

UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE

**TEACHING AND EXAMINATION REGULATIONS  
PART B**

Academic year 2016-2017

**MASTER'S PROGRAMME BIOMEDICAL SCIENCES**

<b>Chapter 1</b>	<b>General provisions</b>
Article 1.1	Definitions
Article 1.2	Study programme information
Article 1.3	Intake dates
<b>Chapter 2</b>	<b>Programme objectives and exit qualifications</b>
Article 2.1	Programme objective
Article 2.2	Exit qualifications
<b>Chapter 3</b>	<b>Further admission requirements</b>
Article 3.1	Admission requirements
Article 3.2	Pre-Master's programme
Article 3.3	Limited programme capacity
Article 3.4	Final deadline for registration
Article 3.5	English language requirement for English-language Master's programmes
Article 3.6	Free curriculum
<b>Chapter 4</b>	<b>Curriculum Structure</b>
Article 4.1	Composition of the programme
Article 4.2	Compulsory units of study
Article 4.3	Practical exercise
Article 4.4	Electives
Article 4.5	Sequence of examinations
Article 4.6	Participation in practical exercise and study group sessions
Article 4.7	Maximum exemption
Article 4.8	Validity period for results
Article 4.9	Degree
Article 4.10	Determining results of examinations
<b>Chapter 5</b>	<b>Transitional and final provisions</b>
Article 5.1	Amendments and periodic review
Article 5.2	Transitional provisions
Article 5.3	Publication
Article 5.4	Effective date
<b>Appendix</b>	Final attainment levels of the major Science in Society, the major Science Communication and Major Teaching, and learning objectives minor TESLA

## Chapter 1. General Provisions

### *Article 1.1 – Definitions*

In addition to part A, the following definitions are used in part B

- |                            |  |
|----------------------------|--|
| a. Course                  | Education imparted in a series of lectures or meetings   |
| b. Literature review       | A component of 12 EC comprising literature resulting in a written report                                   |
| c. Personal Education Plan | An individual study plan for the student's Master's programme.   |
| d. Research project        | Compulsory internship/master thesis of 30-60 EC always resulting in a written report and oral presentation |

### *Article 1.2 – General information master's programme*

1. The Master's programme Biomedical Sciences, CROHO 66990, is offered on a full-time basis and the language of instruction is English.
2. The programme has a workload of 120 EC.
3. The programme consists of the cluster Medical Biology and the cluster Neurobiology in which the following tracks are offered:

Medical Biology cluster:

- Biochemistry and Metabolic Diseases (BMD);
- Cell Biology and Advanced Microscopy (CBAM);
- Experimental Internal Medicine (EIM);
- Infection and Immunity (I&I);
- Oncology (ONC).

Neurobiology cluster:

- Basic and Applied Neuroscience (BAN);
- Cognitive Neurobiology and Clinical Neurophysiology (CN2);
- Molecular Neuroscience (MNS);
- Psychopharmacology and Pathophysiology (PPP).

### *Article 1.3 – Intake dates*

The programme is offered starting in the first semester of the academic year only (1 September). The intake date mentioned in this paragraph ensures a programme that can be expected to be completed within the time set for the programme.

## Chapter 2. Programme objectives and exit qualifications

### *Article 2.1 – Programme objective*

The programme aims at:

- teaching students to conduct empirical research to develop their skills, knowledge and insights into Biomedical Sciences;
- providing a student-oriented education that is of high, internationally recognised quality;
- offering students the opportunity to gain knowledge and insight in an international setting;
- stimulating cooperation in the development of science, based on knowledge in Biomedical Sciences;
- providing a feasible study programme to a heterogeneously composed student population in an inspiring academic learning environment;
- educating students to become research-skilled professionals, that can deal with current scientific knowledge and apply this knowledge independently in new and continuously changing practical situations.

