

**Faculty: Engineering Technology (CTW\*)**

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

**MASTER'S PROGRAMME Sustainable Energy Technology**

**The programme-specific part of the STUDENT CHARTER OF THE UT Article 7.59, WHW\*\*  
Education and Examination Regulations (OER\*\*\*) Article 7.13, WHW**

**2016 – 2017**

Reference number: xxxxxxxxxxxxxxxxxxxx.

Approved by the Dean of the Faculty of Engineering Technology on 31 August 2016

\* CTW = Construerende Technische Wetenschappen

\*\* WHW = Wet op het hoger onderwijs en wetenschappelijk onderzoek = Higher Education and Research Act

\*\*\* OER = Onderwijs- en examenregeling

## FOREWORD

The Sustainable Energy Technology programme has chosen to adapt the OER of the Mechanical Engineering programme that is embedded in 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). 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 where necessary to the education page of the Master's programme Sustainable Energy Technology (<http://www.utwente.nl/set>) and for information about course content to the 'OSIRIS course information'.

In this document the rules (rights and obligations of the programme and of the students) are reproduced. The core of these rules is that they apply to all students in general. On personal grounds, individual students have the right to request the examination committee to take an action which deviates from the regulation. The examination committee can also decide to take a general or an individual action which deviates from the regulation, provided that it is to the advantage of the student.

When the student does not agree with an action taken by the programme, or a procedure or decision of a teacher or assessor, the basis and the procedure for making an appeal are given in this regulation. An adapted programme applies to students with a rounded-off previous education in a university of professional education (HBO) in the sector Engineering and Technology. This programme consists of a premaster's part which leads to admission to the master's programme. The admission regulations are part of this Charter. Because the premaster's programme consists of a selection of bachelor courses, the bachelor's Education and Examination Regulations (OER) apply for the programme. The programme is provided within the Faculty of Engineering Technology (CTW) at the University of Twente (UT) in Enschede, The Netherlands.

All master's students are informed by e-mail of the publication of the new Student Charter for Sustainable Energy Technology with a reference to the relevant website. Agreements made with potential students before the approval of the Student Charter, and which deviate from it, are respected.

The Student Charter 2016 for Sustainable Energy Technology is applicable to all master's students participating in the Master's programme in 2016/17 and to HBO-ers<sup>1</sup> who start the premaster's programme in September 2016.

T.H. van der Meer, Director of Education  
P.W. Gerbens-Leenes, programme coördinator

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<sup>1</sup> Students at or graduates of a [Dutch] university of professional education 'hogeschool'

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## 1. GENERAL CONDITIONS

### 1.1 Applicability of the Regulation

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

### 1.2 Definition of terms

- 1.2.1 In this regulation terms have the following meanings:

- a. **BOZ:** Education Affairs Office (Bureau Onderwijszaken), Engineering Technology (Sustainable Energy Technology), within the Unit S&O (student & educational services);
- b. **Dean:** the Dean of the Faculty of Engineering Technology;
- c. **Programme Council:** The Programme Council consists of chairmen of Departments and general professors in the Faculty, whose subject area(s) belong to the domain of Sustainable Energy Technology, as well as members of the Management Team;
- d. **EC:** European Credit; a unit of study effort in which 1 EC matches 28 hours of effort; a course year is 1680 hours = 60 EC;
- e. **Graduation examination:** An evaluation by which the Examination Committee determines whether all examinations of the courses belonging to the programme have been passed (in conformation with Article 7.10 of the [Dutch] law);
- f. **Examination Committee:** The Examination Committee of the programme constituted in conformation with Article 7.12 of the [Dutch] law;
- g. **Examiner:** The person appointed by the Examination Committee for conducting examinations, in conformation with Article 7.12 of the [Dutch] law;
- i. **Faculty:** The Faculty of Engineering Technology (CTW), University of Twente;
- j. **Institution:** The University of Twente (UT);
- k. **Management Team:** The Management Team (MT) of the Faculty of Engineering Technology;
- l. **SET** Sustainable Energy Technology; this qualification prefixing, for example, student, programme, examination, etc is in many cases in this Charter hereafter omitted in the interests of readability. Sometimes the synonym SET is used;
- m. **Programme:** The Sustainable Energy Technology programme (SET), University of Twente;
- n. **Director of Education:** The Director of Education of the SET programme;
- o. **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<sup>2</sup>-network (<http://www.eciu.org/>);
- p. **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;*
- q. **Academic year:** The time period that begins on 1 September<sup>3</sup> and ends on 31 August in the following calendar year;

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<sup>2</sup> European Consortium for Innovative Universities

- r. **Course:** A component of the study programme to which a course code is assigned;
- s. **Examination [tentamen]:** 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 Committee for that purpose;
- t. **Web-site:** The web-site [www.utwente.nl/set](http://www.utwente.nl/set) ;
- u. **Working day:** Monday to Friday inclusive, with the exception of recognised holidays and leave days and/or holiday period approved by the UT;
- v. **Law:** The [Dutch] Higher Education and Research Act (WHW).

1.2.2 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 (see 1.2.1p). Where 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. Where 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.

### 1.3 Emergencies

1.3.1 The University Board (CvB<sup>4</sup>) of the University of Twente or, on its behalf, the representative in the particular building, determines whether there is a (threatening) emergency. When this has been determined, (a part of) the relevant building will be evacuated according to the relevant procedures in force.

1.3.2 When such emergencies occur, or threaten to occur, during or just before an examination, the following procedures apply:

- a. Where an emergency is expected before the start of an examination, the examination is immediately postponed. In consultation with the Director of Education and/or the Education Affairs Office (BOZ), the responsible teacher determines a new time for the examination. The new confirmed examination time, that takes place within one month (exclusive of the vacation period), is obligatory. This is published within three working days using the usual media.
- b. Where an emergency occurs, or is expected, during an examination, the following procedures – where possible – apply:
  - At the beginning of the examination, the student writes his name and student number on all the examination work.
  - At the request of the responsible authority or invigilator those present should leave the examination room immediately.
  - Students leave the work they have done behind in the examination room.

1.3.3 Where the opportunity has already occurred to begin the examination, and where it is reasonably possible, the teacher determines a final mark on the basis of the (partly) completed answers.

1.3.4 Where the teacher cannot determine a final mark on the basis of the statement in 1.3.3, a repeat examination is organised for the students involved within one month (excluding the vacation period) after the examination has been cut short by the emergency. Students are considered to be ‘involved’ if they had registered for the original examination.

1.3.5 Where emergencies occur, or threaten to occur, during or shortly before a lecture or practical, this is immediately postponed.

In consultation with the Director of Education and/or the Education Affairs Office (BOZ), the teacher responsible for the course determines a new time for the lecture or practical. This time is published using the usual media at the latest the day after the building has been re-opened.

### 1.4 Safety Regulation

<sup>3</sup> In most cases the course begins somewhat earlier (mostly in week 35 or 36)

<sup>4</sup> College van Bestuur

- 1.4.1 For the complete Safety Regulation for Engineering Technology (CTW) and a list of names of the Company Emergency Response Team<sup>5</sup> (CERT), see:  
[https://www.utwente.nl/ctw/intranet/arbo\\_milieu\\_huisvesting/Veiligheid/veiligheidsreglement12/](https://www.utwente.nl/ctw/intranet/arbo_milieu_huisvesting/Veiligheid/veiligheidsreglement12/)  
For the regulations for working conditions (ARBO) and the environment, see:  
[http://www.utwente.nl/hr/vgm/organisatie\\_informatie/informatie/arbowedgeving/](http://www.utwente.nl/hr/vgm/organisatie_informatie/informatie/arbowedgeving/)
- 1.4.2 Prevention of Repetitive Strain Injury (RSI) is an important point of consideration for the programme, although the final responsibility rests with the student himself. For further information about prevention of RSI, reference is made to the web-site:  
<http://www.utwente.nl/hr/en/health-safety-environment/health-welfare/rsi/>
- 1.4.3 A student is only entitled to participate in the education when he has informed himself of and conducts himself in accordance with the safety and working conditions (ARBO) regulations as described in article 1.4.1.
- 1.4.4 Additional safety requirements can apply for graduation work in specialist laboratories. A student is only entitled to participate in this research when he has informed himself of and conducts himself in accordance with these additional safety requirements.

