as practical experience with, the application of software engineering methods and tools in the development and validation of large-scale systems.
3. ST graduates know the trade-offs between alternative software engineering techniques and can make educated decisions throughout the software lifecycle.
4. ST graduates have knowledge and understanding of various aspects of Software Engineering including its mathematical background, software management, quality assurance, architectural design, detailed design, software construction, testing, and verification.
5. ST graduates have specialist knowledge and understanding of one or more sub-fields or aspects of the software engineering discipline, e.g., programming languages, requirements engineering, software composition, software evolution, service-oriented architectures, model-driven engineering, logic, algorithms, and formal methods.
6. ST graduates have practical experience conducting scientific research in the realm of software engineering methods and technologies, formal methods and/or programming or design paradigms, enabling them to contribute to such research, follow the trends, and apply the results.

d. Internet Science and Technology
1. IST graduates have thorough knowledge about and understanding of both wired and wireless communication devices, networks and systems, in terms of both key principles and contemporary technologies.
2. IST graduates can design and evaluate wired and wireless communication devices, networks and systems; in doing so, they can take into account both detailed aspects of the individual components, and system-wide aspects such as security and management.
3. IST graduates can quantitatively evaluate the performance of networked systems, and judge their formal correctness, using both analytical methods and computer tools.
4. IST graduates have practical experience conducting research and/or doing design work in a sub-field of networked systems, can follow trends in the field and contribute to its further development.

B3 Further admission requirements

Admission requirements additional to the ones in Article 2 of section A can be found in Appendix I.

B4 Curriculum structure

Article B4.1 Composition of the programme

1. The general composition of the course programme is as follows[14]:
   a. Core courses: mandatory courses depending on the specialisation.
   b. Advanced courses: courses depending on the specialisation.
   c. Profiling space: around 30 EC in courses related to the specialisation.
   d. 191612680 Computer Ethics, (5 EC)
   e. 192199508 Research Topics (10 EC)
   f. 192199978 Final Project (30 EC)
2. Each student has an individual course programme of at least 120 EC which meets the general programme guidelines of B4.1.1, and also the programme requirements of their selected specialisation described in B6 specialisations.
3. In addition to Article B4.1.1 and B4.1.2, students with a Bachelor's degree which includes "educatieve minor" may use the elective credits within the profiling space to form an alternate package of 30 EC with didactical/pedagogical subjects, including a traineeship in a high school, as part of a Science Education and Communication (SEC) Master's programme under the terms of Article A3.6.
4. To ensure basic knowledge in the field of study and the specialisation selected, the Admission Board or Programme mentor may adjust the programme requirements on the basis of the student's prior education and training. Such an adjustment will never entail an intensification of the total study load, the programme will always have a study load of 120 credits.
5. Students take around 30 EC in courses related to the specialisation as part of their profiling space. Apart from additional requirements depending on the specialisation, this space should be used for:
   a. an exchange programme
   b. an internship (192199968, 20EC)
   c. the study tour (10 EC)
   d. a methodological course from the theme OOO (organize / research / design)
   e. additional advanced specialisation courses
   f. courses from another CS specialisation
   g. courses from a different Master which are relevant to the specialisation
   h. courses at one of our 4TU partner programmes
   i. courses from a different Master for a double / combined programme
   j. homologation courses with a maximum of 15EC, as part of a bridging programme assigned by the Admission Board or Programme mentor as referred to in B4.1.4
6. When an 192199968 internship is included in an individual course programme, the 192199978 Final Project can only be carried out at the UT, at another university or at a research institute and not also at an external company.
7. Exceptions to the composition of the programme can be approved by the Examination Board.

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[14] Students whose admission to the CS programme is derived from, or constitutes a part of, their admission to a programme within the EIT Digital Master school, may have a course programme which deviates from the requirements listed under Art. B 4.1.1. The programme for EIT Digital CybSec and SPECTRO students is described in Art. B 6.1.4, the one for EIT Digital Data Science and Technology in Art. B6.2.4.

Article B4.2   Course programme approval

1. Every student is required to obtain course programme approval from the Programme mentor of their selected specialisation.
2. The programme approval is an agreement on the content of a student's individual course programme between the student and the Programme mentor. The Programme mentor approves a programme on behalf of the Examination Board.
3. Students are allowed to complete courses and sit examinations up to a maximum of 15 credits in a specialisation before contacting the Programme mentor for an approved course programme. After 15 credits permission from the Programme mentor is required for complete programme of 120 credits.
4. Until Research Topics and Final Project are started by the student, the approved course programme can still be altered by laying down a new revised course programme. At that time the Programme mentor should have approved the 120-credit course programme in its entirety.
5. In principle, the student will earn the programme diploma if they complete the units of study listed in the course programme and earns results in line with the guidelines for passing the final degree audit.
6. If the approved course programme does not satisfy the regulations as described in these Regulations and/or does not satisfy the conditions imposed by the Admission Board, the Examination Board is authorized to impose additional diploma eligibility requirements.

Article B4.3   Approval of a Flexible-degree programme
The Examination Board shall decide on reasoned requests from students for a Flexible degree programmes as referred to in Article 7.3c of the Act and A3.5. Conditions related to this matter are to be specified in the Rules and Guidelines of the Examination Board.

