TEACHING AND EXAMINATION REGULATIONS
(TER)
(see Article 7.13, WHW)

2020 – 2021

BSc DEGREE PROGRAMME
Computer Science & Engineering
(translation)

DELFT UNIVERSITY OF TECHNOLOGY
Faculty of Electrical Engineering, Mathematics and Computer Science

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Part 1   General

Article 1 – Areas to which the regulations apply

1. These regulations apply to teaching and examinations of the Bachelor's degree programme in Computer Science & Engineering, hereafter referred to as the programme.
2. These regulations also apply to teaching and examinations of the minors. Unless specified otherwise each article applies to each of the minors.
3. This programme is conducted under the responsibility of the Faculty of Electrical Engineering, Mathematics and Computer Science at Delft University of Technology (EEMCS), hereafter referred to as the faculty.
4. The programme is governed by Implementation Regulations (appendix) which constitute part of these Teaching and Examination Regulations.
5. That which is stated in the Rules and Regulations of the Board of Examiners shall apply mutatis mutandis.
5. The Teaching and Examination Regulations and the Implementation Regulations are laid down by the Dean.

Article 2 – Definitions of terms used

The terms used in these regulations should be interpreted as meaning the same as in the Higher Education and Scientific Research Act, insofar as they are defined in that Act.

The following terms are to be defined as follows:

a. Act: the Higher Education and Scientific Research Act (in Dutch, the WHW), in the Dutch Bulletin of Acts, Orders and Decrees, number 593 and as amended since;

b. programme: the Bachelor's degree programme as denoted in Article 7.3a section 1, subsection a of the Act;

c. student: anyone enrolled at Delft University of Technology for the purpose of benefiting from education and/or for the purpose of sitting the examinations and undergoing the final examination which form part of the programme;

d. cohort: the group of students who have registered for a degree programme for the first time in a given academic year;

e. first academic year: the first part of the programme with a study load of 60 credits, as denoted in Article 7.8 of the Act;

f. quarter: half of a semester, an education period of 10, or, in the fourth period, 11 weeks of education;

g. course: a teaching unit within the programme as intended in Article 7.3, section 2 and 3 of the Act, with which an examination is associated.

h. practical exercise: course or component of a course aimed at the acquisition of particular skills. The following can be understood as practical exercises:
• writing a thesis or paper;
• conducting a project or experimental design;
• completing a design or research assignment;
• completing a project
• conducting a literature review;
• completing an internship;
• participating in fieldwork or an excursion;
• conducting tests and experiments;
• participating in other educational activities aimed at enabling participants to attain certain skills;

i. examination: investigation of the student's knowledge, insight and skills with regard to a subject, along with the assessment of that investigation by at least one examiner, appointed for that purpose by the Board of Examiners;

j. component examination: an assessment of the knowledge, insight and skills of a student in relation to a component within a course, as well as the marking of that assessment by at least one examiner, appointed for that purpose by the Board of Examiners;

k. degree audit: an assessment by which the Board of Examiners, in accordance with Article 7.10 of the Act, establishes whether all examinations in the various courses that constitute the Bachelor programme have been successfully completed;

l. Board of Examiners: the programme's Board of Examiners, which has been installed in accordance with Article 7.12 of the Act;

m. examiner: the individual who, in line with Article 7.12, section 3 of the Act, has been appointed to set the examinations;

n. Implementation Regulations: the Implementation Regulations which form part of these Teaching and Examination Regulations;

o. credit/EC: a credit awarded in line with the European Credit Transfer System (ECTS); one credit denotes a study load of 28 hours;

p. working day: Monday to Friday with the exception of recognised national public holidays and the collective closure days;

q. study guide: the digital guide to the programme containing specific information pertaining to the various subjects (www.studiegids.nl);

r. institute: Delft University of Technology;

s. electronic learning environment: an electronic system designed for the exchange of teaching information e.g. Brightspace;

t. student registry system: an electronic system designed for the registration of study progress (Osiris);

u. disability: all conditions which are (at least for the specified period) chronic or lasting in nature and which form a structural limitation for the student in receiving education and/or sitting examinations or taking part in practical exercises;

v. recommendation continuation of studies first year of enrolment: the recommendation on the continuation of studies, as specified in article 7.8b, section 1 of the Act, that every student is issued no later than at the end of the first year of enrolment;

w. negative binding recommendation on continuation of studies: the rejection linked to the recommendation on the continuation of studies at the end of the first year of enrolment as specified in Article 7.8b section 3, first sentence of the Act;

x. academic year: the period from 1 September till 31 August of the following calendar year;

y. bridging programme: a deficiency programme aimed at moving up to a Master's degree programme, while enrolled in a Bachelor's degree programme, but without obtaining a Bachelor's degree (as stipulated in Article 7.30e or 7.57i of the Act);

z. programme duration: the duration starting from the enrolment of the student till the last examination.

2. The other concepts in these regulations are used in the sense in which they appear in the Act.

3. Where these Regulations refer to examinations, they also refer to component examinations, with the exception of the first two sentences of Article 19, sub 2.

4. A written or oral examination can also be administered digitally and/or online. Where these Regulations refer to examinations, this also refers to digital and/or online examinations.

Paragraph 2 – Admission and prior education

Article 3 – Admission Bachelor degree programme Computer Science & Engineering (art. 7.25 and 7.28 WHW)
BoS advisory powers; SC advisory powers 2018-2019 (amendment RIB)

1. Access to education in the Bachelor's degree programme in Computer Science & Engineering is open to individuals possessing a certificate as stipulated in the law and corresponding ministerial regulations with the proper profile or subject, or on the condition that all of the stated requirements have been met.

In addition, the programme is accessible only to individuals possessing a notice of admission, as stipulated in the TU Delft Selection and Placement Regulations, after having completed the matching and selection procedure, as described in the Regulation Matching & Selection Criteria and Procedure BSc CSE 2019-2020.

The prior education requirements are elaborated below, by type of certificate.

a) Certificate of pre-university education (VWO; as stipulated in Art. 7.24.1 a or b of the WHW) or a Surinam diploma for pre-university education (VWO)

  profile S&E (N&T) [direct admission]
  profile S&H (N&G) [with Mathematics B]
  profile E&S (E&M) [with Mathematics B]
  profile C&S (C&M) [with Mathematics B]

The following applies as well:

  1. individuals possessing a pre-university (VWO) certificate with the S&H (N&G) profile from before 2007 are eligible for direct admission;

  2. individuals possessing an 'old style' pre-university (VWO) certificate with Mathematics B in the combination of modules are eligible for direct admission;

  3. individuals with certificates that do not include the aforementioned modules must rectify these deficiencies before they can be registered and admitted (no later than 31 August).

b) Bachelor's, Master's or Doctoral degree, or a certificate of first-year degree audit for higher professional education obtained at a Dutch institution

The following applies to this category:

  1. individuals possessing a pre-university (VWO) certificate, as mentioned in section a, are subject to the conditions of the table in section a;

  2. individuals possessing certificates from senior general secondary education (HAVO) or senior secondary vocational education (MBO) must rectify the deficiencies relative to the pre-university (VWO) level [Mathematics-B] before they can register and be admitted (no later than 31 August).

c) Foreign degree

Individuals holding a foreign degree (regardless of whether they were earned abroad) or diplomas based on a European or International Baccalaureate programme must rectify the deficiencies relative to the pre-university (VWO) level [Mathematics-B] before they can register and be admitted (no later than 31 August). This equivalence is determined by the Executive Board.

Individuals in this category must also meet the requirements of satisfactory linguistic mastery of English, as stated in the Implementation Regulations article 12. They must rectify any language mastery deficiencies before they can register and be admitted (no later than August 31).

2. In all non-standard cases, the admissions committee of the Bachelor's degree programme will assess whether their qualifications reflect an adequate level of Mathematics and linguistic mastery.

