Hanze
University of Applied Sciences
Groningen

Teaching and Examination Regulations
of the programme

European Master in Renewable Energy

(full-time)

School of Engineering

Hanze University of Applied Sciences, Groningen

Adopted by the Dean of the School of Engineering on xx, 2020

These regulations take effect from 1 September 2020

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1. STUDY PROGRAMME

This document contains the teaching and examination regulations of the European Master in Renewable Energy as provided by Hanze University of Applied Sciences, Groningen (Hanze UAS). The teaching and examination regulations incorporate the EUREC regulations (Appendix 2.1) and the general examination regulations of Master programmes at the Hanze UAS (Appendix 3). If they conflict, the Hanze regulations take precedence over the examination regulations of EUREC.
The teaching and examination regulations apply to all students who are enrolled in the programme.

1.1 Programme description

Nature and relevance
The master's degree programme outlined in this document builds on the framework of the existing EUREC European Master in Renewable Energy. The European Master in Renewable Energy intends to deliver renewable energy engineers who will bridge the gap between growing industry demand for specialised renewable energy expertise and the skills available in the job market. Aims of the European Master in Renewable Energy programme are to:

- train students to become renewable energy engineers who will be designers and developers of the next generation of renewable and sustainable energy systems.
- provide a firm technical background in the key renewable energy fields and to create a context for energy production and use in European perspective.
- enable students to specialize at high level in the state-of-the-art technology in one of the renewable energy areas
- enable students to undertake a project related to the specialisation in industry, a research laboratory or at the university and during which the student can gain practical and research experience.
- enable students to gain international experience by studying in at least two different European countries and in an international environment.

The EUREC master is offered by a consortium of a selected group of 10 European universities consisting of core provider universities (first semester) and specialisation provider universities (second semester).

Present core universities are:

- Ecole des Mines de Paris, France - French-taught
- Loughborough University, UK - English-taught
- University of Zaragoza, Spain - Spanish-taught
- Oldenburg University, Germany - English-taught
- Hanze UAS – English-taught

Specialisations and their poviders are:

- Photovoltaics, University of Northumbria, UK
- Solar Thermal Energy, University of Perpignan, France
- Wind Energy, National Technical University of Athens, Greece
- Grid Integration, University of Zaragoza (Spain)
- Ocean Energy, University of Lisbon (Portugal)
- Sustainable Fuel Systems for Mobility, Hanze UAS (Netherlands)

Students enroll in one of the core universities. Core universities award the degree (Master of Science). The partner universities recognize each other's credits. EUREC cooperation (Memorandum of Understanding) and regulations govern the cooperation of the consortium, see appendix 3.1.

Educational principles
The educational basis of the Hanze European Master in Renewable Energy is provided by developments in the professional practice of Renewable Energy. Sources of inspiration are a contemporary view on the needs of international professional practice, independent learning and students taking responsibility for their own learning process at Master level. Academic learning outcomes focusing on applied research & analytical skills and application-oriented learning outcomes are central in this degree programme, in combination with context and integrative learning outcomes. Learning outcomes and assessments are aligned to this educational policy.
The programme's main educational characteristics:

- Competence based learning with focus on academic, technical, social and communicative learning outcomes.
- Integrated learning of knowledge skills.
- Flexible learning path: specialisation abroad is chosen on the basis of student interest.
- Development of professional and personal competences.
- Studying in an international environment.

1.2 Examination Board and Testing Committee

The Examination Board is responsible for assuring the quality of the programme by supervising the content, method and level of the examinations. The Examination Board is charged with determining whether students have achieved the intended learning outcomes (exit level) described in the Teaching and Examination Regulations. The members of the Examination Board are appointed by the dean.

The Testing Committee is responsible for monitoring the quality of examinations and tests and operates under the supervision of the Examination Board.
A specific master chamber of the Examination Board has been installed to handle the master related specific issues. The composition of the master chamber of the Examination Board can be found on https://www.hanze.nl/eng/education/engineering/school-of-engineering/organisation/boards/examination-board-engineering.
Contact address of the Examination Board: EIE@org.hanze.nl

1.3 Admissions Committee

EUREC checks whether students applying for admission to the master programme meet the EUREC entry requirements, and forward a list of eligible students to the core provider. Subsequently, the Admission Committee checks whether the student meets the Hanze entry requirements and advises the dean which applicants may be admitted to the programme.

Contact address Admission Committee: mastereurec@org.hanze.nl

1.4 School Participation Council of the School/Academy/Institution

The representative council of a school, academy or institution is a democratically elected body. The Council comprises an equal representation of students and university staff.
The members of the school participation council and how to contact them can be found at https://www.hanze.nl/nld/organisatie/hanzehogeschool/medezeggenschap/medezeggenschapsraden/techniek/instituut-engineering.
Contact address of the School Participation Council: g.g.h.hoekstra@pl.hanze.nl.

