Teaching and Examination Regulations
Full-time Master Smart Systems Engineering

Hanze University of Applied Sciences,
Groningen

2019-2020

Adopted by the Dean of the Institute of Engineering on 1 September 2019
These Regulations take effect from 1 September 2019
## Version history

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TEACHING REGULATIONS OF THE STUDY PROGRAMME MASTER SMART SYSTEMS ENGINEERING

1. Study Programme
This document contains the teaching and examination regulations of the Master Smart Systems Engineering. This programme is offered by the Institute of Engineering Assen and is part of the wider Institute of Engineering (Groningen and Assen), one of the 17 schools of the Hanze University of Applied Sciences, Groningen (Hanze UAS). The teaching and examination regulations incorporate the general examination regulations of Master programmes at the Hanze UAS (Appendix A). The teaching and examination regulations apply to all students who are enrolled in the programme.

1.1 Programme Description

Nature and relevance
Graduates from the Master Smart Systems Engineering are professional Engineers, capable of conceiving, designing and managing end-to-end products and user level services in technical environments where the generation, management, analysis and application of (potentially large) data streams from sensors play a central role. They have the professional skills to carry projects beyond the proof-of-concept phase into prototypes and user applications. They can advise clients on conceptual solutions and on optimal ways to analyse complex systems and data flows. Their job-title will vary depending on the domain and specialisation, but has the common denominator of Smart Systems Architect.

Educational principles
The educational basis of the Master Smart Systems Engineering is provided by developments in the professional practice of Sensor Technology. Graduates have advanced technical knowledge of sensor technology with systems overview and a problem-oriented approach that allows them to take a user/service perspective. They have competences to design architectures for big-data sensor systems and data-centric sensor applications, including the modelling of complex data flows and analysis algorithms. They are aware of real-world limitations and constraints, both physical, societal and regulatory. They have the professional skills to work in intercultural and multidisciplinary teams, to excel in interaction with customers, colleagues and partners in the value chain.

The programme’s main educational characteristics are:
- Competence based learning with focus on academic, technical and social and communicative learning outcomes.
- Integrated learning of knowledge skills.
- 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, operating under the supervision of the Examination Board. A specific master chamber of the Examining Board has been installed to handle the master related specific issues. The composition of the master chamber Examining Board can be found on https://www.hanze.nl/eng/education/engineering/school-of-engineering/organisation/boards/examination-board-engineering. Contact address of the Examining Board: EIE@org.hanze.nl

1.3 ADMISSION COMMITTEE
The Admission Committee advises the Dean on student admission. The members of the committee are appointed by the Dean. Information on the admissions committee can be found at https://www.hanze.nl/nld/onderwijs/techniek/instituut-voor-engineering/organisatie/commissies/toelatingscommissie and they can be contacted mastersse@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.

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. 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/smart-systems-engineering/organisation/boards/programme-committee.

2. Intended Learning Outcomes (exit level)
The following programme learning outcomes have been defined for graduates of the Master Smart Systems Engineering. These programme learning outcomes are thought to be essential for the future Sensor Technologist in understanding the smart systems they will work with. These key competences agree with the Dublin Descriptors for a Master level programme (see below) and implement the EUR-ACE Programme Outcomes for a Professional Master of Engineering. These learning outcomes comprise:

2.1 GENERAL PROGRAMME LEARNING OUTCOMES
SSE1: Giving meaning to Sensor Data
The graduate creates models to enhance the intelligence of smart sensor systems that transform raw sensor data into data interpretations by applying complex analysis methods, while
considering state-of-the-art technologies and applying model-based reasoning from a multidisciplinary perspective.

**SSE2: Building Intelligent Architectures**

The graduate independently designs smart sensor systems architectures aimed at streaming data and high-performance processing. Within the architecture the graduate can make critical decisions on the location and function of system intelligence considering technical and financial specifications, and considering ethical aspects and environmental impact.

**SSE3: Creating Reliable Services**

The graduate gathers product design requirements from the full range of stakeholders and integrates legal demands and professional standards into the requirements. The graduate takes these requirements into account and methodically designs a viable and reliable smart system based product. The graduate presents this design convincingly to expert and non-expert stakeholders.