B5   Research Topics and Final Project

Article B5.1   Research Topics
1. All students must take Research Topics course as part of their course programme.
   a. Students in the regular programme take 192199508 Research Topics (10EC)
   b. Students in the EIT Digital Master School programme take 10 EC split into 201800524 Research Topics EIT (4EC) and 201800525 I&E Study EIT (6EC).
2. Research Topics serve as a preparation for the Final Project described in Article A3.7 and B5, and therefore has to immediately precede the graduation work. Students cannot start Research Topics before having obtained at least 60EC, but are recommended to start at 75 credits.
3. Students start Research Topics by registering in Osiris and subsequently Mobility Online.
Further information and procedures can be found on the programme website www.utwente.nl/csc. These procedures are considered part of this Regulation.

Article B5.2   Additional rules and procedures for the Final Project
1. In addition to the rules in Article A3.7, all students must carry out a Final Project under the graduation supervisor, a staff member from one of the responsible research groups of the specialisation, with the following requirements:

a. The Final Project deals with carrying out a research project, delivering of a graduation report and a summary of the report, and finally an oral presentation in public at the University of Twente (even when some of the contents are confidential under Article A3.11). Generally the Research Topics as described in Article B5.1 immediately precede the graduation work, and serve as a preparation for the Final Project.

b. Students may start the Final Project with a maximum of 10 EC of unfinished courses, unless the graduation supervisor deems the content of the unfinished courses essential with regards to the chosen topic of the Final Project. Students can start by registering in Osiris and subsequently Mobility Online

c. Faculty research groups take responsibility for supervision and assessment of the Final Project. Responsibility implies:
   - either the graduation committee contains a member of the group
   - or the Programme mentor has explicitly given permission for supervising the Final Project by a graduation committee containing no member of the group.

   The responsibilities are as follows:
   - Cyber security: SCS or DACS
   - Data science and Technology: SCS or DMB or FMT or PS
   - Software technology: FMT
   - Internet science and technology: DACS or PS.

2. The Final Project description is written down as an agreement (by filling out the online Graduation registration form in Mobility Online), signed by both the student and the supervisor. The supervisor signs on behalf of the Examination Board.

Organizational procedures are found on Canvas, after registering in Osiris and on the programme website www.utwente.nl/csc.These procedures are considered part of this Regulation.

Article B5.3   Assessment and marking of the Final Project

1. If student and supervisor agree on the necessity of an extension of the duration of the Final Project (e.g. because of illness or because of an unforeseen re-examination of a pending course) they may request the Programme Mentor (of the specialisation in which the Final Project takes place) to give permission for such an extension. The Programme Mentor may give permission for an extension once, with a maximum duration of three months.

2. If an additional extension is needed, or if the desired extension period is longer than three months, or if the supervisor and the Programme Mentor are the same person, such a request has to be submitted to the Examination Board.

3. The composition of the assessment committee is described in A3.8 of the Faculty Section A.

4. In case the final grade of the Final Project is insufficient the student has to carry out a new Final Project.

B6   Specialisations

Article B6.1   MSc Computer Science: Cyber Security

1. Core courses
The following 4 courses are mandatory:
- 201700074 Internet Security (InS)
- 202300045 Security and Cryptography (Crp)

- 201600051 Software Security (SoS)
- 202300044 Cyber Risk Management (CRM)

2. Advanced courses

At least 4 courses must be chosen out of the following:
- 192110940 Secure Data Management (SDM)
- 201700083 Security Services for the Internet of Things (SSI)
- 201500039 Security Verification (SeV)
- 201700086 System Security (SyS)
- 192140122 System Validation (SyV)
- 202300047 Cyber Data Analytics (CDA)
- 202300046 Privacy Enhancing Technologies bootcamp (PET)
- 201700079 Blockchain and Distributed ledger technology (BCT)
- 201500040 Introduction to Biometrics (Bio)
- 202000026 Secure Cloud Computing (SCC)
- 202100073 Empirical Security Analysis & Engineering (ESA)
- 201500038 E-Law (eLa)
- 202400121 Automated Vulnerability Research and Mitigation (AVR)

202500500 Economics of Cyber Security (2025-2026)

3. Profiling space

Suggested elective courses:
- 192620010 Mobile and Wireless Networking (MWN)
- 202001472 Software Testing and Risk assessment (STAR)
- 201400177 Cloud Networking (CIN)
- 201600070 Machine Learning 1 (ML1)
- 192130112 Distributed Systems (DiS)
- 202001579 Internet Measurements (IMs)
- 201700077 Advanced Networking (ANET)
- 202000028 Smart Industry Systems (SIS)
- 202300336 Explainable AI (XAI)