## 1.5 Insurance

For insurance during a internship<sup>6</sup> (in-company and/or abroad) and/or a project, see the general 'Student Handbook' <http://www.stage.utwente.nl/en/Manual/manual/stagehandleiding%20Engels.doc/h6.html>, under the chapter 'Insurances'

## 1.6 Rights of ownership

The rights of ownership of the results of tasks, assignments and projects which are carried out in the framework of the programme rest with the Faculty of Engineering Technology.

No rights can be derived to the relevant student for (parts of) results of a project, research or assignment undertaken under the commission of the UT, unless this is agreed with the Faculty management before the start and is confirmed in writing. Agreements with the company concerning the public access to the results, the final report and the duration and extent of confidentiality should be confirmed beforehand.

## 2. VISION OF THE PROGRAMME

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

The collaboration of SET with the University of Delft and Eindhoven are included in appendix 2

2. The appendix forms an integral part of these regulations.

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<sup>5</sup> BedrijfsHulpVerlenings-team (BHV)

<sup>6</sup> Dutch 'stage', sometimes called 'placement'

### **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 Director of Education.
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 [www.utwente.nl/set](http://www.utwente.nl/set)).
- 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 Director of Education 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.

### 3.2 Additional requirements for students coming from abroad.

Students from abroad must show they have sufficient command of the English language. If they do not come from a country in which education is already given in the English language, they must provide the result of a language test. An IELTS<sup>7</sup> score of at least 6.5 is required.

### 3.3 Premaster's programme

- 3.3.1 Bachelors from a university of professional education (HBO) in construction and engineering subjects are admitted to the premaster's programme. Admission of others is at the discretion of the Examination Committee.
- 3.3.2 The premaster's programme consists of a selection of courses from the bachelor's programme with an emphasis on physical and mathematical courses.
- 3.3.3 The premaster's programme consists of 30 EC. Those entering from a university of professional education who have considerable industrial experience can gain exemption from the internship (stage).
- 3.3.4 A student who successfully passes all courses in the agreed programme within eight months after registration for the premaster's programme is admitted to the master's programme.

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<sup>7</sup> International English Language Testing System

- 3.3.5 A student who is rejected from a premaster's programme at one of the three Sustainable Energy Technology programmes in the Netherlands is not re-admitted to a premaster's programme in a following academic year.
- 3.3.6 A student who, after the premaster's programme, is admitted to the master's programme, follows a programme which in certain parts will deviate from that of the regular master's programme, depending on the previous education and the subject of specialisation.

## **4. EDUCATION AND PROGRAMME**

### **4.1 Implementation of the programme**

#### **4.1.1 Provision of information**

- a. A course description, method of examination and the form of the education should be published beforehand for every UT 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, is found on Blackboard.
- b. The programme ensures the registration of study results.

#### **4.1.2 Composition of the personal study programme**

- a. The student composes a programme together with a professor in the Department to which he is assigned. This programme requires the approval of the graduation professor (chairman of the graduation committee) and the Director of Education.
- b. The student hands in the approved study programme to the Education Affairs Office (BOZ) at the start of the master's programme, but at the latest on 1 October of that 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).
- c. In order to be able to make a proposal for the study programme mentioned above, students can use the pre-laid-out form for the study programme on the website [http://www.set.utwente.nl/master\\_programme/study-programme-2016-2017](http://www.set.utwente.nl/master_programme/study-programme-2016-2017). This is then discussed with and approved by the graduation professor. Thereafter it is sent (with signature of the student and the graduate teacher) to the Education Affairs Office (BOZ) or sent together with an accompanying e-mail from the graduation professor to BOZ. BOZ presents the study programme to the Examination Committee for approval.
- d. Changing the study programme. Where the examinee wishes to make changes to the choice of one or more courses of the programme which has already been approved, he can submit a request to that effect to the relevant graduation professor. What is stated in 4.1.2a applies for this request (for this purpose the form 'Changing master's courses' is available from the web-site, [https://www.utwente.nl/me/master\\_programme/graduate\\_procedure/forms/wijzigen\\_master\\_vakken.htm](https://www.utwente.nl/me/master_programme/graduate_procedure/forms/wijzigen_master_vakken.htm)).
- e. A course may only be a part of one of the master's programmes.

#### **4.1.3 Internship<sup>8</sup>**

- a. The extent of the internship is 15 – 20 EC (10.5 – 14 nominal study weeks, including writing the report). The extent of the internship is determined beforehand, and depends on the nature, scope and extent of the project and the necessary residence period.
- b. The internship may be started after at least 40 EC of the master's programme has been rounded off.
- c. If, after the internship has begun, it is determined that it will not be possible to achieve the intended learning effect, the student will contact the programme to discuss the consequences. It is up to the student to give a timely signal. In all situations where the cause of a non-optimal internship does not rest with the student, an adequate making-good of the lapsed study time will be determined in a flexible manner. The graduation professor takes the initiative for this.

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<sup>8</sup> Dutch 'stage', sometimes called 'placement' or 'traineeship'.

- d. The student takes the initiative for arranging an internship location and a suitable project. The programme supports this. For this purpose a mobility coordinator<sup>9</sup> is appointed. The internship project requires the approval of the graduation professor and the mobility coordinator. The graduation professor is responsible for assessment of the content. The mobility advisor determines whether the project conforms with the general UT and programme policies and provides adequate administrative support.
- e. During his internship the student receives supervision from a staff member of the programme (usually from the Department within which he will graduate).
- g. The programme will make no financial demands on the organisation which provides the internship.
- h. Further information about the practical carrying out of the internship and/or the subsidy regulation is available from the Sustainable Energy Technology internship coordinator. There is also an 'Internship handbook', which is published annually. See also the handbook, subsidy regulations, insurances, etc on [https://www.utwente.nl/me/master\\_programme/student\\_mobility/](https://www.utwente.nl/me/master_programme/student_mobility/)

#### 4.1.4 Internationalisation

The programme has the aim 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 graduation project and/or the following of a number of regular courses at a foreign university. For the extra costs made for this purpose, there are subsidy regulations for which only once during the programme is it possible to claim. See the subsidy regulations: <http://intoffice.utwente.nl/en/financial/>

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

- a. For this purpose and well before departure to the university abroad, the student makes an agreement with the graduation professor. The student explains the reasons for his request and provides the necessary (course) information.
- b. The graduation professor 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.
- c. Where the content of an international course does not match a master's course in UT, the graduation professor can consider making the course a 'special subject' ('capita selecta') course.
- d. No international courses may be included which substantially overlap with regular UT courses which have already been completed or which still have to be rounded off.
- e. There is no automatic translation of international study points into UT study points (EC). The graduation professor determines the number of ECs. The starting point for this is the agreements in the framework of the ECTS (European Credit Transfer System).
- f. The maximum number of study points 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'.
- g. One exception can be made relating to 'the maximum number of international courses' in point f: where the student participates in a master's programme that is set up 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 Engineering Technology and by the Director of Education.
- h. The agreement as mentioned in a. needs to be confirmed by using the form 'Inclusion of international courses'; this form has to be signed and handed over to the Education Affairs Office (BOZ). The Director of Education agrees the request.
- i. Where possible, the Education Affairs Office takes the international names of the courses over to the Diploma Supplement.

