



# **Model Teaching and Examination Regulations**

## **MASTER's Degree Programmes**

Science, Business & Innovation

### **B. Programme-specific section**

Academic year 2017-2018

## **Section B: Programme-specific section**

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## **Section B: Programme-specific section**

### **1. General provisions**

#### **Article 1.1 Definitions**

Not applicable

#### **Article 1.2 Degree programme information**

1. The programme in Science, Business & Innovation (CROHO number 69320) is a full-time programme taught in English.
2. The programme consists of 120 credits.
3. A unit of study comprises 6 EC or a multiple thereof.
4. Within the programme the following tracks are offered:
  - Life & Health (L&H);
  - Energy & Sustainability (E&S)Within each track, there are no variants offered.
5. The student determines the content of the Master's programme in consultation with the coordinator of the Master's programme and according to the rules of Chapter 3. The coordinator of the Master's programme will lay down the content chosen by the student in a Personal Education Plan (PEP). The coordinator submits this PEP together with his recommendation to the Examinations Board. If the student wants to change the contents of the study programme, the student promptly consults with the coordinator of the study programme. If this results in a new PEP the student coordinator submits this to the Examinations Board.

#### **Article 1.3 Intake date**

The programme is offered starting in the first semester of the academic year (1 September). The intake date mentioned in this paragraph ensure that a programme can be completed within the nominal study duration set for the programme.

### **2. Programme objectives and exit qualifications**

#### **Article 2.1 Programme objective**

The objective of the programme is that SBI students learn to contribute to valorization of natural scientific knowledge in a business and innovation context while taking into account natural scientific as well as organizational, social and cultural variables. Students learn to contribute to valorization by means of developing, designing, executing, reporting and presenting academic research about valorization subjects in the empirical field. Students are educated for jobs in research-driven environments where valorization of findings and knowledge is a key driver. Students learn to contribute to the introduction, use and exploitation of new products, processes and services based on (knowledge from) natural scientific research and knowledge. The learning process is structured and driven by developing scientific research projects in the specific empirical setting. This takes place within one of the following specialization areas:

- 1) Energy & Sustainability (E&S), with an emphasis on renewable and clean energy development;
- 2) Life & Health (L&H), emphasizing drug development, molecular diagnostics and innovative medical instrumentation.

#### **Article 2.2 Exit qualifications**

The graduate:

- has demonstrated knowledge and understanding of modern chemistry/physics, including the knowledge of other disciplines required for that purpose. This enables an original approach in developing and/or applying ideas, often within a research context.
- has demonstrated thorough knowledge of research methods, research culture, research organization and research processes in E&S or L&H.
- has demonstrated thorough knowledge of the business- and social scientific aspects of innovation in E&S or L&H.
- has the ability to apply one's knowledge of chemistry/physics and business- and social science in a broader (multidisciplinary) context.
- has the ability to deal with the safety and environmental aspects of chemistry/physics.

- is proficient in analysing and solving problems with regard to innovation trajectories in E&S or L&H.
- has the ability to formulate a research plan, using an empirical or design research cycle, and based on a problem within the discipline of science-based or R&D-intensive innovation in E&S or L&H.
- has the ability to analyze research results and to draw conclusions therefrom, and uses academic technological methods.
- has the ability to write a scientific report about a research project, and to participate in discussion of the field of study that is related to this project.
- has the ability to consult international academic literature in the relevant sub-areas (science-based or R&D-intensive innovation in E&S or L&H) and to apply the knowledge gained from that.
- is proficient in applying the acquired theoretical and practical insights in day-to-day practice at an institute, company or organization, strongly focused on providing solutions that enable innovation trajectories in E&S or L&H business.
- can communicate his/her conclusions, and the knowledge and rationale underpinning these, with peers, the larger scholarly community and with society in general.
- is able to make a factual and critical contribution to a scientific or public discussion and is capable of presenting his/her findings in an international perspective in the form of an academic English-language article.
- is capable and motivated to work goal- and task- oriented with and for others in a differentiated and dynamic - and interdisciplinary setting.
- has strong affinity with management practices concerning innovation trajectories in E&S or L&H and takes into account academic, social, and technological opinions and methods in the context of his/her work.