4. EIT Digital: Cyber Security & SPECTRO

A special way to fulfil the requirements of the Cyber Security specialisation is by successfully completing the course programme on Cyber Security coordinated by EIT Digital, set up as a double degree programme where one year is completed at the University of Twente and one year at a partner university. The partner universities in these programmes on Cyber security are:
- University of Trento, Italy (both entry and exit year curricula; specialisation: System Security)
- Eötvös Loránd University, Hungary (both entry and exit year curriculum; specialization 1: Advanced Cryptography; specialization 2: Quantum-resistant Cryptography)
- University of Turku, Finland (both entry and exit year curriculum; specialisation: Security Technologies and Intelligence)
- Babeș-Bolyai University, Romania (both entry and exit year curriculum; specialisation: Software Security)
- University of Rennes 1, France (only entry year curriculum)

- EURECOM, France (only exit year curriculum; specialisation: Big Data Security)

a. Entry year

The entry year of EIT Digital Cyber Security & SPECTRO follow the rules for the Master's programme in Computer Science. The total amount of credits during the entry year must be at least 60 EC. The exit year is completed at a partner university and will consist of at least a graduation project and a minor in Innovation & Entrepreneurship (I&E).

The following course is mandatory for all Computer Science students:
- 191612680 Computer Ethics (UT)

Core courses
The following 9 courses are mandatory:
- 201700074 Internet Security (InS)
- 202300045 Security and Cryptography (Crp)
- 201600051 Software Security (SoS)
- 202300044 Cyber Risk Management (CRM)
- 202100178 I&E Basics: Innovation Management for EIT
- 201700119 Business Development Lab I
- 201700120 Business Development Lab II
- 201700086 System Security (SyS)
- 201400613 I&E for Venture Creation (**4EC**)

At least 2 courses must be chosen out of the following:

Advanced courses
- 201700083 Security Services for the Internet of Things
- 201500039 Security Verification (SeV)
- 201500040 Introduction to Biometrics (Bio)
- 202300047 Cyber Data Analytics (CDA)
- 202300046 Privacy Enhancing Technologies bootcamp (PET)
- 201700079 Blockchain and Distributed ledger technology (BCT)
- 201500038 E-Law (eLa)
- 192620010 Mobile and Wireless Networking (MWN)
- 202400121 Automated Vulnerability Research and Mitigation (AVR)
- 202500500 Economics of Cyber Security (2025-2026)

Profiling
Elective Innovation and Entrepreneurship (I&E) courses
- 201700019 Brand Management
- 201800077 Bioresource Business Development & Management
- 201800079 Bioresource Supply Chain Management
- 201600155 Global Strategy and Business Development
- 194105070 Information Systems for the Financial Services Industry
- 201500008 Empirical Methods for Designers
- 201600015 Strategic Technology Management and Innovation
- 201500080 Advanced Topics in Digital Marketing

- 201800205 Smart Industry
- 201800230 Advanced Project in Impact, Innovation & Entrepreneurship

Suggested elective courses
Please see list of suggested courses in the Cyber Security specialisation (Art B6.1.3)

b. Exit year: specialisation "Cyber Security: High Tech, Human Touch"
Exit year students have completed the equivalent of our core and advanced programme in the entry year at one of our partner universities.
The exit year counts at least 60 EC consisting of the following mandatory parts for all Computer Science students: 191612680 Computer Ethics (5 EC), and the 192199978 Final Project (30 EC).

Instead of the course "Research Topics"*,* EIT exit year students do:
- 201800524 Research Topics EIT (4EC)
- 201800525 I&E Study EIT (6EC)

For the remainder of the 60EC, the student needs to pick at least 15 EC from the following courses:
- 202000026 Secure Cloud Computing (SCC)
- 192140122 System Validation (SyV)
- 202300044 Cyber Risk Management (CRM)
- 192110940 Secure Data Management (SDM)
- 201500039 Security Verification (SeV)
- 201500040 Introduction to Biometrics (Bio)
- 201600070 Machine Learning 1 (ML1)
- 201700075 Internet of Things (IoT)
- 201400177 Cloud Networking (ClN)
- 192130112 Distributed Systems (DiS)
- 201600071 Machine Learning 2 (AML)
- 201700079 Blockchain and Distributed Ledger Technology (BCT)
- 192620010 Mobile and Wireless Networking (MWN)
- 202300047 Cyber Data Analytics (CDA)
- 201500038 E-Law (eLa)
- 201700083 Security Services for the Internet of Things (SSI)
- 202100073 Empirical Security Analysis & Engineering (ESA)
- 202400121 Automated Vulnerability Research and Mitigation (AVR)
- 202500500 Economics of Cyber Security (2025-2026)

Further details on the programme can be found on: https://masterschool.eitdigital.eu/cyber-security and www.eitdigital.eu/eu-collaborations/spectro/.

Article B6.2   MSc Computer Science: Data Science and Technology

1. Core courses
The following 4 courses are mandatory:
- 201200044 Managing Big Data

- 202300200 Data Science
- 201600070 Machine Learning 1
- 201700080 Information Theory and Statistics

2. Advanced courses

At least 4 courses must be chosen out of the following:
- 201600071 Machine Learning 2
- 202200103 Image Processing and Computer Vision
- 201800177 Deep Learning - From Theory to Practice
- 201600076 Foundations of Information Retrieval or 201600074 Natural Language Processing[15]
- 192320111 Architectures of Information Systems
- 201700081 Probabilistic programming
- 202100258 FAIR Data Engineering
- 202100291 Ontology-Driven Conceptual Modeling with Applications

3. Profiling space

Requirements: No additional requirements apply, but the data science student is suggested to further specialize in one or more of the following data science profiles.