*Article 2.2 – Exit qualifications*

1. The graduate of the Master's programme Biomedical Sciences has *[between brackets the most associated Dublin descriptor(s)]*:
  - the ability to read up on and master current scientific research developments and have knowledge of current scientific developments within relevant biomedical research *[Knowledge and understanding]*;
  - the analysing, problem-solving and synthesising abilities in order to deal with current scientific knowledge in medical biology and/or neurobiology and apply this knowledge in new and continuously changing practical situations, also in broader, multidisciplinary contexts *[Applying knowledge and understanding]*;
  - both a broad basic medical biological and/or neurobiological as well as specialist knowledge of one or more sub-areas of biomedical sciences, as basis or opportunity for originality in developing and/or applying ideas *[Knowledge and understanding]*;
  - the ability to formulate questions on the frontline of scientific research *[Knowledge and understanding, Applying knowledge and understanding, Making judgements]*;
  - the ability to formulate realistic and falsifiable (research) hypothesis, based on incomplete, limited or complex information and translate this into a research proposal *[Knowledge and understanding, Applying of knowledge and understanding, Making judgements]*;
  - the ability to independently set up and conduct biomedical experiments and laboratory measurements contributing to a line of research *[Applying of knowledge and understanding, Learning skills]*;
  - the skills to present research plans and results, orally or written, in English, at various scales and levels of abstraction, and communicate these to specialist and non-specialist audiences *[Communication]*;
  - the skills to analyse and interpret biological patterns and processes in both a qualitative and quantitative sense *[Applying of knowledge and understanding]*;
  - the ability to get acquainted with a field of study in a short period of time by self-study, to form one's own opinion and to write a critical essay in a set period of time *[Making judgements]*;
  - the ability to integrate the many hierarchical levels present in medical biology and/or neurobiology, and understands the interactions between biomedical sciences and other sciences *[Making judgements]*;
  - the ability to fulfil a position in society requiring an academic qualification as an independently operating professional that has a good knowledge base and attitude towards a biomedical approach to relevant societal issues *[Learning skills]*;
  - an attitude that enables critical reflection *[Making judgements, Learning skills]*.
2. In addition to paragraph 1, the student finishing track Biochemistry and Metabolic Diseases has obtained the following track-specific qualifications:
  - the ability to interpret and evaluate current state-of-the-art research in the fields of biochemistry and metabolic diseases and to start an independent research project in this direction;
  - Has the know-how and research experience to act as a self-directed professional in an environment in which understanding of biochemical processes is required.
3. In addition to paragraph 1, the student finishing the track Cell Biology and Advanced Microscopy has obtained the following track-specific qualifications:
  - the ability to interpret and evaluate current state-of-the-art research in the fields of cell biology and microscopy and to start an independent research project in this direction;

- Has the know-how and research experience to act as a self-directed professional in an environment in which understanding of cell biological processes and visualise these processes through microscopy is required.
4. In addition to paragraph 1, the student finishing the track Experimental Internal Medicine has obtained the following track-specific qualifications:
    - the ability to interpret and evaluate current state-of-the-art research in the field of experimental internal medicine and to start an independent research project in this direction;
    - Has the know-how and research experience to act as a self-directed professional in an environment in which understanding of human organ physiology is required.
  5. In addition to paragraph 1, the student finishing the track Infection and Immunity has obtained the following track-specific qualifications:
    - the ability to interpret and evaluate current state-of-the-art research in the fields of infection and immunity and to start an independent research project in this direction;
    - Has the know-how and research experience to act as a self-directed professional in an environment in which understanding of infectious and immunological processes is required.
  6. In addition to paragraph 1, the student finishing the track Oncology has obtained the following track-specific qualifications:
    - the ability to interpret and evaluate current state-of-the-art research in the field of oncology and to start an independent research project in this direction;
    - Has the know-how and research experience to act as a self-directed professional in an environment in which understanding of oncological processes is required.
  7. In addition to paragraph 1, the student finishing the track Basic and Applied Neuroscience has obtained the following track-specific qualifications:
    - a solid knowledge of the basic disciplines that together form Neuroscience with a focus on the cellular and system level: neurophysiology, anatomy, neurogenetics and molecular neuroscience;
    - has learned how to employ his/her fundamental scientific knowledge in translational neuroscience.
  8. In addition to paragraph 1, the student finishing the track Cognitive Neurobiology and Clinical Neurophysiology has obtained the following track-specific qualifications:
    - has obtained a solid knowledge of the basic and advanced disciplines that together form Neuroscience with a focus on the neural mechanisms underlying behavior and cognition;
    - has obtained the ability to interpret and evaluate current state-of-the-art research on clinical neurophysiology, in particular on the field of brain imaging and neurophysiology of neuropsychiatric disorders
  9. In addition to paragraph 1, the student finishing the track Molecular Neuroscience has obtained the following track-specific qualifications:
    - a solid knowledge of the basic and advanced disciplines that together form Neuroscience with a focus on the molecular biology of neuronal systems, midbrain and cortex development and signal transduction;
    - solid understanding of neurodevelopment and neurodevelopmental disorders and a deepened understanding of relevant technologies applied within the field of molecular neuroscience.
  10. In addition to paragraph 1, the student finishing the track Psychopharmacology and Pathophysiology has obtained the following track-specific qualifications:

- a solid knowledge of the basic and advanced disciplines that together form Neuroscience with a focus on putative neuronal substrates, mechanisms of action and deficits underlying the most important and/or common neuropsychiatric and neurological disorders.
  - has performed an internship where he/she obtained a deeper understanding of, and at least some practical experience with, some of the most commonly used research tools, models and approaches and analytical methods to study the potential substrates, behavioral responses and disease mechanisms implicated in these brain disorders.
11. In addition to paragraphs 1 through 10, the graduate who has chosen to do a second track-specific research project has the ability to continue his/her career either as a researcher able to pursue a PhD degree at world's best universities, as a scientist in research institutes worldwide, or as a research-skilled professional in an organisation of government, civil society or business and industry.
  12. In addition to paragraphs 1 through 10, the graduate who has chosen to do a major or minor as mentioned in article 4.4.2, obtains the exit qualifications as listed in the appendix.

