

# TEACHING AND EXAMINATION REGULATIONS (TER)

IN ACCORDANCE WITH ARTICLE 7.13 OF THE [DUTCH]  
HIGHER EDUCATION AND RESEARCH ACT [WHW]

## ANNEX

**INTERFACULTY MASTER DEGREE PROGRAMME**  
TRANSPORT, INFRASTRUCTURE & LOGISTICS

2021  
2022

# TABLE OF CONTENTS TER

|   |  |           |
|---|--|-----------|
| <b>Paragraph 1</b>  | <b>General</b>   | <b>7</b>  |
| Article 1   | Applicability of the regulations .....   | 7         |
| Article 2   | Concepts / definitions .....   | 7         |
| <b>Paragraph 2</b>  | <b>Admission and prior education</b>   | <b>9</b>  |
| Article 3a  | Admission to the Master's degree programme (Addendum) .....                              | 9         |
| Article 3b  | Completion of bridging programme prior to the degree programme .....                     | 11        |
| Article 4   | Not applicable.....  | 11        |
| <b>Paragraph 3</b>  | <b>Content and composition of the programme</b>  | <b>11</b> |
| Article 5   | Goal of the programme .....  | 11        |
| Article 6   | Track.....   | 12        |
| Article 7   | Composition of the programme and degree audits .....                                     | 12        |
| Article 8   | Form of the programme.....   | 13        |
| Article 9   | Language .....   | 13        |
| Article 10  | Honours Programme .....  | 13        |
| Article 11  | (Compulsory) participation in the programme .....  | 13        |
| Article 12  | Programme evaluation .....   | 13        |
| <b>Paragraph 4</b>  | <b>Registration for courses and examinations</b>   | <b>14</b> |
| Article 12a   | Cancelled .....  | 14        |
| Article 13  | Registration for written examinations .....  | 14        |
| Article 14  | Registration for other examinations .....  | 14        |
| Article 15  | Withdrawal from examinations .....   | 15        |
| <b>Paragraph 5</b>  | <b>Examinations</b>  | <b>15</b> |
| Article 16  | Form of the examinations and the manner of testing in general .....                      | 15        |
| Article 17  | Times and number of examinations .....   | 15        |
| Article 18  | Oral examinations .....  | 16        |
| Article 19  | Determination and announcement of results.....   | 16        |
| Article 20  | Right to inspect the results .....   | 16        |
| Article 21  | Discussion of the results of examinations .....  | 17        |
| Article 22  | Period of validity of examinations .....   | 17        |
| Article 23  | Exemption from an examination or obligation to participate in a practical exercise ..... | 17        |
| Article 24a   | Periods and frequency of degree audits .....   | 17        |
| Article 24b   | Invalidation of examinations .....   | 17        |
| <b>Paragraph 6</b>  | <b>Studying with a disability</b>  | <b>18</b> |
| Article 25  | Adjustments to the benefit of students with disabilities or chronic illnesses.....       | 18        |
| <b>Paragraph 7</b>  | <b>Study support and (binding) recommendation on the continuation of studies</b>         | <b>19</b> |
| Article 26  | Study support and Monitoring of student progress .....                                   | 19        |
| Article 27  | Not applicable.....  | 19        |
| <b>Paragraph 8</b>  | <b>Final provisions</b>  | <b>19</b> |
| Article 28  | Conflicts with the regulations.....  | 19        |
| Article 29  | Amendments to the regulations.....   | 19        |
| Article 30  | Transitional regulations .....   | 20        |
| Article 31  | Announcement .....   | 20        |
| Article 32  | Entry into force .....   | 20        |
| <b>Appendix &amp; Addendum TER MSc</b>                          |  | <b>21</b> |
| APPENDIX to Article 2 - relevant websites.....                  |  | 21        |
| APPENDIX to Article 3 TER (for Master's degree programmes)..... |  | 22        |
| APPENDIX to Article 5 TER .....                                 |  | 23        |
| Article 3 TER MSc .....   |  | 26        |

# TABLE OF CONTENTS ANNEX TIL

|                    |  |           |
|--------------------|--|-----------|
| <b>Paragraph 1</b> | <b>Compiling the study programme</b>   | <b>28</b> |
| Article 1          | The study load.....  | 28        |
| Article 2          | The composition .....  | 28        |
| Article 3          | Fundamentals.....  | 28        |
| Article 4          | Specialisations .....  | 28        |
| Article 5          | Electives .....  | 29        |
| Article 6          | Projects .....   | 32        |
| Article 7          | Thesis.....  | 32        |
| <b>Paragraph 2</b> | <b>Honours Programme</b>   | <b>33</b> |
| Article 8          | Master's Honours Programme .....   | 33        |
| <b>Paragraph 3</b> | <b>Bridging and other deficiency programmes</b>  | <b>34</b> |
| Article 9          | Bridging programme for students with a Dutch higher vocational bachelor's degree ..... | 34        |
| Article 10         | Convergence programme for students with a Dutch university bachelor's degree .....     | 34        |
| <b>Paragraph 4</b> | <b>Deviate from examination programme</b>  | <b>35</b> |
| Article 11         | The free study programme .....   | 35        |
| Article 12         | Practicals .....   | 36        |
| Article 13         | Deviate from the examination programme .....   | 36        |
| <b>Paragraph 5</b> | <b>Transitional rules</b>  | <b>36</b> |
| Article 14         | Transitional rules as of 1 September 2021.....   | 36        |
| Article 15         | Transitional rules as of 1 September 2022.....   | 38        |
| <b>Paragraph 6</b> | <b>Final provision</b>   | <b>38</b> |
| Article 16         | When the rules do not provide .....  | 38        |

# Paragraph 1

## General

### Article 1 Applicability of the regulations<sup>1</sup>

1. These regulations including the programme specific annexes, apply to the teaching and the examinations of:
  - » the Master degree programme in Civil Engineering (CE)
  - » the Master degree programme in Applied Earth Sciences (AES)
  - » the Interfaculty 4TU Master degree programme Construction Management and Engineering (CME)
  - » the Interfaculty Master degree programme Transport, Infrastructure and Logistics (TIL)

hereinafter referred to as 'the programme' or 'programmes'.

These regulations also apply to the bridging programmes of the aforementioned programme(s).

2. For CE and AES, the programme is provided under the responsibility of the faculty of Civil Engineering and Geosciences at Delft University of Technology, hereinafter referred to as the 'faculty'.  
For TIL, the programme is provided under the responsibility of the faculty Civil Engineering and Geosciences, the faculty Mechanical, Maritime and Materials Engineering and the faculty Technology, Policy and Management of Delft University of Technology.  
For CME, the programme is provided under the responsibility of the faculty Civil Engineering and Geosciences, Architecture & the Built Environment and Technology, Policy & Management.

### Article 2 Concepts / definitions

A list of relevant websites can be found in the appendix to this article.

1. The following concepts apply in this Regulation:

- |                                     |  |
|-------------------------------------|--|
| a. academic year:                   | the period from 1 September till 31 August of the following calendar year;   |
| b. Act:                             | the Higher Education and Scientific Research Act (in Dutch, the <a href="#">WHW</a> ), Dutch Bulletin of Acts, Orders and Decrees, number 593 and as amended since;  |
| c. annex (former: IR);              | the appendix which forms part of these Teaching and Examination regulations;   |
| d. Board of Examiners:              | the programme's Board of Examiners, which has been installed in accordance with Article 7.12 of the Act;   |
| e. bridging programme:              | a deficiency rectifying programme aimed at moving up to a Master degree programme, while enrolled in a Bachelor degree programme, but without obtaining a Bachelor degree, as stipulated in Article 7.30e or Article 7.57i of the Act; |
| f. cohort:                          | the group of students who have registered for a degree programme for the first time in a given academic year;  |
| g. course (or: 'subject');          | a teaching unit within the programme as intended in Article 7.3, sections 2 and 3 of the Act; a course can consist of a number of components;  |
| h. credit:                          | a European Credit (EC) awarded in line with the European Credit Transfer System (ECTS); one credit denotes a study load of 28 hours;   |
| i. (component) partial 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;  |
| j. dean:                            | Dean of the faculties mentioned in Article 1, Section 2 or Dean that represents the Deans of the faculties mentioned in Article 1, Section 2;  |
| k. degree:                          | an academic title conferred by universities and colleges as an indication of the completion of a course of study, or as an honorary recognition of achievement;  |
| l. degree audit:                    | the evaluation, in which, in accordance with Article 7.10 of the Act, the Board of Examiners determines whether all examinations in the courses of the degree programme have been successfully completed;                              |

<sup>1</sup> This Teaching and Examination Regulation (TER) is established per academic year and is valid as of the first day of the relevant academic year. This TER replaces all previous versions of the TER. The Study Guide is an integral part of the TER and its annex.