Data Science profiles
a) *specialist in specific kinds of data*, such as natural language text, image data, geographic data, sensor data, networked data
b) *designer of smart services*
c) *designer of data science algorithms*
d) *multi-disciplinary researcher*

The following are suggested courses for the profiling space:
- (a) 201600083 Advanced Information Retrieval
- (a) 201600081 Advanced Natural Language Processing
- (a) 201600075 Speech Processing
- (a) 201600082 Advanced Speech processing
- (a,b) 201700075 Internet of Things
- (a,b) 202100263 Linked Data and Semantic Web
- (a,b) 202300046 Privacy-Enhancing Technologies
- (a,b,c,d,e) 201300074 Research Experiments in Databases and Information Retrieval (REDI)
- (a,b,c,d,e) 202000029 Empirical and Design Science Research in Information Systems
- (a,b,c,d,e) 202200251 Capita Selecta DST
- (a,c) 201800222 Complex Networks
- (a,c) 201500040 Introduction to Biometrics
- (a,c) 201700364 Spatial Statistics
- (a,d) 202300201 Data Science Additional Topics
- (a,d) 201900060 3D modelling for City Digital Twins based on geospatial information

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[15] Students can do both, but only one will count as an advanced course and the other as an elective in the profiling space.

- (a,d) 193810020 Advanced Techniques for Signal Analysis
- (a) 201100254 Advanced Computer Vision and Pattern Recognition
- (b) 201400277 Enterprise Architecture
- (b) 202300064 Simulation
- (b) 202000027 Enterprise Security
- (b) 192376500 Business Process Integration lab
- (b) 192320501 Electronic Commerce
- (b) 201100051 Information Services
- (b) 192652150 Service-oriented Architecture Web Services
- (b,d) 202000028 Smart Industry
- (c) 191506103 Statistics and Probability
- (c) 192135310 Modeling and Analysis of Concurrent Systems
- (c) 201900115 Statistical Learning
- (c) 202001281 Signals with Information
- (c) 202400416 Graph Theory (4EC)
- (c) 192111092 Advanced Logic
- (c) 191571090 Time Series Analysis
- (c,d) 202100112 Graphical Models and Causality
- (d) 201700196 Advanced Discrete Event Simulation
- (d) 202001583 Sports Interaction Technology: Designing Interactive Systems for Sports
- (a,b,c,d) 202300336 Explainable AI
- (d) 202400120 Learning Analytics (2025-2026)
- (b,c,d) 202400609 Green Software development
- (c) other courses on fundamentals and algorithms of signal processing, stochastic processing, etc.
- (d) other courses on data analysis from fields like health/medicine, social sciences, business sciences, bio-informatics, engineering.

4. EIT Digital: Data Science

A special way to fulfil the requirements of the Data Science & Technology specialisation is by successfully completing the course programme on Data Science in the EIT Digital Master School, set up as a double degree programme where one year is completed at the University of Twente and one year at a partner university. The partner universities in the EIT Digital Master programme on Data Science are:

- KTH Royal Institute of Technology, Stockholm, Sweden (both entry and exit year curricula; specialisation: Distributed Systems & Data Mining for Big Data)
- Technical University of Madrid, Spain (both entry and exit year curricula; specialisation: Infrastructures for Large Scale Data Management and Analysis)
- Université Côte d'Azur, Nice, France (both entry and exit year curricula; specialisation: Multimedia and Web Science for Big Data)
- Politecnico di Milano, Italy (only entry year curriculum)
- Aalto University, Helsinki, Finland (both entry and exit year curricula; specialisation: Machine Learning, Big Data Management, and Business Analytics)
- Eötvös Loránd University, Budapest, Hungary (both entry and exit year curricula; specialisation: Real-time Data Analytics)
- University of Rennes 1, France (both entry and exit year curricula; specialisation: Artificial Intelligence & Data Mining for Business Intelligence)
- University of Turku, Finland (both entry and exit year curricula; specialisation: Medical Data Science)

- University of Trento, Italy (only exit year curriculum; specialisation: Big Data Variety and Veracity)
- University of Technology and Economics, Budapest, Hungary (only exit year curriculum, specialization: Human-centred intelligent data analysis)

a. Entry year

The entry year of EIT Digital Data Science follows the rules for the Master's programme in Computer Science. The total amount of credits during the entry year must be at least 60 EC. The exit year is completed at a partner university and will consist of at least a graduation project and a minor in Innovation & Entrepreneurship (I&E).

Mandatory for all Computer Science students
- 191612680 Computer Ethics

Core courses
The following 4 courses are mandatory:
- 201200044 Managing Big Data
- 202300200 Data Science
- 201600070 Machine Learning 1
- 201700080 Information Theory and Statistics

Advanced courses
At least 4 courses must be chosen out of the following:
- 201600071 Machine Learning 2
- 202200103 Image Processing and Computer Vision
- 201800177 Deep Learning - From Theory to Practice
- 201600076 Foundations of Information Retrieval or 201600074 Natural Language Processing[16]
- 192320111 Architectures of Information Systems
- 201700081 Probabilistic programming
- 202100258 FAIR Data Engineering
- 202100291 Ontology-Driven Conceptual Modeling with Applications

NB: students are allowed to propose similar courses at the exit university to cover core or advanced courses. This has to be approved by the Programme mentor. Furthermore, a grade transcript of the exit university needs to be provided in the end to prove that the covering courses have at least the same amount of ECs as the equivalent course at the UT and have been passed.

