

UNIVERSITY OF TWENTE.

Education and Examination Regulations
Master Sustainable Energy Technology
2022-2023

PREFACE

The Sustainable Energy Technology (SET) programme has chosen to embed the Education and Examination Regulations within the programme-specific part of the Student Charter on the basis of Article 7.59 of the Dutch Higher Education and Research Act (WHW).

This document presents the rules (rights and obligations) of the programme and of students with regard to education and examinations. These rules apply to all students, but individual students have the right to submit a request for an alternative programme. Also, the Programme Director can decide to take a general or individual action that deviates from the regulations, provided that it is not to the disadvantage of the student(s). Note that whenever the male gender is used in this document, this can be understood as referring to the female gender as well.

For general information, reference is made to the 'Student Charter of the UT, the institution-specific part'. For special possibilities within the study programme, reference is made to the education page of the Master's programme in Sustainable Energy Technology (<http://www.utwente.nl/set>) and, for information about course content, to the Course Catalogue (<http://osiris.utwente.nl>), whenever necessary.

The Sustainable Energy Technology Education and Examination Regulations apply to all SET students. The programme is provided within the faculty of Engineering Technology (ET) at the University of Twente (UT) in Enschede.

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ARTICLE 1. GENERAL CONDITIONS

1.1 Applicability of the regulation

- 1) This regulation applies to the education and the examinations of the master's programme in 'Sustainable Energy Technology', hereafter called: the programme.
- 2) The programme is provided under the responsibility of the Faculty of Engineering Technology at the University of Twente, hereafter called: the Faculty.
- 3) The final responsibility for the implementation of the education programme rests with the Programme Director and for admission and assessment with the Examination Board of the programme. A student who doubts whether he has been handled in conformance with the regulations can ask the Programme Director for clarification. It is always possible to appeal against a decision that has been taken via the UT Complaints Desk.

1.2 Definition of terms

Academic year	The time period that begins on 1 September and ends on 31 August in the following year
Admission Committee	The Admissions Committee is appointed by the Dean (Article 7.30 WHW).
Assessment plan	A plan indicating how the testing of a course is organised. At first, it states the grading of the study units of the course, and secondly, the conditions for passing the course (including possible compensation rules within the course).
Assignment	Carrying out a design or a research project
BOZ	Educational Affairs Office, Engineering Technology (Sustainable Energy Technology), within Centre for Educational Support (CES)
Canvas	The digital learning management system of the University of Twente Canvas page programme: https://canvas.utwente.nl/enroll/YXP86A
Colstruction	Combination between a lecture and a practical
Compulsory Holiday	Compulsory day free of work
Course	A component of the study programme to which a course code is assigned
CPO	Personal Circumstances Committee. A committee formed by the institutional board that issues advice to the programme board in individual cases concerning the validity, term and seriousness of the personal circumstances of the student involved
Curriculum	The entirety of compulsory and optional study units belonging to the programme.
Dean	The Dean of the Faculty of Engineering Technology
EC	A unit of 28 hours of study workload, in accordance with the European Credit Transfer System, a full academic year consisting of 60 EC or 1680 hours (Article 7.4 WHW).
Essay	A written report about a theoretical or practical project/assignment
Exam	An evaluation with a study unit of the knowledge, understanding and skills of the student, as well as the assessment of the results of this evaluation (Article 7.10 of the WHW); an exam may consist of a number of tests.

Examination	An inquiry into the knowledge, the insight and the skills of a student relating to a particular unit of education, as well as the assessment of that inquiry by at least one examiner designated by the Examination Board for that purpose
Examination Board	The body that establishes objectively and expertly whether a student meets the criteria set in the education and examination regulations regarding knowledge, insight and skills needed for obtaining a degree (Article 7.12 WHW).
Examiner	The individual who has been appointed by the examination board in accordance with Article 7.12c of the WHW to hold exams and tests and determine their results.
Exemption	Establishing by the examination board that a student has acquired competences, i.e. on account of exams or final examinations in the higher education domain passed earlier, or knowledge or skills acquired outside the higher education domain, that are comparable in content, size and level to one or more study units or parts thereof
Faculty	The Faculty of Engineering Technology (ET), University of Twente
Faculty board	Head of the faculty (Article 9.12 WHW).
Graduation examination	An evaluation by which the Examination Board determines whether all examinations of the courses belonging to the programme have been passed (Article 7.10 WHW)
HBO-Bachelors	Bachelors from a University of Applied Sciences
Institution	The University of Twente (UT)
Institution Board	The Executive Board of the University of Twente
Internship	Assignment carried out in a company or scientific environment in order to (among others) become acquainted with the future field of the mechanical engineering student as well as with engineering problems or task in a professional manner and as part of a team of engineers in a professional environment
Learning outcomes	The qualities regarding the knowledge, insight and skills a student must have acquired upon completion of the programme
Lecture	A plenary meeting for the students which is intended to convey information
Literature study	The undertaking of literature research into specified scientific phenomena
OSIRIS	System designated by the institutional board for registration and for providing information on all relevant data related to students and the university, as described in WHW.
Partner Institution	An institution with which the university has a structural relationship for collaboration, in which the programme is active. For example the 4TU federation and the ECIU ¹ -network (http://www.eciu.org/)