3a.   For the 2020-2021 academic year, in addition to Section 1 of this article, students referred to in Subsection a of this Section may be admitted conditionally provided that they make it plausible that, before 1 January 2021, they:
- haver successfully completed the NT2-II language exam, or
- have passed the state examination in Dutch as a second language or have otherwise demonstrated that they meet the required language level, and
- have eliminated any other deficiencies by taking one or more state exams.

If, on 1 January 2021, they do not meet the conditions for admission referred to in Subsection 1a of this article, they will be unenrolled from the degree programme.

3b.   For the 2020-2021 academic year, in addition to Section 1 of this article, students referred to in Subsection b of this Section may be admitted conditionally provided that they:
-    By 1 August 2020 at the latest, TU Delft has received a completion recommendation from their HBO (University of Applied Sciences) showing that it is likely they will successfully complete the relevant first year before 1 January 2021, and
-    on the basis of which the degree programme has made a positive assessment.

If, on 1 January 2021, students have not met the admission requirements referred to in section 1b of this article, they will be unenrolled from the degree programme.

Article 4 – University entrance examination (art. 7.29 section 2 WHW)
BoS advisory powers

1.   The process of conducting the admissions examination, as specified in Article 7.29 Sections 2 and 3 of the WHW, is assigned to the TU Delft University Entrance Examination Committee established for the joint programmes.

2.   Individuals who have reached the age of 21 years and who would like to be eligible for a university entrance examination must possess the following:

a) a partial pre-university education (VWO) certificate for the subject Mathematics B and physics, or a certificate from a continuing education course or a test administered by the institution, and

b) satisfactory communication skills in Dutch. This is also a requirement for degree programmes taught in English.

3.   The TU Delft University Entrance Examination Committee assesses whether the candidate possesses the certifications (or partial certifications) mentioned in Section 2. If this is the case, the committee will conduct an interview with the candidate, in which they examine the candidate further and determine whether the candidate has satisfactory communication skills in Dutch.

4.   Meet the requirements regarding linguistic mastery as stated in the Implementation Regulations article 12.

Paragraph 3 – Content and composition of the programme

Artikel 5 – Goal and final attainment levels of the Bachelor degree programme Computer Science & Engineering (art. 7.13 section 2 subsection c WHW)
BoS right of approval

1. The programme aims to:

- educate students so that they can obtain a Bachelor of Science degree in Computer Science & Engineering, for which the final attainment levels described in paragraph 2 of this Article must be achieved,

- enable students to gain admission to one of the Master's programmes following on directly from the Bachelor's programme, including the Master's programmes in Computer Science, Computer Engineering and Embedded Systems.

2. The graduate

  1. is familiar with existing scientific knowledge in the field of computer science and has the competence to increase and develop this through study:
     - has knowledge of the core concepts and basic methods of the field of computer science such as programming, software engineering, logic, fundamental computer science, databases, web technology, computer systems and networks, information systems and artificial intelligence;
     - has the necessary mathematical knowledge, such as a knowledge of calculus, linear algebra, probability theory and statistics;
     - is aware of the role of computer science in its application fields;
     - can apply the above-mentioned knowledge to problems of limited complexity in the field of computer science and its application fields.

  2. is competent in carrying out research in the field of computer science under supervision:
     - has been introduced to research and in particular to modelling in the field of computer science, i.e.
       - can analyse problems in order to produce a research plan;
       - can use scientific literature to find solutions to studied problems;
       - can adapt and implement these solutions.

  3. has a systematic approach in designing software and software systems:
     - can formulate the requirements to be fulfilled by software and software systems;
     - can take and substantiate design decisions, taking into account technical, ethical preconditions and socio-economic consequences;
     - can effectively model the aspects involved;
     - can choose and apply a suitable software engineering method in order to implement and test that system.

  4. has a scientific attitude and approach to computer science:
     - is inquisitive and has an attitude of lifelong learning;
     - has a systematic approach, e.g. in hypothesis driven problem solving or engineering software;
     - has the knowledge and the skills to use, justify and assess concepts and theories in computer science as to their value for research and can adapt these for his or her own use;
     - has insight into the scientific practice in computer science (research system, relation with clients, publication system, importance of integrity, etc.);
     - knows the methods and techniques used in the scientific practice of computer science and can apply them under supervision;
     - is aware of the limitations of science.

  5. has the basic skills to critically reflect on the field of computer science:
     - can adopt a critical approach towards and deliberate on his or her own arguments as well as those of others in order to subsequently arrive at a well-founded position;
     - can recognise and use reasoning methods, ask the right questions, and make and understand qualitative and quantitative statements in the field of computer science.

6. is competent in co-operating and communicating:
   - can work in a professional manner within an international team to solve complex software design problems with fellow computer scientists or others;
   - can present the results of the work both orally and in writing to fellow computer scientists or others.

7. takes account of the ethical, temporal and social context:
   - can analyse and discuss the socio-economic, ethical and legal consequences that ill-considered, incorrect or poorly designed systems can have;
   - can account for a developed computer science artefact (software, algorithm, database, system, etc.) with respect to the responsible use of data and algorithms and the software development process followed.

Article 6 – Track (art. 7.13 section 2 subsection b WHW)

BoS right of approval

Not applicable for BSc degree programme.

Article 7A – Composition of the degree programme and the degree audit

Art. 7.13 section 2 subsection a, e en g WHW; BoS advisory powers a; right of approval e en g

Art. 7.13 section 2 subsection x WHW; FSC right of approval, BoS advisory powers

1. The composition of the degree programme and the relevant transitional regulations are laid down in the Implementation Regulations in the annex.

2. The programme includes the Bachelor's degree audit with a study load of 180 credits. This includes the first academic year with a study load of 60 credits, which is concluded with a binding recommendation on the continuation of studies. The second and third academic years have a combined study load of 120 credits. This phase includes a minor with a study load of 30 credits.

3. The Bachelor's degree audit is concluded with a final test or assignment. This test or assignment demonstrates that the student possesses and is able to apply the knowledge, insight and skills acquired in the degree programme.

4. The actual design of the education is elaborated in greater detail in the digital study guide.

Artikel 7B – Minors

The composition of the EEMCS minors are laid down in the Implementation Regulations in the annex.

Article 7C – Flexible exam programme

1. Students can draw up a flexible exam programme that will lead to an examination. Beforehand, students need to consult with an academic counsellor regarding this programme. The flexible exam programme needs an approval in advance by the Board of Examiners. The programme needs to consist completely or mainly of courses that are part of the curriculum of the degree programme, but can be supplemented by courses that are administered by other degree programmes.

2. A motivated request for approval as mentioned in section 1 has to be submitted to the Board of Examiners by the student.

Article 8 – Form of the programme (art. 7.13 section 2 subsection i WHW)

FSC right of approval, BoS advisory powers

The programme is offered exclusively on a full-time basis.

Article 9 - Language (art. 7.2 WHW)

FSC right of approval, BoS advisory powers

Courses are taught in English and examinations and final examinations are administered in English.

Artikel 10 – Honours Programme

FSC right of approval, BoS advisory powers

1. Students who have successfully completed the first academic year in a single year and have met the criteria mentioned under section 2 will be invited to register for the Bachelor's Honours Programme (BHP) for outstanding Bachelor's students.

2. Students will be selected and admitted by the Director of Studies or an Honours Coordinator or Honours Committee established by the Director of Studies, when they have completed the courses of the first academic year nominally and with an average grade of 8.0 or higher. Students who have completed the first academic year nominally and with an average grade between 7.5 and 8.0, can submit a motivated request to be admitted.

3. The BHP will comprise at least 20 credits:
    a. At least 5 credits must be completed in the Delft University of Technology-wide component of the BHP, which consists of:
    - social awareness,
    - entrepreneurship, - leadership,
    - development of specific skills.
    b. At least 15 credits must be completed in the faculty component of the BHP, which consists of a research project with a research group inside or outside the EEMCS faculty.

4. Any student selected for participation in the BHP must submit his or her options for the faculty component to the director of studies or the BHP coordinator or the BHP committee for approval.

