

**TEACHING AND EXAMINATION REGULATIONS
(TER)
(see Article 7.13 of the Higher Education and
Research Act)**

**MASTER'S PROGRAMME
Sustainable Energy Technology**

**DELFT UNIVERSITY OF TECHNOLOGY
UNIVERSITY OF TWENTE
EINDHOVEN UNIVERSITY OF TECHNOLOGY**

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The texts of the TER are the same for every university but they are approved by their own board.

The Board of the Mechanical Engineering Faculty of Eindhoven University of Technology in view of articles 9.15, first paragraph, subparagraph a, 7.13, first and second paragraph, 9.38, subparagraph b, and 9.18, first paragraph, subparagraph a, of the Higher Education and Scientific Research Act of the Netherlands

The Board of the Faculty of Applied Sciences of Delft University of Technology in view of articles 9.15, first paragraph, subparagraph a, 7.13, first and second paragraph, 9.38, subparagraph b, and 9.18, first paragraph, subparagraph a, of the Higher Education and Scientific Research Act of the Netherlands

The Dean of the Faculty of Engineering Technology of the University of Twente in view of articles 9.15, first paragraph, subparagraph a, 7.13, first and second paragraph, 9.38, subparagraph b, and 9.18, first paragraph, subparagraph a, of the Higher Education and Scientific Research Act of the Netherlands

with due observance of the consent of the Faculty Council/Faculty Student Council

hereby establishes

Teaching and Examination Regulations for the Sustainable Energy Technology programme.

Section 1 - General

Article 1 – Definitions of terms used

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

The following terms are to be defined thus:

- a. the Act: the Higher Education and Scientific Research Act (in Dutch, the WHW), in the Dutch Bulletin of Acts, Orders and Decrees, number 593 and as amended since;
- b. the Dean: If an institution that is fully or partly responsible for the programme has opted for a Joint Faculty Board, then "Dean" will also include the Faculty Board;
- c. programme: the Master's degree programme as denoted in Article 7.3a paragraph 1, subparagraph b of the Act;
- d. student: anyone enrolled at Delft University of Technology (TUD), University of Twente (UT) or Eindhoven University of Technology (TU/e) as a student or external student for the purpose of benefiting from education and/or for the purpose of sitting the examinations and undergoing the degree audit which form part of the programme;
- e. subject: a unit of study within the programme as referred to in Article 7.3, paragraphs 2 and 3 of the Act;
- f. practical: a practical exercise as intended in Article 7.13, paragraph 2, subparagraph d of the Act, taking one of the following forms:
 - writing a thesis
 - conducting a project or developing an experimental design
 - completing a design or research assignment
 - conducting a literature review
 - completing an internship
 - giving a public presentation

- participating in fieldwork or an excursion
 - conducting tests and experiments
 - writing a position paper
 - or participating in other educational activities aimed at enabling participants to attain certain knowledge, insights or skills;
- g. examination: an assessment of the student's knowledge, insight and skills in relation to a subject, as well as the marking of that assessment by at least one examiner, appointed for that purpose by the Board of Examiners;
- h. degree audit: an assessment by which the Board of Examiners, in accordance with Article 7.10 of the Act, establishes whether all examinations in the various subjects that constitute the degree programme have been successfully completed (also referred to as final examination);
- i. Board of Examiners: the programme's Board of Examiners (also referred to as Examination Committee), which has been installed in accordance with Article 7.12 of the Act;
- j. examiner: the individual who, in line with Article 7.12, paragraph 3 of the Act, has been appointed to set the examinations;
- k. credit: a credit awarded in accordance with the European Credit Transfer System (ECTS); one credit denotes a study load of 28 hours;
- l. working day: Monday to Friday with the exception of recognised national public holidays;
- m. study guide: a guide (also referred to as course guide) to the degree programme containing specific information pertaining to the various subjects;
- n. institution: Delft University of Technology (TUD), Eindhoven University of Technology (TU/e), University of Twente (UT), together referred to as 3TU.
- o. disability: all conditions which are (at least for the period in question) 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.