¹ European Consortium for Innovative Universities

Practical exercise	A practical exercise as intended in Article 7.13 paragraph 2 subparagraph d of the [Dutch] law. This is understood to mean participation in an education activity designed to master certain skills, such as completing written work or a prototype design, the carrying out of tests and experiments, and participating in field work or an excursion
Pre-Master	The pre-master's programme is a transfer and bridging programme for Universities of Applied Sciences (HBO) or University Bachelor programme students who wish to obtain a university master's degree, but who cannot be admitted directly.
Programme	The Sustainable Energy Technology programme (SET), University of Twente
Programme Board	The committee charged by the faculty board with managing the programme. This may also be an individual person. In which case the term programme director is used.
Programme Committee	The Programme Council consists of chairmen of Departments and professors in the Faculty, whose subject area(s) belong to the domain of sustainable energy technology, as well as a member of the Board of the Faculty
Programme Director	The programme director of the SET programme
Project	Carrying out as a team a design or a research project
Quartile	A quarter of an academic year
Seminar	A meeting for a subgroup of the population to offer students the opportunity to work through the learning materials (also supervised self-study).
SET	Sustainable Energy Technology; this qualification prefixing, for example, student, programme, examination, etc. is in many cases in this Charter hereafter omitted in the interest of readability.
Student	He or she who is registered as student at the University of Twente for the following of education and/or the taking of examinations of the 'Sustainable Energy Technology' programme, and who has completed the payment of (legal) tuition fees (Articles 7.32 and 7.34, WHW). Wherever in this regulation the male gender is used, the female gender can also be understood
Study Adviser	Person appointed by the faculty board who acts as contact between the student and the programme, and as such represents the interests of the students, as well as fulfilling an advisory role.
Study load	The amount of time an average student needs to capture the learning material. The study load comprises for instance project work, self-study, lectures and writing papers. The study load is expressed in credit points in accordance with the European Credit Transfer System.
Study unit	A component of the programme as described in Article 7.3, paragraphs 2 and 3 of the WHW. Every study unit concludes with an exam.
Test	An evaluation of the knowledge, understanding and skills of the student, as well as the assessment of the results of this evaluation. A test is a part of an exam. If a study unit has only one test, this coincides with the exam for the unit in question

Tutorial	A meeting for students who work on exercises guided by a lecturer
Website	www.utwente.nl/set
WHW	The Higher Education and Research Act (WHW), in the Dutch Bulletin of Acts and Decrees 1992, number 593, and as amended since.
Working day	Any day from Monday to Friday with the exception of official holidays and the prearranged compulsory holidays on which the staff is free

ARTICLE 2. ADMISSION

2.1 Requirements for previous education

Admission to the SET master's programme can be achieved in several ways:

- 1) University bachelor's degrees from adjoining subjects or programmes: bachelors of a number of adjoining subjects are admissible, in many cases under the condition that a certain supplement of the bachelor's programme is undertaken (for example, a pre-master programme) and that a certain graduation specialisation is chosen. The admission from other University of Technology programmes is determined in the admissions matrix:
<https://www.utwente.nl/en/education/master/admission-requirements/dutch-university/> In all these cases there is individual adaptation of the programme;
- 2) Bachelor of Science degree from a university abroad which is equivalent to the Dutch WO Bachelor degree can be admitted when the additional requirements (including the language requirements) are met;
- 3) With a successfully completed pre-master's programme (see article 2.3).

2.2 Additional requirements for students with a non-Dutch qualification

Students with a foreign diploma must show they have sufficient command of the English language.

These requirements can be found here: <https://www.utwente.nl/en/education/master/admission-requirements/language/>

2.3 Pre-Master programme

- 1) Bachelors from a Dutch university of professional education (HBO) in construction, mechanical/electrical engineering, physics, chemistry or related subjects are admitted to the pre-master programme. Admission of others is at the discretion of the Admission Committee.
- 2) The pre-master programme consists of a selection of courses with an emphasis on physics and mathematics, and for HBO students, on academic research skills.
- 3) The pre-master programme consists of 30 EC.
- 4) A student who successfully passes all courses in the agreed programme within eight months after registration for the pre-master programme is admitted to the SET master's programme.
- 5) A student who failed a pre-master programme at one of the three sustainable energy technology programmes in the Netherlands will not be admitted to the SET pre-master programme of the UT in a following academic year.
- 6) A student who failed the pre-master programme SET is not eligible for another pre-master programme within the Faculty Engineering Technology of the UT in a following academic year.

2.4 Following master courses by non-master students

A student has the right to follow education and/or take examinations relating to the programme, provided he has satisfied the legal regulations in force. When someone has not (completely) met these requirements and at that moment still takes part in the education and/or examinations, this is regarded as irregular. When applicable, the relevant registered student data can be removed from the administrative records and does not count for student progress nor for student grants and loans. Additional conditions can be placed on participation in the various education activities and examinations.

ARTICLE 3. VISION OF THE PROGRAMME

3.1 Aims of the programme

The two-year English-taught master's programme Sustainable Energy Technology (SET) at the University of Twente provides students in-depth understanding of (energy) technology and engineering and to supplement that with knowledge and skills related to entrepreneurship and innovation. Building on this broad foundation, SET engineers will rise above technology pur sang to play a role as enabler, leader and game changer in the transition towards sustainable energy systems. The energy challenges that are faced today call for professionals who are as skilful in engineering as they are in business development and innovation. The SET programme will prepare engineers for this broader, more entrepreneurial role. Students will be trained in chemical, electrical, process and mechanical engineering, as well as economics, business development, innovation, supply chain management and societal change.

Within the 4TU framework the Universities of Twente, Delft and Eindhoven collaborate with their SET-programmes, details are included in appendix 3; registration at one university automatically includes a secondary enrolment ("neveninschrijving") at the other universities. The rules and regulations of the main registration are applicable.

Regarding academic competences the graduate of SET has the following intended learning outcomes:

A Master of Science graduate of the SET degree programme:

- 1) is qualified to degree level within the domain of 'science engineering & technology';
- 2) is competent in the relevant domain-specific discipline(s), namely Sustainable Energy Technology, i.e.
 - 2.1 has a thorough understanding of at least one sub-area of Sustainable Energy Technology and is able to maintain and expand his/her expertise in this field
 - 2.2. has the necessary knowledge and skills to evaluate a broad range of energy technologies and energy systems, taking into account technological, societal, economic and sustainability aspects
 - 2.3. is able to analyse and understand the role of sustainable energy technologies in a system. Either as part of an electrical system (connection to the grid), as part of a decentralized system (like a building) or the society as a system with opportunities and barriers for the development of sustainable energy technologies
 - 2.4. is able to contribute to discussions about complex matters related to the introduction of sustainable energy
- 3) is able to conduct research and design independently
- 4) has the ability and attitude to include other disciplines in their research, where necessary
- 5) has a scientific approach to complex problems and ideas
- 6) possesses intellectual skills that enable them to reflect critically, reason and form opinions
- 7) has the ability to communicate the results of their learning, thinking and decision-making processes at an international level
- 8) is aware of the temporal and social context of science and technology (comprehension and analysis) and can integrate this context in their scientific work
- 9) in addition to a recognizable domain-specific profile, possesses a sufficiently broad basis to be able to work in an interdisciplinary and multidisciplinary context. In this context, multidisciplinary means being focused on other relevant disciplines needed to solve the design or research problem in question
- 10) has the ability and attitude to seek new potential applications, taking the social context into consideration.