1.5 Board of Studies

The Board of Studies is the body charged with issuing recommendations on enhancing and safeguarding the quality of the degree programme. It also issues solicited and unsolicited recommendations to the dean on all matters relating to education at the relevant programme. The Board has the right to approve the

Teaching Regulations. The Board of Studies comprises an equal representation of students and lecturers. The method in which the Board is composed is set out in the Board of Studies Regulations. For the Hanze UAS energy master programmes the dean has appointed one Board of Studies, representing the four masters EMRE, SESyM, SSE and E4S.

More information on the composition of the Board of Studies can be found at https://www.hanze.nl/eng/education/engineering/school-of-engineering/programmes/master/european-master-in-renewable-energy/organisation/boards/programme-committee (link moet nog aangepast worden na naamswijziging in board of studies)

Contact address: see http://www.hanze.nl

2. INTENTED LEARNING OUTCOMES (EXIT LEVEL)

2.1 Hanze UAS Programme Learning Outcomes

The following programme learning outcomes were defined for graduates of the Hanze European Master in Renewable Energy. The six key competences agree with the Dublin Descriptors for a master level programme (see below), implement the recommendations of the European Federation of National Engineering Associations and of the Accreditation Board for Engineering and Technology. These programme learning outcomes comprise:

A. Academic learning outcomes (E2.1): good and applicable knowledge of, and skills in, analytical and research methodology relevant for current and future renewable energy sources; being able to conduct applied research, which combines scientific rigor and practical impact, in complex professional 'real life' situations. M.Sc.-graduates will be **reflective** professionals, with a **sound grasp of research methodology**: they will be competent to conduct applied scientific research in order to implement fundamental research insights in renewable energy innovations. The M.Sc.- graduate is competent to use a range of applied research methods and techniques **independently**:

a. to formulate a problem definition, employ specific research and analysis methods and plan and conduct research on real-life non-routine problems.
b. to translate a practical problem into questions in terms of a conceptual model, to collect relevant data and to translate the outcomes of the model into answers to the original problem.
c. to apply appropriate scientific methods and techniques, mathematics, economics and other sciences in energy systems design.
d. to communicate findings in both written and oral form in English to the problem owner and other relevant stakeholders.
e. to display a reflective attitude (investigative, critical) towards the possibilities and limitations of the scientific methods used and the development of a body of knowledge and, based on that attitude, make meaningful contributions to the energy debate.

B. Application-oriented learning outcomes (E2.2): good and **applicable** knowledge of multiple renewable energy technologies, and a higher level in at least one particular renewable energy technology. Learning attention will focus on solar photovoltaic (PV), solar thermal, ocean energy, biofuels, grid integration and wind energy in the context of the analysis and/or **originality** of **design** of near energy neutral systems (as little energy loss as possible). The MSc.-graduate is competent in:

a. multiple renewable energy technologies and – depending on the specialisation chosen by the student – specialist in at least one renewable energy technology.
b. integrating renewable energy sources (wind, solar [photovoltaic, thermal], water, biomass energy) into a flexible, distributed energy system.
c. applying the principles of integrated storage techniques.
d. analysing and improving the energy efficiency of production chains (implementing

innovations).

C. **Context-oriented learning outcomes (E2.3):** basic understanding of issues in energy systems at different **levels of context** (local, regional, national, global).
The MSc-graduate is competent in:
   a. applying knowledge and insights of the principles of a range of renewable energy systems for optimal energy conversion.
   b. **designing a (range of)** renewable energy **system(s)** for optimal energy conversion at a given location and for particular applications.
   c. critically appraising codes of practice relevant to renewable energy systems.
   d. analysing economic and sustainability aspects of renewable energy systems as well as technological considerations.
   e. statistically assessing renewable energy resources at a specific location given appropriate data.

D. **Integrative learning outcomes (E2.4):** good ability to **integrate** technical knowledge and skills with technological, strategic, social and economic issues; ability to **handle complexity**.
The MSc graduate is competent in:
   a. using appropriate mathematical methods for modelling and analyzing engineering problems relevant to renewable energy systems.
   b. using knowledge and understanding of the socio-economic effects of introducing and using relevant technologies.
   c. Making an economic evaluation of the profitability and competiveness of renewable energy projects.

E. **Communication learning outcomes (E1.1)**: ability to communicate **appropriately** and perform efficiently in international, **multidisciplinary teams**.
The MSc graduate is competent in:
   a. carrying out tasks in a project environment.
   b. participating effectively in an international, multidisciplinary team.
   c. communicating effectively orally, visually and in writing at an appropriate level (in English) to clients and stakeholders.
   d. communicating the link between technological projects and strategic objectives, to the management and other relevant stakeholders.

F. **Professional development learning outcomes (E1.2):** ability to **learn independently** and **reflect** on oneself in a professional context.
The MSc graduate is competent in:
   a. staying abreast of relevant (inter)national developments, trends and ideas in society, policy, and professional practice and to translating, developing and introducing these in an innovative manner to improve professional practice.
   b. managing his or her own learning process and sharing expertise with peers and other experts in professional practice.