#### 4.1.6 Master's project

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<sup>9</sup> Dutch 'mobiliteitsmedewerker', sometimes called 'placement officer' or 'exchange coordinator'.

The procedure of the master thesis is given in the manual master thesis SET in Annex 1.

### 4.3 Requirements for attendance and participation in education

There are no requirements for attendance or participation in order to follow education units which are offered in the form of lectures or plenary meetings, unless this is determined otherwise beforehand.

- Enrolment may be required for participation in tutorials or seminars. Moreover preparation and regular participation is assumed. Where it seems that this requirement is not met, or not sufficiently met, participation can be excluded.
- For admission to participation in a practical and projects, in general the requirement is that previous courses or study phase(s) have been successfully completed. Above all, there is a requirement to be present and to participate actively. A practical and projects can only be rounded off with a satisfactory result if all prescribed courses have actually been carried out within the prescribed period.
- For admission to participation in theory courses, the general requirement is that previous courses which prepare for the relevant course have been satisfactorily completed ('OSIRIS course information').

Not participating in education in an education period can result in not passing the examinations, projects or a practical. The programme takes no responsibility for this at all.

In cases beyond one's control (*force majeure*) (for example, ill health) the student should immediately contact the teacher who is responsible for the missed course of education.

### 4.4 Language (Article 7.2, WHW, see also central part of the Student Charter of the UT, Article 3.1.3)

4.4.1 The education is given, and the examinations are taken in English.

4.4.2 The graduation report is written in the English language.

## 5. TAKING EXAMINATIONS AND GRADUATION PROCEDURE

### 5.1 Definition of terms

5.1.1 The programme recognises no examination session for the programme as a whole; all courses are examined separately. A course examination is called an examination (tentamen). The total of the results of the examinations taken is submitted by the student (= examinee) to the relevant Examination Committee for assessment within the graduation procedure.

5.1.2 Meaning of terms in 'manner of assessment':

- written examination: Written test.
- oral examination: Oral test (see also article 5.8, oral examinations).
- project examination: (In principle oral) test on the basis of written reporting, which is the result of an assignment, carried out in the appropriate period by a group of students. A presentation, defence and cross-questioning often make up a part of the project examination. The testing can be organised on either an individual or group basis.
- practical: (practical) exercise; (see also article 4.3, requirement for participation in (practical) exercises).
- part-test: a part of an examination: the part-tests together (combined where applicable with another method of assessment) form the basis for a final mark.
- project (assignment): Homework answers, essay, problem, practical, product, presentation, colloquium, and so on. The determining factor is that the student delivers an achievement which is to be assessed. The examiner publishes further details.
- portfolio / file of documents : A reproduction of the competencies achieved and the activities undertaken in the framework of development of competencies and the results thereof (products and/or assessments). The whole gives an impression of how the student is developing himself as a 'prospective master'.

### 5.2 The Examination Committee

Adress: Postbus 217, 7500 AE Enschede

Tel: 053-489 2480 Fax.: 053-489 5370

E-mail: [BOZ-WB-CES@utwente.nl](mailto:BOZ-WB-CES@utwente.nl)

- 5.2.1 The composition of the Examination Committee is stated in Appendix 5.
- 5.2.2 Composition of the graduation committee is stated in the Manual Master thesis in Appendix 1.  
The chairman of the graduation committee can invite others as experts to attend the examination session as guest. Guests have no voting rights. Members of the Examination Committee and the Director of Education are always empowered to attend examination sessions.
- 5.2.3 The meetings of the graduation committees and of the Examination Committee take place in closed session.
- 5.2.4 Where 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 (see 5.2.2.2). The substitute should identify himself as such to the chairman before or at the start of the meeting. The substitute has the voting rights of the member he replaces.

### **5.3 The sequence of examinations**

- 5.3.1 Disqualification from participation in projects or (practical) exercises.  
Before the start of an education period, the Examination Committee can limit the participation of students in projects or (practical) exercises to those students who have made sufficient progress in the courses preceding the project or practical.
- 5.3.2 Regulation for administrative secondary activities and/or top sport
  - a. The student who satisfies what is stated in c. and d. below, and who considers taking part in recognised administrative secondary activity or activities or has the status of top sportsperson, may count on the support of the programme.
  - b. In the opinion of the programme at the moment the request is made, the study progress of the student must be reasonable to good.
  - c. The secondary activities must be of a limited extent and duration.
  - d. The student should consult in good time the relevant education coordinator or graduation professor, during which among other matters the study planning and the planning of the secondary activities are discussed.
  - e. The agreements made about them are confirmed in writing and after they have been countersigned by the coordinator and the student, they are handed in to the Education Affairs Office (BOZ).

### **5.4 Time periods, times and frequencies of examinations**

(Article 7.13 paragraphe 2 sub-paragraphe f, WHW)

- 5.4.1 At the beginning of a quarter a timetable is published in which the dates of written examinations are stated.
- 5.4.2 In the case where an examination can be taken orally, this can be taken 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 vacation period not being counted).
- 5.4.3 For each of the courses of the master's programme which are not published in an education timetable, the examiner who is charged by the Examination Committee with conducting the examination in such a course, determines, as far as possible in consultation with the student(s), a time when the examination can take place.
- 5.4.4 The examination for the courses which are taken as written examinations, can be taken at least twice per course year, once immediately after the period in which the teaching in that course is given, 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 year can, at the request of a student, be taken at least once every academic year.
- 5.4.5 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.
- 5.4.6 The number of times that it is allowed to take part in a regular completion of a course is limited to two, unless otherwise indicated. Where the student wishes to participate in more than two attempts, permission

from the Examination Committee is necessary. In this case the Examination Committee can also prescribe a different form of examination (oral, project).

Where a change of existing courses, or a substantial change of the material in a course, has been made which has been approved by the Director of Education, the 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.

- 5.4.7 Registering for but not taking an examination is regarded as an attempt at the examination for which a mark of 1 is awarded.
- 5.4.8 For each of the examinations the examiner charged by the Examination Committee with conducting this examination determines, after consultation with the student, a time when the examination can be taken. This can mean that examination can only be taken once per academic year.
- 5.4.9 In special cases and by student request, the Examination Committee or the relevant examiner can allow a deviation from the times fixed in article 5.4.3.
- 5.4.10 Concerning an examination that relates to a course which 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 Committee.

## **5.5 Special provisions (Article 7.13 paragraph 2 subparagraph i, WHW)**

Students with a physical or sensory limitation are given the opportunity to take examinations in a manner that is as far as possible adapted to their individual limitation. The facilities which are to be offered as far as possible consist of a form or duration of the examinations which matches the individual situation, or making practical aids available. For this purpose the student should hand in to the Education Affairs Office a written (e-mail) request at the start of the study or the start of the limitation. The Director of Education seeks, whenever necessary, expert advice before making a decision. The student is informed of the decision in writing.

## **5.6 Taking examinations**

(Articles 7.10 and 7.12 paragraph 3, WHW)

- 5.6.1 Every examination consists of an inquiry into the knowledge, the insight and the skills of the student as well as the assessment of the results of that inquiry.
- 5.6.2 The assessment is made by one or more examiners.
- 5.6.3 In the case where the inquiry of the same examination is undertaken at the same time or not by more than one examiner and the result thereof is assessed, the relevant Examination Committee ensures that the examiners assess on the basis of the same standards. Where necessary it appoints an examiner who has the prime responsibility for the examining.
- 5.6.4 The determination whether the conditions for taking of the examination, or one or more components of it, are satisfied is taken by the relevant Examination Committee or examiner, who can delegate the implementation to the Education Affairs Office.