3.2 Purpose of the master

The objective of the master's programme SET is to educate academic engineers who possess scientific knowledge on and insight into the design, behaviour and performance of energy technologies and the integration of these technologies in grids, buildings and society at large. The learning outcomes ('exit qualifications') are operational definitions of the programme goals and describe the knowledge, skills and attitudes that students should have acquired after completing the programme.

3.3 Organisation of the programme

The master's programme Sustainable Energy Technology is only provided as a full-time programme. The study effort of the programme involves 120 EC.

The SET programme consists of 120 European Credits (EC):

	EC
Core programme (first year)	60
Specialisation-linked elective subjects	15
Internship / elective subjects	15
Master assignment	30
Total	120

The first year consists of 12 compulsory courses (60 EC) that provide the student a broad foundation with elements from technology as well as from entrepreneurship and innovation. This combination of knowledge is covered in a well-balanced programme. The core programme of 60 EC in the first year is made up of courses related to four themes:

- 1) Energy sources
- 2) Technology and sustainability
- 3) Socio-economics
- 4) Design and system integration.

The second year consists of elective courses (15 EC), an internship (15 EC) and a master assignment (30 EC).

The elective courses in the second year give students the possibility to acquire in-depth knowledge to effectively carry out a master assignment in one of the research areas of sustainable energy technology. The courses need to be at MSc level. In case the courses are not taken at the University of Twente, they must have a minimum of 3 EC and graded with a validated transcript of records from an accredited academic institution.

The main objective of the internship is to put acquired knowledge and skills into practice in a real professional engineering environment. The trainee engineer can participate into research, design, development or production activities. During this internship the student works independently (or in a team of researchers) on a real problem. The assignment is carried out in a company or scientific environment in order to (among others) become acquainted with the future field of the engineering student as well as with an engineering problem or task in a professional manner and as part of a team of engineers in a professional environment.

The master assignment takes 30 EC, which agrees with a study load of 2 quarters of 10 weeks each. This individual master's assignment is the completion of the master's programme. The main objective of the master assignment is that the student learns and proves that he is able to define, perform, complete and reflect a SET research project at a large degree of independence. During the master's assignment, a student proves his level of understanding and ability to carry out a scientific research or design project, using the acquired competences, i.e. knowledge, skills and attitude. The assignment, containing social as well as technological aspects, is carried out under the responsibility of one of the SET related research chairs of the UT. Under certain conditions, the assignment can be done (partially) at an external institute or organization.

3.4 Language

- 1) The instruction language of the master's programme is English. That means lectures, examinations and all other educational activities are taught in English.
- 2) The internship report and master assignment report are written in English. In special occasions deviation from the provisions is possible. Permission must be obtained beforehand from the Examination Board.

3.5 Internationalisation

The programme has the intention of allowing all students to have an international experience during the study. This can be a company internship, an internship in a university or scientific institution, a master assignment and/or following of a number of regular courses at a university abroad. As this

brings extra costs there is a possibility to apply for scholarships. See for the subsidy regulations:
<https://www.utwente.nl/en/education/scholarship-finder/search/>

ARTICLE 4. EDUCATION AND PROGRAMME

4.1 Information supply

- 1) A course description, method of examination and the form of the education are published before the start of the course. For this purpose, reference is made to the 'OSIRIS course information' on the internet, with the reservation that education is susceptible to continuous change. The most up-to-date course information, as it is applicable, can be found on Canvas.
- 2) The programme ensures the registration of study results in Osiris.

4.2 Composition of the personal study programme

- 1) The first year consists of 12 compulsory courses.
- 2) A student who has already acquired the necessary knowledge of a course as a result of his previous education is entitled to request the use of maximum 2 wildcards to replace a compulsory course by another course. The student submits a substantiated request to the Programme Director, who will decide on basis of this.
- 3) The student must compose a programme for the second year, together with a professor in the Department or research group in which he will do his master assignment. This programme requires the approval of the Programme Director.
- 4) The student hands in the approved study programme to BOZ at the latest at the beginning of the second year. Even if this is in many cases a provisional programme, handing it in on time is crucial for the student (admission to courses, and being sure that the course may make part of the graduation programme).
- 5) In order to be able to make a proposal for the study programme mentioned above, students must use the form for the study programme on the website <http://www.utwente.nl/set>.
- 6) If the student wishes change one or more courses in the already approved programme he can submit a request to the Programme Director. For this purpose the form 'Change of master courses' must be used which is available on CANVAS.
- 7) A course may only be a part of one master programme, unless it is part of a double programme.

4.3 The free MSc programme

- 1) In exceptional cases, approval by the Examination Board can be given to the taking of a master's examination on the basis of a programme of courses proposed by the student. This is referred to as the free programme.
- 2) The Examination Board determines whether the free programme is actually composed of education units which are provided by an institution of higher education, whether the study load is sufficient, and whether that programme has the required level.
- 3) The 'required level' mentioned in clause 4.3.2 relates to both the programme of courses, the internship and to the master assignment.
- 4) When the Examination Board does not approve the proposal, it must provide clear substantiation for its decision.