5. The Board of Examiners will be responsible for assessing whether all the requirements of the BHP have been met.

6. Any student who has successfully completed the BHP will be awarded a certificate signed by the chair of the Board of Examiners and the Rector Magnificus.

Article 11 – (Compulsory) participation in the programme (Art. 7.13 Section 2, Subsection t WHW)

FSC right of approval, BoS advisory powers

1. All students are expected to participate actively in the course for which they are registered.

2. If necessary, there will be an obligation to participate in practical exercises, with a view to admission to the related examination, without prejudice to the authority of the Board of Examiners to grant an exemption from this obligation, with or without imposing a substitute requirement.

3. Any supplementary obligations are described by component in the course description.

Article 12 - Evaluation of the study programme (Art. 7.13 Section 2, Subsection a1 WHW)

BoS right of approval

1. The Director of Studies ensures the implementation of the evaluation of the education.

2. The manner in which the education in the programme is evaluated is documented in the faculty's Quality Assurance Manual, which is submitted to the Faculty Student Council and the Board of Studies.

3. The Director of Studies informs the Board of Studies concerning the outcomes of the evaluation, the intended adjustments based on these outcomes and the effects of the actual adjustments.

Paragraph 4 – Registering and withdrawing

Article 13 – Registration for written examinations
FSC right of approval; BoS advisory powers

1. Registration to take part in a written examination is compulsory and is done by entering the required data into Osiris no later than 14 calendar days (not *working* days) before the examination. Students receive examination tickets by email as confirmation of their registration. Contrary to the first sentence, for a written examination administered online remotely from the university, a registration period of no later than three calendar days before the examination date applies.

2. Students who have not registered within the term specified in Section 1 may request registration for that examination after this term until no later than 3 calendar days before the examination in question, by entering the requested data in Osiris. The request will be honoured providing that places are available in the room or rooms where the examination is scheduled to take place. Students receive examination tickets by email as confirmation of their registration.

3. In the case of circumstances beyond a student's control, whereby the student is unable to register for the examination, the Board of Examiners can still permit the student to participate in the examination.

4. A student who has not registered for the examination and is therefore not included on the list of participants, may report to the invigilator on the day of the examination from 15 minutes before until the start of the examination. In so far that there are seats available, they will be admitted to the examination room 30 minutes after the start of the examination in the order they reported to the invigilator. The lack of 30 minutes examination time cannot be compensated. Students who have thus gained access to the exam will be added to the list of participants. The student takes the exam subject to the reservation that it will be investigated whether he/she is entitled to participate in the examination.

5. In case the investigation leads to the conclusion that the student was not entitled to participate in the examination, the examination work is invalid, will not be evaluated and does not lead to a result.

6. The student can submit a substantiated request to the Board of Examiners to have examination work that is considered to be invalid to be declared valid and to have it evaluated.

7. The Board of Examiners will only agree to the request in exceptional circumstances.7

8. Sections 2 and 4 of this article do not apply to a written examination administered online remotely from the university.

9. As a result of COVID-19, subs 1 and 2 will be replaced by the following clause: the registration for participation in a written examination must be submitted no later than 6 calendar days (not working days) before the examination. The student will receive an examination ticket as confirmation by e-mail. This clause only applies to the academic year 2020-2021 (Decision of the Executive Board, dated August 25, 2020).

Article 14 – Registration for other examinations and practical exercises
FSC right of approval; BoS advisory powers

1. Registration for participation in an examination other than a written examination or registration for a practical exercise will take place in the manner and by the deadline indicated in the digital study guide for the examination or practical exercise in question.

If, due to unforeseen circumstances or measures, as a result of COVID-19, the form or manner of taking the examination changes, what is stated in the study guide will apply in full, unless the Dean decides to deviate from the manner or term for registration prescribed in the study guide.

2. In special cases the Board of Examiners may deviate from the period of registration referred to in section 1, however only in favour of the student.

3. Students who have not registered on time will not be allowed to participate in the examination or practical exercise. In exceptional circumstances the Board of Examiners may allow the student to participate in the examination or practical exercise.

4. If a student participates in an examination or practical for which the student was not properly registered, the Board of Examiners can declare the results of the examination or practical exercise to be invalid.

Article 15 – Withdrawal written examination
FSC right of approval; BoS advisory powers

1. It will be possible to withdraw from an examination via the student registry system up to 3 working days before the examination takes place.
2. Any student who has withdrawn from an examination should re-register on a subsequent occasion, in accordance with the provisions of Article 13.

Paragraph 5 – Examinations

Article 16 – The form of examination and method of assessment in general (Art. 7.13 Section 2, Subsections h and I WHW)
FSC right of approval, BoS advisory powers

1. The examinations are set as described in the annex (Implementation Regulations) and in the digital study guide. Unforeseen circumstances or measures, as a result of COVID-19, may require deviation from the prescribed form. If an examination is administered using online proctoring, this must take place in accordance with the TU Delft Online Proctored Examination Regulation.

2. The annex (Implementation Regulations) and/or the digital study guide contains a description of the moments at which and the numbers of times that examinations can be taken, along with their frequency, without prejudice to the provisions of these regulations concerning written and oral examinations.

3. A student may participate in an examination for a subject no more than twice in one academic year.

4. In special cases, the Board of Examiners will deviate from the provisions of this Article in favour of the student.

Article 17A – Times and number of written examinations (Art. 7.13 Section 2, Subsection j WHW)
FSC right of approval, BoS advisory powers

1. Two opportunities to take written examinations will be offered each academic year:
    -   the first opportunity is immediately after the teaching period for the course to which the examination in question relates,
    -   the second opportunity is at a later moment during the current academic year.

2. The examinations as mentioned in section 1 will be administered as described for the respective examination in the Implementation Regulations and in the digital study guide for the respective

programme for the current academic year. A timetable of all the opportunities to sit written examinations is drawn up on an annual basis and distributed before the start of each semester.

3. If absolutely necessary, changes can be made to this examinations' timetable but only with the approval of the Board of Examiners and if the changes are communicated to students through the official means of communication (the electronic learning environment) at least 4 weeks in advance. In case of force majeure, deviation from this period is allowed, only by decision of the Board of Examiners.

4. If an examination is part of a course not offered by the faculty of EEMCS the relevant stipulations in the Teaching and Examination Regulations of the relevant programme will apply.

5. Notwithstanding the provisions of section 1, there will be at least one chance in a year to sit examinations relating to courses not taught in a given academic year.

6. In exceptional cases, the Board of Examiners may permit more than two opportunities in a year for certain examinations.

Article 17B – Sequence of examinations

In the Implementation Regulations (annex) the sequence in which students are required to sit examinations is laid down for the programme. Any entry requirements for taking part in an examination or practical exercise are mentioned here as well.

Article 18 – Oral examinations (Art. 7.13 Section 2, Subsection n WHW)

FSC right of approval, BoS advisory powers

1. Only one student at a time will sit an oral examination, unless the examiner in question specifies otherwise.

2. Preferably, an oral exam will take place with two examiners and anyhow when it is requested by the student. A request to this end has to be submitted to the lecturer at least 7 days before the exam. In the event of unforeseen circumstances or measures, as a result of COVID-19, the oral examination can be administered by a single examiner, in which case the oral exam is recorded on sound and/or image.

3. Oral examinations are announced publicly, unless determined otherwise by the Board of Examiners in a special case or unless the student has formally objected to the public nature of the examination.

4. The student must be able to provide proof of identity prior to an oral examination.

Article 19 – Determining and announcing the results (Art. 7.13 Section 2, Subsection o WHW)

FSC right of approval, BoS advisory powers

1. The examiner determines the result of the oral examination and publishes the result. This is done no later than 15 working days after the oral examination was held, and no later than 5 working days after the last examination in a group taking the same examination.

2. The examiner determines the result of a written examination as quickly as possible but by no later than 15 working days after the examination. The results of written component examinations shall be announced no later than five working days before the next written component examination.

