UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE

TEACHING AND EXAMINATION REGULATIONS
PART B

Academic year 2014-2015
MASTER'S PROGRAMME LIFE SCIENCES

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 lessons or meetings
b. Literature review   A component of 6 EC comprising comprising literature research resulting in a written report
c. Personal Education Plan   An individual study plan for the student's master programme.
d. Research project   Compulsory internship/master thesis of 18-42 EC always resulting in a written report and oral presentation

Article 1.2 – General information master's programme
1. The Master's programme Life Sciences, CROHO 60225, is offered on a full-time basis and the language of instruction is English.
2. The programme has a workload of 120 EC.
3. A component of the programme consist of 6 EC or multiples of this number.
4. Within the programme the following track is offered:
    - Systems Biology and Bioinformatics
5. In the master track students may choose one out of two specialisation variants: Systems Biology or Bioinformatics. Both specialisation variants can be combined provided that both educational programmes of these variants are fully completed.
6. The student may choose one out of three majors or a minor (see article 4.10).
    - Major Science Communication
    - Major Science in Society
    - Major Teaching
    - Minor Tesla
7. Students have to consult the track coordinator for the contents of their individual study programme by filling in their Personal Education Plan (PEP). A standard PEP contains courses offered by the Master's programme (see attachment 1), Master thesis and a literature review. Any change in the standard PEP has to be approved by the track coordinator. An non-standard PEP containing components that are not offered by the Master's programme has to be submitted to the track coordinator for advice and subitted to the Examinations Board for prior approval (see also Article 4.4). Students and track coordinators are advised to consider the requirements for the majors (60 EC) when filling in the PEP (see also Article 4.1). Further information on regulations and procedures about the PEP can be found at the website http://www.student.uva.nl.

Article 1.3 – Enrolment
The programme starts at the beginning of the first semester of the study year (September). This enrolment date ensures a programme that can be expected to be completed within the official period.

Chapter 2.   Aim of the programme and exit qualifications

Article 2.1 – Aim of the programme
The aim of the programme is:
- to teach students to conduct empirical research to develop their skills, knowledge and insights into systems biology and/or bioinformatics;
- to provide a student-oriented education that is of high, internationally recognised quality;

- to offer students the opportunity to gain knowledge and insight in an international setting;
- to stimulate cooperation in the development of science, based on knowledge in systems biology and/or bioinformatics;
- to provide a feasible study programme to a heterogeneously composed student population in an inspiring academic learning environment.

Article 2.2 – Exit qualifications
1. The graduate of the Master's programme Life 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 research areas of systems biology and/or bioinformatics[Knowledge and understanding];
   - the analysing, problem-solving and synthesising abilities in order to deal with current scientific knowledge in systems biology and/or bioinformatics and apply this knowledge in new and continuously changing practical situations, also in broader, multidisciplinary contexts [Applying knowledge and understanding];
   - both a broad basic knowledge of all sub-areas as well as specialist knowledge of one or more sub-areas of systems biology and/or bioinformatics, quantitative life sciences and related fields such as biophysics, biochemistry, mathematic modelling and cell biology [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 implement experiments 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];
   - knowledge and understanding of the iterative process i.e. the relation between model, experiment and reality, of systems biology [Making judgements];
   - the ability to successfully fulfil a position in society requiring an academic qualification as an independently operating professional that has a good knowledge base and attitude towards a biological approach to relevant societal issues [Learning skills];
   - an attitude that enables critical reflection [Making judgements, Learning skills].
2. In addition to paragraphs 1, 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 the best universities, as a scientist in research institutes worldwide, or as a research-skilled professional in organisation of government, civil society or business and industry.
3. In addition to paragraphs 2.2.1 and 2.2.2, the graduate who has choosen to do a major or minor as mentioned in article 1.2.5, obtains the exit qualifications as listed in appendix xxx.

Chapter 3.   Admission to the programme

Article 3.1 – Entry requirements
1. A student, who has obtained a Bachelor's degree in Bio-exact, Biology, Biomedical Sciences, Chemistry, Informatics, Physics or Mathematics, Medical Natural Sciences, Pharmaceutical Sciences or Physics from the University of Amsterdam (UvA) or from the Vrije Universtiteit VU; Amsterdam) may be admitted to the programme.
2. Students possessing a Bachelor's Degree from the disciplines Biomedical Sciences, Biology, Chemistry, Physics, Mathematics, Engineering or Biochemistry from a Dutch University may enrol in the programme provided that the student has obtained sufficient knowledge in the fields of Biology and Mathematics. An intake may be part of the admission procedure.
3. Without prejudice to the provisions of paragraphs 1 and 2 the Examinations Board may, after asking advice of the programme director, decide whether a student whose academic Bachelor does not meet aforementioned entry requirements is eligible for admission. An interview may be part of the intake procedure.
4. When the programme commences, the student must have fully completed the Bachelor's programme allowing admission to this programme.

Article 3.2 – Premaster's programme
Not applicable.

Article 3.3 – Restrictions on the number of students admitted to the Master's programme
Not applicable.