### **Chapter 3. Further admission requirements**

#### *Article 3.1 – Admission requirements*

1. A student, who has obtained a Bachelor's degree in Biomedical Sciences or a Bachelor's degree in Psychobiology or equivalent from a Dutch university, may enter the programme.
2. In addition to the requirements referred to in paragraph 1, the student has to comply with the following requirements:
  - a. The Bachelor's Grade Point Average (GPA) is 6.5 or higher (according to the Dutch grading system). The GPA is the average of the Bachelor's course grades weighed by course/study load;
  - b. The student has obtained the Bachelor's degree within 4 years;
  - c. The student must have completed a Bachelor's thesis (experimental work) of at least 15 EC. The subject of the Bachelor's thesis must show affinity with the track.
3. In addition to the requirements referred to in paragraph 1 and 2, the student has to comply with the entry requirements depending on the cluster or track to be followed, which are described in paragraphs 4 through 6.
4. In addition to the requirements stated in paragraph 1 and 2, to enrol in the Medical Biology Cluster advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Molecular and Cellular biology is required.
5. In addition to the requirements stated in paragraph 1 through 4, to enrol in the track Infection and Immunity advanced (2<sup>nd</sup> and/or 3<sup>rd</sup> year BSc level) knowledge in immunology is required.
6. In addition to the requirements stated in paragraph 1 and 2, to enrol in the Neurobiology Cluster advanced (2<sup>nd</sup> and 3<sup>rd</sup> year BSc level) knowledge in Neurobiology is required.
7. In addition to the requirements stated in paragraph 1 through 4, to enrol in the track Basic and Applied Neuroscience advanced (2<sup>nd</sup>/or 3<sup>rd</sup> year BSc level) knowledge in neurophysiology is required.
8. In addition to the requirements stated in paragraph 1 through 4, to enrol in the track Cognitive Neuroscience and Clinical Neurophysiology advanced (2<sup>nd</sup>/or 3<sup>rd</sup> year BSc level) knowledge in neuroscience, cognition or behaviour is required.
9. In addition to the requirements stated in paragraph 1 through 4, to enrol in the track Molecular Neuroscience advanced (2<sup>nd</sup>/or 3<sup>rd</sup> year BSc level) knowledge in molecular biology is required.

10. In addition to the requirements stated in paragraph 1 through 4, to enrol in the track Psychopharmacology and Pathophysiology advanced (2<sup>nd</sup>/or 3<sup>rd</sup> year BSc level) knowledge in neurobiology and brain disorders is required.
11. Without prejudice to the provisions of paragraphs 1 through 6 the Examinations Board may, after asking advice of the programme director, grant admission to the programme when concluding that the previous education of the candidate is equivalent to the Bachelor's degrees referred to in paragraph 1. The Examination Board decides in such cases for every student whether the previous education of the candidate had deficiencies for admission. An interview and test may be part of the admission procedure.
12. When the programme commences, the candidate must have fully completed the Bachelor's programme allowing admission to this Master's programme.

*Article 3.2 – Pre-master's programme*

Not applicable.

*Article 3.3 – Limited programme capacity*

1. The Dean will, if necessary, announce the maximum programme capacity by 1 May prior to the start of the academic year. Up to, but no more than, 240 students are admitted to the Master's Programme Biomedical Sciences as a whole.
2. Selection will be based on the following criteria:
  - a. Study programme;
  - b. GPA score;
  - c. Study progress Bachelor's programme;
  - d. Subject of Bachelor's thesis;
  - e. Motivation.
3. The selection committee consisting of programme director and track coordinator(s) will judge requests for admission on criteria mentioned in article 3.1 and select students on an individual basis and in comparison to the other applicants. The selection committee will advise the Examinations Board which will grant admission to the candidates.

*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 Examinations 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:

The minimum scores required on the TOEFL test are:

- Internet-based test: 92
- Computer-based test: 235
- Paper-based test: 580

Please note that the TOEFL-code for the Faculty of Science of the University of Amsterdam is 8628.

The minimum score IELTS: 6.5, at least 6 on each sub-score (listening/reading/writing/speaking)

A Cambridge Examination Score with a minimum test result of CAE A or B will also be accepted. For the CPE test a minimal score of C is required.

2. Those possessing a Bachelor's degree from a Dutch university satisfy the requirement of sufficient command of the English language.
3. 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 scores specified in paragraph 1, or
  - had previous education in secondary or tertiary education in an English-speaking country as listed on the UvA website, or
  - have an English-language 'international BSc' diploma.