4.4 UT two-master programmes

The master's programme Sustainable Energy Technology can be combined with another UT master's programme, provided:

- 1) the students is admissible to the Sustainable Energy Technology programme and the other MSc programme
- 2) the student choose 45 EC of SET courses (all themes (specified in art. 3.3) must be included), 45EC of the master courses in the other MSc-programme (pre-master courses are not accepted) and 15 EC of courses shared in both MSc programmes, that is:

Master's programme for a double UT programme	EC's
a. Courses SET	45
b. Courses other UT MSc-programme	45
c. Courses both programmes	15
d. Internship	15
e. Master assignment	60
Total (minimum)	180

- 3) the master assignment incorporates themes of both master programmes and is increased from 30 to 60 EC. The total study load of the two master programmes is at least 180EC.
- 4) the Examination Board of both programmes need to approve the proposed study programme so that it meets the requirements (intended learning outcomes) of both master programmes.

4.5 Regulation for including international courses in the master's study programme

- 1) For this purpose and well before departure to the university abroad, the student makes an agreement with the programme director. The student explains the reasons for his request and provides the necessary (course) information.
- 2) The programme director is responsible for determining the level of the course(s) to be taken abroad. He can delegate this to a UT teacher who provides a comparable course. In principle the international course must have a level equivalent to that of UT courses.
- 3) The international courses need to be approved upon before the student goes abroad.
- 4) No international courses may be included which substantially overlap with regular UT courses that have already been completed or that still have to be completed.
- 5) There is no automatic conversion of international study points into UT study points (EC). BOZ calculates the number of EC's by using the Credit Conversion Table of the UT.
- 6) The maximum number of EC's for international courses which can be taken up in the core and elective programme is 30 EC. The surplus of courses can be added to the marks list of the degree certificate as 'extra courses'.
- 7) One exception can be made relating to 'the maximum number of international courses' in clause 4.5.6: when the student participates in a master's programme that is setup together with a partner university, and the education and assessment of it takes place at the partner university. The [relevant] programme should be approved and countersigned beforehand as-a-whole by one of the professors of the SET programme and by the programme director.
- 8) When possible, BOZ uses the international names of the courses on the International Diploma Supplement.

4.6 Time periods, times and frequency

- 1) At the beginning of a quarter a timetable is published with the dates of written examinations.
- 2) In the case when an examination can be taken orally, this can be done at a time determined by the examiner(s) in consultation with the student and, if the student so wishes, at the latest within a month after the request (the holiday period not being counted).
- 3) Courses of the master's programme that are not published in an education timetable, the examiner appointed by the Examination Board with conducting the examination determines, if possible with the student(s), a time for the examination to take place.
- 4) The examination for the courses with written examinations, can be taken at least twice per academic year, once immediately after the period in which the teaching in that course is provided, and once at such a time that there is a reasonable gap between two successive examination opportunities.
Examinations (oral and written) in courses for which the teaching is not offered every academic year can, at the request of a student, be taken at least once every academic year.
- 5) Every student has the right to complete every course of the relevant academic year, unless the student has been excluded from participation in the relevant education or examination. The student progress, the results of conditional tests, the score in one of the contributing courses or the absence from education activities or examinations for which one has registered, can in the extreme case be reasons for excluding a student from (further) participation.
- 6) When existing courses are changed, or substantial change of the material in a course are made and, approved by the programme director, a student who has participated at least once in the examination of the relevant course before the changes were made, has the right to be re-examined in the course in its "old" form at the first timetabled opportunity in the adjoining academic year.
- 7) In special cases and by student request, the Examination Board or the relevant examiner can allow a deviation from the times listed in clause 4.6.4.
- 8) Concerning an examination relating to a course that is not taught within the programme, the sequence and time periods in the education and examination regulations valid for that course are applicable, except for a deviating decision made by the Examination Board.

4.7 Structure of practical exercises

For practicals there is an enrolment and participation obligation. The course itself describes how the study unit needs to be completed. Absence during a study period may result in failing of tests, exams, projects or practical exercises. The programme accepts no responsibility for students absenteeism.

In the event of force majeure (e.g. illness), the student must immediately contact the lecturer responsible for the study unit from which they were absent.

4.8 Internship

- 1) The extent of the internship is 15 EC (10.5 nominal study weeks, including writing the internship report). The content of the internship shall be determined beforehand, and depends on the nature, scope and extent of the project and the necessary residence period.
- 2) The internship can be started after at least 40 EC of the master's programme has been registered in Osiris.
- 3) Students with considerable industrial experience (for example from a university of professional education or a university abroad) are not obliged to do an internship. Instead of an internship they can follow 15EC (elective) master courses.
- 4) The internship should be on a sustainable engineering problem or task in a professional manner and as part of a team of engineers in a professional environment.
- 5) Before the start of the internship the student will be assigned an UT internship supervisor with help of the responsible department. The internship supervisor is responsible for the assessment of the internship report and has contact with the company supervisor at least once during the internship period.
- 6) If, after the internship has begun, it is determined that it will not be possible to achieve the intended learning outcomes, the student will contact the internship coordinator to discuss the consequences. It is up to the student to give a timely signal. In all situations when the cause of a non-optimal internship does not rest with the student, an adequate compensation of the lapsed study time will be determined in a flexible manner. The UT internship supervisor takes the initiative for this.
- 7) The student takes the initiative for arranging an internship location and a suitable project. Support is available by means of an internship coordinator. The internship project requires the approval of the UT internship supervisor. The internship coordinator makes sure that the application in Mobility Online is completed by the student. The UT internship supervisor is responsible for assessment of the content and determines whether the project meets the general UT and programme policies, the internship coordinator provides adequate administrative support.
- 8) During his internship the student receives supervision from a staff member of the programme (usually from the Department within which he will carry out his master assignment).
- 9) The student is obliged to register his internship in Mobility Online. Only after the approval of the UT supervisor and the internship coordinator the internship will be part of the student's study programme.
- 10) The programme will make no financial demands on the organisation that provides the internship.
- 11) Further information about the practical carrying out of the internship and/or the subsidy regulation is available from the SET internship coordinator. See https://www.utwente.nl/en/set/master_programme/student_mobility/

4.9 Approval, publications and registration of results

- 1) After the end of an oral examination, the assessment is confirmed within one week and published to the student.
- 2) Within 15 working days (not counting the academic holidays) after the end of a written examination, handing in of a project or finishing a practical, the result is published. When there is the opportunity of a quick re-examination for the relevant course, the grading time is shortened to such an extent that the student can reasonably prepare for the re-examination. In exceptional cases this term can be exceeded but this has to be communicated clearly by the lecturer.
- 3) If the period stated in clause 4.9.2 is exceeded, the Examination Board can determine or allow the determination of the result of an examination.
- 4) The results of all examinations are published in 'OSIRIS'. When there is lack of clarity about the result, the declaration countersigned by the examiner is the valid result.
- 5) When a mistake has been made in a marks list or overview which relates to the study progress of a student, both the programme and the student shall inform the other party as soon as the mistake is discovered and work together to annul the mistake made. The administration of the programme

discloses complete information unless indicated to the contrary. When there is evidence to the contrary, the examination work assessed by the teacher is valid.