2.2 The Master's Level

The master's level is characterized by the student's expertise in their specialism. Students are (semi)autonomous, demonstrating independence in the negotiation of assessment tasks (including the thesis project) and the ability to evaluate, challenge, modify and develop theory and practice. Students are expected to demonstrate an ability to isolate and focus on the significant features of problems and to offer synthetic and coherent solutions, with some students producing original or innovative work in their specialism that is worthy of publication or public performance or display. Students demonstrate abstract thinking in research when applying technical energy concepts.

From the point of view of the framework for Qualifications of the European Higher Education Area, the Hanze European Master RE is a second cycle programme. This means it should develop learning outcomes in line with Dublin Descriptors for the master level. The table below describes the alignment of the Hanze European Master RE learning outcomes with these descriptors.

Dublin Descriptors Master level	Hanze European Master in Renewable Energy
Knowledge and understanding Demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Bachelor's level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context	This is accomplished by learning outcomes A (academic learning outcomes) and B (application-oriented learning outcomes)
Applying knowledge and understanding Can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study	This is accomplished by learning outcomes B (application-oriented learning outcomes) and C (context-oriented learning outcomes)
Making judgments Have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments	This is accomplished by learning outcomes C (context-oriented learning outcomes) and D (integrative learning outcomes)
Communication Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously	This is accomplished by learning outcomes E (communication-oriented learning outcomes)
Learning Skills Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous	This is accomplished by learning outcomes F (professional development learning outcomes)

Table 1 Alignment of Hanze European Master RE to Dublin Descriptors

Academic Orientation

The orientation of the Hanze European Master in Renewable Energy is academic. Research is an integral part of the set of intended learning outcomes. Research methodology skills to carry out scientific research are described in the Academic learning outcomes. The competence to resolve multidisciplinary or interdisciplinary issues in relation to Renewable Energy is demonstrated in the Context-oriented learning outcomes and the Integrative learning outcomes. The context for the research in energy is international. Independent research is carried out in the final semester during the thesis. Students are responsible for all the stages of research; from gaining ethical approval to reporting findings in the thesis to an international EUREC committee.

3. PROGRAMME OUTLINE

3.1 Mode of Study

The European Master in Renewable Energy is a full-time programme.

EUREC Framework
The EUREC framework for the master programme comprises the general programme structure, EUREC general core learning outcomes and core curriculum outlines developed and evaluated by the EUREC Master Steering Committee. The exact content of the curriculum is the responsibility of each partnering university and each university is expected to use its own strengths to provide its own profile in the core. EUREC definitions and regulations concerning this master program are described on the EUREC website http://www.master.eurec.be/en/About-the-Master/Regulations/

3.2 Justification for language used in all or parts of the programme

All components of the programme are taught in the English language. The reason for the English language is that the Master Renewable Energy is a European programme, preparing Dutch and international students for an international career, abroad or with an international company in the Netherlands.

3.3 Core, specialisations and final-stage programme

The content and structure of the EUREC Master is predetermined by the EUREC university consortium and comprises:

1. a core semester of 30 ECTS credits; consisting of learning modules and majors also consisting of learning modules and structured as
2. a specialisation semester of 30 ECTS credits; and the final stage programme consisting of
3. a thesis research project of 30 ECTS credits.

The Hanze European Master in Renewable Energy was developed to suit these requirements.

Semester 1 **Core (30 ECTS credits) provided by Hanze UAS**	**Semester 2** **Specialisation (30 ECTS credits) provided by one of the specialisation universities**	**Semester 3** **Thesis (30 ECTS credits) provided by Hanze UAS**
Energy Technical Foundation (5 EC's) Energy Transition Project (5 EC's) BioMass Energy (5 EC's) Wind & Marine Energy (5 EC's) Solar Energy (5 EC's) Energy Transport, Distribution and Storage (5 EC's)	Photovoltaics Wind Energy Solar Thermal Grid Integration Ocean Energy Sustainable Fuel Systems for Mobility (SFS)	Choice by student in consultation with and after approval from Hanze UAS.

Table 2 Semester Contents

The relation between programme learning outcomes and the module learning outcomes of the Hanze UAS curriculum is given by matrices in appendix 1

3.4 Study Pathways

After finishing the CORE semester, a student will continue his/her study at one of the specialisation providers and after finishing the specialisation he/she needs to find a research topic for the final semester in order to graduate. The thesis provider may be a research & development unit at a university or company.