|                                   |   |
|-----------------------------------|---|
| m. 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 practicals;   |
| n. education registration system: | the current education registration system is Osiris;  |
| o. examination:                   | an assessment of the knowledge, insight and skills of a student in relation to a course, as well as the marking of that assessment by at least one examiner, appointed for that purpose by the Board of Examiners;  |
| p. examiner:                      | the individual who, in line with Article 7.12, Subsection 3 of the Act, has been appointed by the Board of Examiners to set the examinations;   |
| q. institute:                     | Delft University of Technology;   |
| r. interim examination:           | the assessment of the examinee's knowledge, insight and skills and the results of the assessment as referred to in Section 7.10, first subsection of the WHW;   |
| s. learning management platform:  | the current learning management platform is Brightspace;  |
| t. practical exercise:            | course or component of a course aimed at the acquisition of particular skills. The following can be understood as practical exercises: <ul style="list-style-type: none"> <li>• writing a thesis,</li> <li>• conducting a project or experimental design,</li> <li>• carrying out a project or a design/research assignment,</li> <li>• completing an internship,</li> <li>• participating in fieldwork or an excursion,</li> <li>• conducting tests and experiments, or</li> <li>• participating in other educational activities that are considered essential and that are aimed at acquiring particular skills;</li> </ul> |
| u. programme:                     | the Master degree courses as stipulated in Article 7.3a Paragraph 1, Subsection b of the Act  |
| v. programme duration:            | the duration starting from the enrolment of the student up and to including the last examination;   |
| w. student:                       | a person enrolled at Delft University of Technology in order to receive education and take the examinations and the degree audit in the degree programme ( <a href="http://www.studiegids.tudelft.nl">www.studiegids.tudelft.nl</a> );  |
| x. study guide:                   | a digital guide to the programme containing specific information pertaining to the various courses;   |
| y. teaching period:               | half a semester;  |
| z. track                          | major, as stipulated in Article 7.13, Paragraph 2, Subsection b of the Act;   |
| aa. virtual learning environment: | the electronic system designed for the exchanging of teaching information (here: Brightspace);  |
| bb. working day:                  | Monday to Friday with the exception of recognised national public holidays and the collective closure days.   |

2. The other concepts in these regulations are used in the sense in which they appear in the Act.
3. In these regulations, the term 'examination' also refers to 'interim examination', with the exception of Article 19, Section 1, first two complete sentences.
4. A written or oral examination may also be taken digitally and/or online. In these regulations the term examination is also taken to mean a digital and/or online examination, unless stated otherwise in these regulations.

# Paragraph 2

## Admission and prior education

### Article 3a Admission to the Master's degree programme {Addendum}

1. Individuals holding one of the following degrees have access to the education of the Master degree programme in Civil Engineering (under a) or Applied Earth Sciences (under b) or Construction Management Engineering (under c) or Transport, Infrastructure and Planning (under d) on the condition that all of the stated requirements have been met.

#### a. Civil Engineering

- » Bachelor degree Civil Engineering from Delft University of Technology or Bachelor degree Civil Engineering from University of Twente.

#### b. Applied Earth Sciences

- » Bachelor degree "Technische Aardwetenschappen" or "Applied Earth Sciences" from Delft University of Technology.

#### c. Construction Management and Engineering

- » Bachelor degree Architecture, Urbanism and Building Sciences (Bouwkunde) from Delft University of Technology or from Eindhoven University of Technology,
- » Bachelor degree Civil Engineering (Civiele Techniek) from Delft University of Technology or University of Twente,
- » Bachelor degree Systems Engineering, Policy Analysis and Management (Technische Bestuurskunde) from Delft University of Technology,
- » Bachelor degree Industrial Engineering & Management from University of Twente,
- » Bachelor degree Industrial Engineering from Eindhoven University of Technology,
- » Bachelor degree in Sustainable Innovation from Eindhoven University of Technology.

#### d. Transport, Infrastructure and Logistics

A university Bachelor degree at Delft University of Technology or equivalent in:

- » A university Bachelor degree at Delft University of Technology or equivalent in:
- » 'Civiele Techniek' (also at University of Twente) 'Electrical Engineering' (also at Eindhoven University of Technology and University of Twente),
- » 'Luchtvaart- en Ruimtevaarttechniek',
- » 'Maritieme Techniek',
- » 'Technische Bestuurskunde',
- » 'Technische Informatica' (also at Eindhoven University of Technology and University of Twente),
- » 'Technische Natuurkunde' (also at Eindhoven University of Technology, University of Twente and University of Groningen),
- » 'Technische Wiskunde' (also at Eindhoven University of Technology, University of Twente and University of Groningen),
- » 'Werktuigbouwkunde' (also at Eindhoven University of Technology and University of Twente).

or a university Bachelor degree in:

- » 'Econometrie en Operationele Research' at Erasmus University Rotterdam, University of Amsterdam, VU University Amsterdam, University of Groningen, University of Tilburg or Maastricht University,
- » 'Technische Bedrijfskunde' at Eindhoven University of Technology, University of Twente or University of Groningen.

Depending on the Bachelor degree, certain synchronisation courses are mandatory according to the annex of the distinctive programme.

2. Students who do not possess the degree mentioned in section 1 are required to obtain proof of admission to the programme from the Dean, who will seek the advice of the admission committee on this matter.

**a. Other university Bachelor degree (not including those listed in section 1)**

The following applies to this category: successful completion of the stated bridging programme for admission to the Master degree programme:

**Civil Engineering and Applied Earth Sciences:**

- » University Bachelor degree
- » Bridging programme to be followed: to be specified upon application.

**Construction Management and Engineering:**

- » University Bachelor degree: students who do not possess any of the degrees mentioned in section 1 may be eligible for, and should therefore seek advice on a Bridging minor or a custom bridging program as stipulated in the Annex for the MSc CME.

**Transport, Infrastructure and Logistics:**

A university Bachelor degree at Delft University of Technology or equivalent in:

- » 'Bouwkunde' (also at Eindhoven University of Technology)
- » 'Industrieel Ontwerpen' (also at University of Twente)
- » or a university Bachelor degree in:
  - » 'Landschapsarchitectuur en Ruimtelijke Planning' at Wageningen University,
  - » 'Technische Planologie' at University of Groningen,
  - » 'Sociale Geografie en Planologie' at University of Amsterdam, Utrecht University or University of Groningen
- » gives admission to the Master's degree programme, in which a convergence programme has to be completed. This convergence programme will be part of the Master's degree programme in Transport, Infrastructure and Logistics and consists of convergence courses stated in the annex to the TER.

**b. Higher professional education degree**

The following applies to this category:

Successful completion of the stated bridging programme for admission to the Master degree programme and, if applicable, the language requirement.

- » higher professional education degree

**Civil Engineering and Applied Earth Sciences:**

Bridging programme to be followed: Transitional programme for students with a Dutch higher vocational institute Bachelor degree ("HBO") as stipulated in the annex.

**Construction Management Engineering:**

Bridging programme to be followed: Transitional programme for students with a Dutch higher vocational institute Bachelor degree ("HBO") as stipulated in the annex.

**Transport, Infrastructure and Logistics:**

A relevant higher professional education degree gives admission to the programme only after successful completion of the bridging programme stated in the annex to this TER and, if applicable, the language requirement.

**c. Foreign degree**

This category is subject to the general selection requirements of Delft University of Technology with regard to prior foreign education, based on a Cumulative Grade Point Average of at least 75% of the maximum number of points that could be earned, included in the table of countries (see website) and meeting the requirements for satisfactory linguistic mastery of English, as stated in the appendix to art. 3.

3. For admission in accordance with section 2, the following additional condition apply:  
Access to the education of the Master degree programme in Civil Engineering, Applied Earth Sciences, Construction Management Engineering or Transport, Infrastructure and Logistics is open to individuals who have demonstrated to the admissions committee that they possess knowledge, insight and skills at the level of the Bachelor degree mentioned in sections 1 and 2.
4. Civil Engineering and Applied Earth Sciences:  
In order to meet the stipulations outlined in subsection 2 and 4b, knowledge for the programme may be lacking in various subjects as long as it does not exceed the level of 10 credits. The missing subjects can be integrated into the MSc programme.

#### **Article 3b**      **Completion of bridging programme prior to the degree programme**

1. A student who is enrolled in a Bachelor degree programme for a bridging programme with the aim of being admitted to the Master degree programme at TU Delft, must complete this bridging programme within two academic years. Deviations from the bridging programme are not allowed.
2. After the programme duration of the bridging programme the enrolment of the student will be cancelled. Under exceptional circumstances the student can submit a well-founded request for an extension of the course duration for a period of at most twelve months. The Board of Examiners can decide to grant extension of the programme duration when a student is experiencing or has experienced a study delay due to circumstances that are beyond the student's control.

#### **Article 4**      **Not applicable**

Not applicable.

## Paragraph 3

# Content and composition of the programme

#### **Article 5**      **Goal of the programme**

1. The programme is intended to educate students to earn a Master of Science degree in respectively Civil Engineering (CE), Applied Earth Sciences (AES), Construction Management and Engineering (CME) or Transport, Infrastructure and Logistics (TIL), providing them with such a level of knowledge, insight and skills in the area of the above mentioned programmes, that graduates can fulfil positions on the labour market at the Master's level.
2. Graduates must also meet the specific final attainment levels for each degree programme, as listed below:
  1. be capable of being analytical in their work, on the basis of a broad and deep scientific knowledge;
  2. be able to synthesise knowledge and to solve problems in a creative way when dealing with complex issues;
  3. possess the qualities needed for employment in circumstances requiring sound judgement, personal responsibility and initiative, in complex and unpredictable professional environments;
  4. be able to assume leading roles, including management roles, in companies and research organisations, and be able to contribute to innovation;
  5. be able to work in an international environment, helped by their social and cultural sensitivity and language and communication abilities, partly acquired through experience of team work and any study periods abroad;
  6. possess an awareness of possible ethical, social, environmental, aesthetic and economic implications of their work and the insight to act accordingly.
  7. possess an awareness of the need to update their knowledge and skills.