Article 2 – Programme Structure

1. The following points regarding the programme are included in the appendix:
 - a. programme composition and relevant examinations,
 - b. whether the programme is full-time, part-time or a sandwich course,
 - c. composition of the specialisations,
 - d. study load of the programme and of each of the units of study making up that programme,
 - e. number and sequence of examinations and practical exercises,
 - f. whether the examinations will be administered in an oral, written or other format,
 - g. the content of the practicals,
 - h. if and when necessary, that a satisfactory result on an examination is a prerequisite for admission to other examinations,
 - i. if and when necessary, that the requirement to participate in a practical will be part of the admission procedure to a particular examination,
 - j. the units of study from which the student may choose to fulfil programme elective requirements,
 - k. the transitional regulations as referred to in article 20.
2. The appendix forms an integral part of these regulations.

Article 3 – The programme's final attainment levels

Regarding academic competences the graduate has the following qualifications:

1. has a thorough scientific attitude (having the ability to work independently, to reflect, to critically analyze, to evaluate, to generate novel ideas etc.). In his scientific attitude he does not restrict himself to the specific boundaries of the Construction Management and Engineering domain and is able to cross these boundaries, wherever and whenever necessary;
2. has the ability to reflect on the complete scope of matters and issues in the domain: is able to form an opinion and contribute to discussions;
3. as an academic, the graduate understands the potential benefits of research and is able to understand and incorporate the results of research into his own design of solutions. He has the potential to contribute to or perform research himself;
4. understands the importance of oral and written communication skills, in particular in English, and can make effective use of these. He also adheres to existing academic traditions, such as providing proper credits and references.
5. has the habit to reflect upon his own work and continuously uses relevant information to improve his competences.
6. is able to operate in the context of a team and to act as a project leader.

As a graduate he or she has the following capabilities in addition to the ones listed above:

7. knows that compromises are inevitable and is able to deal with these effectively.
8. makes decisions based on these compromises and risk evaluations.
9. knows that models only approximate reality, but he is able to develop and use them adequately whenever this is beneficial.
10. is aware of the disadvantages of certain design decisions and is able to communicate these to the relevant parties (stakeholders). He is able to take the purpose of a particular design and its context into consideration.
11. has the attitude and is able to implement the concept of life-long-learning both inside and outside the field of expertise covered by the MSc programme.

Regarding the SET domain-specific competences the graduate has the following qualifications:

1. has acquired the necessary engineering skills in the context of sustainable energy technology (is able to work methodically, is able to invent his own tools, adapt scientific theories and techniques, is able to work in a multidisciplinary environment, is application-oriented);
2. is able to develop implementation processes based upon 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 content-related subjects mentioned above. The graduate can find his way in the development and implementation of unfamiliar process configurations;
3. is able to manage complex assignments in a multidisciplinary team. This ability covers the knowledge and application of the management of social interactions. The underlying objective of this ability is to find a balance between possible solutions of complex requirements, technical possibilities, genuine interests of the parties involved and justified value creation on the scientific and operational levels;
4. is able to translate technological concepts and developments into appropriate process innovations for construction. This ability covers the understanding of technical developments and of their implications for process characteristics such as risks, costs, time, quality, stakeholders' participation, value creation, legislation;
5. is able to evaluate processes with respect to above mentioned process characteristics. This ability means that the graduate is able to evaluate SET designs against the background of a balance composed of possible solutions involving complex requirements, technical possibilities, interests of parties involved and justified value creation on the scientific and operational levels;
6. is skilled in domain-specific documentation and presentation of the results of research and design projects.

Article 4 – Admission to the programme

1. Students in possession of a diploma which shows that they have passed the final examination for the following Bachelor of Science's programmes will be eligible for admission to the programme.
 - Aerospace Engineering (TUD)
 - Applied Physics (TU/e, TUD, UT)
 - Advanced Technology (pre-SET track) (UT)
 - Chemical Engineering (TU/e, UT)
 - Molecular Science and Technology (TUD and UT)
 - Electrical Engineering (TU/e, TUD, UT)
 - Innovation Sciences (Energy) (TU/e)
 - Mechanical Engineering (TU/e, TUD, UT).
2. Students who are not in possession of one of the diploma's mentioned in paragraph 1 will require a certificate of admission issued by the Dean.
3. The admission criteria to receive a certificate of admission for the Master's programme are the same as the qualities attained at completion of the Mechanical engineering, Chemical engineering, Electrical engineering or Applied physics Bachelor's programme with regards to knowledge, insights and skills. (the preliminary Bachelor's degree).