**SSE4: Professional Skills**

The graduate shows the communication and negotiation skills that allow him/her to work effectively in national and international environments. The graduate can interact efficiently and reach agreements with different professionals. The graduate demonstrates leadership skills by planning the steps required to understand the goals of the different stakeholders involved in professional situations.

**SSE5: Performing Applied Research for System Design**

The graduate independently gathers and selects relevant information from several independent reliable sources related to the system design problem. The graduate formulates a research question addressing the system design problem and the research question is clearly derived from a critical review of the literature. The graduate methodically designs a system, and conducts empirical research to support the system design decisions. The graduate contributes to the state of the art in the field of smart sensor system technology with solutions to real world problems. The graduate reflects on the required steps regarding robustness, reliability and usability to develop a smart sensor system from a validated proof-of-concept to a market ready product.

**SSE6: Contributing to Sustainable Innovation**

The graduate identifies opportunities for sustainable innovation starting in the design phase, actively looking for ways to contribute to a responsible use of natural resources and respecting the needs of all components of biological systems and human societies, taking advantage of the latest developments in smart sensor technology and receiving domain. The graduate assesses the impact on sustainability of the community, company or other collaboration supporting the research and development underlying the realization of the innovation. The graduate shows reflection on the societal, environmental, and business impact, including reflection on but not limited to: privacy issues, environmental degradation, intellectual property rights, legal aspects, industry standards and applicable codes of conduct.

### 2.2 The Master’s level

Agreements have been made in Europe on the general level of the master’s programme. These agreements have been laid down in the so-called Dublin descriptors. The national profile of the Master Smart Systems Engineering must relate to the Dublin descriptors.
A total of five descriptors have been identified:
1. knowledge and understanding;
2. applying knowledge and understanding;
3. making judgements;
4. communication;
5. learning proficiencies.

The following is an explanation of the Dublin descriptors relevant to the master’s programme.

1. knowledge and understanding;
   Has 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.

2. 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; has the ability to integrate knowledge and handle complexity.

3. making judgements;
   Can formulate judgements with incomplete or limited information, taking account of social and ethical responsibilities linked to the application of their knowledge and judgements.

4. communication;
   Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously.

5. learning proficiencies.
   Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.
The table below shows how the Dublin descriptors are covered by the Programme Learning Outcomes defined for the Master.

<table>
<thead>
<tr>
<th>Professional competencies - Master Smart Systems Engineering</th>
<th>Dublin descriptors</th>
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<tbody>
<tr>
<td>SSE1. Giving Meaning to Sensor Data</td>
<td>Knowledge and understanding</td>
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<tr>
<td>SSE2. Building Intelligent Architectures</td>
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<tr>
<td>SSE3. Creating Reliable Services</td>
<td>X</td>
</tr>
<tr>
<td>SSE4. Professional Skills</td>
<td>*</td>
</tr>
<tr>
<td>SSE6. Contributing to Sustainable Innovation</td>
<td>*</td>
</tr>
</tbody>
</table>

X = high contribution   * = contribution

The EUR-ACE Programme Outcomes defines six programme outcomes for a Professional Master of Engineering.

1. Knowledge and understanding
2. Engineering analysis
3. Engineering design
4. Investigations
5. Engineering practice
6. Transferable skills
These programme outcomes are summarised below with a description how they are implemented in the Master Smart Systems Engineering.

### 1. Knowledge and Understanding

The underpinning knowledge and understanding of science, mathematics and engineering fundamentals are essential to satisfying the other programme outcomes. Graduates should demonstrate their knowledge and understanding of their engineering specialisation, and also of the wider context of engineering.

**Second Cycle** graduates should have:
- an in-depth knowledge and understanding of the principles of their branch of engineering
- a critical awareness of the forefront of their branch

In-depth engineering knowledge and understanding is covered in the foundational programme learning outcomes: “Giving Meaning to Sensor Data”, “Building Intelligent Architectures”, “Creating Reliable Services” and “Performing Applied Research for System Design”. As the titles imply, these programme learning outcomes go significantly beyond the average level, bringing students up to the front, and teaching them to assess critically the global technology base.