## **5.7 Exemption from examinations**

(Article 7.13 paragraph 2 subparagraph n, WHW)

- 5.7.1 On the basis of examinations taken elsewhere with satisfactory results, exemption from an examination can be given. The Examination Committee decides about the granting of exemptions after it has received advice from the relevant teachers.  
The exemptions from examinations stated in the previous paragraph are determined in a written decision.
- 5.7.2 A request for exemption from the requirements to take examinations or to participate in (practical) exercises (see 4.3) on the basis of what is determined by or in accordance with the [Dutch] law should be made to the Director of Education.
- 5.7.3 Having heard the relevant examiner(s), the Examination Committee decides within one month of having received the request.
- 5.7.4 The student has the opportunity to be heard before the Examination Committee decides to grant the exemption totally or in part.

5.7.5 Where, by or according to the [Dutch] law, the examinee has the right to exemption for one or more examinations, he informs the Education Affairs Office (BOZ), and provides the relevant pieces of evidence.

## **5.8 Oral examinations** (Article 7.13 paragraphe 2 sub-paragraphe h, WHW)

5.8.1 The examiner can himself determine the form of examination within the frameworks which have been set.

5.8.2 The oral taking of an examination is not in public, unless the relevant Examination Committee or examiner has in special circumstances determined otherwise.

5.8.3 Members of the Examination Committee and the Director of Education are entitled to attend an oral examination session.

## **5.9 Written examinations**

5.9.1 The questions and answers (examination scripts) of an examination do not go beyond the sources from which the material has been taken and what has been handled in lectures. These sources are published in outline before the start of the education that is given in preparation for the relevant examination. At the latest one month before taking the examination, the definite extent of the material is made known in writing (e-mail/Blackboard). The manner in which the examination is to be taken must be published at the moment that the registration period in '*OSIRIS Self Service*' is opened.

5.9.2 The times when the written examinations can be taken are published in the annual timetable (see 5.10.1).

5.9.3 The Examination Committee ensures that in good time the students can gain insight into the extent and complexities of the demands placed on the examinations. For a written examination, the students have well before the examination a concrete insight into the degree of difficulty and accents to be expected of the examination.

## **5.10 Registration for examinations / Conduct during examinations** (Article 7.12, WHW)

5.10.1 The registration for examinations

a. Registration is required for written examinations.

The annual timetable states up to which day it is still possible to inscribe for the examinations of each separate semester. Bearing in mind the dates indicated in the previous sentence, inscribing for examinations should take place using the '*OSIRIS Self Service*', unless otherwise informed.

Not registering in the stated manner before the closing date for inscription, cancels the right to participate in the relevant session. Even if participation is allowed by the relevant invigilator, this does not automatically confer the right of assessment of the work handed in.

b. A student who has registered for the examination and without valid reason does not appear can be excluded from participation in the next examination session of the relevant course.

c. Registration is required for the master's examination. The registration takes place at the Education Affairs Office (BOZ) (see Appendix 1).

5.10.2 Conduct during an examination

a. One or more invigilators are appointed to a written examination, who ensure that the taking of the examination runs smoothly. The student should take the examination at the designated place.

b. The student can only take part in an examination if, when asked, he can establish his identity with a document of registration as student or otherwise.

c. The student is considered to take part in a written examination, when he has taken receipt of the examination paper.

d. In connection with quietness during the session, the student is required to be present before the start of the session and on entry where applicable to switch off and put away communications apparatus. On late arrival, the invigilator can refuse him participation in the written examination. The invigilator makes out a formal report about this.

e. Over-garments and bags remain as far as possible outside the room or at the front of the room at a place so designated by the invigilator.

- f. Having communications apparatus within reach is not allowed, unless otherwise indicated.
- g. Writing materials are allowed; the teacher can indicate which other aids are allowed, for example, a reader, book, pocket calculator, etc.
- h. The permission of the invigilator is required for a visit to the toilet; study materials, communications apparatus, and other (portable) study aids should be left behind in the examination room.
- i. The student who has satisfied point c. should at the end hand in to the invigilator the examination work he has done.
- j. A student who wishes to leave the examination session early, should tell the invigilator. He should then hand in the examination work, even if he has not made a start with answering the questions.
- k. Instructions by the invigilator should be followed precisely.

## 5.11 Fraud (Article 7.12 paragraph 4, WHW)

### 5.11.1 Fraud is understood to mean:

1. The use in examinations of more or different aids than those which the examiner, before the examination, has stated in writing that they are allowed.
  2. The use in examinations of aids or help which the student knew or should have known that they were not allowed. In any case the following are included among the intended help or aids mentioned in the previous sentence:
    - a. Cheating, whether or not:
      - With the aid of cheating notes, other means of help, previously prepared workings out, and/or communications apparatus;
      - Through copying or allowing copying, in examinations;
      - Making contact with others (other than the invigilator or teacher) about the material of the examination during the time for sitting the examination and when the work has not yet been handed in.
      - Through making use of parts of written work or worked out answers of others.
    - b. Forgery of documents, including doing or allowing the doing of an examination under a false name.
  3. Behaviour of students which, before the taking of the examination, the teacher has made it known in writing that he regards it as fraudulent.
  4. Plagiarism: copying without proper reference to sources and allowing copying.
- Appendix 6 provides further details of which procedures are to be applied for handling written work which is considered fraudulent.

5.11.2 Where (suspected) fraud is perceived, the responsible teacher informs the student involved and the Examination Committee in writing (e-mail).

5.11.3 After determining fraud, the teacher takes the following action(s) concerning the student:

- a. The assessment of the complete examination is a mark 1 (one). This also holds for fraud in a part of an examination.
- b. Exclusion from participation in the relevant examination for a period of at most one year.
- c. The examiner can determine for the student involved a deviating form of assessment of the relevant examination.

5.11.4 The Examination Committee is entitled to impose additional actions on the student.

- a. When the Examination Committee determines that there was fraud, it can exclude the student(s) involved for a period of at most one year from participation in, in the extreme case all examinations.
- b. An examination for which in whatever way fraud has been confirmed may not, during the period of exclusion, be replaced by another examination.

5.11.5 Article 6.7 is applicable for what concerns objection and appeal against a decision which is taken in the framework of articles 5.11.3 and 5.11.4.

## 6. RESULTS

### 6.1 Transcript of examination result (Article 7.11 paragraph 1, WHW)

6.1.1 After an examination has been taken, the examiner draws up a declaration from which the result or results are apparent. The declaration is signed by the examiner.

### 6.2 Assessment (Article 7.12 paragraph 4, WHW)

6.2.1 The assessments are usually expressed in the form of one of the following **integer** marks 1 to 10 inclusive. The marks have the following meanings:

1: very poor	2: poor	3: very unsatisfactory
4: unsatisfactory	5: almost satisfactory	6: satisfactory (pass)
7: very satisfactory	8: good	9: very good
		10:excellent

Examinations can be assessed with a 'V' (voldoende = sufficient) where in the judgement of the examiner(s) at least a reasonable achievement is handed in. On the marks list an exemption is indicated by 'Vr' (vrijstelling).

6.2.2 Where the student has been assessed more than once for the same examination, the highest mark is the valid one.

### 6.3 Approval, publication and registration of results of an examination

(Article 7.13 paragraphe 2 sub-paragraphe k, WHW)

6.3.1 After the end of an oral examination, the assessment is confirmed within one week and published to the student.

6.3.2 Within 20 working days (not counting the academic vacations) after the end of a written examination, after the handing in of a project or after the finishing of a practical, the result of it is published. Where there is the opportunity of a quick re-examination for the relevant course, the checking time is shortened to such an extent that the student can reasonably prepare for the re-examination.

6.3.3 If the period stated in 6.3.2 is exceeded, the Examination Committee can in the most extreme case determine or allow the determination of the result of an examination.

6.3.4 The results of written examinations, projects and practicals are published in 'OSIRIS Self Service' here there is lack of clarity about the result, the declaration countersigned by the examiner is the valid result.