Admission of foreign students:

- 1) Command of English: students must have a level of English sufficient to finish the master's degree in English, as is specified by each university (see admission websites).
 - 2) The level of education in the country in which the student has completed his/her pre-university education: this must be more or less comparable with that in the Netherlands.
 - 3) Level of knowledge: the student must have accumulated sufficient knowledge on the basis of the subjects he/she has studied abroad to be at a level comparable to that of Dutch students who are admitted to the Master's degree program.
4. Notwithstanding the provisions of paragraph 1, the Dean may under special circumstances admit a student to one or more examinations and/or practicals of the programme before the student has passed the Bachelor's examination. A limited period of validity may be set for such permission.
 5. Students holding a bachelor degree of relevant polytechnical programmes are admissible after successful completion of a premaster programme.

Article 5 – Language

Education shall be provided in English. Students shall sit examinations and undergo the degree audit in English, unless otherwise is agreed by the students as well as the staff. The Dean has the authority to adapt language criteria under certain circumstances.

Section 2 – Examinations

Article 6 - Number, times and frequency of examinations

1. There are at least two opportunities in each academic year for sitting examinations.
2. A timetable of all opportunities for sitting written examinations is drawn up on an annual basis and details are published before the start of each semester.
3. In special cases, the Departmental Board can deviate from the timetable referred to in the previous article, no later than two months before the examinations should have taken place. The Departmental Board will inform the students of the change, giving reasons, without delay.
4. Notwithstanding the provisions of paragraph 1, there will be at least one opportunity in a year to sit examinations relating to subjects not taught in that academic year.
5. If a subject is removed from the study programme, two opportunities to sit an examination in this subject will be granted after the last classes in this subject have been taught: an examination following the last of the classes, and one resit in the same academic year. If in the subsequent academic year no substituting subject is offered, and the student has shown to be close to passing the examination, a last resit will be organized in this subsequent academic year.
6. In exceptional cases, the Board of Examiners may permit a deviation from the standard number of times and the way in which certain examinations may be administered.

Article 7 – Validity of examinations

1. The result of an examination is valid for an unlimited period.
2. However, in cases where the examination result dates from over six years ago, the Board of Examiners may impose an additional or substitute examination.

Article 8 – Oral examinations

Oral examinations will be held in public, unless determined otherwise by the Board of Examiners in a special case or unless the student has formally objected to the public nature of the examination.

Article 9 – Determining and announcing the results

1. The examiner is required to determine the result of an oral examination as soon as it is finished and to supply the student with a written statement of the result.
2. In the case of written examinations, the examiner is required to determine the result as soon as possible after the examination but within 20 working days at most. Taking due account of the student's right to privacy, the student administration then ensures that the results are registered and published within 20 working days of the examination date. If the examiner is unable to meet these criteria due to extenuating circumstances, the examiner must inform the Board of Examiners, stating reasons for the delay. The Board of Examiners will then pass this information on to the student or students without delay, and a new date for announcing exam results will simultaneously be made known.
3. Regarding any examinations that are not taken orally or in writing, the Board of Examiners will determine beforehand precisely how and within what period of time the student will be notified of the results.
4. When receiving the result of an examination, the student will be made aware of his or her right to inspect the results as referred to in Article 10, the opportunity for a subsequent discussion as referred to in Article 11 and the opportunity to lodge an appeal with the Examination Appeals Board.

Article 10 – The right to inspect the results

1. For a period of at least 20 working days after notification of the results of any written examination, the student has the right to inspect his or her marked work, on request. If a student intends to lodge an appeal regarding the marking of his or her written work, he or she will be supplied with a copy of the marked work at cost price. The student accepts that the copy is handled confidentially, only for the purpose of writing an appeal.
2. During the period referred to in paragraph 1, all interested individuals may acquaint themselves with the questions and assignments set in the examination in question, as well as with the criteria used for marking.
3. The Board of Examiners may determine that the right to inspection as referred to in paragraphs 1 and 2 will be exercised at a location specified beforehand and at no less than two specific times, also to be decided in advance.
If the student can prove that he/she is or was unable to be present at the location at the set time due to circumstances beyond his or her control, then another opportunity will be provided, if possible within the period stated in paragraph 1.
The location and times mentioned in the first sentence will be announced within five working days.