- 6) The Exam Office ensures the registration of the assessments and the results of the examinations.

4.10 Duration of validity of assessments

- 1) The results of examinations that have been taken are valid without time restriction. The questions, answers and the assessed work of written tests will be retained for a period of 2 year by the responsible assessor. In deviation from this, for a course for which the examination was passed more than six years beforehand, the Examination Board can impose an additional or resit of the examination. The validity of an exam result can only be restricted if the tested knowledge, insight or skills are proven to be out of date.
- 2) In special circumstances the Examination Board can extend the duration of validity of assessments stated in the previous paragraph by a period the length of which it determines.
- 3) The retention period of (final) assignments of the master's programme is at least 7 years.

4.11 Right of inspection and discussion

- 1) The student is entitled to inspect and discuss his test together with the examiner and the examiner is to explain the assessment. The right of inspection is also applicable to the master assignment.
- 2) If there is no collective discussion of the test, then a student may submit a request to the examiner for an individual discussion within ten days after publication of the results. The individual discussion must take place no later than three working days prior to the next test opportunity.
- 3) The discussion must take place no later than five weeks after the publication of the test results, but at least three working days prior to the next test opportunity, in the presence of the examiner or a designated substitute.
- 4) The student has a right to inspect his assessed written work for a period of two years following the assessment.

4.12 Quality assurance

The Programme Director is responsible for the design and implementation of a systematic procedure for evaluating (the parts of) the programme, in particular for the elements 'quality' and 'feasibility'.

ARTICLE 5. FINAL DEGREE

5.1 Examination of the programme

- 1) The programme is completed with the master assignment.
- 2) The master graduation assignment will be assessed by a graduation committee.

5.1.1 Requirements

- 1) The master assignment must be within the domain of one of the themes of the programme and can be taken at one of the departments of the UT, or at an external organization.
- 2) In case the graduation assignment is completed at the same organization as the internship, the internship needs to be completed before the start of the master assignment. Next to that the objective and research question of the internship and master assignment should be different.
- 3) The student is the only author.
- 4) The master assignment report is written in the language of the programme (English).
- 5) The student can start with the master assignment when all the courses of the 1st year have been completed and registered in Osiris and the internship is fully completed. If a student does not meet the entry requirements, his (intended) supervisor will also be informed.
- 6) Before the start of the graduation assignment the student should complete the application in Mobility Online and provide all required agreements.
- 7) The programme coordinator may, after consultation with the study adviser, deviate from the restriction in clause 5.1.5 if this restriction causes considerable loss of time for the student.

5.1.2 Duration

- 1) The duration of the master assignment corresponds to the applicable study load of 30 EC. 30EC equals to a work load of 40 hours a week during a period of 21 working weeks (not counting the academic holidays). The student will be monitored on his progress during this period and if the times passes the 32 working weeks the student should ask permission (including a planning) from the Examination Board for an extension. If the extension is not given, the student has to start a new master assignment.

- 2) At the beginning of the graduation, agreements are made on the nature of the assignment, the planned start date of the master assignment, the manner of guidance, and the date on which the final report must be handed in;
- 3) The agreements made in clause 5.1.1-1 and 2 are recorded in Mobility Online;
- 4) The graduation report is submitted to the chairman of the graduation committee for review. In case the chairman is the supervisor of the master assignment at least one of the other members of the graduation committee should be consulted. If the graduation report is approved, the chairman issues a statement that can be used by the student to apply for the final examination. If the graduation report is not (yet) approved, the chairman indicates clearly what additions and/or changes to the master assignment or the graduation report are required. A new date is set on which the revised graduation report must be handed in. If necessary, this procedure is repeated.
- 5) The approved report should be available for the committee at least two weeks in advance of the graduation date.
- 6) If the graduation committee is of the opinion that the work done by the student is insufficient, the committee may decide, in consultation with the programme director, that the student has to do another master assignment. The same applies if the student fails to hand in the reports or hands them in far too late.

5.1.3 Members of the graduation committee

The graduation committee consists of at least three members authorised to conduct examinations:

- 1) One of the full professors or UHD1 from the relevant Department is chairman of the graduation committee. When there is no professor, nor UHD1, available, the Department chairman can propose another member of the academic staff of the Department to the Examination Board. The Examination Board can invite a professor from outside the Faculty to function as chairman of the graduation committee.
- 2) One (or more) supervisors of the student.
- 3) At least one member is the external member being academic staff of another chair, excluding PhD's and Postdocs.
- 4) Qualifications of members of the graduation committee:
 - Academic staff of the chair, including PhD's and Postdocs can be regular members.
 - All members must have been observer (guest without voting rights) twice in a graduation exam.
 - All member should be in active service (i.e. not retired). However, a supervisor can be a member up to and including 5 years after his retirement.
- 5) Additional observers of the graduation committee may include:
 - Guest(s), being experts on the topic, invited by the chairman. Guests have no voting rights
 - Members of the Examination Board and the programme director. They have no voting rights.
- 6) When a member of the graduation committee is prevented from attending an examination session, he can be replaced by a member who has authority to conduct examinations. The member that is unavailable should inform the chairman before or at the start of the meeting who will be the replacement. The substitute has the voting rights of the member he replaces.