### 2. Engineering Analysis

Graduates should be able to solve engineering problems consistent with their level of knowledge and understanding, and which may involve considerations from outside their field of specialisation. Analysis can include the identification of the problem, clarification of the specification, consideration of possible methods of solution, selection of the most appropriate method, and correct implementation. Graduates should be able to use a variety of methods, including mathematical analysis, computational modelling, or practical experiments, and should be able to recognise the importance of societal, health and safety, environmental and commercial constraints.

**Second Cycle** graduates should have:
- the ability to solve problems that are unfamiliar, incompletely defined, and have competing specifications
- the ability to formulate and solve problems in new and emerging areas of their specialisation
- the ability to use their knowledge and understanding to conceptualise engineering models, systems and processes
- the ability to apply innovative methods in problem solving

Conceptualisation of models is an essential prerequisite for “Giving Meaning to Sensor Data”. Engineering processes (including user specifications) are covered in depth in “Building Intelligent Architectures” and “Creating Reliable Services”. Dealing with incomplete information is covered in all programme learning outcomes, but a formal process is covered in “Performing Applied Research for System Design”. The field of Smart System Engineering requires students to develop an accurate awareness of new and emerging technologies which is accounted for in “Contributing to Sustainable Innovation”.

### 3. Engineering Design

Graduates should be able to realise engineering designs consistent with their level of knowledge and understanding, working in cooperation with engineers and non-engineers. The designs may be of devices, processes, methods or artefacts, and the specifications could be wider than technical, including an awareness of societal, health and safety, environmental and commercial considerations.

**Second Cycle** graduates should have:
- an ability to use their knowledge and understanding to design solutions to unfamiliar problems, possibly involving other disciplines
- an ability to use creativity to develop new and original ideas and methods
- an ability to use their engineering judgement to work with complexity, technical uncertainty and incomplete information

“Giving Meaning to Sensor Data”, “Building Intelligent Architectures”, “Creating Reliable Services” and “Contributing to Sustainable Innovation” address complex systems, requiring
creativity in combination with engineering rigour. In both cases the bachelor level is exceeded by the introduction of modelling, client-interaction and testing, adding to complexity and uncertainty both in specifications, but also in verification.

4. Investigations
Graduates should be able to use appropriate methods to pursue research or other detailed investigations of technical issues consistent with their level of knowledge and understanding. Investigations may involve literature searches, the design and execution of experiments, the interpretation of data, and computer simulation. They may require that data bases, codes of practice and safety regulations are consulted.

Second Cycle graduates should have:
- the ability to identify, locate and obtain required data
- the ability to design and conduct analytic, modelling and experimental investigations
- the ability to critically evaluate data and draw conclusions
- the ability to investigate the application of new and emerging technologies in their branch of engineering

The handling and application of information in a multidisciplinary context is most directly addressed in “Performing Applied Research for System Design” and “Contributing to Sustainable Innovation”. Aspects of modelling and evaluation of emerging technologies are of course also covered in “Giving Meaning to Sensor Data” and “Creating Reliable Services”.

5. Engineering Practice
Graduates should be able to apply their knowledge and understanding to developing practical skills for solving problems, conducting investigations, and designing engineering devices and processes. These skills may include the knowledge, use and limitations of materials, computer modelling, engineering processes, equipment, workshop practice, and technical literature and information sources. They should also recognise the wider, non-technical implications of engineering practice, ethical, environmental, commercial and industrial.

Second Cycle graduates should have:
- the ability to integrate knowledge from different branches, and handle complexity
- a comprehensive understanding of applicable techniques and methods, and of their limitations
- a knowledge of the non-technical implications of engineering practice

Non-technical implications are covered in “Contributing to Sustainable Innovation”, inter-disciplinary research is an essential part of “Performing Applied Research for System Design” and “Professional Skills”. The programme learning outcome “Giving Meaning to Sensor Data” gives students the tools to assess the limitations of technology. Handling complex systems interdisciplinary is key to “Building Intelligent Architectures” and “Creating Reliable Services”.

6. Transferable Skills
The skills necessary for the practice of engineering, and which are applicable more widely, should be developed within the programme.