Article 11 – Subsequent discussion of the examination results

1. As soon as possible after the results of an oral examination have been announced, an opportunity will be arranged for the examiner to discuss the results with the student, if so requested by the student or at the instigation of the examiner. At this meeting, the reasons behind the marks awarded will be explained.
2. For a period of 20 working days after the results have been announced, students who have taken a written examination may submit a request to discuss the results with the relevant examiner. The discussion will take place within a reasonable time span and at a place and time determined by the examiner.
3. In cases where a collective discussion is organised by or on the instructions of the Board of Examiners, a student may only submit a request, as referred to in the preceding paragraph, if the student was present at the collective discussion and if the student provides a good reason for the request or if, due to circumstances beyond the student's control, the student was unable to attend the collective discussion.
4. The provisions of paragraph 3 are similarly applicable if either the Board of Examiners or the examiner first gives the student the opportunity to compare his/her answers with model answers.
5. The Board of Examiners may permit deviations from the provisions of paragraphs 2 and 3.

Section 3 – Studying with a disability

Article 12 – Adaptations to assist students with a disability

1. Students who have a physical or sensory disability are entitled to adaptations in teaching, examinations and practicals. If possible, the student must submit a written request to the Dean at least three months before the student is due to participate in coursework, examinations and/or practicals. These adaptations will be geared as much as possible to a student's individual needs, but they must not affect the quality or the degree of difficulty of a subject or an examination programme. The facilities provided to this end may involve adapting the form or duration of examinations and/or practicals to the student's individual situation or making practical aids available. (At TU/e, this request should be submitted to the STU/International Relations Office.)

2. The request referred to in paragraph 1 should be accompanied by a recent medical certificate from a doctor or a psychologist. If there is evidence of dyslexia, for example, the request should be accompanied by a document issued by a recognised dyslexia-testing bureau (i.e. registered with BIG, NIB, or NVO). If possible, this certificate should also give an estimation of the extent of the disability.
3. The Dean will decide on requests for adaptations to the educational environment. The Board of Examiners will decide on requests for adapting examinations. The decision must be announced within four weeks.

Section 4 – Approval by the Board of Examiners

Article 13 Exemption from examinations or practicals

1. After having been advised by the relevant examiner, the Board of Examiners may decide to exempt students from an examination or practical. Conditions for exemption are to be specified in the Rules and Regulations of the Board of Examiners.
2. The Board of Examiners may exempt a student from a specific examination only on the grounds of the content, level and quality of examinations successfully completed earlier or on the grounds of the student's prior knowledge, insights and skills developed outside of higher education.

Article 14 Elective subjects

Criteria for approval of elective subjects to be followed by the student, as referred to in the appendix article 4, are contained in the Rules and Regulations of the Board of Examiners.

Article 15 Free programme choice

The Board of Examiners shall decide on reasoned requests from students for free programme choice as referred to in Article 7.3c of the Act. Conditions related to this matter are to be specified in the Rules and Regulations of the Board of Examiners.

Section 5 – Degree audit

Article 16 – The times and frequency of the degree audit

There shall be an opportunity to undergo the Master's degree audit at least twice a year. The dates set by the Board of Examiners are to be published before the start of the academic year.

Section 6 – Student counselling and study progress

Article 17 – Student support and guidance

Responsibility for student support and guidance lies with the Dean. This includes informing students about study options within the programme or elsewhere. One or more study advisers may be appointed for this purpose.

Article 18 – Monitoring academic progress

1. The Dean is responsible for the registration and timely publication of the exam results of individual students in the institution's virtual learning system.

2. The Dean is responsible for facilitating discussion of the results between the student and the study adviser, when appropriate.