In addition, Master of Science graduates should possess the following competences:

1. required core knowledge and understanding in their field of study;
2. knowledge of methods and technical practice in their field of study;
3. training in theoretical knowledge and methods, including modelling;
4. advanced knowledge of specific areas in their field of study;
5. specific attitude and way of thinking expected in a particular subject;
6. awareness of connections with other disciplines and ability to engage in interdisciplinary work.

The programme-specific requirements for CME and TIL are listed in the appendix to article 5 TER.

## Article 6 Track

1. The Master degree programme in [Civil Engineering](#) has the following tracks, with the stated content in the annex to this TER:
  - » Building Engineering
  - » Environmental Engineering
  - » Geo-engineering
  - » Geoscience and Remote Sensing
  - » Hydraulic Engineering
  - » Structural Engineering
  - » Transport & Planning
  - » Water Management

### Double track

A student can opt to study two tracks within the Master degree programme in [Civil Engineering](#), for which the criteria are stipulated in the annex to this TER.

2. The Master degree programme in [Applied Earth Sciences](#) has the following tracks, with the stated content in the annex to this TER:
  - » Geo-Energy Engineering
  - » Geo Engineering
  - » Geoscience and Remote Sensing
  - » Environmental Engineering
  - » Applied Geophysics
  - » European Mining Course (EMC)
3. The Master Degree Programme [Construction Management and Engineering \(CME\)](#) has no tracks.
4. The Master Degree Programme [Transport, Infrastructure and Logistics \(TIL\)](#) has no tracks.

## Article 7 Composition of the programme and degree audits

1. The programme includes the Master's degree audit, with a study load of 120 credits.
2. Following approval from the two Boards of Examiners concerned, a student may take an individual double degree programme in which two Master's programmes are combined simultaneously to create a programme of at least 180 credits. Upon completion the student is awarded two Master's diplomas. The student must earn at least 60 unique credits for each Master's degree programme.
3. A course that was part of the Bachelor's degree programme that qualified a student for admission to the Master's degree programme may not be included in the Master's degree programme. If a compulsory component has already been completed in the aforementioned Bachelor's degree programme, the Board of Examiners will designate an alternative course. If an elective course of the degree programme has already been completed in the aforementioned Bachelor's degree programme, the student will select an alternative elective course. Subsection a.
4. The Master'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.

5. The degree programme and its courses are described in the annex, including the study load, number of contact hours and form of examination of each course, as well as the programming of the examination and the language.
6. The actual design of the educational programme is elaborated in greater detail in the study guide.

### **Article 8**      **Form of the programme**

The degree programmes are offered exclusively on a full-time basis.

### **Article 9**      **Language**

The education is in English, and the examinations are administered in English.

### **Article 10**      **Honours Programme**

1. Based on the criteria referred to in the Honours Programme, students will be selected and admitted to the [Honours Programme](#) by the Honours Programme Committee established by the Director of Studies.
2. The Honours Programme comprises at least 20 credits.
  - a. At least five credits must be completed in the institution-wide component of the Honours Programme: the course 'Critical Reflection on Technology', UD2010, and
  - b. At least 15 credits must be completed in the faculty (organised) component of the Honours Programme, the composition of which (including its content and options) is described in the Guidelines Honours programme CEG and/or annex.
3. All students selected for participation in the Honours Programme must submit their options for the faculty component for approval to the Honours Coordinator.
4. The Board of Examiners will be responsible for assessing whether all the requirements of the Honours Programme have been met.
5. Any student who has successfully completed the Honours Programme 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**

1. All students are expected to participate actively in the programme 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. The Board of Examiners may 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 in the study guide.

### **Article 12**      **Programme evaluation**

1. The Director of Studies is responsible for 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

## Registration for courses and examinations

### Article 12a **Cancelled**

Not applicable.

### Article 13 **Registration for written examinations**

1. Registration to participate in a written examination, including a written examination that is taken online, remotely from the university, is compulsory and is done by entering the requested data into the education registration system (Osiris) no later than six calendar days before the examination. Students receive examination tickets by email as confirmation of their registration.
2. In the event of circumstances beyond a student's control resulting in the student being unable to register for an examination, the Board of Examiners may nevertheless permit the student to participate in the examination.
3. Students who have not registered for the examination and are therefore not included on the list of examinees can report on the day of the examination to the invigilator beginning 15 minutes before the start of the examination until the actual start. They will be admitted to the examination room, in the order that they reported to the invigilator, 30 minutes after the start of the examination, if sufficient places are available. The loss of 30 minutes of examination time cannot be compensated. Students who have been granted late access to the examination will be added to the list of examinees. The student participates in the examination subject to the validation of entitlement to participate in the examination.
4. In the situation described in the previous section, if it is found that a student was not entitled to participate in the examination, the examination work will be deemed invalid, it will not be marked and it will not count towards a result. The student may subsequently submit an appeal to the Board of Examiners, accompanied by reasons, requesting that the examination work that has been deemed invalid be declared valid and to have it assessed. The Board of Examiners will approve the request only in case of extenuating circumstances.
5. Section 3 of this article does not apply to a written examination that is taken online, remotely from the university.
6. If unforeseen circumstances or measures make it necessary to change the form or manner of taking the examination, the Dean may determine a different registration period in favour of the student.

### Article 14 **Registration for other examinations**

1. Registration for participation in an examination other than a written examination is compulsory, and is possible up to six calendar days before the examination takes place in the manner that is stated in the study guide for the relevant examination.  
If unforeseen circumstances or measures make it necessary to change the form or manner of taking the examination, the provisions stated in the study guide apply in full unless the Dean decides to deviate from the manner or term of registration prescribed in the study guide.
2. In special cases, the Board of Examiners may deviate from the registration term stated in Section 1, but only in favour of the student.
3. Students who have not registered on time will not be allowed to participate in the examination. The Board of Examiners can nevertheless admit a student to the examination, but only in case of special circumstances.
4. In the event of unauthorised participation in an examination, the Board of Examiners may declare the result invalid.

## Article 15 Withdrawal from examinations

1. Students can withdraw from an examination through the education registration system (Osiris) up to three calendar days before the examination.
2. Any student who has withdrawn from an examination should re-register on a subsequent occasion, in accordance with the provisions of Articles 13 and 14.

# Paragraph 5 Examinations

## Article 16 Form of the examinations and the manner of testing in general

1. Examinations (oral, written or otherwise) are taken in the manner described in the study guide. In the event of unforeseen circumstances or measures, the Board of Examiners may determine that the manner prescribed may be deviated from. If an examination is taken using online proctoring, this takes place in accordance with the TU Delft Online Proctored Examination Regulation.
2. The 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 course no more than twice in one academic year, with the understanding that registration for an examination without timely withdrawal counts as participation.
4. In special cases, the Board of Examiners may deviate from the provisions of the above sections 1 to 3 in favour of the student.
5. Well before a written examination, the examiner will give the students the opportunity to familiarise themselves with a set of representative examination questions and the criteria by which they will be assessed. The lecturer or examiner will provide accompanying guidelines for the way in which the sample questions are answered.

## Article 17 Times and number of examinations

1. Two opportunities to take written examinations will be offered each academic year. The previous provision applies equally to examinations other than written examinations, unless this cannot be reasonably demanded of the programme. The times in which the examinations can be taken are:
  - » at the end of the teaching period in which the course is taught, and
  - » in the fifth week or at the end of the next teaching period or during the summer resit period according to the TU Delft academic calendar.
2. An annual timetable is issued detailing when examinations may be taken, and it is published before the start of the relevant teaching period.
3. Contrary to the provisions in Section 1, the opportunity to take the examination for a course that is not taught in a certain academic year must be given at least once in that year.
4. Contrary to the provisions of section 1, two opportunities to sit an examination will be offered for discontinued courses in the academic year following the year in which the course was last taught.
5. In exceptional cases, the Board of Examiners may permit more than two opportunities in a year for certain examinations.

## Article 18 Oral examinations

1. For oral examinations, no more than one student shall be tested at a time, unless determined otherwise by the Board of Examiners.
2. Oral examinations shall not be public unless the Board of Examiners has decided otherwise. In deviation from this first clause, a final presentation is given publicly except in special cases in which the Board of Examiners has decided otherwise, or if the student has filed an objection to the publicity of the final presentation.
3. The oral examination is administered by at least two examiners. In the event of unforeseen circumstances or measures, the Board of Examiners may determine that the oral examination be administered by a single examiner, provided the student consents to an audio and/or video recording with sound of the oral examination.