#### *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 most appropriate Examinations Board.
3. The free curriculum is put together by the student from the units of study offered by the University of Amsterdam and must at least have the size, breadth and depth of a regular Master's programme.
4. The following conditions must at least have been met in order to be eligible for the Master's degree:
  - a. At least 60 EC must be obtained from the regular curriculum
  - b. The level of the free curriculum programme must match the objectives and exit qualifications that apply for the programme for which the student is enrolled.

## **Chapter 4. Curriculum structure**

#### *Article 4.1 – Organisation of the programme*

1. The curriculum consists of the following components:
  - a. General compulsory components amounting to 90-108 EC, including research projects and literature review.
  - b. Specialisation-specific compulsory components amounting to 12 EC.
  - c. Practical components
  - d. Elective components amounting to a maximum of 18 EC.

#### *Article 4.2 – Compulsory components*

1. In the UvA Course Catalogue the content, format and examination requirements of each compulsory component of the study programme are described, indicating the preconditions that are required in order to be able to follow the course successfully.
2. For each cluster and track the compulsory components are given below:

<b>Cluster Medical Biology – Compulsory Components</b>						
Component	Code	Study Load	Period	Teaching Method	Test	Track
Advanced immunology	5234ADIM6Y	6 EC	1	L, SS & T	AP, D, OP & WE	I&I
Advanced medical microbiology <sup>1</sup>	5234ADMM6Y	6 EC	2	L, SS & S	OP, E & WE	I&I & BMD
Advanced microscopy	5234ADMI6Y	6 EC	1	T & PT	A & WE	CBAM
Biomedical systems biology	5234BISB6Y	6EC	1	A, L, T, S & SS	A & WE	BMD

Clinical cell biology	5234CLCB6Y	6 EC	2	L & PT	D, E & OP	CBAM & ONC
Experimental oncology	5234EXPO6Y	6 EC	1 & 4	L & T	WE	ONC
Gastrointestinal and cardiovascular disease <sup>1</sup>	5234GACD6Y	6 EC	2	L, PT & SS	WE	EIM & BMD
Literature review	5234PAP12Y	12 EC	1-6	SS & PT	E	All
Molecular biology of the cell	5234MOBC6Y	6 EC	1	L, PT & T	A, P & WE	all
Pathology, neurogenetics and endocrinology	5234PANE6Y	6 EC	1	L, PT & SS	WE	EIM
Research projects <sup>2</sup>	52341RP00Y or 52342RP00Y	72-90 EC	1-6	PT	P, OP, & E	all

Cluster Neurobiology – Compulsory components						
Component	Code	Study Load	Period	Teaching Method	Test	Track
Advanced cognitive neurobiology and clinical neurophysiology	5234ACP12Y	12 EC	1	L, T & PT	A, OP, AP, E & WE	CN2
Advanced neuroscience	5234ADN12Y	12 EC	1	L, T & PT	A, AP, OP, D & WE	BAN
Advanced neuroscience 2		6 EC	2	L, T & PT	A, AP, OP, D & WE	BAN
Advanced psychopathology	5234ADP12Y	12 EC	1	L, S & T	D, E, OP & WE	PPP
Neurodevelopment: specification of neuronal systems	5234NENS6Y	6EC	1	L & PT	A, OP, P & WE	MNS
Neuronal signal transduction pathways	5234NSTP6Y	6 EC	2	L & PT	A, OP, P & WE	MNS
Stem cell fate and cortical genesis	5234SCFC6Y	6 EC	1	L & PT	A, OP, P & WE	MNS
Research projects <sup>2</sup>	5224RP130Y or 5224RP230Y	78-96 EC	1-6	PT	P, OP, & E	all
Literature review	5224LRB12Y	12 EC	1-6	SS & PT	E	all

Abbreviations: A=Assignments; AP= Active Participation; CS=Case Study; D=Discussion; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; S=Seminar SS=Self Study; T=Tutorials; WE=Written Examination (paper or digital)

<sup>1</sup>Constrained list courses: for the track BMD one of the two courses is obligatory.

<sup>2</sup>Two research projects with a minimum of 30 EC and a maximum of 60 EC each.

#### Article 4.3 – Practical exercise

1. In addition to, or instead of, classes in the form of lectures, the elements of the master's examination programme often include a practical component as defined in article 1.2 of part A. The UvA Course Catalogue contains information on the types of classes in each part of the programme. Attendance during practical components is mandatory.
2. When performing practical components, students must adhere to the faculty's safety regulations
3. The student has to submit a proposal for each research project and the literature review for prior approval by the track coordinator and examiner.
4. The research projects and literature review have to be completed and assessed within the period indicated in the approval form. Research projects and the literature review have to be assessed by at least two assessors.
5. In case the student fails to hand in the report/thesis within the period agreed on in the approval form, the examiner is entitled to grade the project lower or assess the component as a 'fail'.
6. Further information on regulations and procedures about Research Projects and Literature Review can be found at the website <http://www.student.uva.nl>



*Article 4.4 – Elective components*

1. Elective courses may be part of the study programme. In the UvA Course Catalogue the content, format and examination requirements of elective courses are described. The student can choose up to 18 EC of the components below without asking prior approval of the Examinations Board.