Section 7 – Appeals and objections

Article 19

1. Decisions by the Board of Examiners based on these regulations may be appealed within four weeks after the announcement of the decision to the student in question. Appeals should be lodged with the Examination Appeals Board.
2. Decisions by the Dean based on these regulations may be appealed within six weeks after the announcement of the decision to the student in question. Objections are to be lodged with the Dean.

Section 8 – Contravention, changes and implementation

Article 20 – Contravening the Regulations

If the study guide and/or any other regulations relating to the study programme and/or the examination programme prove to contravene these Regulations and the accompanying appendix, precedence will be given to the provisions of these Regulations with which the appendix forms an integral whole.

Article 21 – Amendments to the regulations

1. Any amendments to these regulations will be made by special resolution of the Dean.
2. No amendments will affect the current academic year unless it is reasonable to suppose that the interests of students will not be adversely affected.
3. Amendments to these regulations may not retroactively affect a decision by the Board of Examiners to the detriment of the student.

Article 22 – Transitional regulations

1. If the composition of the study programme undergoes intrinsic changes or if these regulations are amended, the Dean will draw up transitional regulations that will be incorporated into appendix of these Regulations.
2. If and when appropriate, such transitional regulations are required to include:
 - a. a provision concerning the exemptions that can be given on the basis of the examinations already passed;
 - b. a provision specifying the validity of the transitional regulations.

Article 23 – Publication of the regulations

The Teaching and Examination Regulations and the appendix, which forms an integral whole with the Regulations, shall be published on the institution's website.

Article 24 – Entry into force

These regulations will come into effect on 1th of September 2011

APPENDIX TO TEACHING AND EXAMINATION REGULATIONS

IMPLEMENTATION REGULATIONS 2011-2012

3TU MASTER'S DEGREE PROGRAMME SUSTAINABLE ENERGY TECHNOLOGY

DELFT UNIVERSITY OF TECHNOLOGY UNIVERSITY OF TWENTE EINDHOVEN UNIVERSITY OF TECHNOLOGY

Article 1 - Study load

1. The Master's degree audit for the Sustainable Energy Technology programme has a study load of 120 credits. These 120 credits must not include any credits which constituted part of a previously passed Bachelor's audit.
2. The programme will be taught in full time

Article 2 - Composition of the degree programme

1. The composition of the 3TU.SET study programme is as follows:
 - a. Core programme, 44 – 46 EC, as described in Article 3,
 - b. Specialisations, specialisation-linked and elective subjects, 10 – 16 EC, as described in Article 4,
 - c. Internship and projects, 15 – 21 EC, as described in Article 5,
 - d. Specialisation-linked graduation work, 40 – 45 EC, as described in Article 6.

Overview

University	Delft	Twente	Eindhoven
Core program	45	50	44
Specialisation-linked and elective subjects	15	19	10 or 16
Internship and projects	15	15 (20)	15 or 21
Graduation work	45	40	45

The division of credits is such that the total programme amounts to at least 120 EC.

2. In addition to the programme referred to in paragraph 1, students who will be admitted to the programme on the basis of a Bachelor's degree awarded by a Dutch institute of professional education must also complete a bridging course (within a year of commencing their course of study) that includes the following subjects:

At Delft University of Technology:

Conditional admission of graduates from institutes of HBO

Dutch students with an HBO bachelors degree in Applied Physics (36 credits)

HBO graduates with a background in applied physics have to follow extra courses in mathematics and physics:

Code	Course Title	Credits (EC)
WI1142 + WI2242	Linear Algebra	6
WI2140	Differential Equations	4
TN2545	Systems & Signals	6
TN2344	Waves	6
TN2301 or TN2311 + TN2411	Quantum Mechanics	6
TN2053	Electromagnetism 1	6
TN2951-P	Research Laboratory (1 experiment from two departments)	2

Dutch students with an HBO bachelors degree in Biochemical and Chemical Engineering (24 credits)

HBO graduates with a background in chemical engineering have to follow extra courses in mathematics and process technology.