5.2 Degree

- 1) To show that the master's examination has been successfully completed, a degree certificate is awarded by the Examination Board. The degree certificate is countersigned by the persons stated in the regulations from the Examination Board. The award takes place in public; in special circumstances the Examination Board can deviate from this.
- 2) The International Diploma Supplement (WHW art. 7.11, section 4) is added to the examination certificate. The objective of this supplement is to provide insight into the content of the completed programme for the purpose of international identification of the programme.
- 3) 'Extra courses' are stated when applicable, provided these were added to the study programme on request of the student with the approval of the Programme Director. The stated 'extra courses' make no part of the total programme, these courses should have been satisfactorily completed.

5.3 Graduation with distinction

When, the Graduation Committee is of the opinion an exceptional level of student achievement and proof of the student's potential as an exemplary academic engineer, the Examination Board can submit a reasoned proposal to the Examination Board to affix to the master's degree the designation "with distinction".

This must be requested two weeks beforehand, in order that the degree certificate “with distinction” can be awarded immediately after the end of the examination. Where there is uncertainty about the award, a degree declaration can be handed over and the degree certificate (with or without “with distinction”) can be received the Educational Affairs Office within two weeks after the examination.

In addition to the ‘exceptional level and potential’ the guidelines for passing ‘with distinction’ are:

- a. The final mark for the master assignment is at least a 8.5;
- b. The unweighted averaged mark of all courses, exclusive of the master assignment, must be at least: 8.0;
- c. The assessments of all examinations of the master’s courses, including extra courses, are satisfactory (‘EX’, ‘P’ or a grade higher than 6);
- d. All study units that belong to the exam programme of the candidate should be completed within 2.5 years counted from the date of enrolment; when a student is completing a double programme with another UT MSc programme this should be completed within 3.5 years counted from the date of enrolment.
- e. The student is not been convicted for fraud during their master programme;
- f. Exemptions were granted for no more than a third of the total master’s programme.

Where these conditions are not completely met, the chairman of the Graduation Committee of the student involved can submit a request to the Examination Board for the award of the designation ‘with distinction’. The Examination Board makes a decision if the designation gets awarded.

ARTICLE 6. STUDENT GUIDANCE

6.1 Student guidance

- 1) The Faculty Board is responsible for student guidance, including informing students of opportunities for academic endeavour within the programme and via extracurricular avenues. The study advisers are mandated to provide this guidance.
- 2) Each student is appointed a Study Advisor.
- 3) The Study Advisor supervises the student and advises him on study-related matters, as well as personal problems that may be affecting the student’s studies.
- 4) If a student wishes to make use of his right to specific supervision or special facilities, he must contact the Study Advisor. The Study Advisor records the agreements made with the student.
- 5) The following applies to the entitlement to special facilities:
 - a) demonstrable circumstances beyond the student’s control or extenuating personal circumstances;
 - b) if necessary and when possible, dispensation from participation in exams or tests and/or the availability of special facilities for exams and tests. Such dispensation and additional opportunities for tests may only be granted by the Examination Board.

6.2 Studying with a disability

- 1) A functional impairment is a physical, sensory or other functional disorder that might limit the student’s academic progress.
- 2) The study advisor and the student will discuss the most effective facilities for the student as referred to in Article 2 of the Equal Treatment of Disabled and Chronically Ill People Act (WGB h/cz).
- 3) Facilities are to be aimed at removing specific barriers in the teaching programme or when it comes to taking exams. Where necessary, these facilities may be related to access to infrastructure (buildings, classrooms and furnishings) and study materials, adjustments to the form of assessment, alternative learning pathways or a customized study plan. The facilities are to ensure the student’s chances of achieving the final attainment targets.
- 4) Based on the interview referred to in paragraph 2, the student is to submit a written request for facilities, in consultation with the study adviser, to the faculty board, preferably three months before the student is to participate in classes, exams and practical exercises for which the facilities are required.
- 5) The request is to be submitted along with supporting documentation that is reasonably necessary for assessing the request (such as a letter from a doctor or psychologist registered in the BIG register, or in the case of dyslexia from a healthcare psychologist or special education needs expert, also registered in the BIG register).

- 6) The faculty board will decide on the admissibility of the request as referred to in paragraph 4 and will inform the student and the study adviser of the decision within 20 working days after receipt of the request or sooner as the urgency of the request dictates.
- 7) The study adviser will ensure that the relevant parties are informed in time about the facilities granted to a student with a functional impairment.
- 8) Should the faculty board reject the request in full or in part, the faculty board is to inform the student of the justification for the rejection and the possibilities for lodging an objection and an appeal. A written objection must be submitted in writing within six weeks after the decision has been communicated to the student. The objection is to be submitted to the objections, appeals and complaints office via the Student Services desk.
- 9) Should extra facilities be granted the period of validity will also be indicated. The applicant and the study adviser will evaluate the facilities before the end of this period. During this evaluation parties will discuss the effectiveness of the facilities provided and whether they should be continued.
- 10) If a student is dyslexic he will be granted a maximum of 15 extra minutes for each hour that a test or exam is officially scheduled.

ARTICLE 7. AMENDMENTS, TRANSITIONAL ARRANGEMENTS, APPEALS AND OBJECTIONS

7.1 Conflicts with regulations

If other additional regulations and/or provisions pertaining to education and/or examinations conflict with these Education and Examination Regulations, the provisions in these Education and Examination Regulations will prevail.

7.2 Administrative errors

If, following the publication of an exam result, a marks sheet, or an student's progress report, an alleged error is discovered, the discoverer, be it the university or the student, is required to make this known to the other party immediately upon finding the error and to cooperate with rectification of the error.

7.3 Amendments to the regulations

- 1) Amendments to these Education and Examination Regulations are enacted by the Faculty Board in a separate decree.
- 2) In principle, amendments to these regulations do not apply to the current academic year. Amendments to these regulations may apply to the current academic year if the interests of the student are not prejudiced within reasonable bounds, or in situations of force majeure.
- 3) Amendments to these regulations have no effect on earlier decisions by the Examination Board.