3.5 Curriculum Overview

The next tables give an overview of the EMRE curriculum

European Master in Renewable Energy Semester 1 (CORE) - 2020/2021			
Module F1 Energy Technical Foundation	**Course code**	**# EC**	**Exam Type (W/O)*** **
Energy Technical Foundation	ZWVH18ETF	**5**	
Theory Electrical Engineering + Energy Basics		*3*	**W**
Assignment Numerical Modelling * **		*2*	O
Module F2 Energy Transition Project			
Energy Transition Project	ZWVH18ETP	**5**	
Assignment Capstone RM/RP * **	100%	*5*	O
Professional Skills	**Pass or Fail**	*0*	O
Module F3 BioMass Energy			
BioMass Energy	ZWVH18BME	**5**	
Theory	60%	*3*	**W**
Assignment BME* **	40%	*2*	O
Module F4 Wind & Marine Energy			
Wind & Marine Energy	ZWVH17WHE	**5**	
Theory	60%	*3*	**W**
Lab WHE* **	20%	*1*	O
Assignment WHE* **	20%	*1*	O
Module F5 Solar Energy			
Solar Energy	ZWVH17SLE	**5**	
Theory	60%	*3*	**W**
Lab SLE* **	20%	*1*	O
Assignment SLE* **	20%	*1*	O
Module F6 Energy Transport, Distribution & Storage			
Energy Transport, Distribution & Storage	ZWVH20ETDS	**5**	
Theory	80%	4	**W**
Lab EDS **	20%	*1*	O

Report may also include a presentation (pitch)* * always includes Individual part and may be a Group part*

European Master in Renewable Energy Specialisation Semester 2 AT THE HANZE- 2020/2021			
Module G1 Physics and Fuels	**Course code**	**# EC**	**Exam Type (W/O)*** **
Physics and Fuels	ZWVH19PAF	**5**	
Theory	80%	*4*	**W**
Lab	20%	*1*	O
Module G2 Bio Energy Conversion			
Bio Energy Conversion		**10**	
Theory BioChemical Conversion ic Basics	**ZWVH18BCC**	***3***	**W**
Theory ThermoChemical Conversion	**ZWVH18TCC**	***2***	**W**
Lab BioFuels* **	ZWVH15UB	*2*	O
Assignment Aspen Model* **	ZWVH15RAP	*3*	O
Module G3 Power2Hydrogen			

**Power2Hydrogen * ** **	ZWVH19P2U	**5**	
Theory	60%	*3*	**W**
Experiments	40%	*2*	O
Module G4 Sustainable Fuel Systems Design			
**Sustainable Fuel Systems Design* ** **	ZWVH19SFSD	**5**	
Assignment 1	40%	*2*	O
Assignment 2	60%	*3*	O
Module G5 New Business Development			
Business Plan Report* **	ZWVH18NBD	**5**	O
OR: European Master in Renewable Energy Specialisation Semester 2 AT A PARTNER UNIVERSITY - 2020/2021			
Specialisation Photovoltaics (Northumbria)	ZWVH2SPV	**30**	O
Specialisation Wind Energy (Athens)	ZWVH2SWE	**30**	O
Specialisation Grid Integration (Zaragoza)	ZWVH2SGI	**30**	O
Specialisation Solar Thermal (Perpignan)	ZWVH2SST	**30**	O
Specialisation Ocean Energy (Lisbon)	ZWVH2SOE	**30**	O

Report may also include a presentation (pitch)* * always includes Individual part and may be a Group part*

European Master in Renewable Energy Thesis Project Semester 3			
Thesis Project	**Course code**	**# EC**	**Exam Type (W/O)*****
Thesis Project	ZWVH17THP	30	O

Table 3 Curriculum table EMRE *W = written Exam O = Other (assignment, oral)*

Conversion Table

EMRE Conversion Table		
2020-2021	2019-2020	
• ZWVH20ETDS	• ZWVH19EDS	

Table 4 Conversion table

4. CURRICULUM

The curriculum units are described in the Osiris student information system and form part of these regulations.

4.1 Curriculum Components

The curriculum consists of CORE modules and specialisation modules, see above.
Students enrolling at Hanze University are given a choice of the following major specialisations:

- Photo Voltaics (30 ECTS) delivered by New Castle, University of Northumbria, UK
- Solar Thermal & Associated Renewable Storage (30 ECTS) delivered by the University of Perpignan, France
- Wind Energy (30 ECTS) delivered by the National Technical University of Athens, Greece
- Renewable Energy Grid Integration and Distributed Generation(30 ECTS) delivered by the University of Zaragoza, Spain
- Ocean Energy (30ECTS) delivered by the Technical University of Lisbon, Portugal
- Sustainable Fuel Systems (SFS) for Mobility (30 ECTS) delivered by Hanze UAS Groningen, the Netherlands

New specialisations that will be added to the EUREC programme will be offered to Hanze students after these specialisations have been approved by the Examination Board.
The short module descriptions of the curriculum are elaborated in appendix 2.2.