Second Cycle graduates should be able to:
- fulfil all the Transferable Skill requirements of a First Cycle graduate at the more demanding level of Second Cycle
- function effectively as leader of a team that may be composed of different disciplines and levels
- work and communicate effectively in national and international contexts

Technical, research and professional skills are deepened with respect to the Bachelor level explicitly in “Professional Skills” and “Creating Reliable Services”. They are also covered by “Giving Meaning to Sensor Data”, “Building Intelligent Architectures” and “Contributing to Sustainable Innovation”, where an international context is implied throughout. “Performing Applied Research for System Design”, “Professional Skills” and “Contributing to Sustainable Innovation” include the skills to lead a team in technical decisions.
3. Programme Outline

3.1 Mode of Study: Full-time, Part-time, Work-based
The Master Smart Systems Engineering is a full-time programme.

3.2 Justification for Language Used in All or Parts of the Programme
All components of the programme are taught in English. The reason for the English language is that the Master Smart System Engineering is an international programme, preparing Dutch and international students for an international career, abroad or with an international company in the Netherlands.

3.3 Specialisations and Differentiations
The Master Smart Systems Engineering does not prescribe a specialisation. The student can apply his knowledge and skills in any specialisation of his or her choice. This could be Health, Energy, or High Tech Systems (HTSM).

3.4 Study Pathways
The Master Smart Systems Engineering has one study pathway, in which any specialisation of choice can be selected.

The Master SSE used to be a 70 ECTS master and has been now extended to 90 ECTS, from one year to one and a half year. Developments, both technologically and in the area of higher education, and at Hanze UAS and the Master SSE since the previous visitation specifically, have resulted in a need to adjust the Master programme. Topics such as the Internet of Things, data ownership, informational transparency and environmental impact have become more important. In higher education, there is an increasing need for efficiency and standardisation. At Hanze UAS, this has been translated in a streamlining of its Master programmes. These developments have resulted in the need for an extension from 70 ECTS to 90 ECTS.

Cohort 2017-18 and earlier follows the graduation regulations approved by the Dean on 1 December 2018. If students from cohort 2017-18 or earlier do not start graduation before September 2020 then new graduation regulations from the 90 EC programme will apply.

3.5 Curriculum Overview

<table>
<thead>
<tr>
<th>Master Smart Systems Engineering – full-time Semester 1</th>
<th>OC</th>
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Cohort 2017-18 and earlier follows the graduation regulations approved by the Dean on 1 December 2018. If students from cohort 2017-18 or earlier do not start graduation before September 2020 then new graduation regulations from the 90 EC programme will apply.
### Master Smart Systems Engineering – full-time Semester 2

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<td>Data Fusion Architecture &amp; Models</td>
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<td>Sensor Application Specialisation</td>
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<td>Professional Skills &amp; Community</td>
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*S = Exam organised by the school  
O = Other*
4. Curriculum

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

4.1 CURRICULUM COMPONENTS
* Majors - none
* Final-stage profiles (graduation phase, resulting in a thesis)
* Minors - none
* Electives - none

4.2 FINAL-STAGE PROGRAMME

The table below indicates which course modules contribute to the various PLOs. The final stage programme (also called ‘graduation programme’) of the Master SSE consists of various course modules and are highlighted with an E in the table below. The rules and regulations for the Master Thesis Project at the end of the master period are written down in the Graduation Rules and Regulations.

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<td>E*</td>
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<td>+</td>
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<td>SSE6 Contributing to Sustainable Innovation</td>
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</tbody>
</table>

+ indicates small contribution. ++ indicates major contribution; E indicates that the PLO is assessed at end level; purple - highlighted modules suggest graduation programme. E* end level is assessed over more than one module.

5 Admission Requirements

5.1 REQUIRED PRIOR LEARNING

There is direct admission to the Master SSE for students with:

- a Bachelor of Science degree in Electrical and Electronics Engineering, Mechatronics, Mechanical Engineering, Applied Physics, Technical Information Technology or another educational programme with sufficient similar content (will be assessed based on the detailed grade list) from a university in the Netherlands or another European union member state.
• a Bachelor degree in Electrical and Electronics Engineering, Mechatronics, Mechanical Engineering, Applied Physics, Technical Information Technology or another educational programme with sufficient similar content and level (will be assessed based on the detailed grade list) from a non-EU university.