7.4 Transitional arrangements

- 1) In the case of amendment of these Education and Examination Regulations, the Faculty Board is to enact a transitional arrangement as necessary.
- 2) The transitional arrangement is to be published on the degree programme's website.
- 3) General principles for the transitional arrangement in the case of changes to the curriculum:
 - a) Changes to the curriculum are to be announced prior to the academic year in which the changes take effect.
 - b) No guarantee can be made that all programme study units that were part of the curriculum when a student enrolled in a programme will continue to be part of the curriculum.
- 4) The transitional arrangement will always include:
 - a) an explanation of which courses (if any) in the changed programme replace courses of the old programme;
 - b) an indication that if a study component that does not involve a practical is dropped from a programme, then students are to have at least two opportunities in the following year to take a written or oral exam or to undergo another form of assessment.
 - c) an indication that if a study component with practical exercises is dropped from the programme and there is no opportunity in the subsequent academic year to complete the practical exercise, then at least one study unit will be designated that may be completed as a substitute for the study unit that has been dropped;
 - d) the period of validity of the transitional arrangement.
- 5) The transitional arrangement must be approved by the Examination Board with regard to the provisions of paragraph 4.

- 6) In exceptional cases and not to the student's detriment, the Examination Board may deviate from the prescribed number of opportunities to sit exams related to study unit that have been dropped from the curriculum.

7.5 Assessment of the Education and Examination Regulations

- 1) The Faculty Board is responsible for the regular assessment of the Education and Examination Regulations and is to take into account the time involved for the student for the purposes of monitoring and adjusting the study load, if necessary.
- 2) In accordance with article 9.18 of the Higher Education and Research Act, parts on the Education and Examination Regulations need the approval of the Programme Committee. On other parts the Programme Committee can advise.

7.6 Appeals and objections

An objection against a decision by the Examination Board or by an examiner or an appeal against decision by the Faculty Board based on these Regulations must be submitted in writing within six weeks after the decision has been communicated to the student. The objection is to be submitted to the objections, appeals and complaints office via the Student Services desk.

7.7 Hardship clause

The Examination Board may allow derogation from the provisions of these Regulations in the event of demonstrably compelling unreasonableness or unfairness.

7.8 Publication

The Education and Examination Regulations and the Rules and Regulations of the Examination Board are to be published on the degree programme's website.

7.9 Date of effectiveness

The date of effectiveness of these regulations is 1 September 2022.

APPENDICES

Appendix 1: Procedure for master examination, colloquium and award of degree

The programme can proceed to the award of the master's degree certificate when the student has met the following requirements:

- 1) Well before the graduation the student contacts the graduation professor in order to determine the graduation committee, graduation date and room. Also see the Manual SET and/or the relevant graduation regulations within the Department;
- 2) The student ensures that the 'Registration for the master's degree award' form and the colloquium form countersigned by the graduation professor are handed in at the Educational Affairs Office (BOZ) four weeks (20 working days) before his examination;
- 3) BOZ then sends the student an e-mail (and a copy to the graduation supervisor) with the study data of not-yet-completed study phase(s), with the request to check these data within a week. When it's necessary to tidy things up, change, delete and/or add courses, the student needs to hand in a copy of the 'Form for proposal for changes to master's courses' countersigned by the programme director at BOZ;
- 4) Immediately thereafter, BOZ checks all study data and, when applicable, the form proposals for changes;
- 5) The marks of all courses, except the master assignment, must be handed in at BOZ three weeks before the examination;
- 6) If all requirements for passing have been met, BOZ registers the student with Student Services (done in writing BOZ two weeks before the examination);
- 7) The student ensures that at the time of the master assignment examination he is registered for the programme of the UT;
- 8) Student Services checks whether the student has met (registration) requirements;
- 9) Once each week, BOZ authenticates and registers all the relevant degree certificates at Student Services.
- 10) About one week before the examination, the student hands in the report of the master assignment in digital form, preferably by e-mail (and in Word or PDF format) at BOZ. When the rules above have been met and the examination is completed successfully by the student, the student can immediately thereafter sign and receive the degree certificate signed by the chairman of the Examination Board of Engineering Technology and the graduation professor. The English language diploma/degree supplement is also awarded.
In exceptional circumstances, BOZ is not able to hand over the degree certificate in time for the award directly after the colloquium. The degree certificate can be obtained at a later time arranged by BOZ or the Department.
- 11) After the final mark of the examination has been given to BOZ and has been processed, the transcript of records (in Dutch and English) is sent to the student as soon as possible by BOZ.

All the forms mentioned above can be downloaded from the SET Canvas page (<https://canvas.utwente.nl/enroll/YXP86A>).

Appendix 2: Assessment of the master examination

2.1 General remarks

- 1) In the assessment of the master's project, it is determined whether the candidate satisfies the aims of the programme. The aspects of assessment are:
 - The level of the contents of the work undertaken in the light of the aims of the programme;
 - The demonstrated skills of the engineer (working in projects, independence, approach to design, scientific/academic attitude);
 - Communications skills (report, presentation, communication with colleagues in company and in the Department).
- 2) These aspects are tested by reference to the report, the presentation, the oral cross-questioning and the approach to the problem (master's problem). Marks for each component are used to substantiate decisions and for giving feedback. The final mark is not the average of the component marks.
- 3) In the case of a complete and regular master's programme, the student passes when the following conditions have been satisfied:
 - the assessment of the master's project is satisfactory;
 - every course mark is at least a 6, 'exempt' (EX) or 'pass' (P).
- 4) If the student has passed, BOZ will send the result with date of passing to Student Services.

2.2 Examination protocol master assignment SET

This protocol was set up to support the assessment of master theses within the MSc-programme Sustainable Energy Technology.