6.3.5 Errors in overviews

Where a mistake has been made in a marks list or an overview which relates to the study progress of a student, both the programme and the student are required to make it known to the other party as soon as it is discovered, and to work together to annul the mistake that has been made. The administration of the programme discloses complete information unless indicated to the contrary. When there is evidence to the contrary, in every case the examination work assessed by the teacher is valid.

6.3.6 The Education Affairs Office (BOZ) ensures the registration of the assessments and the results of the examinations.

6.3.7 The Examination Committee can give information about registered data to authorised persons, such as:

- Members of the programme management;
- Members of the assessment committee;
- Those persons who are charged with activities such as making requests for financial support, dealing with the study grant (DUO = Dienst Uitvoering Onderwijs ("IB-Groep = Information Management Group, Informatie Beheer Groep " previously)), and the central administration for students and alumni.

The information disclosed is limited to what is essential for the purpose.

### 6.4 Duration of validity of assessments (Article 7.13 paragraph 2 subparagraph g, WHW)

- 6.4.1 The results of examinations which have been taken are valid without time restriction. In deviation from this, for a course for which the examination was passed more than six years beforehand, the Examination Committee can impose an additional or resit of the examination.
- 6.4.2 In special circumstances the Examination Committee can extend the duration of validity of assessments stated in the previous paragraph by a period the length of which it determines.

## **6.5 Right of inspection** (Article 7.13 paragraph 2 subparagraph 1, WHW)

- 6.5.1 During a period of four months which begins on the day after the result of a written examination is made known to the participant, the student can at his request inspect his own assessed examination work and scripts.

Concerning reports of a practical, the same agreement is applicable for the inspection of own work. The leader of the practical determines:

- a. whether, after the stated period of four months, the reports can be given back to the students involved and
- b. whether copies may be made of the assessed reports.

The intended inspection occurs at a time and place determined by the examiner in consultation with the interested party.

### 6.5.2 Storage time for examinations

The assessed examination work produced by the students on paper should be stored for at least one year under the responsibility of the Examination Committee. Where an examiner is appointed for the course involved, he is responsible for this.

## **6.6 Subsequent discussion** (Article 7.13 paragraph 2 sub-paragraph m, WHW)

- 6.6.1 Without prejudice to what is determined in article 6.5, an individual subsequent discussion of the work takes place with the examiner if the student requests it. This request must be made within a period of two months after the result of the examination has been published.
- 6.6.2 Where a joint subsequent discussion is organised, a student can submit a request as intended in the previous paragraph, when he has been present at the joint discussion and gives his reasons for his request.

## **6.7 Difference of meaning / Right of Appeal**

- 6.7.1 Where there is a difference of meaning about a decision which has been taken, the relevant examiner and the student try to reach an agreement during the subsequent discussion. See also article 10.2.3.

- 6.7.2 Where the student is not provided with this opportunity, or the discussion does not lead to a result which satisfies both parties, a written (e-mail) appeal can be made to the Examination Committee within two weeks against the treatment. The Examination Committee will take a decision about it within three weeks and will inform those involved about it.

### 6.7.3 The joint right of complaint of students (Article 9.28, WHW)

Method of implementation

- a. The joint right of complaint can be used where the obligations of the university (in this case the programme) towards students are not met, or not completely met, or not met to a sufficient extent.
- b. The right intended in the first paragraph can be used by a group of students who are registered for the same programme at the University of Twente.
- c. The named group of students appoints from among them one or more spokesperson(s).
- d. The complaint is submitted in writing (e-mail) to the Director of Education by or on behalf of the spokesperson(s) stated in c. This consists of a clear description of the objections and what, according to the applicants, must be done to overcome the objections.
- e. The Director of Education confirms receipt to the spokesperson(s) within seven days of having received the complaint, and provides the applicants with the opportunity to give clarification of it within a reasonable period of time.

- f. Within six weeks of having received the complaint, the Director of Education informs the spokesperson(s) of the applicants in writing and with reasons, whether the complaint is a reason for him to take actions and, if this is the case, what actions they are.
  - g. Where the complaint relates to an issue which does not fall under the authority of the Director of Education, the Director of Education forwards the complaint to the authorised body or the authorised official. The Director of Education informs the spokesperson(s) of the applicants of the complaint about this. What is stated in e. and f. is applicable in this case.
- 6.7.4 Appeal to the Appeals Tribunal for Examinations is possible against the decision of the Examination Committee or examiners as intended in Article 7.61, WHW. The period for submission of the (written) appeal is four weeks (Article 7.61, paragraph 3, WHW).

## **7. GRADUATION EXAMINATION**

### **7.1 Approval of the results of the examinations (Article 7.10 paragraph 2, WHW)**

- 7.1.1 After all components of a graduation examination have been taken, the Examination Committee involved can determine whether the student has satisfied the conditions stated in Appendix 2 for passing, or not. Where this is indeed the case, the Examination Committee can declare the student to have passed, and can carry out (or have carried out) all the relevant procedures which follow.
- 7.1.2 Moreover, where the guidelines stated in Appendix 3 for the award of the designation ‘with distinction’ (‘met lof’) have been satisfied, the Examination Committee is empowered to allow this designation to be used on the master’s degree certificate.

### **7.2 Degree certificates and registration (Article 7.11, WHW)**

- 7.2.1 To show that the Master’s examination has been successfully completed, a degree certificate is awarded by the Examination Committee. The degree certificate is countersigned by the persons stated in Appendix 4. The award takes place in public; in special circumstances the Examination Committee can deviate from this.
- 7.2.2 An English language diploma/degree supplement and/or marks list, on which the results of the examinations are stated, is provided to all those examined.
- 7.2.3 ‘Extra courses’ are stated where applicable, provided these were added to the study programme with the approval of the Director of Education. The stated ‘extra courses’ make no part of the total programme. These courses should have been satisfactorily completed.

## **8. QUALITY ASSURANCE**

The Director of Education 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’ (‘studeerbaarheid’<sup>10</sup>).

## **9. FACILITIES (Article 7.59 paragraph 4 sub-paragraph a2, WHW)**

### **9.1 Computer provisions / Computer rooms**

- 9.1.1 It is a requirement for following education that Sustainable Energy Technology students have a notebook available which supports the hardware and software. Students with questions about software can make use of the ‘Helpdesk/Notebook Service Centre’. Students can also go there for breakdowns of notebooks which were selected by the NSC.
- 9.1.2 Every student has his own e-mail address which is assigned to him at the beginning of the UT study. Electronic communication between the UT and students occurs exclusively via this e-mail address.

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<sup>10</sup> Translator’s note: a good English translation of the compact Dutch word ‘studeerbaarheid’ is notoriously difficult: ‘feasibility’, ‘do-ability’ and ‘learn-ability’ are all used. The essence is whether a suitably-qualified diligent student can successfully master the required academic material within a defined time. The criteria applied in the master ME are: the students in average should be able to pass the exam with the mark 7 by spending the allotted time.

- 9.1.3 Within the programme, copying and printing facilities are available for students (at their cost).
- 9.1.4 Misuse of or damage to UT facilities (use of computer provisions and network provisions for non-study purposes) or misconduct can, in addition to paying for the damage, be a reason for the management team temporarily to refuse the student participation in teaching and the examinations.
- 9.1.5 Use of the computer provisions and network provisions for non-study purposes can be regarded as misuse.
- 9.1.6 A room can be booked via [http://www.utwente.nl/onderwijssystemen/en/about\\_the\\_applications/timetabling\\_systems/WRB/](http://www.utwente.nl/onderwijssystemen/en/about_the_applications/timetabling_systems/WRB/)

## **9.2 Library**

The central UT library contains an abundance of books and periodicals relevant to the Sustainable Energy Technology programme. In addition some study materials are available in the room of the Isaac Newton Student Association .

