Appendix for the FSE High Tech Systems and Materials Master's Honours Programme (HTSM)

I. Learning outcomes
II. Admission to the HTSM programme
III. Content of the HTSM programme
IV. Board of Examiners

I. LEARNING OUTCOMES

The HTSM programme is an extracurricular programme offered by the Faculty of Science and Engineering, and designed for ambitious, talented and motivated master students. The HTSM programme does not form part of the regular master's curriculum.

Innovation is at the core of High Tech Systems and Materials and of the HTSM programme. To be able to continuously innovate and improve products and processes, the sector is in need of excellent scientists who are able to collaborate in multidisciplinary teams, who look beyond the borders of their own field, who are open-minded towards other disciplines and the outside world and who are prepared to go the extra mile every day.

The aim of the HTSM programme is:
Graduates of the HTSM programme will excel – beyond the reach of regular education programmes – in the competitive High Tech Systems and Materials marketplace by being prepared for:

- a profession in the field of High Tech Systems and Materials;
- working in interdisciplinary research and innovation settings in the field of High Tech Systems and Materials;
- participation in the international field of High Tech Systems and Materials.

The learning outcomes of the HTSM programme are as follows:
The programme is designed to impart knowledge on the theories, methods and skills required to comprehend high tech systems and materials in both theoretical and practical manners.

A. The programme aims to impart knowledge on and understanding of:
A1) important concepts regarding high tech systems and materials, including technical innovation, multidisciplinary and industrial design, various material classes (metals, polymers and modern materials) and electrical engineering and embedded systems; plus those relevant for their practical application;
A2) the most important theories in the field of high tech systems and materials, including technical innovation, multidisciplinary and industrial design, various material classes (metals, polymers and modern materials) and electrical engineering and embedded systems;
A3) the innovation and design process in an interdisciplinary approach;

A4) practical cases and problems in the commercial sector of high tech systems and materials;
A5) equipment and technology available in high tech systems and materials laboratories, both in academic and commercial sectors, and practical experience in how to operate these.

B. Applying knowledge and understanding
Graduates are able to:
B1) compile a suitable and relevant product proposal to improve and innovate an existing product in the sector of High Tech Systems and Materials;
B2) create, test and finalize product improvements in cooperation with others;
B3) independently put into practice acquired knowledge and skills for product improvement in the commercial sector of high tech systems and materials.

C. Making judgements
Graduates are able to:
C1) judge the quality of research and innovations being undertaken in the field of high tech systems and materials;
C2) take into account the practical aspects of research and product innovations in the field of high tech systems and materials, both academic and commercial;
C3) judge quality issues when pursuing product innovation and development;
C4) reflect on how (their) knowledge and skills can be used for innovation and product development in the field of high tech systems and materials;
C5) use a wide, interdisciplinary approach when making judgements.

D. Communication
Graduates are able to:
D1) provide constructive feedback and intervision on research, analysis and proposals produced by their fellow students and others in the field;
D2) present and write interdisciplinary product proposals and plans of approach for technical innovation and product improvement in a clear, convincing and scientific manner;
D3) reflect and argue about their work in a scientific manner; D4)
discuss and debate ideas and developments within the field;
D5) cooperate and communicate with others effectively when working on research and product innovation in the field;
D6) reflect on their own personality and traits, and use this knowledge to improve their way of functioning in research and innovation efforts of interdisciplinary groups in the high tech systems and materials field.

E. Attitudes
Graduates:
E1) develop a critical, independent, creative, pro-active and resourceful attitude suitable for an excellence programme;
E2) develop a scientific and methodological rigour of doing research beyond the reach of regular education programmes;
E3) are able to work together in interdisciplinary settings, both theoretical and practical;
E4) are able to work with deadlines, feedback and professional intervision.