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.

5.5 Foreign Students: Language Requirements for Admission to Programmes Taught in English
1. Students applying for admission who submit a previous qualification issued outside the European Economic Area (EEA) must be able to present proof that they have achieved an IELTS score of at least 6.5 with no subscore below 6.0, or an equivalent score for another type of language test. Students must be able to present proof that they have taken this language test within the past two years.
2. Students applying for admission who hold a previous qualification which was issued within the EEA and which is on the ‘diploma list’ drawn up at the behest of the HEI associations in the Netherlands [http://internationalstudy.nl/sites/default/files/Diplomalijst.pdf] are exempt from the language requirement.
3. Students holding a qualification from the United States, Canada, Australia, New Zealand, Great Britain or Ireland are exempt from the language requirement, as are students holding an International Baccalaureate or a European Baccalaureate. Students holding a previous qualification issued outside the EEA are also exempt if they can present a statement from the educational institution proving that they received their prior education taught in English. The dean may seek advice from NUFFIC in such a case.

5.6 Foreign Students: Legal Residence Requirement
Students must have a valid residency status in order to study in the Netherlands.

Students can contact the International Student Office for further information.

6 Exams

6.1 Sequence of Exams
There is only one subject with a written examination organised by the school and this (plus a second opportunity) will take place within the first semester. All other subjects will be graded in another manner. The ways of examination can be found in the descriptions on Osiris. The Master Thesis will be graded following graduation guidelines and is scheduled at the end of the 18 month programme.
6.2 **NUMBER OF EXAMINATION RESITS (OUTSIDE OF WRITTEN EXAMINATIONS)**

Rules and regulation of the student charter artikel 4.9 apply.

6.3 **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/attribute/acknowledgement, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work, whether it be a 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.

7 **Placements and Excursions**

Apart from the Master thesis project no external placements take place. There is one excursion to a company in the introduction week and one more later in the curriculum. The students are expected to attend a conference.

8 **Compulsory Attendance**

Attendance at lectures, workshops and other educational activities is strongly advised. Attendance at labs is required.

9 **Academic counselling**

Students have an individual mentor assigned to them who they can approach for guidance, advice and assistance.

10 **Cum Laude Regulations**

Cum Laude regulations are provided in the Hanze UAS Student charter article 4.13.

11 **Student Contributions**

The issue of accessibility is one of the key notions underpinning our education policy. Enrolments in a degree programme may not be conditional on monetary contributions other than tuition fees (Section 7.50, first paragraph, of the Higher Education and Research Act). Enrolled students are entitled to make use of various facilities (Section 7.34 of the Higher Education and Research Act). These include participation in education and examinations, access
to buildings and collections and the use of student facilities and tutoring. Students may not be charged any additional fees in exchange for such facilities. The below section offers an overview of all individual student costs in each year.

**Costs per activity**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended books</td>
<td>€ 400,- (first year only)</td>
</tr>
<tr>
<td>Recommended calculator</td>
<td>€ 15,-</td>
</tr>
<tr>
<td>Networking Conference</td>
<td>Possibly Conference fee &amp; travel cost; subject to availability</td>
</tr>
<tr>
<td>Recommended Laptop/computer</td>
<td>Modern Laptop with virtualization support with at least 30 GB available for installation of Virtual Machine</td>
</tr>
</tbody>
</table>

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.
Chapter 4a Examination Regulations for Master’s Degree Programmes

Article 4a.1 General Provisions

4a.1.1 These Examination Regulations in conjunction with the Teaching Regulations form the Teaching and Examination Regulations for the Master’s degree programmes taught at Hanze UAS.

4a.1.2 In these Examination Regulations, ‘examination’ means an assessment of a student’s knowledge, understanding and/or skills. An examination can be in the form of a written, oral or computer examination, a practical, a practice-based examination or competence assessment, an individual or group (project) assignment or any other form of assessment approved by the Examination Board. Students are assessed individually, also where it concerns group assignments. Examinations may also be referred to as tests.