## **9.3 Educafé**

The study spaces in the centre of the Horst building in front of the lecture room C.101, the canteen and the student area in the basement are designated as the Educafé. Outside the lunch time, the canteen is intended for study and consultation, wherein persons should follow the local/domestic rules, including the return on time of canteen-ware. Study material can be loaned via the Isaac Newton Student Association.

## **10. CONDITIONS FOR IMPLEMENTATION AND FINAL CONDITION**

### **10.1 Assessment and approval of this regulation**

- 10.1.1 Having heard the Faculty Council (FR-CTW) and the Education Committee (OLC-WB), the Dean approves this regulation.
- 10.1.2 The Dean and the Education Committee assess this regulation regularly in the context of its implementation and its effectiveness.

### **10.2 Changes to this regulation**

- 10.2.1 Changes to this regulation are approved by separate decision of the Dean.
- 10.2.2 Changes which are applicable to the current academic year can only be effected where the interests of the students are not thereby reasonably damaged.
- 10.2.3 In cases not covered by this regulation, the Examination Committee decides. This is also the case for (apparent) lack of clarity, inconsistencies, differences of interpretation and/or (apparently) conflicting texts. In cases which this regulation does cover, the Examination Committee can in special circumstances also decide otherwise, provided this is not to the disadvantage of the student. It informs the involved teacher, Examination Committee and/or student of the decision.

### **10.3 Appendices**

The Appendices mentioned in the previous articles are an integral part of this regulation.

### **10.4 Publication**

The Director of Education arranges for publication of this regulation and any changes to it which may be approved at a later time. In any case these are made available to the target group via Internet or at the Education Affairs Office.

### **10.5 Final Condition**

- 10.5.1 This regulation comes into force on 1 September 2016.
- 10.5.2 This regulation can be quoted as 'Education and Examination Regulations for Sustainable Energy Technology'.

## **APPENDIX 1: MANUAL MASTER THESIS SET**

### **Manual master thesis Sustainable Energy Technology**

May 2016

P.W. Gerbens-Leenes, programme coordinator SET  
T.H. van der Meer, director of education SET

## 1. Introduction

In 2003, the three Dutch Universities of Technology (TUD, TU/e and UT) embarked on a cooperation directed towards the harmonisation and coordination of research and educational efforts. The MSc programme in Sustainable Energy Technology (SET) was one of these five new programmes. The three Universities of Technology are in a good position to offer a research-oriented Master's programme, as required by the energy sector. The joint master programme provides students the possibility to study and perform the master thesis work at one of the three locations, not only at the location of the first registration, but also at one of the other locations. Registration at one location automatically includes registration at the other two. SET is a two years Master's course of 120 European Credits (EC) offered at the UT according to Table 1. The MSc.-assignment takes 40 - 45 ECTS (credits), which agrees with the duration of 3 quarters of 10 weeks of 42 hours.

	ECTSs
Core programme	45
Specialisation-linked and elective subjects	15
Internship and projects	15 - 20
Master's thesis	40 – 45
<i>Total</i>	<i>120</i>

**Table 1: Programme setup from OER 2010-2011<sup>11</sup>**

This manual gives important information about the general rules for doing the SET master thesis at the University of Twente (UT). The master's programme Sustainable Energy Technology is a research-driven programme. At all three locations, research in this field is at a high level and of high importance.

The individual master's assignment is the completion of the master's program. The main objective of the MSc.-assignment is that the student learns and proves that (s)he is able to define, perform, complete and reflect a research project at a large degree of independence. The assignment is performed in one of the energy related research chairs of the UT under the supervision of a daily supervisor and the responsibility of a chair holder (professor) and a master's graduation committee. Conditionally, the assignment can be done (partially) at an external institute or organization.

During the master's thesis work, 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. SET graduates combine a broad knowledge in the field of sustainable energy technology with an in-depth specialisation in one field. The combination is covered in a well-balanced two year programme. The core programme is made up of five course types, introductory courses, courses to reach adequate basic levels in applied mathematics and physics, core courses, courses to reach adequate basic levels in social sciences, and system integration courses. Elective courses give students the possibility to acquire in-depth knowledge to effectively carry out a Master's thesis project.

## 2. Getting started

### 2.1 Selecting a topic and a research group

The first step to take to get started with the master thesis research is to select the topic and the research group. We advise you to do this in the first quartile of the first year of the programme. This gives you time to do elective courses in the first year that you need to acquire the in-depth knowledge. You can select a topic from the large offer of the University of Twente. For examples of thesis topics, you can visit our website at [www.utwente.nl/set](http://www.utwente.nl/set). If you

<sup>11</sup> The newest version of the OER can be found via the respective websites of SET at Twente, Eindhoven and Delft

have another idea about a thesis topic related to sustainable energy technology, this is also possible. Another option is to do the thesis work in Delft or Eindhoven. If so, you graduate from the university where you were registered first, in this case the UT. Examples for areas for the thesis topic are:

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

The MSc.-assignment has to take place in one of the chairs of the university that is involved in sustainable energy related research. An external assignment is only possible by exception, to be judged by the Exam Committee. In case of an external assignment, a UT-chair professor has to take the responsibility for the assignment and should officiate as the professor in the MSc.- graduation committee.

## 2.2 Elective courses

When you have found a research topic and a research group, including a supervisor, you make a list of elective courses for your in-depth knowledge and fill it in in the “Study Programme form”. You do this together with your supervisor who will help you. This list needs the approval of both the chairholder of your supervisor and the director of education of SET, professor Van der Meer. You can find this list on the website [www.utwente.nl/set](http://www.utwente.nl/set) and in Annex 1.

## 2.3 Approval thesis topic and appointment MSc. graduation committee

Next, you need the approval of your thesis topic. For this you fill in the form “Approval form Master Assignment Sustainable Energy Technology”. See Annex 2 and the form on the website. Next, the professor of the chair forms your graduation committee. It includes at least three scientists with a different background related to the topic of research. The committee includes:

- A chairman: the professor of the chair in which the student graduates or a representative (professor or UHD);
- The daily supervisor, who is a member of the permanent scientific staff (professor, UD or UHD);
- A member of the permanent scientific staff of a UT-chair different from the graduation chair (professor, UD or UHD). This member is added to committee to:
  - i. ensure that committees assess MSc.-assignments objectively;
  - ii. add additional knowledge and views from other scientific fields;
  - iii. exchange ideas between chairs.

When the supervisor is a PhD-student, then preferably the staff member who is the supervisor of the PhD-student should be added to the committee. He can monitor the interests of the master student concerned. Scientific experts from outside the programme in which the assignment takes place may be part of the MSc. Graduation committee in addition to the above group of three persons.

The establishment of this interdisciplinary committee makes it possible to guide the student effectively through the process and judge the Master’s thesis from different perspectives. Moreover, the composition of the committees contributes to equal standards across different committees. You give the members of het committee on the form. The form needs the approval of the director of education, Van der Meer.

## 2.4 Agreements with the research group

The student has to perform a substantial research or design project that meets scientific criteria. The level of profundity and complexity is defined by the chairman of the MSc. graduation committee, the chairholder of the

research group. The SET student adds to the research topic of the selected research group the broad perspective of Sustainable Energy Technology.

When you have found your thesis topic and research group, you make agreements with this group. The chairholder of the group, a professor, is responsible for the thesis work. Often, you will have one daily supervisor, sometimes more, who are not necessarily a professor. However, the chairholder has the final responsibility. Before getting started with the actual thesis work, the student and his or her supervisors make a time table of when to get started, end day and deliverables during the thesis work. Also there are agreements about the supervision, who is doing what, and the intensity of supervision. When the actual thesis work is done outside the UT, the research group assigns a supervisor in the outside organization. The UT supervisor and chairholder remain responsible for the content and scientific level of the thesis work. Moreover, they are responsible that the work can be finished within the time given to do the work. The student completes the assignment with a written report (the MSc.-thesis) an oral public presentation and a defense.