II. ADMISSION TO THE HTSM-PROGRAMME

II.1 Admission requirements

1. A student may be admitted to HTSM programme if they meet the following requirements:
   a) holds a valid registration as a master student at the Faculty of Science and Engineering of the University of Groningen, for the full length of the HTSM programme;
   b) has the potential to complete the HTSM programme within the specified period i.e. three consecutive semesters.
   c) important aspects to be considered when assessing a student's potential: the ability to plan realistically, social skills, coping with deadlines/stress, generic academic skills such as the ability to express themselves in written and oral form, willingness to seek out the frontiers of the discipline; the ability to recognize and surpass their own limitations.
   d) motivated to achieve the goals of the HTSM programme: wants to develop and excel in the field of high tech systems and materials as well as interdisciplinary approaches, and is prepared to make extra commitments to achieve this.
   e) links an intellectual capacity to social skills;
   f) possesses a number of special qualities: proactive, enterprising, innovative, creative, original, independent, perseverance;
   g) has a broad interest and is capable of reflection (and self- reflection) and will look across borders;
   h) possess a Bachelor's degree with good to outstanding results, including a Bachelor's thesis (or other final-year Bachelor's project) with an above-average mark.

There is one intake per academic year, namely in the first semester of the academic year.

II.2 Proof of admission

1. Students in possession of a proof of admission for the HTSM programme will be admitted to the lectures and examinations of the HTSM programme.

2. A proof of admission is issued to students once they satisfy the admission requirements and are admitted by the director of the HTSM programme.

3. If a student does not satisfy the admission requirements, they may be admitted under special conditions.

II.3 Board of Admissions

1. The Board of Admissions HTSM decides on matters concerning admission to the HTSM programme.

2. The Board of Admissions has at least three members.

3. The Study Advisor of the HTSM programme (or an equivalent Honours College FSE Staff Member) will be appointed as Advisory Member.

II.4 Selection procedure

1. Students can register for the electronic admissions procedure by submitting the following documents:
   a) a complete application form
   b) a curriculum vitae
   c) an overview of all results achieved thus far (i.e. including the marks for examinations that the student has not passed) in the bachelor's degree programme (being) followed
   d) a short essay of 500 words where the student states:
      i. why they want to be admitted to the HTSM programme, based on their own expectations, interests and ambitions
      ii. the contribution the student proposes to make to the HTSM programme
      iii. how the student thinks they will benefit from the HTSM programme
   e) one or more personal references by qualified experts. References by qualified experts include written recommendations by persons regarded by the Admissions Board as experts, which give a useful and reliable picture of the suitability of the student for participation in the HTSM programme, such as a lecturer, study advisor, programme director, professor, pre-university school counsellor.
   f) other documents, if required, which in the opinion of prospective students will support their eligibility for the HTSM programme.

II.5 Continuation of admission

1. In order to continue to qualify for admission to the HTSM programme, students who are admitted must:
   a) be registered for the same master's degree programme at the University of Groningen when enrolled in the HTSM programme;
   b) have demonstrated dedication, involvement and active participation in the HTSM programme course units.
   c) adhere to the rules and guidelines necessary to create an executable programme for all students, including enrolment and registration periods set by the HTSM coordinator
   d) If a student does not actively make a selection from the offered summer school assignments before the given deadline via the appropriate form, this will lead to an exclusion from all the following modules and termination of the participation of the HTSM programme.

2. In the absence of any of the aforementioned continuation requirements or in extraordinary cases of reprehensible behaviour or statements made by a student, the director of the HTSM programme may, after an advice from the HTSM coordinator and/or the study advisor of the (regular) study programme, discontinue the student's admission to the HTSM programme.

3. The director of the HTSM programme will not make a decision as referred to in Article 2.5.2 until after the student in question has been given the opportunity to respond to the proposed decision, the interests of the student and the institution have been carefully assessed, and once it has been proven

reasonable to assume that the student's behaviour and/or remarks prove them to be unsuitable for working towards achieving the Learning Outcomes of the HTSM programme.

III. CONTENT OF THE HTSM PROGRAMME

The HTSM programme consists of in total 20 ECTS. See table below for the different programme aspects:

Course unit name	**Code**	**ECTS**
Masterclasses	WMHH001-05	5
Personal development	WMHH002-02	2
Product proposal and plan of approach	WMHH003-03	3
Summer school	WMHH004-05	5
HTSM Masterwork	WMHH005-05	5

IV. BOARD OF EXAMINERS

Authority of the Board of Examiners with regard to the HTSM-programme

1. Students who are selected for the HTSM-programme do not need explicit permission from the Board of Examiners of their degree programme to follow this programme.

2. The Board of Examiners EES/SEC is assigned as the responsible Board of Examiners for the HTSM-programme.