## Article 19 Determination and announcement of results

1. 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 interim examinations shall be announced no later than five working days before the next written interim examination.
2. The examiner determines the result of an oral examination as quickly as possible but no later than 15 working days after it is administered. The student is issued with a written statement of this result.
3. The examiner records the results of the assessment of a practical exercise as quickly as possible, but no later than 15 working days after the completion of the practical exercise at the designated time. In the education registration system (Osiris), the result will be dated on the date of completion of the practical exercise. With regard to a series of practical exercises in which the knowledge acquired in a previous practical exercise is important to the subsequent practical exercise, the result of the previous practical exercise shall be announced before the subsequent practical exercise. If this is not possible, the examiner shall schedule a timely discussion of the previous practical exercise.
4. The examiner is responsible for the registration and publication of the results in the education registration system (Osiris), with observance of the student's privacy. When the result of an examination is announced, the student is informed about the right of perusal as stipulated in Article 20 as well as about the possibility of appealing to the Examinations Appeals Board.
5. Contrary to the previous provisions, results for examinations in the last regular teaching period, as well as for resits from the first academic year taken during the summer resit period, shall be determined, registered and published within five working days of the week following the week in which the examination was taken place.
6. If special circumstances prevent the examiner from registering the results on time, the examiner will report this to the Board of Examiners, accompanied by reasons, and notify the students and student administration as quickly as possible.

## Article 20 Right to inspect the results

1. Upon request, students will have the right to inspect their assessed work during a period of at least 20 working days after the announcement of the results of a written examination or the assessment of a practical exercise. During the inspection of the assessed work, it is not permitted to copy the underlying examination questions in any way. Students intending to appeal against the assessment of their work will be issued with a copy of the assessed work.
2. During the period mentioned in Section 1, all students who have participated in the examination can inspect/review the questions and assignments of the relevant examination, as well as with the standards that form the basis of the assessment.
3. The examiner can determine that the inspection or cognizance intended in Sections 1 and 2 will take place at a pre-established place and at a pre-established time.
4. Students proving that they were unable to appear at such an established place and time because of circumstances outside of their control will be offered another possibility, if possible within the period mentioned in Section 1. The place and times mentioned in the first sentence will be made known in good time.

## Article 21 Discussion of the results of examinations

1. Students who have taken a written examination or who have received the assessment of a practical exercise can ask the relevant examiner for a discussion of the results during a period of 20 working days after the announcement of the results. The discussion will take place within a reasonable period, at a place and time to be determined by the examiner.
2. At the request of the student or at the initiative of the examiner, a discussion justifying the assessment will take place between the examiner and the student as soon as possible after the announcement of the result of an oral examination. During the discussion of the assessed work it is not permitted to copy the underlying examination questions in any way.
3. If a collective discussion is organised by the examiner, students may submit requests as referred to in section 1 only if they have been present at the collective discussion and have motivated their requests, or if they were unable to be present at the collective discussion because of circumstances outside their control.
4. The Board of Examiners may allow deviations from the provisions in Sections 2 and 3.

## Article 22 Period of validity of examinations

1. The period of validity of the results of an examination is indefinite. 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 course consists of partial examinations, the period of validity of the partial examination for which no credits are assigned shall be restricted to a time period stated in the study guide.

## Article 23 Exemption from an examination or obligation to participate in a practical exercise

1. After having obtained recommendations from the relevant examiner, the Board of Examiners may grant exemptions to students:
  - a. who have successfully completed an examination or degree audit in a system of higher education within or outside the Netherlands that corresponds to the examination for which the exemption has been requested in terms of content and level, or
  - b. who demonstrate that they possess sufficient knowledge and skills that have been acquired outside the system of higher education.
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.

## Article 24a Periods and frequency of degree audits

In principle, the opportunity to take the Master's degree audit will be offered once each month. The dates for the meetings of the Board of Examiners shall be published before the beginning of the academic year.

## Article 24b Invalidation of examinations

The Board of Examiners is authorised to declare invalid an examination or part thereof if a proper assessment of the knowledge, insight and skills of the student has not proved reasonably possible based on the examination or the part thereof. The Board of Examiners may draw up further rules for this.

# Paragraph 6

## Studying with a disability

### Article 25 Adjustments to the benefit of students with disabilities or chronic illnesses

1. Upon a written and substantiated request to that effect, students with disabilities or chronic illnesses may be eligible for adjustments in teaching and examinations. These adjustments are coordinated to the situations of the students as much as possible, but they may not alter the quality or level of difficulty of a course or the study programme. Facilities to be provided may include modifications to the form or duration of examinations and/or practical exercises to suit individual situations or the provision of practical aids.
2. Requests as mentioned in Section 1 must be accompanied by a recent statement from a physician or psychologist or, in cases involving dyslexia, from a testing office registered with BIG, NIP or NVO. If possible, this statement should include an estimate of the extent to which the condition is impeding the student's academic progress.
3. Decisions concerning requests for adjustments relating to educational facilities are taken by the Dean or by the Director of Studies on the Dean's behalf. Decisions concerning adjustments relating to examinations are taken by the Board of Examiners.
4. Adjustments to examinations can involve the following or other matters:
  - » form (e.g. replacing a written test with an oral test or vice versa, testing the required material in the form of interim examinations or granting exemptions to the attendance requirement);
  - » timing (e.g. additional time for an examination, wider spreading of examinations across the examination period, granting exemptions to admission requirements or extending the period within which a component must be completed);
  - » aids permitted during testing (e.g. English-Dutch dictionaries for students with dyslexia);
  - » location (taking the examination in a separate, low-stimulus space).
5. Adjustments in educational facilities could include:
  - » providing modified furniture in teaching and examination spaces;
  - » providing special equipment (e.g. magnification or Braille equipment for students with visual impairments and blindness or loop systems and individual equipment for students with hearing impairments and deafness);
  - » providing more accessible course material;
  - » providing special computer facilities (e.g. speech-recognition or speech-synthesising software);
  - » providing a rest area.

# Paragraph 7

## Study support and (binding) recommendation on the continuation of studies

### Article 26 Study support and Monitoring of student progress

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. The Dean 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 the educational registration system (*Osiris*).
3. The Student Administration is responsible for ensuring that all students are able to review and check their results in the educational registration system (*Osiris*).

### Article 27 Not applicable

Not applicable

# Paragraph 8

## Final provisions

### Article 28 Conflicts with the regulations

In the case of conflict between provisions in the study guide or other document concerning the relevant teaching and examination education and study programme and these regulations, the provisions of these regulations shall take precedence.

### Article 29 Amendments to the regulations

1. Amendments to these regulations are adopted separately by the Dean.
2. Amendments that are applicable to the current academic year will be made only if they would not reasonably damage the interests of students.
3. Amendments to these regulations may not lead to disadvantageous changes to any decisions that have been made with regard to individual students.
4. In the event of unforeseen circumstances or measures, the Dean may decide to deviate from these regulations, including the actual form of the education and any compulsory attendance requirements. This also means that the provisions in the study guide may be deviated from.



## Article 30 Transitional regulations

1. If the composition of the degree programme undergoes substantive changes, transitional measures will be established and published through the Dean.
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 course within a degree programme is cancelled, four additional opportunities for taking the examination in this course shall be offered after it has been taught for the last time: the examination at the end of the teaching of the course, a resit in the same academic year and two resits in the following academic year.

## Article 31 Announcement

1. The Dean is responsible for ensuring a suitable announcement of these regulations and any amendments to them.
2. In any case, the Teaching and Examination Regulations are to be posted on the programme's website.

## Article 32 Entry into force

These regulations shall enter into force on **1 September 2021**.

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*Adopted by the Dean of the faculty on 21 June 2021.*

# Appendix & Addendum TER MSc

## APPENDIX to Article 2 - relevant websites

Student portal with links to relevant regulations, e.g.

- Student Charter,
- privacy statement online proctoring,
- Code of Ethics,
- Online Proctored Examination Regulation etc.

» <https://www.tudelft.nl/en/student>

Rules & Regulations of the Board of Examiners

» <https://www.tudelft.nl/studenten/faculteiten/citg-studentenportal/onderwijs/onderwijsinformatie/educational-rules-and-regulations/>

Board of Examiners general website

» <https://www.tudelft.nl/studenten/faculteiten/citg-studentenportal/organisatie/board-of-examiners-ceg/>

Wet op het hoger onderwijs en wetenschappelijk onderzoek (WHW)

» <https://wetten.overheid.nl/BWBR0005682/2019-02-01>

Examination Appeals Board

» <https://www.tudelft.nl/en/student/legal-position/central-complaints-desk-for-students/objections-and-appeals>

Studying with a disability

» <https://www.tudelft.nl/en/student/counselling/studying-with-a-disability>

## APPENDIX to Article 3 TER (for Master's degree programmes)

### Language level for individuals holding a higher professional education degree (c)

The following candidates are exempted from the English language test requirement:

- Students with a Bachelor degree from a Dutch university
- Students with a VWO diploma or VWO English certificate
- Students with an HBO (University of Applied Sciences) degree from a degree programme taught entirely in English
- Students who hold the nationality of one of the following countries: USA, UK, Ireland, Australia, New Zealand or Canada.

Sufficient competence in the English language can be demonstrated by passing one of the following tests:

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

If a bridging programme needs to be completed before a candidate can be admitted to a Master's programme, the certificate should be obtained before the start of the bridging programme.