3. The examiner ensures that the results are registered and communicated in Osiris (if applicable) within the time frame mentioned under section 2, taking due account of the student's right to privacy. Notwithstanding the former, results of written examination during the resit period in August need to be registered and communicated in Osiris no later than the last working day of the week following the examination week.

4. In case of a practical exercise, the examiner is required to determine the result as soon as possible after the last due date on which (the last part of) the practical exercise was to be handed

in, but within 15 working days at most. The examiner ensures that the results are registered and communicated in Osiris (if applicable) within this time frame, taking due account of the student's right to privacy.

5. If the examiner is not able to meet the previously mentioned requirements due to exceptional circumstances, he or she must inform the Board of Examiners, stating the reasons for the delay and informs the students as soon as possible.

6. Regarding any examinations that are not taken orally, in writing or as a practical exercise, the Board of Examiners shall determine beforehand precisely how and within which period of time the student will be notified of the results.

7. When receiving the result of an examination, the student will be made aware of his or her right to inspect the results as referred to in Article 20, as well as the opportunity to lodge an appeal with the Examination Appeals Board.

Article 20 – The right to inspect the results (Art. 7.13 Section 2, Subsection p WHW)

FSC right of approval, BoS advisory powers

1. For a period of at least 20 working days after notification of the results of any written examination, the student has the right to inspect his or her marked work. On request students will be supplied with a copy of the marked work.

2. During the period referred to in section 1, all students who have sat the examination may acquaint themselves with the questions and assignments set in the examination, as well as with the criteria used for marking.

3. The Examiner may determine that the right to inspection or perusal referred to in sections 1 and 2 will take place at a location specified beforehand and at a time also specified beforehand.

4. If the student can prove that he/she is or was unable to be present at the location at the set time due to circumstances beyond his or her control, then another opportunity will be provided, if possible within the period stated in section 1. The location and times mentioned in the first sentence will be announced well in advance.

Article 21 – Discussing the examination results (Art. 7.13 Section 2, Subsection q WHW)

FSC right of approval, BoS advisory powers

1. For a period of 20 working days after the results have been announced, students who have taken a written examination may submit a request to discuss the results with the relevant examiner. This discussion will take place within a reasonable time span and at a place and time determined by the examiner.

2. As soon as possible after the results of an oral examination have been announced, an opportunity is arranged to discuss the results, either at the student's request or at the instigation of the examiner. At this meeting, the reasons behind the marks awarded will be explained.

3. In cases where a collective discussion is organised by or on the instructions of the examiner, a student may only submit a request, as described in the preceding section, if he/she was present at the collective discussion and if he/she provides a good reason for the request or if, due to circumstances beyond his/her control, he/she was unable to attend the collective discussion.

4. The Board of Examiners may permit departures from the provisions of sections 2 and 3.

Article 22A – Validity of examinations (Art. 7.13 Section 2, Subsection k, Art. 7.10, Section 4 WHW)

FSC right of approval, BoS advisory powers

1. The result of a final grade[1] is valid for an unlimited period.

   The Dean can restrict the period of validity of a successfully completed examination only if the knowledge or insight that was examined has become outdated or if the skills that were examined have become outdated.

2. In cases involving a limited period of validity based on the first section, the period of validity shall be extended at least by the duration of the acknowledged delay in studies, based on the TU Delft Profiling Fund Scheme.

3. In individual cases involving special circumstances, the Board of Examiners can extend periods of validity that have been limited based on the first section or further extend periods of validity that have been extended based on the second section.

4. If a subject consists of component examinations, the period of validity of the component examination for which no credits are assigned shall be restricted to that academic year.

Article 22B – Invalidation examination or part thereof (Art. 7.12 and 7.12b WHW)

FSC right of approval, BoS advisory powers

The Board of Examiners is entitled to invalidate an examination or part thereof, if it has not been reasonably possible to properly assess the knowledge, insight and/or skill of the student on the examination or part thereof.

Paragraph 6 – Exemptions

Article 23 – Exemption from examinations or obligation to participate in a practical exercise (Art. 7.13 Section 2, Subsection r WHW)

FSC right of approval, BoS advisory powers

1. After having been advised by the relevant examiner, the Board of Examiners may decide to exempt students from an examination on the grounds of:

   a. an examination, final examination completed within the Dutch higher education system or elsewhere which, as regards content and study load, corresponds with the examination for which exemption is sought, or

   b. proof of knowledge and/or skills acquired outside the higher education system.

2. After having obtained recommendations from the relevant examiner, the Board of Examiners may grant exemption from the requirement to participate in a practical exercise with a view to admission to the related examination, possibly subject to alternative requirements.

Paragraph 7 – Degree audit

Article 24 – Periods and frequency of degree audits (art, 7.13 section 2 subsection j WHW)

FSC right of approval, BoS advisory powers

In principle, the opportunity to take the Bachelor's degree audit will be offered once each month. The dates set by the Board of Examiners are published before the start of the academic year on the faculty website.

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[1] Meaning a result or several partial results which has or have been registered in the student registry system in such a way that credits are allocated for the course.

Paragraph 8 – Studying with a disability

Article 25 – Adjustments to the benefit of students with disabilities or chronic illnesses (Art. 7.13 Section 2, Subsection m WHW)

FSC right of approval, BoS advisory powers

1. Students with disabilities or chronic illnesses may be eligible for adjustments in teaching and examinations, on written request. These changes will be geared as much as possible to a student's individual needs, but they must not affect the quality or the degree of difficulty of a course or an examination programme. The facilities provided to this end may involve adapting the form or duration of examinations and/or practical exercises to the student's individual situation or making practical aids available.[2]
2. The application referred to in the preceding section has to be submitted by the student within five weeks after the start of studies or within five weeks after the discovery of the disability.
3. The request referred to in section 1 should be accompanied by a recent medical certificate from a doctor or a psychologist. If there is evidence of dyslexia, the request should be accompanied by a document issued by a recognised dyslexia-testing bureau (i.e. registered with BIG, NIP, or NVO). If possible, this certificate should also estimate the extent to which the disability forms an obstacle to study progress.
4. Requests for the adaptation of teaching facilities will be decided upon by the dean or by the director of studies acting on the dean's behalf. The Board of Examiners will decide on requests for adaptations to examinations.

Paragraph 9 – Study support and (binding) recommendation

Article 26 - Study support and Monitoring of student progress (Art. 7.13 Section 2, Subsection u WHW)

FSC right of approval, BoS advisory powers

1. The Dean is responsible for providing individual study supervision to students registered for the degree programme, partly for their orientation towards potential study options within and outside the degree programme. He will also ensure that effective support and supervision is provided to students in making choices related to their studies.
2. The examination and study programme applying to each student is documented in Osiris.
3. The Student Programme Administration is responsible for ensuring that all students are able to review and check their results in the Osiris student-information system.
4. The dean offers several study support moments in the first academic year. These can include:
    a. Meetings in the context of the education, mainly lectures, seminars and practical exercises;
    b. The meetings of the mentorship that are part of the first academic year of the programme;
    c. The quarterly meetings of the programme;
    The dean expects students to take part in these study support moments.
5. Apart from the study support moments mentioned in the previous section, the dean offers students the possibility to consult academic counsellors. These counsellors can provide advice to students regarding personal problems, study skills and study planning, and, if needed, can refer to the Career & Counselling Services of the TU Delft.

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[2] More information and examples of adjustments to examinations can be found here:
https://www.tudelft.nl/studenten/begeleiding/career-counselling-services/studentendecanen/studeren-met-een-functiebeperking/

Article 27 – (negative) binding recommendation on the continuation of studies[3] (art. 7.13 lid 2 sub f, 7.8b WHW)

BoS advisory powers

1. No later than the end of the first year of enrolment for the degree programme, all students who have not terminated their enrolment before 1 February of that academic year will be issued a recommendation by the Dean concerning the continuation of their studies within or outside the degree programme. The Dean will issue every student enrolled for the first time in the first study year of the degree programme with the following:

    - a preliminary recommendation (which also serves as a warning) in March;

    - a proposed binding recommendation on the continuation of studies in early August[4] or a definitive positive recommendation on the continuation of studies;

    - a definitive (positive or negative) binding recommendation on the continuation of studies no later than 31 August.