4a.1.3 For the purposes of these Regulations, a written request or a written communication has the same status as a request or communication made by electronic means.

4a.1.4 Where these Examination Regulations refer to credits, European Credits are meant. One European Credit (ECTS) is equivalent to 28 hours of study.

4a.1.5 If any serious inequity arises in the application of these Examination Regulations, the Examination Board may depart from these regulations as it sees fit.

4a.1.6 In cases which are not covered by the Examination Regulations or the Examination Protocol, the Examination Board decides.

Article 4a.2 Educational Programme

4a.2.1 The academic programme, the organisation of teaching and the annual planning of the master’s degree programme is set out in the Teaching Regulations.

4a.2.2 Curricula are divided into units of study. The workload of a unit of study is expressed as credits/ECTS in whole numbers. The workload of the entire master’s degree programme is specified in the Teaching Regulations.

4a.2.3 The units of study comprised in the master’s degree programme are stated in a curriculum overview which forms part of the Teaching Regulations. The number of credits assigned to the various units of study in the curriculum overview correspond to the workload established for the units of study.

4a.2.4 Any prerequisites that may apply to a unit of study are specified in the Teaching Regulations.

Article 4a.3 Teaching Regulations

4a.3.1 The Teaching Regulations describe the contents of the master’s degree programme and the units of study which it is comprised of. The Teaching Regulations also include a description of the competencies relating to knowledge, understanding and skills that the student must have achieved on completion of the master’s degree programme.

4a.3.2 The Teaching Regulations describe any practical assignments that are part of the programme.

4a.3.3 The Teaching Regulations state the number and the order in time of examinations, and at what times they can be taken. They also state whether examinations will be taken orally, in writing or in another way, and whether oral examinations are open to public attendance, all subject to the Examination Board’s power to determine otherwise in special cases.
The Teaching Regulations describe how students with a physical or sensory disability can reasonably be given the opportunity to sit examinations.

**Article 4.4 Final Examinations**
A student has passed the final examination if he/she has passed all the particular examinations of the units of study belonging to the master’s degree programme.

**Article 4.5 Examinations**

4.5.1 Each unit of study has one or more examinations attached to it. For each study period the Teaching Regulations stipulate the maximum number of examinations that may be administered in that period.

4.5.2 After a student has passed an examination, the examination result is recorded and credits are awarded. No compensation between examination results is possible. If a unit of study has more than one examination attached to it, the student must pass all the examinations to complete the unit successfully. The Dean may lay down in the Teaching Regulations that students forfeit their examination results if they do not pass all the examinations attached to the unit by the end of the academic year. The Dean will give an explanation of the educational reasons.

4.5.3 The Teaching Regulations may stipulate that students have to sign up for examinations.

**Article 4.6 Term of validity**

4.6.1 Final examinations and the results of individual examinations remain valid indefinitely, in principle.

4.6.2 In respect of students who have been enrolled in a master’s degree programme without interruption, no limitations can be set to the term of validity of credits awarded or exemptions granted, unless the student’s period of enrolment exceeds the nominal length of study plus one year and knowledge, skills and/or attitude have demonstrably become outdated in the opinion of the Examination Board.

4.6.3 Notwithstanding the provisions of the preceding paragraph, with respect to students who have been enrolled in the Architecture master’s degree programme without interruption, no limitations can be set to the term of validity of credits awarded or exemptions granted unless their period of enrolment exceeds the nominal length of study plus two years and knowledge, skills and/or attitude have demonstrably become outdated in the opinion of the Examination Board.

**Article 4.7 Examination results**

4.7.1 Examinations are graded by the examiner(s) who administered the examination. If an examination is graded by more than one examiner, the examiners decide on the grade in consultation. The Examination Board shall draw up guidelines for grading if two or more examiners are involved; these guidelines may include rules for the appointment of a third examiner (why/when and how).

4.7.2 Examinations are graded and the results announced to students as soon as possible, but no later than twenty days after the examination was held, and no later than five working days before any resit examination. The result of an oral examination is announced on the same day as the examination was held, unless the Examination Board stipulates otherwise.