The research group pays a limited number of hard copies of the master thesis. These copies are distributed among the members of the graduate committee and the secretary of the research group at least two weeks before the final defense. A digital version in PDF format needs to be send to BOZ-WB ([BOZ-WB-CES@utwente.nl](mailto:BOZ-WB-CES@utwente.nl)) @utwente.nl).

### 3. Administrative formalities

The following administrative formalities are needed:

- Approval of the list of courses, including elective courses (*see form Annex 1*);
- Approval of the research topic (*see form Annex 2*);
- Approval of the graduation committee (*see form Annex 2*);
- Documentation of agreements with the research group;
- Inform BOZ-WB about the starting date, research group and location. As soon as you have found a thesis assignment, you are *obliged* to register this in the Student Mobility System (SMS). You can register by creating a new assignment called 'Graduation' ("Afstuderen") and filling in a so-called 'Assignment' form ('Opdracht'). Print the form, get a signature for approval from your graduation professor and hand the form over to BOZ-WB (Or: Send the signed form as a pdf to [BOZ-WB-CES@utwente.nl](mailto:BOZ-WB-CES@utwente.nl));
- Within two weeks after you started with your thesis work you are *obliged* to fill in a so-called 'Notification' form ('Melding');
- Agreements about finishing courses. All courses need to be finished before the master thesis can be finalized!
- Assessment of working hours with the research group;
- Agreements with the supervisors about the evaluation meetings;
- Information of supervisor in case of problems during the trajectory;
- Information of BOZ-WB in case of temporarily delay, e.g. in case of illness, holiday, exams, etc.;
- Hard copies two weeks before the defense to committee and secretary group, digital copy to BOZ-WB ([BOZ-WB-CES@utwente.nl](mailto:BOZ-WB-CES@utwente.nl)).

In case of disagreement, the director of education of SET can provide assistance.

### 4. Assessment

The assessment of the master thesis is based on the interdisciplinary analyzing capacity, creativity, self-reliance, written report, oral presentation of 45 minutes (including question round) and discussion for a broad audience and the separate, final one hour defense for the graduation committee. The assessment criteria are given in Table 2, the assessment checklist.

#### Table 2. Assessment Checklist MSc.-thesis SET

<p><b>Assessment research qualities</b></p>	
<ul style="list-style-type: none"> <li>• Problem analysis: <ul style="list-style-type: none"> <li>○ Definition of the research goals and research questions,</li> <li>○ Use of relevant scientific literature,</li> <li>○ Applying a multidisciplinary framework to put the problem in the proper energy related context</li> </ul> </li>   <li>• Execution of the MSc.-assignment: <ul style="list-style-type: none"> <li>○ Application of research methodology,</li> <li>○ Theoretical skills,</li> <li>○ Experimental skills,</li> </ul> </li>   <li>• Analysis of the results: <ul style="list-style-type: none"> <li>○ Application of data analysis,</li> <li>○ Complexity of the research,</li> <li>○ Feedback to the research goals,</li> </ul> </li>   <li>• Accessibility and usefulness of the results: <ul style="list-style-type: none"> <li>○ The most important indicator is the degree of publishability<sup>12</sup> the results.</li> </ul> </li> </ul>	
<p><b>Assessment of the reporting and general aspects</b></p>	
<ul style="list-style-type: none"> <li>• Report (thesis): <ul style="list-style-type: none"> <li>○ Contents and structure,</li> <li>○ Design and lay-out,</li> <li>○ Language,</li> <li>○ Discussion of results, conclusions and recommendations,</li> <li>○ Literature references, list of symbols, description of laboratory set-up, etc.</li> </ul> </li>   <li>• Colloquium: <ul style="list-style-type: none"> <li>○ Contents,</li> <li>○ Message, and connection to public<sup>13</sup>,</li> <li>○ Explanation about methods and results (clearness),</li> <li>○ Style of presenting and use of audio-video support tools,</li> <li>○ Discussion and response to questions.</li> </ul> </li>   <li>• General aspects: <ul style="list-style-type: none"> <li>○ Independence of student,</li> <li>○ Originality and creativity,</li> <li>○ Attitude, effort, pace, dedication, commitment,</li> <li>○ Co-operation with “problem owner” and with co-workers.</li> </ul> </li> </ul>	

<sup>12</sup> Degrees of publishability: independent article by student / with additional results / as a part of other work / non-publishable.

All committee members make an individual assessment of the final grade based on the criteria of Table 2. Based on these grades, the chair proposes the final grade.

## 5. Procedure

### 5.1 Announcement of colloquium

The announcement of the colloquium is arranged by the secretary of the research group where you did the thesis work. The colloquium room is also arranged by the secretary. Next, you inform BOZ-WB as well as the secretary of SET (S.Y. Kloost-Zimmerman van Woesik) who take care of the announcement of the colloquium.

The student notifies BOZ-WB at least 4 weeks (20 working days) before the colloquium using the form 'Aanmelden masterdiploma' (registration master certificate). And the form 'colloquiumformulier' signed by the daily supervisor.

### 5.2 Graduation

The certificate of the master SET is given when the following constraints are met:

- The student has completed all courses and fulfilled all requirements of the master programme SET. This is controlled by BOZ-WB when they have received the notification. Next, BOZ-WB informs CSA (Central Student Administration)
- The grades of all courses, apart from the master thesis, need to be registered at BOZ-WB at least 3 weeks before the graduation.
- The student is registered at the UT the day of the graduation. This is controlled by CSA.
- The student sends a digital version of the thesis to BOZ-WB at least 1 week before the graduation.

When the constraints above are met, the student is allowed to do the final exam, i.e. colloquium and defense. When this is done successfully, the certificate, signed by the chair of the Exam committee of SET-ME, as well as by the chair of the committee is given to the student. The student also receives the grades list.

All forms can be downloaded at: [www.utwente.nl/set](http://www.utwente.nl/set).

**Faculty of Engineering Technology  
Sustainable Energy Technology (SET)**

Annex 1.

3TU.

**Master study programme Sustainable Energy Technology**

1011  
NAME  
STUDENT:

SPECIALISATION:

**CHAIR  
HOLDER:**

to be filled by chair holder

*Within this draft you are invited to*

- *remove the courses you will not take;*
- *add courses of your choice;*
- *fill in or adjust the study load (EC).*

Homologation

Introductory subjects (compulsory, unless otherwise agreed)

201600019	Energy Conversion technology
195740080	Transport Phenomena
195740130	Sustainability

Compulsory subjects: (31 EC)

195740050	Technology and Sustainable Development
195740030	Energy from Biomass
195740100	Electrical Power Engineering and System Integration
195740120	Wind Energy
195740040	Solar Energy
195740060	Hydrogen Technology
194106060	System Innovation and Strategic Niche Management
195740020	Energy and Economy

Internship or Integration Projects (15 EC)

195740010	System Integration Project I (Group)
195740110	System Integration Project II (Individual Assignment)
195799152	Internship (15 - 20 EC)

Specialization subjects / elective subjects (15-20 EC)

Courses in consultation with tutor/ chairholder

Graduate (40-45 EC)

195799198	Master graduation assignment
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***It is strongly recommended to complete the above described programme before taking additional courses***  
**Additional subjects (beyond the 120 EC)**

.....  
.....  
.....