2. Any student who has secured fewer than 45 credits by the end of the first year of study (date of final results: 31 August) will be issued with a negative binding recommendation on the continuation of studies. This student's enrolment will be terminated with effect from the first of the month following the date of the decision in which the recommendation was included, but no earlier than 1 September of the year following the first year of study.

3. Students who have been granted exemptions for more than 15 credits in their first academic year that do not apply to the standard of 45 credits, based on Section 7 of this Article, shall not be required to earn 45 credits in the first year, although they are required to have completed the entire first academic year.

4. For programmes offered jointly with another institution, the required standard will be determined in consultation with the institution in question.

5. Termination of enrolment, as stipulated in the second section, leads to exclusion from the programme for four academic years after the academic year for which the recommendation was issued.

6. The 45 credits originate from the programme for the first year of study in the degree programme in which the student is enrolled.

7. If the student has been awarded exemptions, they may be counted towards the required standard of 45 credits if the activity on the basis of which the exemption was awarded took place in the same academic year as the year for which the binding recommendation on the continuation of studies was issued. The exemptions may not be counted if the activity, on the basis of which the exemption was awarded, took place prior to the academic year for which the binding recommendation on the continuation of studies was issued.

8. If the Dean judges that a student was unable to achieve the required standard of 45 credits as a result of personal circumstances, the Dean will permit said student either to achieve the standard of 45 credits from the programme for the first year of study in the degree programme in which the student is enrolled in the following academic year, with credits secured in the first year of study not counting towards this, or to complete the first year of study in its entirety.

9. If the Dean judges that enrolment after 1 October has had such an influence that a student was unable to achieve the required standard of 45 credits, the Dean will permit said student either to achieve the standard of 45 credits from the programme for the first year of study in the degree programme in which the student is enrolled in the following academic year, with credits secured in the first year of study not counting towards this, or to complete the first year of study in its entirety.

10. Students who obtained fewer than 45 credits in their first year of the degree programme in the 2019-2020 academic year and for whom the binding recommendation on the continuation of studies has been automatically postponed as a result of the amended regulation for the binding

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[3] For more information visit https://www.tudelft.nl/en/student/legal-position/binding-recommendation-on-continuation-of-studies/ .

[4] If the Dean is able to announce the results of the re-examinations to students earlier than 31 August of the first academic year, he may issue a binding study advice earlier. In that case, the study advice may lapse at the beginning of August.

recommendation on the continuation of studies for the 2019-2020 academic year in the context of COVID-19, must have obtained all remaining credits from the first year of the degree programme in a subsequent academic year. Students who have not obtained all remaining credits by the end of a subsequent academic year will receive a final negative binding recommendation on the continuation of studies.

Paragraph 10 – Final provisions

Article 28 – Contravening the regulations
If the digital study guide and/or any other regulations relating to the exam programme and/or the examination programme prove to contravene these Teaching and Examination Regulations and the accompanying Implementation Regulations, precedence will be given to the provisions of these Teaching and Examination Regulations in combination with the Implementation Regulations.

Article 29 – Changes to the regulations
1. Any changes made to these regulations will be made by special resolution of the dean.
2. No changes made will affect the current academic year unless it is reasonable to suppose that the interests of students will not be adversely affected.
3. No change made to these regulations may negatively affect any previous decisions concerning a student that are made by the Board of Examiners on the basis of these regulations.
4. As a result of unforeseen circumstances or measures, as a result of COVID-19, the Dean may decide to deviate from these regulations, including the actual design of the education and any compulsory attendance requirements. This also means that it is possible to deviate from the provisions of the study guide.

Article 30 – Transitional regulations
1. If the composition of the degree programme undergoes substantive changes or if the Teaching and Examination Regulations are adapted, transitional measures will be established and published through the Dean, that will be part of the Implementation Regulations (annex).
2. These transitional measures shall include at least the following:

   a. an arrangement regarding exemptions that may be obtained based on examinations that have already been passed;

   b. the period during which the transitional arrangement shall be valid.
3. Students shall follow the degree programme as it applied or applies during the first academic year of their enrolment, unless components of the programme are no longer offered. In such cases, students must transfer according to the applicable transitional measures. Deviations require the approval of the Board of Examiners. Before submitting a request to this end, the student must have first obtained recommendations from an academic counsellor.
4. If a subject within a degree programme is cancelled, four additional opportunities for taking the examination in this subject shall be offered after it has been taught for the last time: the examination at the end of the teaching of the subject, a resit in the same academic year and two resits in the following academic year.
5. Education components with the same code in different programmes are interchangeable.

Article 31 – Publication of the regulations
1. The dean is responsible for finding a suitable way of publicising these regulations and the relevant Implementation Regulations, as well as any changes to the regulations.
2. The Teaching and Examination Regulations, together with the accompanying Implementation Regulations, will always be published on the programme's website.

Article 32 – Entry into force

These Regulations and the Implementation Regulations will come into effect on September 1, 2020.

Issued by the Dean of the Faculty EEMCS on August 26, 2020, after the approval and recommendations of the Faculty Student Council and the Board of Studies for Applied Mathematics, Computer Science, Electrical Engineering, Embedded Systems, Computer Engineering, Sustainable Energy Technology and the Board of Examiners of EEMCS.

Prof.dr. J.E.J. Schmitz

Annex: Implementation Regulations

Paragraph 1 – Composition of the degree programme and requirements degree audit

Article 1 - Programme structure

Art. 7.13 section 2 subsection a, e en g WHW; BoS advisory powers a; right of approval e en g

Art. 7.13 section 2 subsection x WHW; FSC right of approval, BoS advisory powers

1. The Bachelor's programme in Computer Science & Engineering comprises a study load of 180 EC and is organised based on the major/minor structure.

2. Within the programme, the major comprises a study load of 150 EC and the minor comprises a study load of 30 EC.

3. The minor is a cohesive combination of courses or other study components offered with the aim of broadening or deepening the student's knowledge or for enabling the student to connect to a Master's programme that does not follow on directly from the relevant Bachelor's programme but which can be followed in the fifth semester of the Bachelor's programme (see Articles 7 to 11).

4. For students who wish to combine two EEMCS Bachelor's programmes, a personal study programme can be set up. This programme indicates the courses that form the first academic year. The Binding Study Advice (BSA) standard for the programme is also determined. The request for such a programme must be submitted before 1 June, prior to the start of the first academic year in which this programme will be followed. Approval of the request is subject to additional requirements. Before the start of the programme, it must be submitted for approval to the Board of Examiners of both Bachelor's programmes.

Article 2 - Degree audit requirements

From the Rules and Guidelines of the Board of Examiners (Article 7.12 of the WHW), Delft University of Technology, Faculty of Electrical Engineering, Mathematics and Computer Science:

1. The student is considered to have passed the Bachelor's degree audit if the following requirements are met:

    a. A result has been obtained in all courses: a mark, a pass (V) or an exemption (VR);

    b. None of the marks are lower than a 'satisfactory' mark (6.0).

2. The method of assessment is sufficiently transparent, so that the student can ascertain how the result was reached.

3. In special cases, the Board of Examiners may deviate from the provisions of paragraph 1. It will stipulate additional requirements, if necessary.

Article 3 – Completion of bridging programme prior to the degree programme

1. A student who is enrolled in a Bachelor's degree programme for a bridging programme with the aim of being admitted to the Master's degree programme at TU Delft, must complete this bridging programme within two academic years,

2. After the above mentioned period of enrolment the enrolment of the student is terminated. Under exceptional personal circumstances the student can submit a well-founded request for an extension of the course duration for a period of at most one year.