Component	Code	Study Load	Period	Teaching Method	Test
Advanced immunology	5234ADIM6Y	6 EC	1	L, SS & T	AP, D, OP & WE
Advanced medical microbiology	5234ADMM6Y	6 EC	2	L, SS & S	OP, E & WE
Advanced microscopy	5234ADMI6Y	6 EC	1	T & PT	A & WE
Biomedical systems biology	5234BISB6Y	6 EC	1	A, L, T, S & SS	A & WE
Brain programming; early-life, epigenetics & environment		6 EC	2	L & SS	WE
Clinical cell biology	5234CLCB6Y	6 EC	2	L & PT	D, E & OP
Current Issues in Developmental Biology	5234CIID6Y	6 EC	4 & 5	SS & T	D, E, OP
Experimental oncology	5234EXPO6Y	6 EC	1 & 4	L & T	WE
Gastrointestinal and cardiovascular disease	4235GACD6Y	6 EC	2	L, PT & SS	WE
Laboratory animal course (art. 9)	5234LACA6Y	6 EC	6	L, PT & T	WE
Matlab applied to neuronal data		6 EC	2	L, T & PT	A, OP, AP & WE
Methods and techniques in neurobiology		6 EC	2	L, P, PT & E	E & WE
Microbial Genomics		3 EC	3	L	E
Molecular biology of the cell	5234MOBC6Y	6 EC	1	L, PT & T	A, P & WE
Neural Models, representation and consciousness		6 EC	2	L, T & PT	A, OP, AP & WE
Pathology, neurogenetics and endocrinology	5234PANE6Y	6 EC	1	L, PT & SS	WE

*Abbreviations: A=Assignments; AP=Active Participation; CS=Case Study; D=Discussion; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; S=Seminar SS=Self Study; T=Tutorials; WE=Written Examination*

2. The student has the option to choose between one of three majors or one minor:
  - Major Science in Society;
  - Major Science Communication;
  - Major Teaching;
  - Minor Tesla
  - a. The major Science in Society and the major Science Communication consist of 60 EC. A major has to be combined with a research programme, comprising at least 60 EC (courses, research project and literature review), and with the general compulsory components in order to meet the general requirements of the programme. Further information on these majors can be found on the website of VU University Amsterdam.
  - b. The Major Teaching consists of 60 EC. The major has to be combined with a research programme, comprising at least 60 EC (courses, research project and literature study), and with the general compulsory components in order to meet the general requirements of the programme. Students who have completed an “Educatieve Minor” of 30 EC during their Bachelor’s programme may submit a non-standard study programme for approval to the Examinations Board of the ‘Interfacultaire Lerarenopleidingen’, after discussing this non-standard study programme with the coordinator of the Major Teaching and the coordinator of the Master’s programme. Further information on this major can be found

on the website of the ‘Interfacultaire Lerarenopleidingen (ILO)’ of the University of Amsterdam.

- c. The Minor Tesla consists of 30 EC. It must be combined with a research programme, comprising at least 90 EC (courses, research project and literature study), and with the general compulsory components in order to meet the general requirements of the programme. The minor consist of a course component and a project-based component. This project-based component has to be supervised by a Faculty examiner and is subject to prior approval of the Examinations Board. Because it is a multidisciplinary minor an examiner from the research programme has to be appointed as a second assessor. The learning objectives of this minor can be found as an appendix to Part B of these Regulations. Further information on this minor can be found on the website of the University of Amsterdam.
- d. Students have to go through a separate intake procedure for admission to the major in Science in Society, major in Science Communication, major Teaching and minor Tesla.
- e. Students first have to finish the obligatory research part of the programme (60 EC) before starting one of the majors.
- f. It is not permitted to take the obligatory research part of the programme and the major or minor simultaneously.
- g. The student can participate in the majors without prior approval of the Examinations Board when following the programme as described below:

Cluster Medical Biology	Programme with major	Programme with minor
General compulsory course: <i>Molecular Biology of the Cell</i>	6 EC	6 EC
Track-specific compulsory courses	12 EC	12 EC
Literature Review	12 EC	12 EC
Research Projects	30 EC	60 EC*
Major	60 EC	-
Minor	-	30 EC
Total study load	120 EC	120 EC
Cluster Neurobiology	Programme with major	Programme with minor
Track-specific compulsory courses	12-18 EC	12-18 EC
Elective courses (see paragraph 4.4.1.)	0-6 EC	0-6 EC
Literature Review	12 EC	12 EC
Research Projects	30 EC	60 EC*
Major	60 EC	-
Minor	-	30 EC
Total study load	120 EC	120 EC