Profiling space
Requirements:
- All mandatory Innovation and Entrepreneurship (I&E) courses, see below
- No additional requirements apply, but the data science student is suggested to further specialize in one or more of the following data science profiles:
  - *specialist in specific kinds of data*, such as natural language text, image data, geographic data, sensor data, networked data
  - *designer of smart services*

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[16] Students can do both, but only one will count as an advanced course and the other as an elective in the profiling space.

- o   *designer of data science algorithms*
- o   *multi-disciplinary researcher*

Innovation and Entrepreneurship (I&E) courses
Mandatory I&E courses
- 202100178 I&E Basics: Innovation Management for EIT
- 201700119 Business Development Lab I
- 201700120 Business Development Lab II
- 201400613 EIT Summer School (external) (4 EC)

Elective I&E courses:
- 201700019 Brand Management
- 201800077 Bioresource Business Development & Management
- 201800079 Bioresource Supply Chain Management
- 201600155 Global Strategy and Business Development
- 194105070 Information Systems for the Financial Services Industry
- 201500008 Empirical Methods for Designers

The following are suggested courses for the profiling space:
- (a) 201600083 Advanced Information Retrieval
- (a) 201600081 Advanced Natural Language Processing
- (a) 201600075 Speech Processing
- (a) 201600082 Advanced Speech processing
- (a) 201100254 Advanced Computer Vision and Pattern Recognition
- (a,b) 201700075 Internet of Things
- (a,b) 202100263 Linked Data and Semantic Web
- (a,b) 202300046 Privacy-Enhancing Technologies
- (a,b,c,d) 201300074 Research Experiments in Databases and Information Retrieval (REDI)
- (a,b,c,d) 202000029 Empirical and Design Science Research in Information Systems
- (a,b,c,d) 202200251 Capita Selecta DST
- (a,c) 201500040 Introduction to Biometrics
- (a,c) 201800222 Complex Networks
- (a,c) 201700364 Spatial Statistics
- (a,d) 202300201 Data Science Additional Topics
- (a,d) 193810020 Advanced Techniques for Signal Analysis
- (b) 201400277 Enterprise Architecture
- (b) 202300064 Simulation
- (b) 202000027 Enterprise Security
- (b) 192376500 Business Process Integration lab
- (b) 192320501 Electronic Commerce
- (b) 201100051 Information Services
- (b) 192652150 Service-oriented Architecture Web Services
- (b,d) 202000028 Smart Industry Systems
- (c) 191506103 Statistics and Probability
- (c) 192135310 Modeling and Analysis of Concurrent Systems
- (c) 201900115 Statistical Learning

- (c) 202001281 Signals with Information
- (c) 202400416 Graph Theory (4EC)
- (c) 192111092 Advanced Logic
- (c) 191571090 Time Series Analysis
- (c,d) 202100112 Graphical Models and Causality
- (d) 201700196 Advanced Discrete Event Simulation
- (d) 202001583 Sports Interaction Technology: Designing Interactive Systems for Sports
- (a,b,c,d) 202300336 Explainable AI
- (d) 202400120 Learning Analytics (2025-2026)
- (b,c,d) 202400609 Green Software development
- (c) other courses on fundamentals and algorithms of signal processing, stochastic processing, etc.
- (d) other courses on data analysis from fields like health/medicine, social sciences, business

b. Exit year: specialisation "Data Science for Persona Information"

Exit year students have completed a programme in the entry year at one of our partner universities. Nevertheless, students need to comply with our requirements for a core and advanced programme (see below). Students are expected to show how the courses in their programme at the entry university cover at least most of the core and advanced courses with at least the same amount of EC as the core and advanced courses at the UT. This has to be approved by the Programme mentor. The intention is that students minimize the number of core and advanced courses they still have to do in their exit year, so that sufficient room for electives remain. A grade transcript of the entry university needs to be provided in the end to prove that the covering courses have at least the same amount of ECs and have been passed.

The exit year counts at least 60 EC. It consists of the following parts

Mandatory for all Computer Science students
- 191612680 Computer Ethics
- 192199978 Final Project (30 EC)

Core courses
The following 4 courses are mandatory if not covered by the entry year:
- 201200044 Managing Big Data
- 202300200 Data Science
- 201600070 Machine Learning 1
- 201700080 Information Theory and Statistics or 191506103 Statistics and Probability

Advanced courses
At least 3 courses must be chosen out of the following:
- 201600071 Machine Learning 2
- 191210910 Image Processing and Computer Vision
- 201800177 Deep Learning - From Theory to Practice
- 201600076 Foundations of Information Retrieval or 201600074 Natural Language Processing[17]
- 192320111 Architectures of Information Systems
- 201700081 Probabilistic programming

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[17] Students can do both, but only one will count as an advanced course and the other as an elective in the profiling space.