3. The Executive Board will set the fee to be charged, as denoted in Article 7.57i of the Act, for the enrolment as student in a bridging programme and for the extension thereof, as denoted in section 2 of this article.

Paragraph 2 – The major part of the programme Computer Science & Engineering

Article 4 – Composition for programme 2018 (for programme 2014, see TER 2017-2018 (and before))

1. The 2018 programme includes the course components listed in the table below. For each course, the study load (EC) is indicated as well as the language of instruction, the period in which the course is offered, the time frame and the form of assessment. Entry requirements are also indicated, if applicable. The courses offered in year 3 are subject to change. The education of year 3 is established again each year through the OER of the year in question.

Explanation abbreviations

Abbreviation	Assessment	Description
W*	Written exam	Written assessment in one or more parts
C	Computer exam	Computer assessment (on campus)
O*	Oral exam	Oral assessment
a	Assignments	Course work that is focused on the acquisition of certain skills.
p	Projects	Several forms of assessment can be applied: assignment, report, presentation, oral, mid-term review (of progress, product, method or work process), peer-assessment
g	Gamification	Multiple forms of assessments to collect points towards the final grade, including a/multiple written exam(s).

*A written or oral examination can also be administered digitally and/or online. Where these Regulations refer to examinations, this also refers to digital and/or online examinations.

Year 1	Course name	Type of course***	EC	Language	Period*	Examination*	Assessment*	Entrance requirement**
CSE1000	Mentorate	Standard	0	Engels	Q1 +Q2	Q2	attendance	
CSE1100	OOP	Standard	5	Engels	Q1	Q1/Q2	w, c	
CSE1300	Reasoning & Logic	Standard	5	Engels	Q1	Q1/Q2	w	
CSE1400	Computer Organisation	Standard	5	Engels	Q1	Q1/Q2	w, a	
CSE1200	Calculus	Standard	5	Engels	Q2	Q2/Q3	w	
CSE1305	Algorithms and Datastructures	Standard	5	Engels	Q2	Q2/Q3	w, c	
CSE1500	Web & Database Technology	Standard	5	Engels	Q2	Q2/Q3	w, a	
CSE1205	Linear Algebra	Standard	5	Engels	Q3	Q3/Q4	w, a	
CSE1105	OOP Project	Standard	5	Engels	Q3	Q3	p	
CSE1505	Information and Data Management	Standard	5	Engels	Q3	Q3/Q4	w, a	
CSE1210	Probability Theory and Statistics	Standard	5	Engels	Q4	Q4/Q5	w, a	
CSE1110	Software Quality and Testing	Standard	5	Engels	Q4	Q4/Q5	w, a	
CSE1405	Computer Networks	Standard	5	Engels	Q4	Q4/Q5	w, a	
Year 2	Course name	Type of course***	EC	Language	Period*	Examination*	Assessment*	Entrance requirement**
CSE2215	Computer Graphics	Standard	5	Engels	Q1	Q1/Q2	w, a	
CSE2510	Machine Learning	Standard	5	Engels	Q1	Q1/Q2	w	
CSE2220	Signal Processing	Variant M	5	Engels	Q1	Q1/Q2	w, a	
CSE2410	Digital Systems	Variant S	5	Engels	Q1	Q1/Q2	w, a	
CSE2515	Big Data Processing	Variant D	5	Engels	Q1	Q1/Q2	w, a	
CSE2310	Algorithm Design	Standard	5	Engels	Q2	Q2/Q3	w, c	
CSE2115	Software Engineering Methods	Standard	5	Engels	Q2	Q2/Q3	w, a	

CSE225	Image Processing	Variant M	5	Engels	Q2	Q2/Q3	w, a	
CSE2415	Embedded Software	Variant S	5	Engels	Q2	Q2/Q3	w, a	
CSE2520	Data Mining	Variant D	5	Engels	Q2	Q2/Q3	w, a	
CSE2120	Concept of Programming Languages	Standard	5	Engels	Q3	Q3/Q4	w, a	
CSE2315	Automata, Computability and Complexity	Standard	5	Engels	Q3	Q3/Q4	w, a	
CSE2230	Multimedia Analysis	Variant M	5	Engels	Q3	Q3/Q4	w, a	
CSE2420	Operating Systems	Variant S	5	Engels	Q3	Q3/Q4	w, a	
CSE2525	Computational Intelligence	Variant D	5	Engels	Q4	Q3/Q4	w, a	
CSE2000	Software Project	Standard	15	Engels	Q4	Q4	p	Yes**
Year 3	Course name	Type of course***	EC	Language	Period *	Examination *	Assessment *	Entrance requirement* *
CSE3230	Algebra & Cryptography	Elective	5	Engels	Q3	Q3/Q4	W	
CSE3130	Introduction to Quantum Computer Science	Elective	5	Engels	Q3	Q3/Q4	W	
CSE3500	Human Computer Interaction	Elective	5	Engels	Q3	Q3/Q4	W	
CSE3100	Functional Programming	Elective	5	Engels	Q3	Q3/Q4	W	
CSE3210	Collaborative Artificial Intelligence	Elective	5	Engels	Q3	Q3/Q4	W	
CSE3300	Algorithms for NP-hard problems	Elective	5	Engels	Q3	Q3/Q4	W	
CSE3000	Research project	Standard	15	Engels	Q4	Q4	P	Yes**
Minor	See Article 7 Implementation Regulations	Minor	30	English/Dutch	Q1/Q2		Varies per minor	Varies per minor

* The information provided with regard to the individual courses in this table applies for the academic year 2020-2021. In future years this information can change, as a result of both unforeseen and practical circumstances. If this will be the case, changes will be formulated in the TER (BSc) of the year when said changes will be implemented.

** For entrance requirements see article 5.

*** Type of course depicts if a course is a Standard part of the exam programme, a year 2 variant course where there is choice between Variant M (Multimedia), Variant S (Systems) and Variant D (Data), or a year 3 Elective course.

2. The courses mentioned in section 1 can consist of multiple components. The components needed to successfully complete the course will be published in the digital study guide before the start of the academic year in which the education is provided, including
   - The minimum result of the components,
   - The weighting of the components relative to each other,
   - The validity of the components[5],
   - And, if applicable, whether there is a compulsory attendance for components within a course.

   The final grade of each course consist of a mark (1-10), with the exception of CSE1000, which has a Pass/Fail grade.

Article 5 – Entry requirements

1. Students will only be permitted to participate in the courses of the bachelor's programme of CSE if they have a valid enrolment for this programme or have a valid enrolment for an EEMCS bridging programme in which the course is included.

2. In the Teaching and Examination Regulations (article 17B) it is stated that certain conditions/entry requirements can be asked, that need to be obtained with a view to admission to an examination and/or practical exercise (so-called sequence requirements). In this article this is implemented by formulating a number of these entry requirements (sequence requirements).

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[5] The general rule is described in the TER, article 22A: 'If a subject consists of component examinations, the period of validity of the component examination for which no credits are assigned shall be restricted to that academic year'.

3. Students that do not meet the stated entry requirements of a course and feel this results in unreasonable study delay, can request the educational director to allow them access to the course. The request needs to be accompanied by an advise of an academic counsellor.

4. Students[6] are only allowed to get access to the TI3806 Bachelorproject if they have successfully completed all courses of the first and second academic year of the Bachelor programme.