Code	Course Title	Credits (EC)
MSTTLIN	Lineaire Algebra	3
MSTTDIF	Differentiaalvergelijkingen	3
MSTTFP	Physical transport phenomena	6
MSTTSCT	Separation technology	6
MSTTPT2	Process technology 2	6

Dutch students with an HBO bachelors degree in Mechanical Engineering (35 credits)

HBO graduates with a background in mechanical engineering have to follow extra courses in mathematics and physics:

Code	Course Title	Credits (EC)
WI1708TH1	Analyse 1 TH	3
WI1708TH2	Analyse 2 TH	3
WI1708TH3	Analyse 3 TH	3
WI1807TH1	Lineaire Algebra TH	3
WI1909TH2	Differentiaalvergelijkingen TH	3
WB1217	Sterkteleer 2	3
WB1216	Dynamica 2	3
WB1218	Niet lineaire mechanica	2
WB1225	Stromingsleer	3
WB2207	Regeltechniek	3
WB1224	Thermodynamica 2	3
WB3550	Warmte en stofoverdracht	3

Dutch students with an HBO bachelors degree in Electrical Engineering (40 credits)

HBO graduates with a background in electrical engineering have to follow extra courses in mathematics and physics:

Code	Course Title	Credits (EC)
WI1708TH1	Analyse 1 (including WI1000)	3
WI1708TH2	Analyse 2	3
WI1708TH3	Analyse 3	3
WI1807TH1	Lineaire Algebra 1	3
WI1807TH2	Lineaire Algebra 2	3
SC2030ET	Dynamische regelsystemen	8
ET2105	Elektrische Energietechnik	5
ET8040	Signaaltransformaties HBO	5
ET8041	EM Golven HBO	4
ET2505-A	Stochastische Processen	3

At the University of Twente: Pre-master program for Dutch HBO-graduates

title	code	EC
System Analysis	191131170	3.0
Introduction to fluid dynamics	191154131	3.5
Fluid dynamics and heat transfer	191154141	3.5
Linear algebra A	191512061	3.0
Linear Algebra B	191512081	2.0
Calculus A	191512001	4.0
Calculus B	191512021	3.0
Calculus C	191512041	3.0
Procestechologie	191375141	5.0
Basic Chemistry (SET)	193902020	3.0
Introd Finite Elem Methods	191157110	3.5
Mechanics of Materials 2	191157150	3.5
To be determined		Xxx
total EC		40-45

The Dean may permit deviations from the programme mentioned above, adjusting it to the prior knowledge and entrance requirements.

At Eindhoven University of Technology: Pre-master program for Dutch HBO-graduates

title	code	EC
Basic mathematics	2DL03	3
Pre-master research assignment	0HB01	3
Calculus A	2DL04	3
Thermodynamics minor hbo	4B440	3
Linear algebra	2DL06	3
Reaction kinetics and catalysis for SET	6SE10	3
Physical transport phenomena	3B470	3
control engineering	4A550	3
Electrical power engineering	5EE20	3
Materials science and engineering A	6BA20	3
Training matlab	4ZZ89	0
total EC		30

The Dean may permit deviations from the programme mentioned above.

The three bridging courses are interchangeable.

Article 3 - Core programme

Students must complete one of the three core programmes shown below, totalling 44, 50 or 47 EC. The three core programmes are interchangeable, as a whole.

At Delft University of Technology:

Title	Code	EC
Renewable Energy	SET3011	3
Transport Phenomena	SET3021	4
Smart Energy Products	ID6500SET	4
Sustainable Energy Economics	WM0635SET	6
Introduction to Wind Energy	AE3-W02	4
Electrical Power Engineering	ET4365SET	5
Sustainable Hydrogen and electrical Energy Storage	SET3031	4
Fuel cell systems	WB4425	3
Energy from Biomass	SET3041	4
Solar Energy	ET4149	4
Practical Course on Solar Cells	ET4149TU _p	1
System Innovation and Strategic Niche Management	WM0930SET	3
total EC		45

At the University of Twente:

Title	Code	EC
Technology and Sustainable Development	195740005	3
Design Methodology	192850920	5
Transport Phenomena	191141700	5
Energy Systems	195740070	3
Introduction to Chemical Reactor Engineering	195740090	3
Wind Energy	195740120	4
Electrical Power Engineering and System Integration	195740100	4
Energy and Economy	195740020	4
Hydrogen Technology	195740060	4
Energy from Biomass	195740030	4
Solar Energy	195740040	4
System Innovation and Strategic Niche Management	194106060	4
Sustainability	195740130	3
total EC		50