### Language level for holders of a non-Dutch diploma (d)

- Competence in the English language as demonstrated by passing one of the following tests:
- TOEFL iBT (Test of English as a Foreign Language internet-Based Test) with an overall band score of at least 90 and a minimum score of 21 for each section
- IELTS (academic version) with an overall band score of at least 6.5 and a minimum score of 6,0 for each section
- Cambridge Assessment English:
  - » C1 Advanced (Certificate of Advanced English) with an overall score of 176 and a minimum score of 169 for each section.
  - » C2 Proficiency (Certificate of Proficiency in English) with an overall score of 180 and a minimum score of 169 for each section

### Certificates more than two years old will not be accepted

The following candidates are exempted from the English language test requirement:

- Students who hold the nationality of one of the following countries: USA, UK, Ireland, Australia, New Zealand or Canada;
- Students who hold a Bachelor degree from one of the above countries.

## APPENDIX to Article 5 TER

### Construction Management and Engineering

**The MSc CME domain-specific requirements as specified below are based upon:**

- a. the needs of the construction industry as well as on the needs emerging from the development of society and innovations as outlined in the "Introduction" to this document. Also, with regard to this domain, an important characteristic of the development and application of newly acquired knowledge is the fact that it has to be introduced in existing managing and engineering practices. In other words, students also have to become familiar with the management of transition processes and organizational changes in the construction industry;
- b. the domain-specific and internationally accepted qualifications as defined by the ABET organization (Accreditation Board for Engineering and Technology). The domain-specific requirements have been translated into final qualifications that fit into the 3TU Academic criteria in which the academic level of the programme is indicated as well.

**The Master of Science Construction Management and Engineering final-qualifications are:**

#### 1. Competent in one or more scientific principles

The graduate has knowledge on the following sub-areas of Construction Management and Engineering, is an expert in at least one of them and is able to maintain and expand his expertise in the field of Construction Management and Engineering (for instance, by consulting relevant literature but also look for connections).

- Project and Process management in the field of Construction Engineering (i.e. complex constructions, large-scale infrastructure, urban developments)
- Legal and Governance aspects in the field of Construction Engineering
- Markets and organisations in the field of Construction Engineering
- Innovations and Integral Design in Construction Engineering
- The graduate is able to combine management theory and technical knowledge. This ability covers the knowledge and application of technical process management and innovation regarding construction and engineering processes in the subareas above.

#### 2. Competent in doing research

The graduate has the competence to acquire new scientific knowledge through research or systematic reflection.

The graduate understands the potential benefits of research and is able to understand and incorporate the results of research into the own work.

#### 3. Competent in designing

The graduate is able to Contribute to a functional design of complex constructions or Design management processes in the field of Construction Engineering.

**This means that:**

- The graduate has creativity and synthetic skills with respect to design projects;
- The graduate is application-oriented towards the construction industry when designing constructions or management processes;
- The graduate is able to translate technological concepts and developments into appropriate process innovations for construction;
- The graduate is able to find a balance between possible solutions of complex requirements, technical possibilities, genuine interests of the parties involved and justified value creation on scientific and operational levels.

#### 4. A scientific approach

- The graduate has the habit of reflecting upon his own work and continuously uses relevant information to improve his capabilities;
- The graduate has the attitude to endorse his personal development and enhancing his expertise;
- The graduate knows that models only approximate reality and is able to develop and use them adequately whenever this is beneficial;
- The graduate makes decisions based on calculated risks, costs, time, quality, stakeholders' participation, value creation, legislation and is able to evaluate these decisions;
- The graduate's scientific attitude is not restricted to the boundaries of Construction Management and Engineering, and he is able to cross these where and whenever necessary.

## 5. Basic intellectual skills

- The graduate is able to work independently;
- The graduate is able to work systematically and methodically;
- The graduate is able to reflect on the complete scope of Construction Management and Engineering issues, to critically analyse and to generate novel ideas;
- The graduate is able to invent his own tools, theories and techniques if these are not available.

## 6. Competent in cooperating and communicating

- The graduate is able to work effectively in the context of a multidisciplinary environment, is able to manage complex assignments and can act in different roles depending on the situation;
- The graduate knows the importance of oral and written communication, in particular in English, and can make effective use of these, this means that:
  - a. The graduate is skilled in properly documenting and presenting results of scientific and design work, including the underlying knowledge, choices and considerations, to colleagues and to a broader public;
  - b. The graduate is competent in reasoning;
  - c. The graduate adheres to existing academic conventions, such as giving proper credit and referencing.

## 7. Takes account of the temporal and societal context

- The graduate is able to form an opinion or judgement and contribute to discussions about complex matters related to Construction Management and Engineering;
- The graduate knows that compromises are unavoidable and is able to effectively deal with these;
- The graduate is aware of the disadvantages for society of certain decisions and can communicate these to the relevant parties (stakeholders). The graduate can take the purpose of the design and its context into consideration.

## Transport, Infrastructure and Logistics (TIL)

### MSc TIL-domain specific final-qualifications for MSc-TIL students are:

#### 1. Knowledge and Understanding of the TIL-domain

##### • Scientific Disciplines:

Has a profound understanding of the TIL-domain. Has demonstrated broad understanding of the scientific disciplines that relate to the TIL-domain. Has systematic knowledge about the socio- technical context of TIL- systems. Has a broad understanding of the required knowledge in respect of research and design related to the TIL-domain.

##### • Inter-disciplinary:

Understands insightfully how to act in an interdisciplinary manner and how to bridge and integrate the knowledge between several disciplines and the temporal and techno-social context of TIL- systems.

##### • Contribute:

Is able to make considerable research and/or design contributions to the TIL-domain through original research and/or design that extends the traditional frontiers of knowledge towards integrative TIL- knowledge by means of developing a substantial body of work, corresponding with the level of national and international refereed publications.

#### 2. Application of knowledge and understanding within the TIL-domain

##### • Scientific Approach:

Has a critical attitude and is able to apply a systematic scientific approach characterised by the development and application of theories, methods, models and coherent interpretations (both in doing research and designing) in the TIL-domain.

##### • Problem Solving:

Is competent in applying problem solving abilities in new or unfamiliar environments within broader, multi-disciplinary and/or inter-disciplinary contexts related to the TIL-domain.

##### • Doing Research:

Has demonstrated the ability to acquire new scientific knowledge in respect of the TIL-domain through a substantial process of research by means of the development of new knowledge and new insights in a purposeful and methodological way.

##### • Designing:

Has largely demonstrated the ability to apply a substantial design process by means of applying synthesising activities aimed at the realisation of new or modified artefacts, processes and/or systems within the TIL-domain, with the intention of creating value in accordance with predefined TIL- domain-related requirements and desires.

- **Judgmental skills:**

Has the ability to gather, integrate and interpret relevant, incomplete or limited data, information and knowledge, and understands the complexities in the TIL-domain to reason about and reflect on possible social, scientific and ethical responsibilities linked to the application of this data, information and knowledge to form judgements.

### 3. Communicational and co-operational skills

- **Communication:**

Has the competence to clearly and unambiguously communicate information, ideas, problems, problem solving approaches, their origins and possible solutions to both audiences of specialists (peers within the TIL-domain, the larger scholarly population) and non-specialists (society in general).

- **Co-operation:**

Has the competence of effectively working with and for others on complex problems of the TIL- domain in interdisciplinary teams (colleagues and non-colleagues) and arenas (several organisations that have influence on the outcome “together”) by judging the background, positions, desires, cultural habits, and the political and strategic behaviour of the members of these teams and arenas.

### 4. Learning skills

- **General Learning:**

Has developed considerable learning skills necessary to undertake further study autonomously.

- **Relational Learning:**

Has developed broad appreciations to judge, gather and apply relevant and “new” knowledge to its existing body of knowledge as a result of interdisciplinary teamwork working on complex problems to reach feasible solutions.

### Article 3 TER MSc

Article 3 - Admission to the Master's degree programme - is supplemented with Section 3, which reads:

3. For the 2021-2022 academic year, in the context of the outbreak of Covid-19, students who were enrolled at a Dutch university or HBO (University of Applied Sciences) in the 2020-2021 academic year may be conditionally admitted provided that, on 31 August 2021, they:
  - have a deficit not exceeding 15 ECTS for the Bachelor's degree audit of the Bachelor's programme referred to in this article,  
or
  - have a deficit not exceeding 15 ECTS for completion of the bridging programme referred to in this article. If, on 31 August 2022, students have not met the admission requirements referred to in Section 1 of this article, they will be unenrolled from the degree programme.

The foregoing does not apply to the student who used the regulation applicable in the academic year 2020/2021 in connection with the Covid-19 outbreak for conditional admission in the event of a deficit not exceeding 15 ECTS.

# ANNEX

**INTERFACULTY MASTER DEGREE PROGRAMME**  
TRANSPORT, INFRASTRUCTURE & LOGISTICS

2021  
2022



# Paragraph 1

## Compiling the study programme

### Article 1 The study load

The study load for the master's degree programme is 120 credits.

### Article 2 The composition

1. The examination programme of 120 credits comprises the following components:

#### Courses, 75 credits

- a. Fundamentals, 23 credits as laid down in Article 3
- b. Specialisations, 27 credits as laid down in Article 4
- c. Electives, 25 credits as laid down in Article 5

#### Projects and thesis, 45 credits

- d. Projects, 15 credits as laid down in Article 6
  - e. Thesis, 30 credits as laid down in Article 7
2. The student may be eligible for a special programme of 20 credits on top of the master's degree programme: Honours Programme Master, an individual programme as laid down in Article 8.
  3. As soon as possible, but at the latest before starting with the thesis as stipulated in Article 7, the student must draw up his entire examination programme and present it to the Board of Examiners for approval.