4.7.3 Examination results may be announced by electronic means.

4.7.4 The result of an examination is expressed as a number between 1 and 10 with no more than one decimal after the point, or as a ‘pass’ or ‘fail’. A grade of 5.5 or higher is deemed a pass; a grade below 5.5 is deemed a fail. Participation in an examination is awarded a minimum grade of a 1 or a fail.
4.7.5 The Examination Board is authorised to declare an examination or part thereof to be invalid, if a proper assessment of the student’s knowledge, understanding or skills in that examination or that part thereof has proved to be impossible, within reason.

Article 4.8 Viewing Examination Papers
4.8.1 The Examination Board ensures that students have the opportunity of viewing their examination papers within twenty-five working days of the last day of the study period, or no later than five days before the resit, if a resit is offered. Students may only view their examination papers in the presence of the examiner or their deputy. Students are also given the opportunity to take cognizance of the exam questions and the assessment standards.

4.8.2 The provisions of the preceding paragraph do not apply if the way in which the course is organised makes it impossible to follow the normal procedure. In such a case, the Examination Board shall offer an alternative arrangement for viewing the papers, such that the student can view the examination papers no later than five working days before the resit, if a resit is offered. This procedure must be included in the Teaching Regulations.

4.8.3 Viewing or taking cognizance of examination papers takes place at a predetermined place and time.

4.8.4 The Examination Board may set further rules such as a prohibition to carry switched-on photographic or recording equipment during the viewing. Violation of these rules will be considered an irregularity as referred to in Article 5.6.

Article 4.9 Resit Examinations
4.9.1 If a student retakes an examination, the highest result achieved is recorded. Resitting an examination after obtaining a pass is allowed once as long as the resit is taken within one calendar year of the date of the pass. No resit can be taken of a passed competence-based test, group test, work placement or final project. The Dean may include in the Teaching Regulations which units of study this provision applies to. If this restriction is implemented, the Teaching Regulations will state to which units of study this applies. In exceptional cases the Examination Board may, in derogation from the provisions above, allow an additional resit.

4.9.2 Written examinations can be retaken at least once in any academic year.

4.9.3 Examinations other than those referred to in paragraph 10.2 can be resat in the manner described in the Teaching Regulations for the relevant unit of study.

4.9.4 If it is decided during an academic year that a certain unit of study, or part of it, will no longer be offered in the following years or will be substantially revised, then the students concerned will be given at least one extra opportunity to take the relevant examination(s) before the end of the academic year after which the new arrangement comes into force. Such resit opportunities are announced at least three months before the resit.

Article 4.10 Exemptions
4.10.1 The Examination Board may, on a student’s written application, grant the student exemption from one or more examinations on the grounds of a competence assessment or because the student possesses a certificate, diploma or other document which proves that they have complied with the requirements of the examination(s) in question. The application may also be submitted electronically. The Teaching Regulations may include regulations regarding procedures for applying for exemptions.

4.10.2 If an Examination Board grants the exemption requested, it sends the applicant a certificate of exemption within four weeks of the day that the application was received.
This certificate must state the date on which the exemption was granted and the examination(s) which the exemption applies to. It must be signed by the Chair of the Examination Board.

4a10.3 The Examination Board has the power to grant exemption from the obligation to participate in practical exercises and may impose other requirements instead.

4a10.4 The Teaching Regulations may stipulate that, with regard to the units of study referred to in the regulations, no exemption can be granted for taking the examinations in these units of study.

Article 4a.10a  Provision of Degrees

4a.10a.1 Students who have successfully passed the final examination of a Master’s degree programme are granted the degree of Master by the Dean. The Executive Board may authorise an officer other than the Dean to award the degree.

4a.10a.2 A student to whom a degree has been granted pursuant to Article 4a.10a.1 is entitled to add the title associated with the degree to their name.

Article 4a.11  Diplomas

4a11.1 When a student has passed all the examinations of the units of study of a master’s degree programme, the Examination Board confirms that the student has successfully passed the final examination. It awards the associated diploma as soon as the Dean has declared that all the procedural requirements for awarding the diploma have been complied with. The diploma is drawn up in the language in which the course was taught, as determined by the Executive Board.