### 3. Admission requirements

#### Article 3.1 Admission requirements

1. Applicants will be admitted to the degree programme if they hold a letter of acceptance, issued by or on behalf of the Faculty Board when they have demonstrated that they meet the knowledge, understanding and skills requirements of the final level of attainment in a university Bachelor's degree programme.
2. **Prior education requirements:**
  - Registration for the Master's programme in Science, Business & Innovation is open to anyone who is in possession of a Bachelor's degree in Science, Business & Innovation and a bachelor's degree in Natuurwetenschappen en Innovatiemanagement (Natural Sciences and Innovation Management), awarded by the University of Utrecht. English-language proficiency must be at least equivalent to pre-university final-exam level (VWO in the Netherlands).
  - An applicant with a university Bachelor's degree in a field other than that specified in paragraph 3.1.2.1 may be admitted to the programme by the Examination Board if the following conditions have been met:
    - For both variants, L&H and E&S, students are required to have basic knowledge on bachelor level of mathematics (at least 9 ec), statistics (at least 6 ec), computer skills (at least 6 ec) and of business/innovation/social sciences of at least 24 ec;
    - In addition to these requirements, students entering the E&S variant need to have at least 45 ec obtained during their bachelor in chemistry and/or physics courses (including thermodynamics), while students entering the L&H variant need at least 45 ec obtained during their bachelor in chemistry and/or physics courses (including molecular and pharmaceutical sciences);
    - the applicants prior education meets the qualifications of a university Bachelor's degree programme as defined in the Dublin descriptors;
    - the applicant's English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands);
    - When the programme commences, the candidate must have fully completed the Bachelor's programme or pre-master's programme allowing admission to this Master's programme. Students are allowed to have a deficiency of 6 ec that can be added to their Personal Education Plan (PEP).

#### Article 3.2 Pre-Master's programme

1. Applicants who have a Bachelor's degree in a field that correspond to the field of the Master's

- programme but have deficiencies in either business/innovation or science courses may request admission to the pre-Master's programme.
2. A certificate stating that the student has successfully completed the pre-Master's programme serves as a letter of acceptance to the associated Master's programme in the next academic year.
  3. The letter of acceptance relates exclusively to the academic year following the academic year in which the application for the letter of acceptance was submitted, unless the Faculty Board decides otherwise.

#### Article 3.3 Limited programme capacity

Not applicable

#### Article 3.4 Final deadline for registration

A candidate must submit a request to be admitted to the programme through Studielink before 1 May in the case of Dutch students, before 1 April in the case of EU students and before 1 February in the case of non-EU students. Under exceptional circumstances, the Examination Board may consider a request submitted after this closing date.

#### Article 3.5 English language requirement for English-language Master's programmes

1. The proficiency requirement in English as the language of instruction can be met by the successful completion of one of the following examinations or an equivalent:
  - IELTS: 6.5
  - TOEFL paper based test: 580
  - TOEFL internet based test: 92-93
  - Cambridge Advanced English: A, B or C.
2. Exemption is granted from the examination in English referred to in the first paragraph to students who, within two years of the start of the programme:
  - met the requirements of the VU test in English language proficiency TOEFL ITP, with at least the scores specified in paragraph 1, or
  - had previous education in secondary or tertiary education in an English-speaking country as listed on the VU website, or
  - have an English-language 'international baccalaureate' diploma, or
  - have an English-language diploma of a Bachelor or Master degree programme which has been accredited by the NVAO in the Netherlands.