4.2 Final Stage Programme

In the final stage of the programme, upon completion of the specialisation, the student conducts a 6 month applied research project in industry, a research institute or a university department. The project must contain sufficient technical challenge and must be directly related to renewable energy. Topic approval, supervision and assessment will be in line with the EUREC General Programme Regulations.
During the project, the student's progress is supervised by:

- a Hanze UAS 1st (and 2nd) supervisor;
- a Company supervisor and possibly
- a specialisation supervisor

It is the Hanze UAS supervisors, who ultimately decide the mark for the thesis.
Criteria for grading have been set by EUREC. In addition to EUREC-criteria, Hanze UAS will use its learning outcomes to supervise and assess the student. In practice this will mean that much attention will be paid to the integrative and context-oriented learning outcomes. The student is required to write a master thesis.
The thesis consists of two documents written in English:

1. A comprehensive report of up to 40 pages (including annexes).
2. A summary paper of up to 6 pages (plus up to 20 pages of annexes).

The MSc. thesis manual specifies the process, supervision and assessment of the thesis project in detail. Students will receive this manual at the start of the thesis semester.
The project outcomes must be presented at the EUREC Agency headquarters in Brussels. The jury will consist of representatives from the core provider, the specialisation provider and a representative of another partnering University.

Thesis	ECTS Credits /contact hours	Learning Outcomes	Teaching & learning methods	Assessment Methods
Thesis project	30/25 hrs	All	Independent research	Thesis report + summary (80%) Thesis presentation (20%)

Table 5 Thesis Semester

To start the thesis project in the third semester, the student is required to have obtained

- 20 credits of the core and a minimum of 20 credits of the specialisation semester;
- approval of the thesis topic by the 1st supervisor
- a thesis contract (project/internship agreement), signed by the Hanze thesis coordinator, the company supervisor and the student.

The student is asked to inform the Hanze supervisor of the progress at least once a month.

The thesis (including EUREC) regulations are provided in the thesis manual, see reference 3

5. ADMISSION REQUIREMENTS

5.1 Prior Learning Requirements

Students wishing to enroll in the EUREC-programme must comply with EUREC admission requirements: they are required to hold a BSc Engineering (Electrical, Mechanical, Chemical), BSc in Mathematics or Physics subject OR equivalent with appropriate work experience.

5.2 Employment requirement in part-time programmes, if applicable

Not applicable

5.3 Maximum number of students admissible to the programme

Not applicable.

5.4 Foreign students: language requirements for admission to programmes taught in Dutch

Not applicable.

5.2 Language Requirements

Students applying for admission have to submit:

- TOEFL: minimum score of 575 (paper-based test), or 90 (internet-based test, with not less than 20 in Reading, Listening, Speaking or Writing); or
- IELTS (Academic): 6.5 minimum with not less than 6.0 in Reading, Listening, Speaking or Writing; or
- Cambridge Advanced Exam in English: B minimum; or
- Cambridge Proficiency Exam in English: C minimum or
- TOIC minimum score of 780 (Listening and Reading) and 350 (Speaking and Writing)

Students who have a bachelor qualification from the United States, Canada, Australia, New Zealand, Great Britain or Ireland are exempted from the language requirement.

5.3 Foreign Students legal residence requirement

The student must have valid residency status which enables them to study in the Netherlands. Students can contact the International Service Desk (ISD) for further information

6. EXAMINATIONS

6.1 Sequence of examinations

The various courses and their exam methods are listed in the curriculum component table in chapter 4. The exam dates can be found in the course descriptions on Osiris.

6.2 Grading

Hanze UAS adopts the recommendations of the European Erasmus+ ECTS User Guide (see appendix 1.4) for transferring grades obtained by students between Higher Education Institutes I Europe (HEI) in allocated windows for mobility and recorded in Learning Agreements. *A*verage weighted grades (GPA) based on national standards and received from Specialisation Providers will be recorded in the Hanze UAS study progress registration system (OSIRIS)
In addition to their diploma, students receive a Certificate of Equivalence from the EUREC Agency. This document formally states that the different degrees awarded by the five core universities are equivalent in value and contents. The Hanze UAS degree certificate will list the specialisation that the student has completed. Furthermore, students will receive a European Diploma Supplement.

6.3 Requirements for degree:

1. In order to qualify for the EUREC Master Degree, Students must have:
   i) Complied with the regulations of the Provider responsible for each of the three Sections.
   ii) Accumulated a total of 90 ECTS credits. These credits are allocated as follows:
      - Core semester: Total of 30 ECTS credits
      - Specialisation: Total of 30 ECTS credits
      - Thesis project: Total of 30 ECTS credits
   iii) Paid in full all fees due to the Coordinator and, if applicable under Article 6 of the Memorandum, to the Partners.
2. The degree-awarding Partners must keep records of the final marks for each Course Section for each of the Students to whom they may award a degree. At the end of the Course Section they publish their Students' final results according to the following system: 0 to 40% (Fail); 40 to 54% (graded Fail); 55 to 70% (Pass); above 70% (Distinction).

6.4 Number of Examination Resits

Rules and regulation of the student charter article 4a.9 apply.

A master thesis (ZWVH17THP) that receives a passing grade cannot be resit.