\* Two research projects with a minimum of 30 EC each

3. If the student wishes to take a different subject than the units of study listed (see paragraph 4.4.1), advance permission must be obtained in writing from the Examinations Board. These units:
  - a. have to be followed at an accredited university or institute
  - b. have to be relevant to the master chosen
4. In terms of content, elective components, as referred to in paragraph 3, must not show too much similarity to the components of the student’s standard curriculum. The Examinations Board will decide on the acceptable degree of similarity.
5. An elective component, as referred to in paragraph 3, will only be seen as part of the programme when the Examinations Board has given its prior approval to following this elective component.

#### *Article 4.5 – Sequence and admission requirements*

1. Students may participate in examinations (and/or practical exercises) of the units below only if they have passed the examination or examinations for the units mentioned hereinafter:

- The student has to successfully complete 12 EC of compulsory courses prior to approval and starting of the research project.

*Article 4.6 – Participation practical training and tutorials*

Not applicable

*Article 4.7 – Exemption*

1. A maximum of 60 EC of the curriculum can be accumulated through granted exemptions.
2. At the written request of the student, the Examinations Board may exempt the student from taking one or more examination components, if the student:
  - a. Has passed a component of an academic or higher professional education programme that is equivalent in both content and level;
  - b. Has demonstrated through his/her work and/or professional experience that he/she has sufficient knowledge and skills with regard to the relevant component.
3. This exemption does not apply to Research project 2.
4. Exemptions from examinations (or parts thereof), if granted, will be valid for the same period of these examinations.

*Article 4.8 – Validity period for results*

The validity period of passed interim examinations and exemptions from interim examinations is until the end of the academic year (31 Aug).

*Article 4.9 – Degree*

Students who have successfully completed their Master's 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.

*Article 4.10 – Determining results of examinations*

In addition to Article 4.6 of Part A, in case the examination of a component consists of two or more parts, each part has to be graded with a 5.0 or higher to pass the examination.

## **Chapter 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 dean after taking advice from the relevant Board of Studies. A copy of the advice will be sent to the authorised representative advisory body.
2. Any amendment to the Teaching and Examination Regulations requires the approval of the authorised representative advisory body if it concerns components not related to the subject of Section 7.13, paragraph 2 sub a to g and v, and paragraph 4 of the WHW and the requirements for admission to the Master's programme.
3. An amendment to the Teaching and Examination Regulations is only permitted to concern an academic year already in progress if this does not demonstrably damage the interests of students.

*Article 5.2 – Cancelled programme components*

Not applicable

*Article 5.3 - Publication*

1. The dean will ensure the appropriate publication of these Regulations and any amendments to them.

2. The teaching and Examination Regulations will be posted in the faculty website and deemed to be included in de course catalogue.

*Article 5.4 – Effective date*

These Regulations enter into force with effect from 1 September, 2016.

Thus drawn up by the Dean of the Faculty of Science on 18 July 2016.

- Appendix -

**Final attainment levels of the major Science in Society, the major Science Communication and Major Teaching, and learning objectives minor TESLA**

A. Final attainment levels of the major Science in Society

*Dublin descriptor 1: Knowledge and understanding*

The graduate has theoretical and practical knowledge of management, policy analysis and entrepreneurship. The graduate:

1. has insight into the various relevant disciplines in the social and behavioral sciences. More specifically the student acquires insight into:
  - a. important concepts and theories in the field of policy science, management studies, and entrepreneurship;
  - b. the relation of these gamma sciences to the beta sciences;
2. has insight into concepts and the latest theories, research methodologies, analytical models and important research questions related to interdisciplinary research for addressing societal problems;
3. has knowledge of, and insight into, relevant concepts and theories for effective communication and collaboration.

*Dublin descriptor 2: Applying knowledge and understanding*

The graduate is experienced in carrying out interdisciplinary research, in applying techniques specific to the subject area and in applying scientific knowledge to societal problems. The graduate:

1. has the ability to integrate knowledge from the beta and gamma sciences, as well as from science and practice;
2. can apply scientific knowledge to formulate solutions to societal problems and assess them for appropriateness and societal relevance;
3. adopts an appropriate attitude towards the correct and unbiased use and presentation of data.

*Dublin descriptor 3: Making judgments*

The graduate is able to independently and critically judge information. The graduate is able to:

1. independently acquire information in relevant scientific areas through a literature review and by conducting empirical research, as well as evaluate such information critically;
2. select and order information, distinguish essentials from trivialities, and recognize connections;
3. formulate personal learning objectives and critically evaluate own performance, both introspectively and in discussion with others.