#### Article 3.6 Free curriculum

1. Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula prescribed by the programme.
2. The concrete details of such a curriculum must be approved beforehand by the Examination Board.
3. The free curriculum is put together by the student from the units of study offered by Vrije Universiteit Amsterdam or another institution of higher education and must at least have the size, breadth and depth of a regular Master's programme.

### 4. Curriculum structure

#### Article 4.1 Composition of programme

1. The programme has a study load of 120 credits and consists of the following components:
  - a. required educational units
  - b. practical components
  - c. electives
2. Notwithstanding the provisions of paragraph 1, students may compose their own Master's programme under certain conditions and with the prior approval of the Examination Board.
3. The degree programme has a study load of 120 credits. One credit is equivalent to 28 hours of study.
4. Before starting the SBI project & master thesis, the student must have earned all other programme credits. A shortfall of 12 credits is permissible, as long as it does not include credits for the course SBI Research Methodology.
5. The student must submit the master research project report no later than the last day of the internship. In exceptional circumstances and after consultation with all parties involved, the

student may submit the report within two months of completion of the internship. If the student fails to meet this deadline, the graduation project will be incomplete and the student will not receive the associated credits.

6. In exceptional circumstances, the Examination Board may deviate from the provisions of paragraph 5 on the basis of a request submitted by the student, with supporting arguments.

#### Article 4.2 Compulsory units of study

The programme includes compulsory components. The contents and format of the compulsory components of the various tracks are further described in the Course Catalogue, stating the necessary entry requirements for successful participation in the component.

#### Structure of the programme

The curriculum comprises the following:

- Compulsory business and innovation courses (18 EC)
- Specialisation-related science elective courses (12 EC)
- One specialisation-related compulsory integration course (6 EC)
- One of the two variants of the science project (24 EC)
- Research project (36 EC)
- Compulsory Research Methodology course (6 EC)
- Electives (18 EC)

If the student wishes to take a different unit of study than the units of study listed, advance permission must be obtained in writing from the Examinations Board.

Period	Year 1	Year 2
1: sep-oct	Courses 12 EC*	Courses 12 EC*
2: nov-dec	Courses 12 EC*	Courses 12 EC*
3: jan	SBI interdisciplinary specialization course 6 EC: <ul style="list-style-type: none"> <li>- Specialization E&amp;S: Current Sustainable Energy Technologies</li> <li>- Specialization L&amp;H: Business, Innovation and value creation in the life sciences industry</li> </ul>	Master project 36 EC: Specialization E&S: Academic master research project in(to) valorization aspects of a commercial firm or institutional organization in the sustainable energy sector, facilitated by an internship Specialization L&H: Academic master research project in(to) valorization aspects of a commercial firm or institutional organization in the life sciences or health care sector, facilitated by an internship
4: feb-mar	Science project 24 EC**: <ul style="list-style-type: none"> <li>- Specialization E&amp;S: Internship/research in(to) valorization aspects of a lab setting or R&amp;D setting in the sustainable energy sector</li> </ul>	
5: apr-may	<ul style="list-style-type: none"> <li>- Specialization L&amp;H: Internship/research in(to) valorization aspects of a lab setting or R&amp;D setting in the life sciences or health care sector</li> </ul>	
6: jun	Course 6 EC*	
<p>*Specialization E&amp;S and L&amp;H: 24 EC of the same mandatory Business and social science courses (see list in article 4.2.1);  Specialization E&amp;S: 12EC of natural science courses, chosen from the E&amp;S-list (see list in article 4.2.2);  Specialization L&amp;H: 12EC of natural science courses, chosen from the L&amp;H-list (see list in article 4.2.3);  Specialization E&amp;S and L&amp;H: 18EC electives (see list in article 4.2.4).  **or variant 2: 12 EC course Researching Science Research for E&amp;S and L&amp;H specializations, and 12EC natural science courses from the E&amp;S list (E&amp;S specialization; see article 4.2.2) or from the L&amp;H list (L&amp;H specialization; 4.2.3).</p>		