### Article 3 Fundamentals

1. The examination programme includes a set of basic compulsory courses, the so-called fundamentals, amounting to 23 credits in total.
2. The compulsory courses mentioned in Section 1 are:

| code       | course                                   | ECs |
|------------|--|-----|
| CIE4801-18 | Transport modelling                      | 6   |
| ME44206    | Quantitative methods for logistics       | 5   |
| SEN1221    | Statistical analysis of choice behaviour | 5   |
| TIL4030-20 | TIL research and design methods          | 7   |

### Article 4 Specialisations

1. The examination programme includes one specialisation, amounting to 27 credits in total. The student chooses one out of four specialisations available in the degree programme. The specialisations are specified in Section 2.
2. The degree programme comprises four specialisations. Within a specialisation all courses are compulsory. These specialisations are:
  - » **Specialisation P – Policy:** infrastructure, planning and environment, as laid down in Section 3
  - » **Specialisation D – Design:** transport systems and networks, as laid down in Section 4
  - » **Specialisation O – Operations:** traffic, technology and control, as laid down in Section 5
  - » **Specialisation E – Engineering:** transport, logistics and supply chains, as laid down in Section 6

### 3. Specialisation P – Policy: infrastructure, planning and environment

In this specialisation all courses are compulsory. The composition of this specialisation is as given below.

| code    | course   | ECs |
|---------|--|-----|
| AR0168  | People, movement and public space                                | 5   |
| AR0228  | Infrastructure and environment method module                     | 5   |
| CIE5816 | Urban regions, transport and economics                           | 4   |
| CIE5817 | Assessment of transport infrastructure and systems               | 4   |
| SEN171a | Advanced evaluation methods for transport policy decision-making | 5   |
| TPM004a | Transport safety   | 4   |

### 4. Specialisation D – Design: transport systems and networks

In this specialisation all courses are compulsory. The composition of this specialisation is as given below.

| code       | course  | ECs |
|------------|---|-----|
| AE4423-20  | Airline planning & optimisation                     | 4   |
| AE4446     | Airport operations                                  | 4   |
| CIE4811-18 | Planning and operations of public transport systems | 6   |
| CIE5803-18 | Railway traffic management                          | 4   |
| CIE5826    | Railway operations and control                      | 4   |
| SEN1721    | Travel behaviour research                           | 5   |

### 5. Specialisation O – Operations: traffic, technology and control

In this specialisation all courses are compulsory. The composition of this specialisation is as given below.

| code       | course   | ECs |
|------------|--|-----|
| CIE4825    | Traffic flow modelling and control part 1                                  | 6   |
| CIE5805-18 | Intelligent vehicles for safe and efficient traffic: design and assessment | 4   |
| CIE5821    | Traffic flow modelling and control part 2                                  | 4   |
| ME44200    | Operations and maintenance   | 3   |
| ME44305    | System analysis and simulation   | 5   |
| SEN9110    | Simulation master class  | 5   |

### 6. Specialisation E – Engineering: transport, logistics and supply chains

In this specialisation all courses are compulsory. The composition of this specialisation is as given below.

| code    | course   | ECs |
|---------|--|-----|
| CIE5830 | Freight transportation systems: analysis and modelling | 5   |
| ME44101 | Dynamics and Interaction of Material and Equipment     | 4   |
| ME44300 | Multi-machine coordination for logistics               | 3   |
| ME44311 | Advanced Operations and Production Management          | 5   |
| SEN9720 | Logistics and supply chain innovations                 | 5   |
| TPM028a | Decision making in multimodal transport systems        | 5   |

## Article 5 Electives

- The examination programme includes elective courses, amounting to 25 credits in total. The student chooses elective courses from several lists of electives available in the degree programme. The elective lists are specified in Section 2.
- The degree programme comprises several lists of elective courses. From every list of elective courses at least one course must be chosen. These lists of electives are:
  - » Electives T&P – Transport and Planning, at least 1 course, as laid down in Section 3
  - » Electives T&L – Transport and Logistics, at least 1 course, as laid down in Section 4
  - » Electives MME – Multi-Machine Engineering, at least 1 course, as laid down Section 5
  - » External electives, at least 1 course, as laid down in Section 6
- Electives T&P – Transport and Planning  
At least one course, not already taken as part of the chosen specialisation as stipulated in Article 4, must be chosen from the elective list as given below.

| code       | course   | ECs |
|------------|--|-----|
| CIE4811-18 | Planning and operations of public transport systems                        | 6   |
| CIE4825    | Traffic flow modelling and control part 1                                  | 6   |
| CIE4831-18 | Empirical analysis for transport and planning                              | 6   |
| CIE4845    | Emerging topics for transport & planning                                   | 4   |
| CIE5802-18 | Advanced transport modelling   | 4   |
| CIE5803-18 | Railway traffic management   | 4   |
| CIE5805-18 | Intelligent vehicles for safe and efficient traffic: design and assessment | 4   |
| CIE5810-19 | Traffic safety   | 4   |
| CIE5815    | Resilient transport systems  | 4   |
| CIE5816    | Urban regions, transport and economics                                     | 4   |
| CIE5817    | Assessment of transport infrastructure and systems                         | 4   |
| CIE5821    | Traffic flow modelling and control part 2                                  | 4   |
| CIE5822    | Active modes: traffic and transport  | 4   |
| CIE5825    | Advanced public transport modelling and operations                         | 4   |
| CIE5826    | Railway operations and control   | 4   |
| CIE5830    | Freight transportation systems: analysis and modelling                     | 5   |

#### 4. Electives T&L – Transport and Logistics

At least one course, not already taken as part of the chosen specialisation as stipulated in Article 4, must be chosen from the elective list as given below.

| code    | course   | ECs |
|---------|--|-----|
| SEN115a | Law and institutions   | 5   |
| SEN171a | Advanced evaluation methods for transport policy decision-making | 5   |
| SEN1721 | Travel behaviour research  | 5   |
| SEN1741 | Innovations in transport and logistics                           | 5   |
| SEN9110 | Simulation master class  | 5   |
| SEN9720 | Logistics and supply chain innovations                           | 5   |
| SEN9725 | Supply chain gaming  | 5   |
| TPM004a | Transport safety   | 4   |
| TPM023a | Cost-benefit analysis: theory and application                    | 4   |
| TPM028a | Decision making in multimodal transport systems                  | 5   |
| TPM032a | Multi-criteria decision analysis                                 | 5   |

#### 5. Electives MME – Multi-Machine Engineering

At least one course, not already taken as part of the chosen specialisation as stipulated in Article 4, must be chosen from the elective list as given below.

| code    | course   | ECs |
|---------|--|-----|
| ME44101 | Dynamics and Interaction of Material and Equipment       | 4   |
| ME44106 | Structural design with FEM                               | 4   |
| ME44110 | Integration project large-scale equipment                | 5   |
| ME44115 | Discrete element method (DEM) simulation                 | 4   |
| ME44125 | Reliability and maintenance of transport equipment       | 3   |
| ME44200 | Operations and maintenance                               | 3   |
| ME44210 | Drive and energy systems                                 | 3   |
| ME44300 | Multi-machine coordination for logistics                 | 3   |
| ME44305 | System analysis and simulation                           | 5   |
| ME44311 | Advanced operations and production management            | 5   |
| ME44312 | Machine learning for transport and multi-machine systems | 3   |

#### 6. External electives

At least one course, not already taken as part of the chosen specialisation as stipulated in Article 4, must be chosen from the external elective lists. The student can make a choice of courses from several external elective lists. These lists of external electives are:

- » Electives C&O – Control & Operations, as laid down under a
- » Electives U – Urbanism, as laid down under b
- » Electives TIL – Other TIL fields, as laid down under c

## a. Electives C&amp;O – Control and Operations

| code      | course                          | ECs |
|-----------|---------------------------------|-----|
| AE4321-15 | Air traffic management          | 4   |
| AE4423-20 | Airline planning & optimisation | 4   |
| AE4446    | Airport operations              | 4   |

## b. Electives U – Urbanism

| code     | course                                       | ECs |
|----------|--|-----|
| AR0168   | People, movement and public space            | 5   |
| AR0228   | Infrastructure and environment method module | 5   |
| AR3CS021 | Seminar cross domain city of the future      | 5   |
| AR8003TU | Legal and governance                         | 5   |

## c. Electives TIL – Other TIL fields

| code     | course                            | ECs |
|----------|-----------------------------------|-----|
| CIE4330  | Ports and waterways 1             | 4   |
| CIE5306  | Ports and waterways 2             | 4   |
| CIE4874  | Elements of railway engineering   | 4   |
| CME2300  | Financial engineering             | 4   |
| RO47016  | Automotive human factors          | 5   |
| ME41106  | Intelligent vehicles 3mE          | 5   |
| MT44070  | Shipping management               | 5   |
| WI4062TU | Transport, routing and scheduling | 3   |
| WM1301TU | Ethics of transportation          | 3   |

## 7. Free electives

If the elective courses selected according to Section 2 from the lists in Sections 3 to 6 add up to an amount of credits that is smaller than 25, the student is required to select additional elective courses. The student can make a choice from the free elective courses, as mentioned below.