*Dublin descriptor 4: Communication*

The graduate is able to transfer knowledge and skills related to his/her subject area to other people and to adequately reply to questions and problems posed within society. The graduate:

1. has acquired skills to report orally and in writing on research results in English;
2. has the ability to communicate research conclusions, and the knowledge and rationale underpinning them, to specialist audiences and non-specialist audiences clearly and unambiguously;
3. can collaborate with researchers from various scientific disciplines;
4. can make essential contributions to scientific discussions about plans, results and consequences of research.

*Dublin descriptor 5: Learning skills*

The graduate has developed learning skills that enable him/her to continue with self-education and development within the subject area. The graduate:

1. has acquired skills to develop a research plan, giving details of the problem statement, objectives, research questions, research approach, research methods, and planning;
2. is familiar with the general scientific journals, such as Nature and Science, and with journals in the specialisation, such as Research Policy, Health Policy, Science, Technology & Human Values, Social Science & Medicine, and International Journal on Technology Management;
3. has the learning skills to allow him/her to continue to study in a manner that may be largely self-directed or autonomous (life-long learning).

B. Final attainment levels of the major Science Communication

The MSc graduate possesses an academic attitude, skills and competences to operate at the interface of science and society aiming to contribute to a fruitful science-society dialogue. This means that Master's graduates have the following focus:

- Understanding the dynamic relationship between science and society;
- Translating information from the natural sciences to society and vice versa;
- Shaping the dialogue between science and society.

#### *Knowledge*

1. Knowledge of and insight into the relevant concepts and theories in the field of science communication, sociology, communication science, philosophy and science & technology studies in relation to the natural sciences;
2. Familiarity with scientific journals in the field of science communication and science & technology studies, as well as familiarity with a variety of popular-scientific media;
3. Insight into the nature and course of interpersonal and group communication processes relevant to the formal and informal dialogue between science and society;
4. Insight into relevant concepts and theories for effective communication and collaboration in relation to diverse science-society interactions;
5. Insight into the popularization of the natural sciences in various media;
6. Insight into the roles and responsibilities of museums in science communication.

#### *Skills*

1. Independently acquire, analyze and evaluate relevant information in a variety of scientific disciplines, by conducting literature study and empirical research;
2. Communicate and collaborate effectively with diverse professionals of scientific and nonscientific disciplines as well as lay citizens;
3. Design and facilitate interactive processes in relation to the science-society dialogue;
4. Translate information from various natural science disciplines into more generally accessible language and formats;
5. Produce popular-scientific media output concerning developments in the natural sciences, aimed at a variety of publics;
6. Contribute to the design of museum exhibitions from the perspective of scientific content management and science communication theory;
7. Make an intrinsic contribution to the societal discussion of developments in science and technology.

#### C. Final attainment levels of the major Teaching

Aan het eind van de opleiding moet de student beschikken over de kwaliteiten ofwel competenties op het gebied van geïntegreerde kennis, inzicht en vaardigheden behorend bij het beroep van leraar in het eerstegraads gebied van het voortgezet onderwijs. De competenties hebben betrekking op de taakgebieden waarvoor wordt opgeleid: onderwijzen, begeleiden, organiseren, ontwikkelen en onderzoeken, en professionaliseren. De competenties zijn de volgende:

##### *Interpersoonlijk competent*

Je bent interpersoonlijk competent als je in het contact met leerlingen (en ook met anderen) kunt leiden, begeleiden, bemiddelen, stimuleren en confronteren. Daarmee bereik je een klimaat met open communicatie en een sfeer van samenwerking en wederzijds vertrouwen.

##### *Pedagogisch competent*

Je bent pedagogisch competent als je benaderingen kunt ontwerpen, uitvoeren en evalueren om het welbevinden van leerlingen te bevorderen, om ontwikkelings- en gedragsproblemen te signaleren en om groepen en individuen te begeleiden. Daarmee bereik je een veilige leeromgeving waarin leerlingen zich kunnen ontwikkelen tot zelfstandige en verantwoordelijke personen.

##### *Vakinhoudelijk en didactisch competent*

Je bent vakinhoudelijk en vakdidactisch competent als je je eigen vak gedegen beheerst, op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten kunt ontwerpen, uitvoeren, begeleiden en evalueren. Daarmee bereik je een krachtige leeromgeving voor leerlingen.

##### *Organisatorisch competent*

Je bent organisatorisch competent als je concrete en functionele procedures en afspraken kunt hanteren en als je de leeromgeving en het leren van leerlingen kunt organiseren en faciliteren en de planning kunt bewaken en bijstellen. Daarmee bereik je een overzichtelijke, ordelijke en taakgerichte leeromgeving.

##### *Competent in het samenwerken met collega's*

Je bent competent in het samenwerken met collega's als je informatie deelt, actief bijdraagt aan overleg en samenwerkingsverbanden en deelneemt aan collegiale consultatie. Daarmee bevordert je een collegiale en harmonieuze werksfeer.