6.5 Anti-Plagiarism Rules

All academic work, written or otherwise, submitted by students to their lecturers, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their lecturers on the matter before submission.
When students submit work claiming to be their own, but which in any way borrows ideas, wording or anything else from another source without appropriate referencing/attribution/acknowledgement, the students are guilty of plagiarism.
Plagiarism includes reproducing someone else's work, whether it be published article, chapter of a book, a paper from a friend or some file. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.
When a student's assignment involves research in outside sources or information, the student must carefully

acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin.

6.6 Validation and exemptions

A student can apply for an exemption from one or more exams on the grounds of a certificate, diploma or other document that proves that he/she has already complied with the requirements for the exam in question. In order to apply, the student needs to submit the form entitled 'Request to the Engineering Examination Board' to the examination board, including (as an appendix) a certified copy of the list of marks as proof. The form and instructions can be found at:
https://www.hanze.nl/eng/education/engineering/school-of-engineering/organisation/practical-matters/examination-board-engineering-request
Once approval has been granted, the requested exemption will be given and registered in Osiris as 'VR' (for vrijstelling).

7. PLACEMENTS AND EXCURSIONS

The procedure about finding a thesis topic and an internship placement for a thesis research project is described in the thesis manual.
In the student-teacher manual excursions, also called visits, are listed. For the visits mentioned, the staff will be responsible for the organization. Students may be asked to pay part of the costs for transportation and/or accommodation.

8. COMPULSORY ATTENDANCE

(70%) attendance at lectures, workshops and other educational activities is mandatory unless otherwise stated (in the student manual) by the lecturer at the start of the module. If the attendance % is not obtained (unless force majeure issues) a resit may be refused

9. ACADEMIC COUNSELING

Academic Counselling, also called mentoring, is part of the programme and is part of the core modules. Students have an individual mentor assigned to them who they can approach for guidance, advice and assistance.

10. CUM LAUDE REGISTRATIONS

Cum Laude regulations are provided in the Hanze UAS Student charter article 4a.12

In addition to the student charter regulations, the student has to fulfill the cum laude requirements for his/her specialisation semester even it has taken place at a different University. The specialisation semester is essential part of the master programme and must be thus considered as well. There is a grade conversion between country standards that will be used to determine the equivalent grade as in Appendix 2.5 to make the determination whether a student qualifies for cum laude or not.

11. EXTRA STUDENT CONTRIBUTION

An important principle of education policy is accessibility. Enrollment for a program may not be made dependent on other financial contributions than the tuition fees (Article 7.50, first paragraph, of the WHW). The student is entitled to provisions after enrollment (Section 7.34 of the WHW). This includes, among other things, following education, taking interim examinations, access to buildings and collections

and making use of student facilities and student counseling. No additional contributions from students may be required for such facilities. Below is an overview of all contributions for the students in each school year.

Extra-curricular activities	*Explanation: parts that are not part of the training. Eg: voluntary excursions, voluntary introduction, drinks, winter sports*
Curricular activities **Visits CORE and Specialisation** **Semester: may be required** **Intro programme Springtide** **Event: 80€/student**	*Explanation: parts that are part of the program and that require a personal contribution from the student. A student who does not want or cannot pay the contribution must be offered a free alternative.*
Books and other educational needs about 400€	*Explanation: Costs may only be charged on a voluntary basis. Students may not be required to purchase teaching and learning materials. Students who do not purchase the teaching and learning materials may not be excluded from participation in the lectures and corresponding examinations (book list may be separate from the education regulation).* ***Allowed calculators in exams: Casio FX 82 MS or Texas Instruments TI-30XB or TI 30XS Multiview***

Table 6 Extra costs per Academic Year per activity

12. GENERAL INFORMATION ABOUT RIGHTS AND OBLIGATIONS

The general rights and obligations applicable to all students are set out in the Student Charter. General rules apply, for instance, to tuition fees, examinations and student facilities, in addition to the complaints regulations and the misconduct regulations.

Chapter 10 of the Student Charter concerning legal protection includes the procedures students may undertake to contest a decision made by the Examination Board or a dean.

APPENDIX 1 RELATION LEARNING MODULES AND PROGRAMME LEARNING OUTCOMES

1.1 CORE Module Learning Outcomes and Programme Learning Outcomes

Program Learning Outcomes (PLO)		CORE Module Learning Outcomes (MLO)					
		Energy Technical Foundation (F1) (ETF)	Energy Transition Project (F2) (ETP)	Biomass Energy (F3) (BME)	Wind & Marine Energy (F4) (WHE)	Solar Energy (F5) (SLE)	Energy Distribution & Storage (F6) (EDS)
E2.1 (A)	Academic Learning Outcomes	X	X	X	X	X	X
E2.2 (B)	Application Oriented Learning Outcomes			X	X	X	X
E2.3 (C	Context Oriented Learning Outcomes		X	X	X		
E2.4 (D)	Integrative Learning Outcomes		X	X			
E1.1 (E	Communication Learning Outcomes	X	X	X	X	X	
E1.2 (F)	Professional Learning Outcomes	X	X	X	X	X	