4a11.2 The diploma awarded for passing the final examination must always state:
- the name of the degree programme;
- the examination subjects;
- the qualifications attached to the diploma, if applicable;
- the degree awarded;
- the latest accreditation period of the study programme;
- if applicable: the successful completion of an Honours Talent Programme;
- if applicable: the designation ‘cum laude’, as referred to in article 4a.12 below.

4a11.3 The diploma is accompanied by a list of grades and a diploma supplement. The diploma supplement is drawn up in the English language.

4a11.4 At the student’s request for a charge, the Student Administration provides extra copies of the diploma supplement including a transcript of records, and a certified copy of the diploma.

Article 4a.12  Cum laude

4a.12.1 The Examination Board may award a student the classification ‘cum laude’ if the student’s overall achievement meets the following requirements:
   a. No more than one-third of the total number of the examination credits have been obtained in the form of exemptions;
   b. All units of study have been completed within the nominal length of time;
   c. The student has made no more than two attempts at any examination;
   d. Where a numerical scheme is applied, the average of all results is at least 8.0, no grade is below 7.0 and the student has completed their studies within the normal length of time.

The average referred to in the preceding paragraph under (d) is calculated according to a Weighted Grade Average system, where the weighting factor used in calculating the weighted average is the number of ECTS credits which the unit of study represents.

4a.12.2 Without prejudice to the provisions of the preceding paragraph, the Teaching Regulations may stipulate that the result achieved for a certain unit of study must be at least an 8.0.
4a.12.3 A student against whom the Examination Board has taken a measure which deprived him or her of the right to take one or more examinations at Hanze UAS, is not entitled to the classification ‘cum laude’.

4a.12.4 In special cases, the Examination Board may grant exemption from the provisions of the first paragraph under (b) and/or (c).

**Article 4a.13 Legal protection** *(See also Chapter 10, Legal Protection)*

Students can appeal decisions regarding the implementation of the Examinations Protocol to the Student Appeals Board.
<table>
<thead>
<tr>
<th><strong>English</strong></th>
<th><strong>Dutch</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>C/R Compulsory/Recommended</td>
<td>V/A Verplicht/Aanbevolen</td>
</tr>
<tr>
<td>E Examination *</td>
<td>T tentamen</td>
</tr>
<tr>
<td>Educational Framework Expert Group</td>
<td>Expertisgroep Onderwijskader</td>
</tr>
<tr>
<td>HAVO senior secondary general education</td>
<td>HAVO hoger algemeen voortgezet onderwijs</td>
</tr>
<tr>
<td>HBO higher professional education</td>
<td>HBO hoger beroepsonderwijs</td>
</tr>
<tr>
<td>MBO senior secondary vocational education</td>
<td>MBO middelbaar beroepsonderwijs</td>
</tr>
<tr>
<td>O&amp;O Teaching and Research Department</td>
<td>O&amp;O Staafbureau Onderwijs en Onderzoek</td>
</tr>
<tr>
<td>Programme Committee</td>
<td>OC Opleidingscommissie</td>
</tr>
<tr>
<td>SMR School Representative Council</td>
<td>SMR Schoolmedezeggenschapsraad</td>
</tr>
<tr>
<td>STAD Student Administration</td>
<td>STAD Studentenadministratie</td>
</tr>
<tr>
<td>TER Teaching and Examination Regulations</td>
<td>OER Onderwijs- en Examenregeling</td>
</tr>
<tr>
<td>thesis phase</td>
<td>afstudeerprogramma</td>
</tr>
<tr>
<td>VWO pre-university education</td>
<td>VWO voorbereidend wetenschappelijk onderwijs</td>
</tr>
<tr>
<td>W/O Written/Other</td>
<td>S/O schriftelijk/overig</td>
</tr>
<tr>
<td>WBL Work-Based Learning</td>
<td>duaal duaal onderwijs</td>
</tr>
</tbody>
</table>

* As opposed to a final examination, which is afsluitend examen or simply examen in Dutch; or eindexamen when referring to secondary education.