At Eindhoven University of Technology:

Title	code	EC
Technology for sustainable development	0C900	3
Renewable energy sources	4P510	3
Physical Transport Phenomena	3T320	3
Energy conversion	4P570	3
Energy and consumer	0C903	3
Design of sustainable energy systems for the built environment	7S815	3
Wind energy	4P720	4
Electrical power engineering and system integration	5EE40	4
Energy and economy	0EM72	3
Hydrogen technology	6SE15	4
Energy from biomass	4S610	4
Solar cells	3Y280	3
System innovation and strategic niche management	0C940	3
Solar cells (practical)	3Y281	1
total EC		44

Article 4 – Specialisations, specialisation-linked and elective subjects

1. The following specialisations are offered at the Delft University of Technology:

- Energy from biomass
- Wind energy
- Solar energy
- Fuel cells
- Hydrogen technology
- Electrical power engineering
- Energy and society

All specialisations require that the students complete at least 15 EC of specialisation-linked elective subjects, to be chosen in agreement with the graduation supervisor. The complete set of courses and the graduation project is subject to approval by the examination committee.

2. The following specialisations are offered at the University of Twente:

- Energy from biomass
- Wind energy
- Solar energy
- Hydrogen technology
- Energy and society

It is also possible to choose a graduation project that does not fit in one of these fields, but clearly fits in the field of sustainable energy technology.

All specialisations require that the students complete at least 15 EC of specialisation-linked elective subjects, to be chosen in agreement with the graduation supervisor. The complete set of courses and the graduation project is subject to approval by the examination committee.

3. The following specialisations are offered at the Eindhoven University of Technology:

- Energy from biomass
- Wind energy
- Solar energy
- Hydrogen technology
- Electrical power engineering
- Energy and society
- Sustainable energy in the built environment

All specialisations require that the students complete at least 6 EC of specialisation-linked subjects, to be chosen in agreement with the graduation supervisor. The elective subjects programme of 10 (16) EC is to be completed with elective courses to be chosen from the list in the study guide, other electives can only be chosen after approval of the examination committee. The complete set of elective courses is subject to approval by the examination committee.

Article 5 – Internship and projects

The following internships and projects are offered at the Delft University of Technology:

System Integration project I (group)	SET3801	6 EC
System Integration project II (individual)	SET3811	9 EC
External internship (replacing System Integration Project II)	SET3821	9-15 EC

The following internships and projects are offered at the University of Twente:

System Integration project I (group)	574001	6 EC
System Integration project II (individual)	574011	9 EC
External internship (replacing System Integration Project I&II)	579915	15/20 EC

Depending on their background, students follow either System Integration Projects, among which a research internship of 9 EC, or an external internship of 15-20 EC. Students may not commence the internship until 40 EC of the course program is completed.

The following internships and projects are offered at the Eindhoven University of Technology:

The following group project is part of the students course programme

System integration project	5EP20	6 EC
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Students graduating at TU/e must complete an internship worth 9 or 15 credits as a preparation on their graduation project.

Research traineeship	4SE2.	9 EC
Research traineeship	4SE3.	15 EC

At TUE students may commence a traineeship when they have passed the Bachelor's exam and have completed at least 30 EC of the master program. In case of a bridging course students must have completed the bridging course before doing a traineeship.

Article 6 – Graduation Work

1. Students complete graduation work worth 40-45 credits which is related to their selected specialisation at Delft University of Technology, the University of Twente or the Eindhoven University of Technology.
2. Graduation work consists of at least a graduation project, a graduation report, a summary of the report and a presentation.
3. Students may not commence graduation work until they have:
 - completed at least 64 credits of the course program at TUD or UT, 69 at TUE.
 - completed a bridging course (in the event that such a course was required in accordance with Article 2, paragraph 2),
 - passed the Bachelor's audit referred to in Article 4 paragraph 1 of the Course and Examination Regulations.