1.2 Specialisation Module Learning Outcomes and Programme Learning Outcomes

Program Learning Outcomes (PLO)		Specialisation SFS Learning Outcomes (MLO)			
		Supply Chain Design (G1) (SCD)	Bio Energy Conversion (G2) (BCE)	P ower2 Hydrogen2 Use (G3) (P2U)	New Business Development (G4) (N BD)
E2.1 (A)	Academic Learning Outcomes	X	X	X	
E2.2 (B)	Application Oriented Learning Outcomes	X	X	X	
E2.3 (C	Context Oriented Learning Outcomes	X	X		X
E2.4 (D)	Integrative Learning Outcomes	X			X
E1.1 (E	Communication Learning Outcomes	X		X	
E1.2 (F)	Professional Learning Outcomes				

Program Learning Outcomes (PLO)		Specialisation Wind Energy Learning Outcomes (MLO)			
		Wind Potential, Aerodynamics & Loading of Wind Turbines (H1)	Wind Turbine Design, Electrical & Control Issues, Certification (H2)	Wind Farm Technology , Economics & Environmental Issues (H3)	Mini Project (Part 1) and Wind Farm Study (H4)
E2.1 (A)	**Academic Learning Outcomes**	**X**	**X**	**X**	**X**
E2.2 (B)	**Application Oriented Learning Outcomes**			**X**	
E2.3 (C	**Context Oriented Learning Outcomes**		**X**	**X**	
E2.4 (D)	**Integrative Learning Outcomes**	**X**			**X**
E1.1 (E	**Communication Learning Outcomes**				**X**
E1.2 (F)	**Professional Learning Outcomes**				**X**

Program Learning Outcomes (PLO)		Specialisation Ocean Energy Learning Outcomes (MLO)				
		Ocean Energy Resources (I1)	Modelling and Control of Ocean Energy Systems (I2)	Ocean Energy System Technologies (I3)	Economics, Policy and Environment (I4)	Project (I5)
E2.1 (A)	**Academic Learning Outcomes**	**X**	**X**			
E2.2 (B)	**Application Oriented Learning Outcomes**			**X**		
E2.3 (C	**Context Oriented Learning Outcomes**	**X**	**X**	**X**	**X**	
E2.4 (D)	**Integrative Learning Outcomes**					
E1.1 (E	**Communication Learning Outcomes**		**X**			**X**
E1.2 (F)	**Professional Learning Outcomes**				**X**	

Program Learning Outcomes (PLO)		Specialisation PhotoVoltaics Learning Outcomes (MLO)			
		Photovoltaic Cell and Module Technology (J1)	Advanced Photovoltaic Cell Design (J2)	Photovoltaics, Economics, Policy and Environment (J3)	Photovoltaic System Technology (J4)
E2.1 (A)	**Academic Learning Outcomes**	**X**	**X**		
E2.2 (B)	**Application Oriented Learning Outcomes**	**X**			**X**
E2.3 ©	**Context Oriented Learning Outcomes**		**X**	**X**	**X**
E2.4 (D)	**Integrative Learning Outcomes**				**X**
E1.1 (E)	**Communication Learning Outcomes**		**X**		
E1.2 (F)	**Professional Learning Outcomes**		**X**		

Program Learning Outcomes (PLO)		Specialisation Solar Thermal & Associated Renewable Storage Learning Outcomes (MLO)			
		Thermal Storage (K 1)	Fundamentals (K 2)	Solar Low Temperature (K 3)	Solar High Temperature
E2.1 (A)	**Academic Learning Outcomes**	**X**	**X**	**X**	**X**
E2.2 (B)	**Application Oriented Learning Outcomes**	**X**	**X**	**X**	**X**
E2.3 (C)	**Context Oriented Learning Outcomes**		**X**	**X**	**X**
E2.4 (D)	**Integrative Learning Outcomes**			**X**	**X**
E1.1 (E)	**Communication Learning Outcomes**	**X**			
E1.2 (F)	**Professional Learning Outcomes**	**X**	**X**	**X**	**X**

Program Learning Outcomes (PLO)		Specialisation Grid Integration Learning Outcomes (MLO)						
		Distributed Generation (L1)	Generation and Storage Technologies (L2)	Control Techniques and Renewable Energy Integration System (L3)	Power Grid Analysis and Studies (L4)	Smart Grids (L5)	Standards and Electric Markets (L6)	Project (L7)
E2.1 (A)	**Academic Learning Outcomes**	**X**	**X**	**X**	**X**	**X**		
E2.2 (B)	**Application Oriented Learning Outcomes**	**X**	**X**	**X**	**X**			
E2.3 (C	**Context Oriented Learning Outcomes**				**X**	**X**	**X**	
E2.4 (D)	**Integrative Learning Outcomes**			**X**	**X**	**X**	**X**	**X**
E1.1 (E	**Communication Learning Outcomes**	**X**	**X**		**X**	**X**	**X**	**X**