#### *Competent in het samenwerken met de omgeving*

Je bent competent in het samenwerken met de omgeving als je doelmatige contacten onderhoudt met ouders (verzorgers), maar ook met andere mensen en instanties die te maken hebben met de zorg voor en de opleiding van leerlingen. Daarmee bereik je dat de ontwikkeling van leerlingen op een realistische en constructieve manier wordt ondersteund en dat eventuele problemen tijdig worden onderkend en opgelost.

#### *Competent in reflectie en onderzoek ten dienste van ontwikkeling*

Je bent competent in reflectie als je je handelen planmatig kunt bijstellen op grond van ervaringen in beroepssituaties. Daarmee bereik je professioneel leren en ontwikkeling van jezelf. Je bent competent in onderzoek als je de beroepspraktijk in het algemeen en je eigen beroepspraktijk in het bijzonder kunt analyseren met distantie en met onderzoeksmatige deskundigheid. Daarmee bereik je ontwikkeling van je school, van de didactiek van je vak en/of van jezelf.

### D. Learning Objectives Tesla

#### *Main Objective*

To offer ambitious science students with a demonstrated excellent Academic and non-Academic track record the opportunity to engage in a final challenge before finishing their research master programme.

On completing the Tesla Programme the graduate has acquired the qualities to bridge Science, Society and Business within complex research and project challenges related to the own scientific background. The graduate is fit to start a career in demanding environments which require abilities to utilize the disciplinary science background (as described in OER B) in work environments within or outside of science.

These qualities will be developed while 1) working on an interdisciplinary project related to the scientific background of the graduate and 2) undergoing intensive training on a range of skills.

#### *General Objectives*

The graduate has:

1. The analyzing, problem-solving and synthesizing abilities in order to be able to function at the required academic level;
2. The abilities to utilize his or her specific scientific background (as specified in the OER B of the Master's programme in which the student is enrolled) in settings on the interface of science, business and society;
3. A series of practical professional, academic and personal skills which result in the ability to
  - a. independently set up, manage and execute an interdisciplinary projects at the interface of science, business and society. Thereby utilizing scientific knowledge in contributing to a real demand of a knowledge intensive organization;
  - b. get acquainted with a field of study in a short period of time by self-study, to form one's own opinion and to communicate critically and effectively with different audiences on the topic;
  - c. deal with complex challenges and gather and structure information on different levels to enable professional action in different fields and especially the ability to utilize his/her own scientific background in a non-Academic environment;
  - d. Communicate effectively with different stakeholders (e.g. business professionals, policymakers) while using appropriate means (e.g. business plans, policy advice);
  - e. operate effectively in interdisciplinary teams;
4. An attitude that enables the student to critically reflect on his/her own actions.

#### *Professional Knowledge and Insight*

Students should develop professional knowledge and insight regarding bringing "science to value in practice", especially in relation to their scientific background. More specifically, students should:

1. Obtain understanding of different business practices, discourses and settings with regard to bringing scientific knowledge to value;
2. Develop knowledge on scientific developments in relevant disciplines related to dealing with the societal challenges of 21st century;
3. Obtain understanding of different non-profit practices and settings with regard to bringing scientific knowledge to value;
4. Obtain understanding of different governmental practices and settings with regard to bringing scientific knowledge to value;

5. Increase knowledge and insight of possible career paths and possible roles in bringing scientific knowledge to value.

### *Professional Skills*

Students should develop professional business skills to operate effectively in organizations and groups. More specifically, students should:

1. Develop professional cooperation skills.
  - a. Develop presentation skills: the abilities necessary to communicate complex information and deliver professional presentations in different environments;
  - b. Develop feedback skills;
  - c. Develop meeting skills: the abilities necessary to host and guide meetings in which complex information, different opinions and positions need to be structured to effectively facilitate collection work;
  - d. Develop teamwork and leadership skills;
  - e. Develop interview techniques: abilities necessary to successfully obtain information by means of an interview in different settings;
  - f. Develop reasoning and related skills to structure information: develop the abilities to test arguments and bring propositions towards implementation by convincing others;
  - g. Develop communication and influencing skills.
2. Develop project management skills.
  - a. Be able to effectively manage projects on the interface of Science and Practice, including becoming familiar with:
    - Taking Initiative
    - Managing the workflow
    - Preparing a project planning
    - Use of KPIs in Planning
    - Prioritizing & adjustment (time management, etc.)
3. Practical Tools
  - a. Effective use of communication technology
  - b. Budget management
4. Team Management
  - a. Engaging your interdisciplinary team
  - b. Divide and take Responsibility
  - c. Solving problems
  - d. Get acquainted with consultancy analytics and tools to structure complex challenges & information.
    - Utilizing consultancy models to structure complex challenges and transform them into workable solutions;
    - Develop visual thinking skills: the qualities to use visual tools to structure meetings, complex information and group processes.