5. Students are only allowed to get access to CSE2000 Software Project if the following courses are successfully completed:
    - CSE1100 OOP
    - CSE1305 Algorithms & Datastructures
    - CSE1100 OOP Project
    - CSE1110 Software Quality and Testing
    - CSE2215 Software Engineering Methods

6. Students are only allowed to get access to CSE3000 Research project if the following courses are successfully completed:
    - CSE1100 OOP
    - CSE1300 Reasoning & Logic
    - CSE1400 Computer Organisation
    - CSE1200 Calculus
    - CSE1305 Algorithms & Datastructures
    - CSE1500 Web & Database Technology
    - CSE1205 Linear Algebra
    - CSE1105 OOP Project
    - CSE1505 Information and Data Management
    - CSE1210 Probability Theory and Statistics
    - CSE1110 Software Quality and Testing
    - CSE1405 Computer Networks
    - CSE2215 Computer Graphics
    - CSE2510 Machine Learning
    - CSE2310 Algorithm Design
    - CSE2215 Software Engineering Methods
    - CSE2000 Software Project

    And one of the combinations of the following courses:
    - CSE2220 Signal Processing + CSE2225 Image Processing
    - CSE2420 Digital Systems + CSE2425 Embedded Software
    - CSE2520 Big Data Processing + CSE2525 Data Mining

7. Students with an examination programme of cohort 2017 or older will be allowed to participate in the CSE3000 Research Project provided they have completed the first two years of their examination programme.

8. Unconditional access shall be granted to the other parts of the programme provided that sub 1 of this Article is complied with.

9. Students are informed via Brightspace about the deadlines, procedure and measuring moment for applying for courses with entry requirements.

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[6] This applies to students following the 2014 programme.

Article 6A - Transitional arrangement for 2014 programme to current programme 2018

1. The examinations for the third-year courses of the 2014 programme will be offered for the last time in academic year 2020-2021.

2. Students of the 2017 cohort or earlier retain the 2014 study programme, with due observance of the replacements as included in the replacement table.

3. Students from the 2017 cohort or earlier, who have not completed all the components of the 2014 programme and no longer have the opportunity to use the resit option, may replace the components not yet passed with the replacement course from the new programme as indicated in the replacement table.

4. If students wish to deviate from the replacements, they should consult the academic counsellor. In that case, they may submit a request to the Board of Examiners for a change in their individual study programme.

5. The transitional arrangement shall apply until academic year 2021-2022. After this academic year, all students with the 2014 study programme can be transferred to the 2018 programme.

6. The study load of the total programme after the transfer will comprise at least 180 EC.

Article 6B – Replacement table programme 2018 towards programme 2014

The table below indicates all course replacements regarding programme 2014 towards programme 2018.

Programma 2014			Programma 2018		
Course code	Course name / component	EC	Course code	Course name / component	EC
TI1106M	Calculus	5	CSE1200	Calculus	5
TI1206M	Lineaire Algebra	5	CSE1205	Linear Algebra	5
TI1406	Computerorganisatie	5	CSE1400	Computer Organisation	5
TI1306	Redeneren & Logica	5	CSE1300	Reasoning & Logic	5
TI1706	Softwarekwaliteit & Testen	5	CSE1110	Software Quality & Testing	5
TI1206	OOP	5	CSE1100	OOP	5
TI1506	Web- en Databasetechnologie	5	CSE1500	Web & Database Technology	5
TI1316	Algoritmen & Datastructuren	5	CSE1305	Algorithms & Data Structures	5
TI1206	OOP Project	5	CSE1105	OOP Project	5
TI1906	Logic based AI	5	CSE3230	Algebra and Cryptography	5
TI1606	Project Multi-Agent Systemen	5	CSE2510	Machine Learning	5
TI1806	Computer Graphics	5	CSE2215	Computer Graphics	5

	TI2606	Concepten van Programmeertalen	5	CSE2120	Concepts of Programming Languages	5
	TI2406	Computernetwerken	5	CSE1405	Computer Networks	5
	TI2306	Algoritmiek	5	CSE2310	Algorithm Design	5
	TI2506	Informatie- & Datamodellering	5	CSE1505	Information & Data Management	5
	TI2216M	Kansrekening & Statistiek	5	CSE1210	Probability Theory and Statistics	5
	TI2206	Software Engineering Methods	5	CSE2115	Software Engineering Methods	5
	TI2316	Automaten, Talen & Berekenbaarheid	5	CSE2315	Automata, Languages and Computability	5
A	TI2716-A	Signaalverwerking	5	CSE2220	Signal Processing	5
A	TI2716-B	Beeldverwerking	5	CSE2225	Image Processing	5
A	TI2716-C	Multimedia Analyse	5	CSE2230	Multimedia Analysis	5
B	TI2726-A	Digitale Systemen	5	CSE2420	Digital Systems	5
B	TI2726-B	Embedded Software	5	CSE2425	Embedded Software	5
B	TI2726-C	Operating Systems	5	CSE2430	Operating Systems	5
C	TI2736-A	Computational Intelligence	5	CSE2530	Computational Intelligence	5
C	TI2736-B	Big Data Processing	5	CSE2520	Big Data Processing	5
C	TI2736-C	Datamining	5	CSE2525	Data Mining	5
	TI2806	Contextproject	10	CSE2000	Software Project	15
		Minor	30		Minor	30
	TI3306	Complexiteitstheorie	5	CSE3230	Algebra and Cyptography*	5
	WM0388TI	IT & Values	5	CSE3500	Human Computer Interaction	5
	TI3706	Bachelorseminarium	5	CSE3130	Introduction to Quantum Computer Science	5
	TI3806	Bachelorproject	15	CSE3000	Research Project	15

*Students who are replacing TI1906 with Algebra and Cryptography need to request an individual replacement for TI3306 in their exam programme.

Paragraph 3 – Minors for EEMCS students (Article 7.13 section 2 subsection a WHW)

Article 7 - Minor

1. A minor is a cohesive combination of courses with a study load of at least 30 EC that must be in line with the academic level of the third year. The aim of a minor is to help students broaden and deepen their knowledge, gain industrial/practical experience in their own discipline or connect to a Master's programme other than that which follows on directly from the relevant Bachelor's programme.
2. A distinction is made between thematic minors and individual minors (bridging minors and free minors).
3. A minor may only be taken if there is no overlap with the major programme followed by the student. In the event of a possible overlap, Computer Science & Engineering students must request approval from the CSE minor coordinator before the student starts the minor.
4. For minors at other faculties or universities, the relevant regulations of that faculty or university shall apply. In case of deviating pass criteria, the student may submit a request to the Board of Examiners to be awarded a 'pass'.

NOTE. Whether or not a minor is offered depends on the number of enrolments. If fewer than 30 students are enrolled, it is possible that a minor will not be offered.

Article 8A - Thematic minors
BoS advisory powers

The Thematic minor is a fixed, coherent package of subjects from which it is not possible to deviate. Students of the EEMCS faculty may choose from the programme of minors offered by the Delft University of Technology as well as from that offered by Leiden University and Erasmus University Rotterdam. Minors from other Dutch or foreign universities must be submitted to the Board of Examiners for approval. For the list of thematic minors offered by EEMCS, please see Article 9.

Article 8B - Individual minors: bridging minors and free minors
BoS advisory powers

TU Delft distinguishes between two types of individual minors, i.e. bridging minors and free minors:

1. A bridging minor consists of a combination of courses that prepares students for a specific Master's programme. The combination of courses of the bridging minor must be approved by the Admissions Committee and/or the Director of Studies of the Master's programme for which this minor is a pre-requisite for admission. This must also be submitted for approval to the Board of Examiners of the Bachelor's programme being followed by the student. See Article 10A for more details regarding the CSE offer.

2. A free minor consists of a cohesive combination of courses that may be followed at the Delft University of Technology, another Dutch university or at a foreign university. The combination of courses of the free minor must be submitted for coherence and level verification to the Director of Studies of the Bachelor's programme being followed by the student and must be approved by the Board of Examiners of that programme. An internship/project in a company in the student's discipline may be included as part of a free minor. See Article 10B for more information.