E1.2 (F)	Professional Learning Outcomes			X				X

1.3 Thesis Module Learning Outcomes (Final Level) and Programme Learning Outcomes

M	Thesis Module Learning Outcomes	PLO E1.1	PLO E1.2	PLO E2.1	PLO E2.2	PLO E2.3	PLO E2.4
M1	Has demonstrated to introduce a research project understanding issues of energy strategy and politics at different levels of context.					X	
M2	Has demonstrated to select and reflect on scientific validated (research) methodologies relevant for conducting (applied) research on current and future renewable energy technologies in a complex professional 'real life' situation.			X			
M3	Has demonstrated to conduct applied scientific research with scientific validated data analysis deriving logical conclusions				X		
M4	Has demonstrated to have applicable knowledge for designing (original/authentic) and optimizing renewable (sustainable) energy systems and technologies				X		X
M5	Has demonstrated the ability to integrate technical knowledge and skills in context, handling complexity in solution design and implementation.					X	X
M6	Has the ability to present orally results and context, answering properly questions and using a logical structure	X					
M7	Has the ability to write a research report (and summary) with logical structure, proper use of paragraphs, logic and length (max 40 pgs)	X					
M8	Has demonstrated to communicate effectively with supervisors, developing and proper use of a project plan , and work in multidisciplinary teams	X	X				
M9	Has demonstrated the ability to commit, demonstrate initiative, learn, perform and reflect on oneself in a professional and (international) environment		X				
M10	Has demonstrated the ability to write a concise summary/article in academic style	X					

Table 1 Thesis Module Learning Outcomes and relation to programme learning outcomes

APPENDIX 2 REFERENCES

2.1 EUREC MoS

See separate document

2.2 Short Module Descriptions EMRE

See separate document

2.3 Thesis Manual

See separate document

2.4 ECTS User Guide

See separate document

2.5 Equivalence table for EUREC master marks

EUREC system			EdM in 100	OB [% (German Marks)]	LBO	ZARA-GI	HANZE	Wind	PV	HS	ST	OCEAN
Fail	**0-40**	Fail	0-19	0 - < 45	0-49	0-19	0-54 (0-5.4)	0-49	0-49	0-49	0-19	0-40
Graded Fail	**40-50**		20-49	45 - < 50		20-49					20-49	40-49
Pass	**50-70**	Satisfactory	50-69	50 - < 54,5 (4,0)	50- 59 pass	50-69	55-64 (5.5-6.4)	50-69	50-59	50-59	50-69	50-59
				54,5 - < 59 (3,7)			65-74 (6.5-7.4)			60-69		60-69
				59 - < 65 (3,3)	60-69 merit							
				65 - < 69,5 (3,0)								
Distinction	**>70**	Good Very Good	70-79	69,5 - < 74 (2,7)	70-100	70-89	75-84 (7.5-8.4)	70-79	60-69	70-79	70-79	70-75
				74 - < 80 (2,3)				80-89	70-79	80-89		75-79
				80 - < 84,5 (2,0)								
				84,5 - < 89 (1,7)								
		Outstanding	80-100	89 - < 95 (1,3)		90-100	85-100 (8.5-10)	90-100	80-100	90-100	80-100	80-100
				95 - 100 (1,0)								

APPENDIX 3 EXAMINATION REGULATIONS (chapter 4a of student charter to be replaced with version 2020/21 – will be out in June 2020)

TERMS AND ABBREVIATIONS

TERMS and ABBREVIATIONS	
English	***Dutch***
C/R Compulsory/Recommended	***V/A*** *Verplicht/Aanbevolen*
E Examination *	***T*** *tentamen*
Educational Framework Expert Group	*Expertisegroep Onderwijskader*
HAVO senior secondary general education	***HAVO*** *hoger algemeen voortgezet onderwijs*
HBO higher professional education	***HBO*** *hoger beroepsonderwijs*
MBO senior secondary vocational education	***MBO*** *middelbaar beroepsonderwijs*
O&O Teaching and Research Department	***O&O*** *Stafbureau Onderwijs en Onderzoek*
Programme Committee	***OC*** *Opleidingscommissie*
SMR School Representative Council	***SMR*** *Schoolmedezeggenschapsraad*
STAD Student Administration	***STAD*** *Studentenadministratie*
TER Teaching and Examination Regulations	***OER*** *Onderwijs- en Examenregeling*
thesis phase	*Afstudeerprogramma*
VWO pre-university education	***VWO*** *voorbereidend wetenschappelijk onderwijs*
W/O Written/Other	***S/O*** *schriftelijk/overig*
WBL Work-Based Learning	***duaal*** *duaal onderwijs*
*As opposed to a final examination, which is *afsluitend examen* or simply *examen* in Dutch; or *eindexamen* when referring to secondary education.	