## a. As free elective courses the student may choose:

- » course from the list as given below:

| code    | course  | ECs |
|---------|---|-----|
| TIL6000 | TIL capita selecta ( <i>in conjunction with AR3CS021 only</i> ) | 1   |
| TIL6010 | TIL programming   | 2   |
| TIL6020 | TIL scientific assignment                                       | 7   |

- » all courses offered at master level at Delft University of Technology
- » all courses offered at master level at another Dutch university

## b. As free elective courses the student admitted on the basis of TER Article 3, Section 1, under b must choose:

- » convergence courses mentioned in Article 10

## c. As free elective courses the student may not choose:

- » course from the list as given below:

| code        | course   | ECs |
|-------------|--|-----|
| AE4441-16   | Operations optimisation  | 4   |
| AR0167      | Architecture and urban design                                    | 15  |
| AR0227      | Infrastructure and environment design                            | 10  |
| AR1U131     | Sustainable urban engineering of territory                       | 5   |
| CIE4061-09  | Multidisciplinary project, civil engineering consultancy project | 10  |
| CIE4835     | Transport engineering and optimisation                           | 4   |
| CIEAESM4010 | Research project   | 10  |
| EPA2934     | Preparation master thesis  | 5   |
| ME54015     | ME-MME research assignment                                       | 15  |

|          |   |   |
|----------|---|---|
| MOT2004  | Preparation for master thesis                       | 5 |
| SEN173a  | Analysis and design of freight and logistic systems | 5 |
| SEN2321  | Master thesis preparation                           | 5 |
| WI4051TU | Introduction to operation research                  | 6 |

- » all courses that have significant overlap with any other course in the examination programme
- » courses offered by TU Delft Graduate School
- » courses offered by TRAIL Research School
- » courses focusing on the development of skills
- » language courses
- » massive open online courses (MOOCs).

d. If the student notwithstanding the forgoing mentioned under c chooses:

- » courses focussing on the development of skills
- » language courses
- » massive open online courses (MOOCs),

these choices will be considered within the examination programme as extra-curricular.

e. The student can get approval for his free electives by presenting his examination programme to the Board of Examiners as stipulated in Article 2, Section 3. The approval is only valid on the condition that the selected free elective courses meet the criteria as mentioned under a and b.

8. All elective courses that are not part of the elective lists as stated in Sections 3 to 6, but that were part of an elective list in the annex (or Implementation Rules) 2019-2020 or earlier or that will be part of an elective list in the annex (or its replacement) 2021-2022 or later are in the examination programme considered as free elective courses as stipulated in Section 7.

## Article 6 Projects

1. The examination programme includes a set of compulsory projects, amounting to 15 credits in total.
2. The compulsory projects mentioned in Section 1 are:

| code       | course               | ECs |
|------------|----------------------|-----|
| TIL4020-20 | TIL research project | 5   |
| TIL5050-20 | TIL design project   | 10  |

3. The student is allowed to start the projects mentioned in Section 2 only, once he has successfully completed the course as given below:

| code       | course                          | ECs |
|------------|---------------------------------|-----|
| TIL4030-20 | TIL research and design methods | 7   |

4. The student is allowed to continue and thus complete the second project mentioned in Section 2 only, once he has successfully completed courses amounting to a total of at least 50 credits at the first day of the fifth week of the educational period in which the project starts.

## Article 7 Thesis

1. The final course included in the examination programme is a master thesis:

| code    | course     | ECs |
|---------|------------|-----|
| TIL5060 | TIL thesis | 30  |

2. For supervision and assessment of the master thesis an assessment committee will be established.
3. The student is allowed to start the thesis project mentioned in Section 1, once:
  - all the obligations mentioned in Articles 3, 6 and 10 have been met;
  - all the obligations mentioned in Articles 4 and 5 have been met, with the understanding that a total of not more than 10 credits may not have been completed yet.

4. If the student does not meet the criteria as indicated in Section 3, the chair of the assessment committee as indicated in Section 2 may give exceptional access to the project mentioned in Section 1.
5. The content of the thesis has a relationship to the fields of at least two of the faculties that offer the interfaculty programme: the faculty of Civil Engineering and Geosciences, the faculty of Technology, Policy and Management and the faculty of Mechanical, Maritime and Materials Engineering. This is reflected in the composition of the assessment committee for the thesis project.
6. The assessment committee will consist of at least three members: a chair and two daily supervisors.
7. The members of the assessment committee will originate from at least two of the faculties mentioned in Section 5.
8. Before embarking on the thesis project the student must present the composition of the assessment committee for approval to the Board of Examiners.
9. Any changes made to the composition of the approved assessment committee should be presented to the Board of Examiners.
10. The project is subject to a strict planning and timetable; specific dates and deadlines need to be set for the kick off, midterm and green light evaluations as well as for the final assessment and presentation of the project.
11. The graduation work consists of a thesis project, a thesis report and a thesis presentation. The thesis report includes a scientific paper.
12. The scientific paper mentioned in Section 11 is used to communicate the results of scientific inquiry. The purpose is twofold: to present information so that it is easy to retrieve, and to present enough information that the reader can duplicate the scientific study. A standard format helps readers to find expected information and analysis. Detailed information will be published in the digital learning environment.
13. The assessment committee motivates the outcome of the assessment.
14. Further stipulations regarding the thesis are included in the Rules and Guidelines as laid down by the Board of Examiners.

## Paragraph 2

# Honours Programme

### Article 8 Master's Honours Programme

1. Motivated students who have completed all courses of the first quarter during the first quarter and have obtained an average grade of at least 7.5 for these courses, are invited by email to apply for participation in the Honours Programme Master CEG as described in the Teaching and Examination Regulations (TER) MSc, article 10.
2. Students who fulfil the requirements as described in the [Honours Programme Guidelines](#) and are interested in the Honours Programme can send their application to the HPM coordinator together with an motivation letter in English, and a proposal and planning for their personal programme. The proposal students submit should show coherence within a specific theme. The requirements for designing the programme are described in the [Honours Programme Guidelines](#). The programme has to be approved by the Honours Programme Committee.
3. The programme proposal that the student has submitted to the Honours coordinator is considered for approval by the Honours Programme Committee, established by the Director of Education. For more information about application please check the [Honours Programme Guidelines](#).

4. The Honours Programme Master has to be completed during the student's master degree programme. None of the results may be lower than 6.0.
5. The assessment of the various components of the programme is carried out by the examiner concerned, who must be a TU Delft academic staff member. In special cases, a deviation from this requirement is permitted (Art. 5.3 Rules & Guidelines of the Board of Examiners).
6. Students of the interfaculty [MSc Transport, Infrastructure and Logistics \(TIL\)](#) programmes who are admitted to the Honours Programme master may also complete the 15 credits of the faculty organised component with assignments and courses offered by another faculty, with a supervisor from that faculty.

## Paragraph 3

# Bridging and other deficiency programmes

### Article 9 Bridging programme for students with a Dutch higher vocational bachelor's degree

1. Students with a relevant Dutch higher vocational institute bachelor's degree have to complete a bridging pre-master programme before they will be admitted to the master's degree programme.
2. The bridging programme as referred to Section 1, comprises the following deficiency courses amounting to 30 credits in total:

| code          | course                           | ECs |
|---------------|----------------------------------|-----|
| CTB1420-17    | Transport & planning             | 5   |
| IFEEMCS010400 | Lineaire algebra                 | 5   |
| IFEEMCS010500 | Kansrekening en statistiek       | 3   |
| IFEEMCS012100 | Calculus for engineering, deel 1 | 3   |
| IFEEMCS012200 | Calculus for engineering, deel 2 | 3   |
| IFEEMCS012300 | Calculus for engineering, deel 3 | 3   |
| TB111b        | Probleemanalyse                  | 5   |
| WI1909TH      | Differentiaalvergelijkingen      | 3   |

### Article 10 Convergence programme for students with a Dutch university bachelor's degree

1. Students with a relevant bachelor of science degree of a Dutch university that does not give direct admission to the master's degree programme may be eligible for a special deficiency programme of convergence courses. Degrees qualifying for the deficiency programme are mentioned in the Teaching and Examination Regulations in Article 3, Section 1, under b.
2. Students admitted to the deficiency programme mentioned Section 1 must include convergence courses in their master's degree programme, amounting to 9 credits in total.  
The student is required to select one course from each of the three lists as given below:

#### Analyse, 1 course

| code               | course                           | ECs |
|--------------------|----------------------------------|-----|
| CTB1001-16 Toets 1 | Analyse toets 1                  | 3   |
| IFEEMCS012100      | Calculus for engineering, deel 1 | 3   |
| WBMT1050 Toets 1   | Wiskunde 1                       |     |

### Lineaire algebra, 1 course

| code             | course  | ECs |
|------------------|---|-----|
| CTB1002 Toets 1  | Lineaire algebra toets 1                      | 3   |
| WBMT1051 Toets 1 | Wiskunde 2, lineaire algebra 1 – deeltentamen | 3   |
| WI1808TH1-21     | Linear algebra                                | 3   |

### Kansrekening en statistiek, 1 course

| code             | course   | ECs |
|------------------|--|-----|
| CTB2200          | Kansrekening en statistiek                             | 3   |
| IFEEMCS010500    | Kansrekening en statistiek                             | 3   |
| WBMT2049 Toets 1 | Wiskunde 4 , kansrekening en statistiek – deeltentamen | 3   |

- The convergence courses as mentioned Section 2 can be obtained within the examination programme of 120 credits if the student includes them as free elective courses, mentioned in Article 5, Section 7.
- Students admitted to the deficiency programme mentioned Section 1 have to comply with additional admission rules. These rules are given below.
  - The student must have successfully completed his chosen courses 'Analyse' and 'Lineaire algebra', as mentioned in Section 2, before he gets permission to take:

| code       | course              | ECs |
|------------|---------------------|-----|
| CIE4801-18 | Transport modelling | 6   |

that will be exclusively available in spring semester of the academic year 2021-2022 for these students.