- 202100258 FAIR Data Engineering
- 202100291 Ontology-Driven Conceptual Modeling with Applications

Research Topics
Instead of the course "Research Topics", EIT exit year students do:
- 201800524 Research Topics EIT (4EC)
- 201800525 I&E Study EIT (6EC)

Profiling space
For the remainder of the 60EC in the exit year and to retrieve the 120EC for the total programme, the student needs to pick from the following courses:
- 201500222 Technology for Health
- 202001281 Signals with Information
- 201500040 Introduction to Biometrics
- 201100254 Advanced Computer Vision & Pattern Recognition
- 201700075 Internet of Things
- 201400408 Complex Networks
- 202300336 Explainable AI
- 202001583 Sports Interaction Technology: Designing Interactive Systems for Sports
- The above courses are specifically suggested for the EIT specialisation "Data Science for Persona Information". They are course related to topics such as health and sports, wellbeing, biometrics and privacy. Any other course suggested for the profiling space of the Data Science & Technology programme is also allowed.

Further details on the programme can be found on: http://masterschool.eitdigital.eu/programmes/dsc

Article B6.3   MSc Computer Science: Software Technology

1. Core course
The following 4 courses are mandatory:
- 202001472 Software Testing and Risk Assessment
- 192140122 System Validation
- 192111332 Design of Software Architecture
- 201400225 Software Evolution

2. Advanced courses
At least 4 courses must be chosen out of the following:
- 192111092 Advanced logic
- 192340041 Software Management
- 192135450 ADSA – Model-Driven Engineering
- 192652150 Service-oriented Architecture Web Services
- 192135310 Modeling and Analysis of Concurrent Systems
- 201900082 Graph Algorithms and Complexity
- 202100126 Interactive Theorem Proving
- 202300109 Quantitative Evaluation of Systems

3. Profiling space

Requirements: Choose at least one orientation: design or research (10 EC)

Orientation
Mandatory course for the Design Orientation (10EC):
- 201400172 Industrial Software Engineering Project (10 EC)[18]

Mandatory for the Research Orientation at least 10EC from:
- 202100116 Model Checking and Parity Games
- 202100113 Probabilistic Model Checking
- 202100114 Graph Transformations
- 202100115 Program Verification
- 201400171 Capita Selecta Software Technology

Suggested elective courses
- Additional advanced courses
- 201600051 Software Security
- 192620300 Performance Evaluation
- 201700081 Probabilistic Programming
- 201600070 Machine Learning 1
- 202300200 Data Science
- 201600040 Requirements Engineering Processes and Methods
- Additional software science courses 202100113 Probabilistic Model Checking (Software Science), 202100114 Graph Transformations (Software Science), 202100115 Program Verification (Software Science), 202100116 Model Checking and Parity Games (Software Science)

Article B6.4   MSc Computer Science: Internet Science and Technology[10]

1. Core courses
The following 4 courses are mandatory:
- 192620010 Mobile and wireless networking
- 192620300 Performance evaluation
- 201700075 Internet of Things
- 201700074 Internet security

2. Advanced courses
At least 4 courses must be chosen out of the following:
- 201700077 Advanced Networking
- 192652150 Serv. Oriented Arch. with Web Serv.
- 201400177 Cloud Networking
- 201700073 Ad-Hoc Networks

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[18] The courses 192199968 internship and 201400172 ISEP cannot both be part of a regular programme of 120 EC due to overlap in content and learning goals. In particular, students who choose the Design Orientation thus cannot take the Internship except as an additional elective resulting in a course programme of at least 140 EC.

- 202001579 Internet Measurements
- 202100244 Pervasive computing
- 192130112 Distributed Systems
- 201700083 Security Services for the Internet of Things
- 202100073 Empirical Security Analysis and Engineering
- 201400176 Dependable Networking
- 202400121 Automated Vulnerability Research and Mitigation (AVR)

3. Profiling space
Requirements: No additional requirements apply.

Suggested elective courses
- additional advanced courses
- Electrical Engineering courses (www.utwente.nl/ee)
- Embedded Systems courses (www.utwente.nl/emsys)
- Cyber Security courses
- Data Science & Technology courses
- Software Technology courses

B7　　Degree
Students who have successfully completed their Master's final degree audit are awarded a Master of Science degree. The degree awarded is stated on the diploma.

B8　　Evaluation and quality assurance
In addition to the rules and procedures described in Article A3.12, the following rules describe the internal course evaluations cycle:
1. The online Student Experience Questionnaire (SEQ) is used for evaluation purposes at the conclusion of each courses;
2. Lecturers reflect on the SEQ results with a reflection form send in by lectures as part of the course evaluation cycle;
3. Additionally, the lecturer may initiate supplementary evaluations, such as additional surveys and panel discussions during the course or at its conclusion;
4. If the SEQ results and/or student complaints give reason for concern, then the programme director is to discuss the matter with the lecturer either during the course or at its conclusion;
5. Lecturers are to use this discussion to develop a plan for improving the remainder of the course or for the subsequent edition, including a strategy for evaluating the improvements.