<b>Compulsory components</b>	<b>Subject code</b>	<b>Number of credits</b>	<b>Period or semester</b>	<b>Teaching Method</b>	<b>Examination format</b>	<b>Level</b>
Management of Sustainable Innovation	X_432739	6	2	h	t,o	400
Networked Organizations and Communication	S_NOOC	6	2	h, w	t,v, pres	
SBI Project & Master Thesis	X_432735	36	1-6	pra		600
SBI Research Methodology	X_432846	6	1-6			
<b>One specialisation-related compulsory integration course</b>						
Business, Innovation and Value Creation in the Life Science Industry	X_432723	6	3	h	t, v, pres	500
Current Sustainable Energy Technologies	X_422582	6	3	h, w	v, pres	500
<b>One of the two variants of the science project (24 EC or 12 EC + 12 EC track courses from elective components)</b>						
Business and Innovation project	XM_432845	24	1-6			500
Science Project	XM_422591	24	1-6			500
Researching science research	X_432849	12	4-5		v, pres	400
<b>Specialisation-related science electives courses 12 EC</b>						
<b>Life &amp; Health (L&amp;H)</b>						
Biomedical modeling and simulation	X_430112	6	1	h, w	t, pres, o	400
Principles of Pharmaceutical Sciences/Pharmacochemistry	X_435675	6	1	h, pra	t	400
Protein science	AM_470145	6	1	h, w	t	400
Innovation in medical technology to improve the Health Care System	X_430602	6	6	h, w	v, pres	500
Chemical biology*	X_432538	6	1	h, w	t, pres, o	400
Green chemistry	X_430557	6	1	h	t, v, o	300
<b>Energy &amp; Sustainability (E&amp;S)</b>						
Biosolar cells	X_428531	6				
Green chemistry	X_430557	6	1	h	t, v, o	300
Organic Photovoltaics	X_422590	6	5	h	pres	400
Project sustainable future	X_432784	6	6	h, w	t, v, pres, o	500
Materials for energy and environmental sustainability	X_432850	12	4-5		v, pres	400
<b>Recommended Electives</b>						
Management of Digital Innovation	E_BA_MDI	6	1	h, w	t	400
Managing service innovation	E_BA_MSI	6	5	h, w	case, t	400
Small business development	E_BA_SBD	6	2	h, w	ta, pres, v, t	400
Industriële eigendom	R_Indu.eig.	6	4	h, w	t	400
International Intellectual Property Law	R_Int.prop.l	6		h	t, pres	400

#### Article 4.3 Practical exercise

When performing practical components, students must adhere to the Faculty's safety regulations.

#### Article 4.4 Elective components

1. Students choose components in the field of the discipline according to the rules stated in the Course Catalogue.
2. Students may make a choice out of components in the field of the discipline included in the Course Catalogue, and out of components offered by another Dutch or foreign university upon prior approval of the Examination Board.
3. Course components successfully completed elsewhere or that are not included in list of recommended electives during the programme may supplement the student's examination programme, subject to prior permission from the Examinations Board.
4. In terms of content, elective components must not show too much similarity to other components of the student's curriculum. The acceptable degree of similarity will be decided by the Examinations Board.

#### Article 4.5 Sequence of examinations

Students may participate in examinations [and/or practical exercises] for the units below only if they have passed the examination or examinations for the units mentioned:



Before starting the SBI project & master thesis, the student must have earned all other programme credits. A shortfall of 12 credits is permissible, as long as it does not include credits for the course SBI Research Methodology.