- The student must have successfully completed his chosen course 'Kansrekening en statistiek', as mentioned in Section 2, before he gets permission to take:

| code    | course                                   | ECs |
|---------|--|-----|
| SEN1221 | Statistical analysis of choice behaviour | 5   |

- The student may request the Board of Examiners to be exempted from the obligation to include in his examination programme a course mentioned in Section 4 when he has successfully completed an equivalent course in his Bachelor's degree programme.

## Paragraph 4

# Deviate from examination programme

### Article 11 The free study programme

- Students are free to compile examination programmes that are rounded off with a final degree audit. Such a programme needs prior approval by the Board of Examiners and must consist entirely or mainly of courses given in conjunction with the degree programme but it can be complemented with other courses.
- The preliminary approval referred to Section 1 must be presented to the Board of Examiners by the student in the form of a justified request.



## Article 12      Practicals

Unless otherwise specified by the corresponding course description in the study guide, the following rules apply with respect to improving an unsatisfactory result for a project or practical:

- a. If the result of a practical exercise is less than satisfactory, i.e. if the practical exercise is assessed with a grade 5.5 or lower (rounded off to halves), the grade for the practical exercise may be improved during the next teaching period, through one of the following options depending on the grade obtained:
  - » Grade 5.0 or higher: The student may submit an addendum to the original submission;
  - » Grade lower than 5.0: The student must redo the practical exercise completely, i.e. based on a new case or a new set of input parameters.
- b. The maximum grade that can be obtained by improving an unsatisfactory result for a project or a practical is a grade 6.0.

## Article 13      Deviate from the examination programme

The Board of Examiners may allow students to deviate from the examination programme.

# Paragraph 5

## Transitional rules

## Article 14      Transitional rules as of 1 September 2021

1. A number of courses belonging to the programme 2020-2021 are no longer available in their original form from the academic year 2021-2022 on.
2. Courses from the programme 2020-2021 or earlier programmes that were available in the academic year 2020-2021, that are no longer available in the academic year 2021-2022 and that are replaced by other courses are:

| Course available in academic year 2020-2021 |  |    | Replacement course in programme 2021-2022 |  |    |
|---|--|----|---|--|----|
| code  | course   | EC | code                                      | course   | EC |
| AR0093                                      | Infrastructure and environment method module   | 3  | AR0228                                    | Infrastructure and environment method module                   | 5  |
| AR0551                                      | People, movement and public space              | 3  | AR0168                                    | People, movement and public space                              | 5  |
| AR3CS010                                    | Workshop cross domain city of the future       | 3  | TIL6000                                   | TIL capita selecta<br><i>in conjunction with AR3CS021 only</i> | 1  |
| AR3CS020                                    | Seminar cross domain city of the future        | 6  | AR3CS021                                  | Seminar cross domain city of the future                        | 5  |
| ME41105                                     | Intelligent vehicles                           | 4  | ME41106                                   | Intelligent vehicles 3mE                                       | 5  |
| WI1708TH1                                   | Analyse 1                                      | 3  | IFEEMCS012100                             | Calculus for engineering, deel 1                               | 3  |
| WI1708TH2                                   | Analyse 2                                      | 3  | IFEEMCS012200                             | Calculus for engineering, deel 2                               | 3  |
| WI1708TH3                                   | Analyse 3                                      | 3  | IFEEMCS012300                             | Calculus for engineering, deel 3                               | 3  |
| WI1807TH1                                   | Lineaire algebra 1                             | 3  | WI1808TH1-21                              | Linear algebra   | 3  |
| WI2031TH                                    | Kansrekening en statistiek voor hbo-instromers | 3  | IFEEMCS010500                             | Kansrekening en statistiek                                     | 3  |

3. Groups of courses from the programme 2020-2021 or earlier programmes that were available in the academic year 2020-2021, that are no longer available in the academic year 2021-2022 and that are replaced by a single course are:

| Course available in academic year 2020-2021 |                    |    | Replacement course in programme 2021-2022 |                  |    |
|---|--------------------|----|---|------------------|----|
| code  | course             | EC | code                                      | course           | EC |
| WI1807TH1                                   | Lineaire algebra 1 | 3  | IFEEMCS010400                             | Lineaire algebra | 5  |
| WI1807TH2                                   | Lineaire algebra 2 | 3  |   |                  |    |

4. Subjects from the programme 2020-2021 that are renamed only, are:

| Course available in academic year 2020-2021 |                          |    | Replacement course in programme 2021-2022 |                 |    |
|---|--------------------------|----|---|-----------------|----|
| code  | course                   | EC | code                                      | course          | EC |
| TIL6010                                     | TIL programming / matlab | 2  | TIL6010                                   | TIL programming | 2  |

5. Courses from the programme 2020-2021 that are recoded only, are:

| Course available in academic year 2020-2021 |   |    | Replacement course in programme 2021-2022 |   |    |
|---|---|----|---|---|----|
| code  | course  | EC | code                                      | course  | EC |
| SEN9710                                     | Decision making in multimodal transport systems | 5  | TPM028a                                   | Decision making in multimodal transport systems | 5  |
| ME44105                                     | Structural Design with FEM                      | 4  | ME44106                                   | Structural Design with FEM                      | 4  |

6. Courses from the programme 2020-2021 that are not replaced in the degree programme are:

| code   | course               | ECs |
|--------|----------------------|-----|
| AR0191 | Urban sustainability | 3   |

7. Courses from the programme 2020-2021 that are available in the academic year 2021-2022 but no longer as part of the degree programme 2021-2022 other than as a free elective are:

| code    | course   | ECs |
|---------|--|-----|
| SEN1131 | Institutional economics for designing in socio-technical systems | 3   |

8. New courses, part of the degree programme 2021-2022 are:

| code    | course  | ECs |
|---------|---|-----|
| TPM023a | Cost-benefit analysis: theory and application | 4   |
| TPM032a | Multi-criteria decision analysis              | 5   |

9. Existing courses that are new in the degree programme 2021-2022, are:

| code    | course                   | ECs |
|---------|--------------------------|-----|
| ME44210 | Drive and energy systems | 3   |

10. The examination programme must in any case encompass at least 120 credits. Any inconsistencies arising as a result of transitional measures will be compensated for with free elective courses as mentioned in Article 5, Section 7.

## Article 15 Transitional rules as of 1 September 2022

1. A number of courses belonging to the programme 2021-2022 will no longer be available in their original form from the academic year 2022-2023 on.
2. Courses from the programme 2021-2022 that are available in the academic year 2021-2022, but that are no longer available from the academic year 2022-2023 on, are:

| code       | course   | ECs |
|------------|--|-----|
| CIE4801-18 | Transport modelling  | 6   |
| CIE4825    | Traffic flow modelling and control part 1                                  | 6   |
| CIE4831-18 | Empirical analysis for transport and planning                              | 6   |
| CIE4845    | Emerging topics for transport & planning                                   | 4   |
| CIE5802-18 | Advanced transport modelling   | 4   |
| CIE5803-18 | Railway traffic management   | 4   |
| CIE5805-18 | Intelligent vehicles for safe and efficient traffic: design and assessment | 4   |
| CIE5810-19 | Traffic safety   | 4   |
| CIE5815    | Resilient transport systems  | 4   |
| CIE5816    | Urban regions, transport and economics                                     | 4   |
| CIE5817    | Assessment of transport infrastructure and systems                         | 4   |
| CIE5821    | Traffic flow modelling and control part 2                                  | 4   |
| CIE5822    | Active modes: traffic and transport  | 4   |
| CIE5825    | Advanced public transport modelling and operations                         | 4   |
| CIE5826    | Railway operations and control   | 4   |
| CIE5830    | Freight transportation systems: analysis and modelling                     | 5   |

3. For the courses mentioned in Section 2 a list of replacement courses will be published in the Annex of the Teaching and Examination Regulations 2022-2023.
4. The examination programme must in any case encompass at least 120 credits. Any inconsistencies arising as a result of transitional measures will be compensated for with free elective courses as mentioned in Article 5, Section 7.

# Paragraph 6

## Final provision

## Article 16 When the rules do not provide

Insofar as these rules do not provide for specific circumstances, the Board of Examiners will make a decision that is in line with the annex to every extent possible.