B9　　Transitional and final provisions

Article B9.1　Transitional provisions
The transitional arrangements can be found in appendix B.

Article B9.2　Publication
1. The Faculty Board will ensure the appropriate publication of these Regulations and any amendments to them.

2. The Education and Examination Regulations will be posted on the faculty website.

Article B9.3   Effective date

These Regulations enter into force with effect from 1 September 2024.

I. ADMISSIONS APPENDIX

This is the Admissions Appendix describing admission to the Master's programme in Computer Science. Enrolment as a student is required to sit examinations and to be eligible to earn the Master's diploma. In order to be enrolled, students must demonstrate that they have been admitted to one of the Master's programmes.

Article I.1 Admission to the programme

1. The regulations in this appendix are part of the Education and Examination regulations of the Master's programmes Computer Science and Internet Science and Technology of the Faculty of Electrical Engineering, Mathematics and Computer Science of the University of Twente and are an addition to regulations stated in section A.
2. Admission to the programme can be granted only to students who meet the requirements regarding the level of their previously earned diploma's, in accordance with the provisions of Art.7.30b of the Act.
3. Students in possession of a diploma which shows that they have passed the final degree audit for the Technical Computer Science (UT), Computer Science and Engineering (TUD, TU/e), Business Information Technology (UT) or Informatica (RUG, UU, UvA, VU, UL, RU, OU, UM) Bachelor's programme will be eligible for direct admission to the programme.
4. Students who are not in possession of the diploma mentioned in paragraph 2 and 3 will require a certificate of admission issued by the Admission Board. The Admission Board is appointed by the Dean with the power to act in matters of admission to the programme. Admission involves an assessment of the student's eligibility for the Master's programme of their choice. If the Admission Board positively assesses an application for admission, it issues a certificate of admission. Students with a certificate of admission are eligible for enrolment by the Central Student Administration. Enrolment will only take place if the other admission requirements maintained by the UT have also been satisfied.
5. Admission of foreign students. In addition to the requirements in Chapter 2 of section A, the following criteria apply:
    a. The level of education in the country in which the student has completed their pre-university education: this must be comparable with that in the Netherlands.
    b. Level of knowledge: the student must have accumulated sufficient knowledge on the basis of the courses they have studied abroad to be at a level comparable to that of Dutch students who are admitted to the Master's programme.

Article I.2 Admission to the programme pursuant to a specific regulation

The Dean has adopted the following provisions for certain students to be eligible for admission (next to the ones mentioned in Article I.1).

In addition to these provisions from the Education and Examination Regulation:
1. Applicants who satisfy the following requirements are eligible for admission to the CS Master's programme.
    a. The applicant is holder of a diploma from a University of Applied Science demonstrating that they have satisfied the requirements of the final assessment of the Computer Science (Informatica) Bachelor's programme, the Technical Computer Science (Technische informatica) Bachelor's programme or a HBO ICT Bachelor's programme

b.   The applicant has successfully completed the UT CS transfer minor (*doorstroomminor*) as part of their Bachelor's course programme or the UT CS premaster.

2.   Applicants who satisfy the following requirements are eligible for admission to the CS Master's programme.

a.   The applicant is holder of a diploma from the University of Twente demonstrating that they have satisfied the requirements of the final assessment of the Advanced Technology Bachelor's programme, the Creative Technology Bachelor's Programme, or the Bachelor's programme from University College Twente (ATLAS)

b.   The applicant has successfully completed two out of the following modules as part of their Bachelor's course programme:
- Computer Systems for CS (15EC)
- Software Systems core (12EC)
- Network Systems for EE (15EC)
- Discrete Structures & Efficient Algorithms (15EC)

Article I.3 Admission to the Master's programmes after individual assessment

In all other instances than those mentioned in Art. I.1 and I.2., the Admission Board conducts a detailed assessment of the applicant's eligibility for admission. This assessment takes the following factors into account:

1. the highest diploma earned by the applicant: This must be at least a Bachelor's diploma from a recognized higher education institution. If such a diploma cannot be produced, the Admission Board will ask for a statement attesting to the equivalency of the applicant's qualifications with the Bachelor's diploma required. The body issuing this statement must be authorized to do so.
2. the nature of the degree course and the content of the course programme completed by the applicant, the speed with which the course programme was completed and the marks earned: The nature of the degree course, content of the course programme and marks earned for the individual units of study must clearly demonstrate that the applicant has the fundamental academic skills and appropriate basic knowledge for the Master's programme or is able to compensate for any gaps in basic knowledge.
3. the student's motivation for applying for admission
4. the applicant's command of English: This only applies to international students. The threshold values for sufficient command of English are in Article A2.2.

Article I.4 Variations in admission decisions

1.   Issuing an unconditional certificate of admission

The Admission Board may decide to admit applicants to the Master's programme after assessing their file. These applicants will be issued a (unconditional) certificate of admission.