The assessment of the master assignment takes place after the public colloquium and the discussion/questioning in a closed meeting of the student with the master graduation committee. The assessment is done in a short, closed meeting of the master graduation committee without the student. The assessment is performed by the university members of the master graduation committee. External members have an advisory-vote. At the assessment, several aspects are taken into account (as described below and in appendix 2.3). Appendix 2.4 presents profiles for final grading that indicate how the quality of the master assignment as a whole can be translated into a final grade. The list of aspects for assessment and the profiles for final grading offer guidelines for a more equalized assessment of master theses and offer clarity to the student about the way he or she will be assessed. The aspects for assessment and the grading profiles were set up according to the learning goals of the master assignment and (partially) on the final qualifications of the MSc-programmes.

Regarding the assessment aspects, five main aspects are distinguished:

1. With respect to content: quality of research or design
2. Report
3. Working process during the master assignment
4. Oral presentation
5. Defence

Appendix 2.3 lists all aspects within these five main categories. When assessing a master assignment, the committee will address these five main aspects and determines the strong and weak points of the student's work and gives grades (not necessary integers) on each of these main aspects. Aspect 1, 2 and 3 must be sufficient. A student has still passed if one of the other aspects is insufficient, as long as the final grade is sufficient. This is registered by the chairman of the master graduation committee on the Assessment Form MSc-assignment SET (appendix 2.5). Subsequently the committee determines the final grade, by a half point, for the master assignment according to the final grading profiles (see Appendix 2.4).

After determination of the final grade, the master graduation committee invites the student for a closed meeting and announces the final grade and presents the feedback on the assessment form orally to the student.

2.3 Aspects for assessment

1) *With respect to content; quality of research / design*

- insight in subject matter
- depth (detailed elaborations, use of literature)
- insight in coherence between different parts of the research project
- reasoning / argumentation of conclusions (are research questions clearly stated and answered?)
- relevance (scientifically, but also applicability in practice) (being able to put research into its context)
- creativity / inventiveness: extent to which the student independently introduces new concepts
- extent to which the research contributes to new knowledge / contributes to a concrete product, design or model
- learning (quality and quantity)

2) *Report*

- composition, structure
- consistency
- clarity/sharpness of formulations
- readability
- editing, lay out
- images and tables (usefulness, added value)
- references to literature

3) *Working process during master assignment*

- attitude
- independence
- commitment/enthusiasm
- cooperation
- communication skills
- incorporation of feedback
- functioning within the organisation where the project is carried out
- student's attitude during progress meetings (active / passive)
- the extent to which the original research proposal has been met and reasons for alterations (keeping up with a work planning, follow up on appointments made)
- time needed to finish master assignment

4) *Oral Presentation and defence*

- content (what is included / not included in the presentation; is the message coming across?)
- structure / outline presentation
- care of details / neatness
- captivating way of presenting (verbal capabilities, posture)

5) *Defence*

- insight in subject matter and its relation with adjacent subjects
- answering questions / discussion
- ability to interpret/understand/analyse questions

2.4 Profiles for final grading

5. insufficient

The research and / or report are insufficient and the student was strongly directed by his or her supervisors. Weak points can clearly be pointed out. The student did not show an academic attitude. On average, the student scores 'insufficient' on all aspects for assessment.

6 – 6.5: sufficient

With respect to content, the research was conducted sufficiently. The report is mediocre. Weak points can clearly be pointed out, but are compensated by aspects on which the student performs better. The student has shown little input of his own and was strongly directed by his or her supervisors. On average, the student scores 'sufficient' on all aspects for assessment.

7 – 7.5: amply sufficient

With respect to content, a solid piece of research was delivered. The report is carefully edited. Either the research process or the mastery of subject matter leaves room for improvement.

The supervisors clearly had a steering influence on the final product. The student scores at least 'sufficient' on all aspects for assessment and 'good' on some aspects.

8 – 8.5: good

With respect to content, the research was set up in a solid way and was carried out accurately. The report is carefully edited regarding language, structure as well as lay out with minimal input of the supervisors. The student has worked independently and was able to put forward his or her own initiatives. Guidance given by the supervisors was minimal. On average, the student scores 'good' on all aspects for assessment.

9 – 9.5: very good

The research is innovative and can be converted to an article for a renowned (scientific) magazine or a conference proceedings without putting in too much effort. With respect to content, the research is very solid with some points that can clearly be pointed out as very good. The report is carefully edited and shows that the student disposes of very good writing skills. The student's own input and independence are large. The student clearly stands above subject matter and is able to defend his or her statements in discussions well. The student scores at least 'good' on all aspects for assessment and 'very good' on some aspects.

10: excellent

The student functions at the level of an expert in the field. With respect to content, the research is excellent. The student is very capable of conducting research independently. The report and the presentation show that the student disposes of excellent communication skills (written and oral). The student scores at least 'very good'.

2.5 Assessment form MSc-assignment SET

MASTER'S EXAM:

Name :
 Student number :
 Master's track :
 Graduation professor :
 Master's programme : attached
 Date master's examination :

Oral presentation : _____

Report : _____

Defense : _____

M-assignment (content) : _____

M-assignment (process) : _____

FINAL GRADE : _____

The graduation committee hereby states that
 The status of the final report will be*:

O = "**Confidential**" (for a period of _ years)

O = "**Public**"

^{*)} tick the appropriate box

RESULT : _____

Graduation committee:

Prof.dr.ir. XX

Dr.ir. YY

Prof.dr.ir. ZZ

Signature:

Criteria	Motivation (What went well, What could have been improved)
Oral Presentation	
Report	
Defence	
Content (quality of research or design)	
Working process during project	

Appendix 3: Collaboration within 4TU

- 1) The Master's degree programme in Sustainable Energy Technology is a 4TU MSc programme. The programme is offered at TU/e (Eindhoven University of Technology), TUD (Delft University of Technology) and UT (University of Twente). The programmes have similar learning objectives. The courses and specializations at each university are different. Each programme has a different CROHO number (programme registration according to the WHW).
- 2) After a student is formally enrolled in the master's programme in Sustainable Energy Technology at one of the 3 universities, he will also obtain a secondary enrolment (neveninschrijving) at the 2 other universities.
- 3) Students are allowed to choose elective subjects from the lists of elective/specialization and core courses from each of the 3 programmes, after consultation with the mentor/supervisor from the home university and after approval of the registration form courses by the home university.