#### Article 4.6 Participation in practical exercise and tutorials

1. Student are expected to participate actively in all degree components for which they are registered.
2. In addition to the general requirement regarding active participation, the study guide details additional requirements for each degree component, as well as component attendance requirements.
3. At the start of each degree component, a specification will be made available which details:
  - The final attainment levels of the degree component;
  - The study guidelines for passing the degree component;
  - The way in which the final attainment levels are assessed;
  - The regulations for examinations and resits;
  - The guidance provided by lecturers during scheduled hours and otherwise;
  - Component attendance requirements;
  - The provision of feedback to the student on assignments and reports submitted, and presentations given during the degree component.
4. If a student is prevented by force majeure from attending a required degree component, then the student must send written notification of his or her absence to the examiner and the study advisor as soon as possible. The examiner may, after consultation with the study advisor, give the student an alternative assignment.
5. Absence from degree components with required attendance is only allowed in the case of force majeure.
6. In the event of inadequate participation, either qualitative or quantitative, the examiner may exclude the student from further participation in the degree component or a part of the degree component. The details of the student's inadequate participation must be recorded in advance and approved by the Director of Studies.

#### Article 4.7 Maximum exemption

Not applicable

#### Article 4.8 Validity period for results

No further specific provisions to article 4.8 of TER part A.

#### Article 4.9 Degree

Students who have successfully completed their Master's final examination are awarded a Master of Science degree. The degree awarded is stated on the diploma. If it is a joint degree, this will also be stated on the diploma.

## 5. Transitional and final provisions

#### Article 5.1 Amendments and periodic review

1. Any amendment to the Teaching and Examination Regulations will be adopted by the faculty board after taking advice, and if necessary approval by the Programme Committee concerned. A copy of the advice will be sent to the authorized representative advisory body.
2. An amendment to the Teaching and Examination Regulations requires the approval of the authorized representative advisory body if it concerns components not related to the subjects of Section 7.13, paragraph 2 sub a to g and v of the WHW and the requirements for admission to the Master's programme and insofar it doesn't concern the guidelines of the Executive Board
3. An amendment to the Teaching and Examination Regulations can only pertain to an academic year that is already in progress if this does not demonstrably damage the interests of students.



**Article 5.2**      **Transitional provisions**

Not applicable

**Article 5.3**      **Publication**

1.      The faculty board will ensure the appropriate publication of these Regulations and any amendments to them.
2.      The Teaching and Examination Regulations will be posted on the faculty website and deemed to be included in the course catalogue.

**Article 5.4**      **Effective date**

These Regulations enter into force with effect from 1 September 2017

Advice from Programme Committee, on 20 April 2017

Approved by authorized representative advisory body, on 6 July 2017

Adopted by the Board of the Faculty of Science, on 21 July 2017

## Appendix I

List of articles that must be included in the OER pursuant to the WHW (articles in framed boxes):

### Section A

Art. 1.1	7.13, para 1, WHW
Art. 2.1	7.13, para 2 sub w
Art. 3.2	7.13, para 2 sub e
Art. 4.2	7.13, para 2 sub h and l
Art. 4.3	7.13, para 2 sub n
Art. 4.4	7.13, para 2 sub o
Art. 4.5	7.13, para 2 sub j, h
Art. 4.7	7.13, para 2 sub r
Art. 4.8	7.13, para 2 sub k
Art. 4.9	7.13, para 2 sub p
Art. 4.10	7.13, para 2 sub q
Art. 4.11	7.13, para 2 sub a
Art. 5.1	7.13, para 2 sub u
Art. 5.2	7.13, para 2 sub m

### Section B

Art. 1.2	7.13, para 2 sub i
Art. 2.1	7.13, para 1 sub b, c
Art. 2.2	7.13, para 2 sub c
Art. 3.1	7.25, para 4
Art. 4.1	7.13, para 2 sub a
Art. 4.2	7.13, para 2 sub e, h, j, l
Art. 4.3	7.13, para 2 sub t
Art. 4.4	7.13, para 2 sub e, h, j, l
Art. 4.5	7.13, para 2 sub s
Art. 4.6	7.13, para 2 sub d
Art. 4.8	7.13, para 2 sub k