2.   Issuing a conditional certificate of admission

The Admission Board may not reach a final decision about admission, because it finds insufficient or formally incorrect evidence of the applicant's status in the application file. In such a case the board can decide to admit the applicant conditionally. The student can enroll at the UT on the condition they submit

the evidence lacking in the original application file to the satisfaction of the Admission Board. (A typical case of conditional admission is when the applicant's file shows no formal proof of sufficient proficiency in English.)

3. <u>Issuing a certificate of pre-master admission</u>

In some cases, the Admission Board will issue applicants a certificate of pre-master admission. While these individuals may enroll at the UT, they are not entitled to sit examinations or to have the final degree audit conducted.

Pre-master admission is associated with a pre-master's programme, i.e. a list of units of study, the attainment targets and learning objectives of which are at the undergraduate level. The pre-master's programme is defined containing courses on the aspects that are lacking in the BSc programme taking into account the necessary knowledge to successfully complete the Master's programme.

Students in this category must first successfully complete this pre-master's programme to be fully admitted to the Master's programme and become fully enrolled students with all the associated rights. Certificates of pre-master admission are valid for a limited term (generally one year). Students who are not fully admitted during this term must re-apply for admission.

4. <u>Issuing a certificate of admission with additional requirements</u>

The Admission Board may attach additional requirements to a certificate of admission (also to conditional and pre-Master admissions). These additional requirements do not impact the right to enroll, sit examinations or have the final degree audit conducted. They do, however, impact the regulations governing successful conclusion of the Master's programme final assessment.

With this admission decision, the Admission Board establishes additional requirements for the course programme to satisfy in order to successfully pass the Master's programme final assessment. Naturally, the additional requirements will be limited to the extent that the student will still be able to complete the programme with a study load of 120 credits. The additional requirements placed on the course programme are referred to as "homologation".

5. <u>Issuing a certificate of admission with a requirements waiver</u>

Article A3.4 of the Education and Examination Regulation stipulates that the Examination Board may not honor requests for exemptions based on results earned as part of a Bachelor's programme. However, the Examination Board may waive a requirement placed on the course programme in recognition of the results earned as part of a Bachelor's programme and, consequently, permit the student to successfully pass the Master's programme final assessment with a course programme that does not satisfy all the formal requirements. Students who wish to have a waiver for requirements placed on the course programme based on their undergraduate education must submit a request to the Admission Board. The Admission Board will render a decision on the request on behalf of the Examination Board. If granted, it will issue a certificate of admission with a waiver for requirements, thereby granting the student the right to have the Master's programme final assessment conducted without meeting all the formal requirements. Such a waiver will never affect the Master's programme study load. A study load requirement of less than 120 credits is not permitted.

II. TRANSITIONAL ARRANGEMENTS APPENDIX

This is the Transitional Arrangements Appendix to the Education and Examination Regulations of the Master's programmes Computer Science and Internet Science and Technology.

1. *The transitional arrangements appendix forms an integral part of these regulations.*
The regulations in this appendix are part of the education and examination regulations of the Master's programmes Computer Science and Internet Science and Technology of the Faculty of Electrical Engineering, Mathematics and Computer Science of the University of Twente.

2. *Regulation regarding approved course programmes*
In general students who have their course programme approved are allowed to take the degree based on that approved programme unless this contradicts with another regulation or is no longer possible. In case the changes are not covered by any of the regulations in these transitional arrangements, students must contact their Programme mentor for an adjustment of their course programme.

3. *Regulation 2021-2022 regarding the discontinuation of the Internet Science and Technology Master's programme*
Occasion: This regulation is necessary because Internet Science and Technology will be discontinued as a separate Master's programme per September 2023. Instead it will continue to exist as specialisation within the Computer Science Master's programme.
Term of validity: until September 1, 2024.
Contents of the regulation: Students in the Master Internet Science and Technology will need to transfer to the IST specialization of the Computer Science Master programme to finish their degree. Students must contact their Programme mentor for a new approved porgramme in order to graduate.

4. *Regulation 2023-2024 regarding the transition year for Cyber security collaboration within the 4TU*
Term of validity: until September 1, 2024
Students within the Cyber Security specialization are allowed to replace the following courses with their Delft equivalent or vice versa:

UT course	TUD course
202300045 Security and Cryptography	201500027 Security and Cryptography 4TU (IN4191)
202300044 Cyber Risk Management	201500026 Cyber Risk Management 4TU (TPM027A)
202300047 Cyber Data Analytics	201500037 Cyber Data Analytics 4TU (CS4035)
202300046 Privacy Enhancing Technologies bootcamp	201500042 Privacy Enhancing Technologies 4TU (CS4380)

5. *Regulation 2024-2025 regarding the change in courses within the Software Technology specialization*
Terms of validity: indefinite
Students who have not yet completed 201700082 Principles of Programming, Processes, and patterns or 202300101 Software Engineering Techniques as core course in their programme, will have to replace this course with Software Evolution. If Software Evolution was previously part of their 4 mandatory advanced courses, students may have to take an additional advanced course in order to complete at least 4 advanced courses.

6. *Regulation 2023-2024 regarding the change in courses within the Software Technology specialization*
Terms of validity: indefinite
For students who have not finished 201200006 Quantitative Evaluation of Embedded Systems, this course may be replaced by 202300109 Quantitative Evaluation of Systems