Approve of:  
Chair Holder:

Student:

Date

date

Annex 2

**Approval form Master Assignment Sustainable Energy Technology**

Student name

Student number

Track/specialisation

Research group

Date



<b>Members graduation committee</b>	
<b>Name</b>	
Chair	
Supervisor	
Member other group	
Other members	

**Abstract research proposal including 5 keywords (max 600 words)**

**Approval**

T.H. van der Meer, director of education Sustainable Energy technology (SET)

**MASTEREXAMEN:**

Naam :  
Studentnummer :  
Mastertrack :  
Afstudeerdocent :  
Masterprogramma : bijgevoegd  
Masterexamen d.d. :

Voordracht : \_\_\_\_\_

Verslag : \_\_\_\_\_

Mondeling : \_\_\_\_\_

M-opgave(Inhoud) : \_\_\_\_\_

M-opgave(proces) : \_\_\_\_\_

EINDCIJFER : \_\_\_\_\_

} De beoordelingscommissie bepaalt hierbij dat de status<sup>\*</sup> van het afstudeerverslag zal zijn:  
O = "**Vertrouwelijk**" (voor een periode van \_ jaar)  
O = "**Openbaar**"  
<sup>\*</sup>) *aankruisen wat van toepassing is*

UITSLAG : \_\_\_\_\_

Afstudeerexamencommissie:

Handtekening:

Prof.dr.ir. XX

\_\_\_\_\_

Dr.ir. YY

\_\_\_\_\_

Prof.dr.ir. ZZ

\_\_\_\_\_

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

## APPENDIX 2: COLLABORATION WITHIN 4TU

### *3TU bijlage OER SET TUD, UT, TU/e*

1. The Master's degree program in Sustainable Energy Technology is a 3TU MSc program. The program is offered at TU/e, TUD (Delft University of Technology) and UT (University of Twente). The programs have similar learning objectives. The courses and specializations at each university are different. Each program has a different Croho number (program registration according to the WHW).
2. If a student is admitted to the Sustainable Energy Technology program at one of the 3 universities, the student is also admitted to the program at the other universities.
3. After a student is formally enrolled in the Master's program in Sustainable Energy Technology at one of the 3 universities she will also obtain a secondary enrollment (neveninschrijving) at the 2 other universities.
4. The pre-Master's programs of the 3 universities are interchangeable.
5. Students are allowed to choose elective subjects from the lists of elective/ specialization and core courses from each of the 3 programs, after consultation with the mentor/supervisor from the home university and after approval by the Examination Committee of the home university.
6. Students are allowed to choose a specialization / research group and thesis subject at one of the partner universities. After choosing a specialization at a partner university, a student compiles a study program in consultation with the thesis supervisor and/or mentor from the partner university. The study program has to be approved by the Examination Committee of the home university.
7. With respect to the thesis work
  - The thesis work done at a partner university will be supervised by a thesis supervisor from the partner university;
  - The grading and defense will be judged by a joint graduation committee that is composed according to the rules of both programs;
  - The criteria of both programs will be used as 'cross reference' for grading of the thesis work;
  - The final grade will be administered according to the criteria of the partner and will be registered with the course code of the partner university;
8. The home university accepts the transcript of the thesis work and courses as approved under 6.
9. Students who perform their specialization and/or thesis work at a partner university, receive a diploma from their home university.

### **APPENDIX 3: GUIDELINES FOR PASSING AND FOR AWARDING THE DESIGNATION 'WITH DISTINCTION' ('MET LOF')**

When, beforehand, there is in the judgement of the Graduation Committee an exceptional level of student achievement and the prove of the student's potential as an exemplary academic engineer, the Examination Committee can submit a reasoned proposal to the Director of Education to affix to the master's degree the designation 'with distinction' ('met lof').

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 at the Education Affairs Office within two weeks after the examination.

Apart from the 'exceptional level and potential' the guidelines for passing 'with distinction' are:

- a. The final mark for the master's project is at least a 9;
- b. The averaged mark of all courses, exclusive of the Master's project, must be at least: 8.00;
- c. The assessments of all examinations of the master's courses, including extra courses, are satisfactory ('Vr', 'V' or 6);
- d. A mark of 6 is gained not more than once in the programme (extra courses are not counted);
- e. The master's examination should have been taken within the nominal study time, augmented where applicable with recognised awards for graduation support, with a maximum over-run of two years. The nominal time is two years for BSc's or two years plus the extent of the premaster's courses less the exemptions within the master's programme for HBO-bachelors<sup>14</sup>).

Where these conditions are not completely satisfied, the chairman of the Graduation Committee of the student involved can still submit a proposal to the Examination Committee for the award of the designation 'with distinction'. This Examination Committee makes a decision.

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<sup>14</sup> Bachelors from a university of professional education ('hogeschool')

## **APPENDIX 4: AUTHORITY FOR SIGNING DEGREE CERTIFICATES AND STATEMENTS**

### **Master's degrees**

These are signed beforehand by the chairman of the Examination Committee and after the examination by the graduation professor and the successful candidate.

When no degree can be awarded after the assessment of the graduation project, the degree certificate is signed at the appropriate time by the graduation professor and the Director of Education. The successful candidate signs the degree certificate after he has received it from the Education Affairs Office.

In the absence of one of the members of UT mentioned above, the following regulation applies:

- The degree certificate should be signed by at least one member of the Examination Committee.
- The Examination Committee gives the Director of Education the authority to be the second signer.

## **APPENDIX 5: COMPOSITION OF THE EXAMINATION COMMITTEE**

The graduation committee includes at least three scientists with a different background related to the topic of research. The committee includes:

- A chairman: the professor of the chair in which the student graduates or a representative (professor or UHD);
- The daily supervisor, who is a member of the permanent scientific staff (professor, UD or UHD);
- A member of the permanent scientific staff of a UT-chair different from the graduation chair (professor, UD or UHD). This member is added to committee to:
  - i. ensure that committees assess MSc.-assignments objectively;
  - ii. add additional knowledge and views from other scientific fields;
  - iii. exchange ideas between chairs.

When the supervisor is a PhD-student, then preferably the staff member who is the supervisor of the PhD-student should be added to the committee. He can monitor the interests of the master student concerned. Scientific experts from outside the programme in which the assignment takes place may be part of the MSc. Graduation committee in addition to the above group of three persons.

The establishment of this interdisciplinary committee makes it possible to guide the student effectively through the process and judge the Master's thesis from different perspectives. Moreover, the composition of the committees contributes to equal standards across different committees. You give the members of the committee on the form. The form needs the approval of the director of education..

## **APPENDIX 6: ADDITIONAL DESCRIPTION OF THE CONCEPT OF 'FRAUD' IN WRITTEN WORK**

The following rules apply in preparing written work, programming assignments and the like:

### **1. Individual written work**

There is one author who obtains an individual assessment on the basis of his own written work. (it is considered fraud when a student did not write the work himself). Where passages are included, or data are used, which are taken from the work of others, it must be clearly stated:

- which passages they are (for example, by putting them *in italics* or within 'quotation marks')
- where they come from (by giving a clear source reference: a formal reference to the literature or a phrase such as '... oral information from Mrs XX').

### **2. 'Individual' group written work**

Different members of the group are responsible for different parts of the report.

- indicate clearly which member of the group is responsible for which part of the report;
- where passages are included, or data are used, which are taken from the work of other members of the group, it must be clearly stated
- which passages they are (for example, by putting them *in italics* or within 'quotation marks');
- where they come from (for example '... this, in addition to the fact that measurements have indicated that the effect is negligibly small (see chapter V of this report), brings us to the conclusion that...')

For matters taken over from persons outside the group, the same rules apply as for individual written work, of course.

### **3. 'Joint' group written work**

The group as-a-whole is responsible for the complete contents of the report, even if each one has taken responsibility for the writing of a separate part. In that case it is not necessary to indicate precisely which idea is whose. Nevertheless the rules for making use of external sources are still the same as those for individual written work. When the student does not follow the rules stated above, and thus literally includes someone else's work or paraphrases it without a clear indication of the source, he commits plagiarism.

Not only copying without indicating the source, but also allowing the copying, is taken to be plagiarism/fraud. In joint group written work it is possible, in principle, in this case to accuse the complete group of fraud.