Article 9 - Thematic minors

Computational Science and Engineering (TW-Mi-195)

Code	Name	EC
TW3730TU	Numerical Methods for Differential Equations	6
TW3710TU	Scientific Programming	3
TW3720TU	Object Oriented Scientific Programming with C++	3
TW3750TU	Numerical Methods for Stochastic Differential Equations	6
TW3740TU	Parallel Computing	4
TW3715TU	Final Minor Project-part A	2
TW3725TU	Final Minor Project-part B	6

Electronics for Robotics (EE-Mi-201)

Code	Name	EC
ET3033TU	Circuit Analysis	3
ET3604LR	Electronic Circuits	3
ET3604LRP	Electronic Circuits	0
EE3115TU-1	Digital Communication Systems	4
CSE2420*	Digital Systems*	5

* CSE2420 Digital Systems not for CSE students with variant Systems: these students should do the course CSE2220 Signal Processing instead.

Code	Name	EC
EE3120TU	Guided and Wireless EM Transfer	5
EE3125TU	Advanced Electronics for Robotics	5
EE3130TU	Marsrover project	5

Electrical Sustainable Energy Systems (ET-Mi-190)

For students of the Electrical Engineering programme

Code	Name	EC
Compulsary components (19 EC):		
ET3034TU	Solar Energy	3
EE3105TU	Sustainable Energy Technologies	3
EE3065TU	Reliability of Sustainable Power Systems	3
EE3060TU	Agent-based energy markets	3
EE3110TU	Energy Efficiency	3
AE3514	Introduction to Offshore Wind Energy	3
Compulsary projects (12 EC):		
ET3036TU	Project Design of sustainable energy supply	6
ET3037TU	Project Integrating Renewable Energy	6

For students from other programmes

Code	Name	EC
Compulsary components (12 EC):		
ET3365TU D1	Introduction to Electrical Power Engineering part 1	3
ET3365TU D2	Introduction to Electrical Power Engineering part 2	3
ET3034TU	Solar Energy	3
EE3105TU	Sustainable Energy Technologies	3

Electives (6 EC):

EE3110TU	Energy Efficiency	3
AE3514	Introduction to Offshore Wind Energy	3
EE3065TU	Reliability of Sustainable Power Systems	3
EE3060TU	Agent-based energy markets	3

Compulsary projects (12 EC):

ET3036TU	Project Design of sustainable energy supply	6
ET3037TU	Project Integrating Renewable Energy	6

Physics for Electronics (EE-Mi-218)

For students of the Electrical Engineering programme

Code	Name	EC
EE3345TU	Introduction to Physics of electronics	2
EE3360TU	Transmission lines	4
EE3370TU	Electronics for Imaging	4
EE3365TU	Basics of Microfabrication	4
EE3375TU	Basics of Solid-State Physics	4
EE3350TU	Introduction to Radio Astronomy	3
EE3380TU	Transduction effects	4
EE3385TU	Phase steering system (5G and AutoRadar)	5

For students from other programmes

Code	Name	EC
EE3345TU	Introduction to Physics of electronics	2
EE3355TU	Linear circuits	4
EE3360TU	Transmission lines	4
EE3370TU	Electronics for Imaging	4
EE3375TU	Basics of Solid-State Physics	4
EE3350TU	Introduction to Radio Astronomy	3
EE3380TU	Transduction effects	4
EE3385TU	Phase steering system (5G and AutoRadar)	5

Finance (TW-Mi-097)

Code	Name	EC
WI3405TU	Option Valuation Methods	6
WI3411TU	Time Series	4
WI3425TU	Monte Carlo Methods	3
WI3417TU	Introduction to Mathematical Finance	6
WI3418TU	Principles of Asset Trading	6
WI3430TU	Current Issues in Finance	2
WI3421TU	Risk Management	3
WI3420TU	Clinic[7]	0

Computer Science (TI-Mi-200)

Code	Name	EC
TI3100TU[8]	Minor Introduction	0
TI3105TU	Introduction to Python Programming	5
TI3115TU	Software Engineering Methods	5
TI3111TU	Algorithms and Data structures	5
TI3130TU	Data Analytics	5
TI3135TU	Visual Data Processing	5
EWI3615TU	Computer Science Project	5

Courseequivalencies

Code	Name	EC	Code	Name	EC
EWI3610TU	Computer Graphics	5	TI3135TU	Visual Data Processing	5
TI2736-A	Computational Intelligence	5	TI3135TU	Data Analytics	5
TI3125TU	Web and Database Technology	5	CSE1500	Web & Database Technology	5
TI2736-B	Big Data Processing	5	CSE2530 TI3130TU	Big Data Processing *or* Data Analytics	5

Article 10A – Individual minors: bridging minors

The programme Computer Science & Engineering does not offer a standard bridging minor. Students that are interested should contact the bridging coordinator of the faculty.

Article 10B – Individual minors: free minors

1. Individual free minors should meet the following conditions:

- The proposed courses should comprise at least 30 EC.
- The proposed courses should form a coherent whole and should not have overlap with the major programme.
- The proposed courses should be offered by a university.
- The minor, as a whole, should reach third year BSc level.
- Courses can only be part of a free minor if these have been taken during the time of registry for the current study programme.[9]

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[7] Contrary to what is stipulated in article 11 this course is not compulsory for completion of the minor.

[8] In tegenstelling tot het gestelde in artikel 16 hoeft dit vak niet behaald te worden.

[9] If minor subjects have been obtained within a programme other than the current programme, a request for exemption may be made using the procedure provided for this purpose

- No MSc level courses are allowed to be part of the free minor. An exception, to be decided by the Board of Examiners, can be made for minors composed of courses offered abroad, but only in case of an insufficient offer of English language BSc courses.
- A request for an free minor containing courses from an existing thematic minor may be denied by the Board of Examiners. Participation in thematic minors is only possible via the regular, central application procedure.
- Students of the Computer Science & Engineering programme are not permitted to do an internship as part of the free minor.
- Students of the Computer Science & Engineering programme are not permitted to perform a freely composed minor, with the exception of the minor abroad, a thematic minor at a Dutch university outside the LDE context, a minor consisting of a thematic minor of 15 EC with additional subjects, and the switching minor.
- Students from outside the Computer Science & Engineering programme are not permitted to include Computer Science & Engineering subjects (including subjects from the Computer Science thematic minor) in their free minor. Students may, however, take the full Computer Science thematic minor (see above).

2. EWI Study Abroad (EWI-Mi-134)

The EEMCS faculty offers her own students the Study Abroad minor. As part of this minor students can gain experience abroad. To get entry to this minor a student needs to have completed all courses of the first academic year and 50 EC worth of courses from the second or third academic year. Additionally, participation in this minor must not result in (extra) study delay. Additional requirements can be asked.

Article 11 - Completion Minor

A minor of the EEMCS faculty is successfully completed if all of the components of the minor have a final grade of 6 or higher, or a V (pass).

Paragraph 4 – Language requirements

Article 12 – Language requirement (appendix to article 3 TER BSc)

Language level for individuals holding a foreign degree (c)

ONLY FOR BACHELOR'S DEGREE PROGRAMMES TAUGHT IN ENGLISH

The English language, by successful passing one of the following tests:

- A TOEFL iBT (Test of English as a Foreign Language Internet-Based Test) with an overall band score of at least 90, or
- an IELTS (academic version) with an overall band score of at least 6.5, or

Students with the nationality People's Republic of China need a Nuffic English language certificate, which is obtained after having passed the aforementioned TOEFL or IELTS test.

- Cambridge Assessment English:
- C1 Advanced (Certificate of Advanced English) with an overall score of at least 176.
- C2 Proficiency (Certificate of Proficiency in English) with an overall score of at least 180.

Certificates older than two years will not be accepted.

The following candidates are exempt from passing an English language test:

- Students with a nationality of one of these countries: United States, United Kingdom, Ireland, Australia, New Zealand, Canada;
- Students who hold a Surinam VWO diploma or European secondary school diploma (pre-university certificate) equivalent to the Dutch VWO level, with English as their final examination subject. A sufficient score ('pass') is required for English at the secondary school diploma;
- Students in possession of an International Baccalaureate, European Baccalaureate diploma, or European secondary school diploma (pre-university certificate), equivalent to the Dutch VWO level, with English as final examination subject. A sufficient score ('pass') is required for English at the secondary school diploma.