The graduation work at the Delft University of Technology is arranged as follows:

The graduation project of 45 EC has code SET3901. Graduation project in one of the specialisations, i.e. energy from biomass, solar energy, wind energy, sustainable hydrogen, fuel cells, electrical power engineering and energy and society. In principle the student finds a suitable supervisor to supervise a sustainable energy related research project. Each year an MSc project introduction meeting will be organised during which relevant groups and potential supervisors are introduced. The student can then decide which supervisors to contact. The student and supervisor agree on a plan for the project and submit a short description (form available from Blackboard) to the Examination Committee MSc SET: EC-SET-TNW@tudelft.nl. In principle the examination committee of SET, headed by prof. E.H. Brueck, has to agree on the plan before the student can start.

The graduation work at the University of Twente is arranged as follows:

Graduation project	5799198	45 (40) EC
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The graduation project has a study load of 45 EC (40 EC in case of an extended internship)

Each year a graduation introduction meeting will be organized where possibilities for the graduation work will be introduced. The student has to find a suitable supervisor and obtains agreement from the exam committee for the graduation work, supervisor and preparatory electives.

The graduation work at the Eindhoven University of Technology is arranged as follows:

The graduation project at TU/e has a study load of 45 EC. The code depends on the faculty of the supervisor and research group.

graduation project applied physics	3YY0.
graduation project chemical engineering	6SE0.
graduation project electrical engineering	5TT0.
graduation project mechanical engineering	4W99.
graduation project technology management	0C93.
graduation project architecture, building and planning	7SE5.

Each year a graduation introduction meeting will be organized where possibilities for the graduation work will be introduced. The student has to find a suitable supervisor and obtains agreement from the exam committee for the graduation work, supervisor and preparatory electives. Rules about the graduation project are specified in the Examination Rules.

Article 7 – Study Programme

1. Before commencing graduation work, students must draw up their study programme and submit this, together with details of the composition of their thesis committee, to the Board of Examiners for approval.
2. Each individual amendment to an approved study programme or an approved thesis committee must be resubmitted to the Board of Examiners for approval.

Article 8 -Free degree programme

1. Students can compile their own free degree programme, with an associated degree audit. The free degree programme, which requires prior approval by the Board of Examiners, must consist wholly or largely of components taught at one of the three universities within the framework of, or in support of, the programme. It may be supplemented by components taught within the framework of, or in support of, other degree programmes.
2. When applying to the Board of Examiners for the prior approval referred to in paragraph 1, students must provide details of their reasons for making this request.

Article 9 – Practical exercises

1. Practical exercises, as described in Article 1 subsection f of the Teaching and Examination Regulations, are taught in accordance with the method described in the prospectus (TU/e: OWinfo, TUD: coursebase and/or blackboard, UT: Osiris) of the subject in question.
2. Any students who fail to complete the practical exercises will be barred from sitting the examination, unless stated otherwise in the prospectus of the subject in question.

Article 10 - The form of the examinations

1. Examinations will be administered in accordance with the details set out in the prospectus of the subject in question.

2. Examinations held by another programme within the framework of another programme are administered in accordance with the procedure set out in, or pursuant to, the Teaching and Examination Regulations of that other programme.

Article 11 – The frequency, terms and sequence of examinations

1. Written and oral examinations are held immediately after the teaching period for the course to which the examination in question relates.

2. Written examination resits are held as follows

at Delft University of Technology:

examination after teaching period and resits at subsequent teaching period or after summer holidays when teaching period ends before the summer holidays.

at the University of Twente:

examination after teaching period and resits at subsequent teaching period or after summer holidays or scheduled on individual request for an oral session.

at Eindhoven University of Technology:

- examination after teaching period 1: resits after teaching period 2 .
- examination after teaching period 2: resits after teaching period 3.
- examination after teaching period 3: resits after teaching period 4.
- examination after teaching period 4: resits interim.

3. Participation in practical exercises is governed by the timetables drawn up for this purpose.

4. Sequence

The programmes examinations and practical exercises, are administered according to the sequence:

- core programme
- elective courses
- internship
- graduation project.

If convergence subjects are part of the programme, these should be rounded up before or together with the core programme. The Board of Examiners may permit deviations from the sequence described in this article.

Article 12 - Transitional regulations

not applicable