Article 3.4 – Intake dates
A request for admission to the programme must be submitted to the Faculty and the Master's programme 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 Requirements
1. The proficiency requirement in English as the language of instruction can be met by the successful completion of the following examinations or an equivalent:
    *   IELTS: 6.5 at least 6 on each sub-score (listening/reading/writing/speaking)
    *   TOEFL paper based test: 580
    *   TOEFL internet based test: 90
    *   TOEFL computer based test: 235
    *   Cambridge Advanced English: A, B or C
    Please note that the TOEFL-code for the Faculty is 8628.
2. Students 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,
    *   had previous education in secondary or teriary 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 mentioned in article 4.1 of these Regulations.
2. The concrete details of such a curriculum require permission of the relevant Examinations Board.
3. The free curriculum programme must satisfy the requirements of a Master's degree programme and lead to a final degree assessment. This programme must equal or surpass the scope, range and depth of a standard Master's programme.
4. In order to be considered for a diploma of this programme, the following conditions must be met:
   a. At least 60 EC of the programme consists of components of the regular study programme.
   b. The level of the free curriculum programme complies with the aims and exit qualifications of the regular master's programme

Chapter 4.   Content and organisation of the programme

Article 4.1 – Organisation of the programme
1. The curriculum comprises the following:

Specialisation Systems Biology	Regular Curriculum	Major	Minor
Compulsory Courses	30 EC	30 EC	30 EC
Basic Models of Biological Networks	*6 EC*	*6 EC*	*6 EC*
Biosystems Data Analysis	*6 EC*	*6 EC*	*6 EC*
Introduction to Systems Biology	*6 EC*	*6 EC*	*6 EC*
Fundamentals of Bioinformatics	*6 EC*	*6 EC*	*6 EC*
Systems Biology in Practice	*6 EC*	*6 EC*	*6 EC*
Constrained List Courses	6 EC	-	-
Advanced Modelling in Systems Biology	*6 EC*		
Programming in R	*6 EC*		
Elective Courses (see attachment 1)	0-18 EC	-	-
Literature Review[1]	6 EC	6 EC	6 EC
Research Projects[2]	60-78 EC	24 EC	24-54 EC
Major[3]	-	60 EC	-
Minor Tesla[4]	-	-	30
Total Study Load	120 EC	120 EC	120 EC

Specialisation Bioinformatics	Regular Curriculum	Major	Minor
Compulsory Courses	36 EC	30 EC	30 EC
Algorithms in Sequence Analysis	*6 EC*	*6 EC*	*6 EC*
Bioinformatics for Translational Medicine	*6 EC*	*-*	*-*
Biosystems Data Analysis	*6 EC*	*6 EC*	*6 EC*
Introduction to Systems Biology	*6 EC*	*6 EC*	*6 EC*
Fundamentals of Bioinformatics	*6 EC*	*6 EC*	*6 EC*
Structural Bioinformatics	*6 EC*	*6 EC*	*6 EC*
Elective Courses (see attachment 1)	0-18 EC	-	-
Literature Review[1]	6 EC	6 EC	6 EC
Research Projects[2]	60-78 EC	24 EC	54 EC
Major[3]	-	60 EC	-
Minor Tesla[4]	-	-	30 EC

Total Study Load	120 EC	120 EC	120 EC

[1]*Students may choose between Literature Review or Systems Biology Grant Application;* [2]*For the research/regular programme: two research projects with a minimum of 18 EC and a maximum of 42 EC each;* [3]*For the major Science Communication, the major Science in Society and the Major Teaching: one research project.* [4]*For minor Tesla: two research programmes with a minimum of 24 EC and a maximum of 30 EC each. Participation in iGEM will account for a 30 ECTS credits research project. It is not permitted to participate in both iGEM project and minor Tesla during the Master's programme.*

Article 4.2 – Compulsory components

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.

In the specialisation Systems Biology a so-called constrained list of courses is part of the study programme. The student has to choose from this constrained list of courses. In the UvA Course Catalogue the content, format and examination requirements of each restricted component of the study programme are described.

Article 4.3 – Practical components

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.
4. The research projects and the literature review have to be completed and assessed within the period indicated in the approval form signed by the track coordinator. 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. A list courses provided by the master's programme can be found in Appendix A.
2. Courses successfully completed elsewhere or that are not included in attachment 1 during the programme may supplement the student's examination programme, subject to prior permission from the Examinations Board.
   a. The courses have to be followed at an accredited university or institute;
   b. The courses have to be relevant to the master chosen.
3. In terms of content, elective components must not show too much similarity to the components of the student's standard curriculum. The acceptable degree of similarity will be decided by the Examinations Board.
4. An elective component will only be seen as part of the programme if the Examinations Board has given its prior approval.

Article 4.5 – Sequence and admission requirements

1. The student may only participate in interim or other examinations or practical exercises of the course components mentioned below if he/she has passed the interim or other examination components:
2. The student has to successfully complete 18 EC of obligatory courses prior to approval and starting of the research project.
3. In cases where the result of a component has not been determined within the time periods mentioned in Article 4.4 of part A, this component may not be required as prior knowledge for the subsequent component.

Article 4.6 – Participation practical training and tutorials
Not applicable.

Article 4.7 – *Exemption*
1. 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.
2. This exemption does not apply to the Master's thesis.
3. Exemptions from examinations (or parts thereof), if granted, will be valid for the same period of examinations.
4. A maximum of 30 EC in the programme in case of one-year programmes and 60 EC in the programme in the case of two-year programmes can be accumulated through granted exemptions.

Article 4.8 – *Validity period of examinations*
1. If programmes are taken on a full-time basis, the validity period of passed examinations is three years in case of a two-year programme.
2. In individual cases, the Examinations Board is authorised to extend the validity period of successfully completed examinations for a period that it determines or to decide that an additional or replacement examination must take place.
3. The validity period of passed interim examinations is until the end of the academic year (31 Aug).

Article 4.9 – *Degree*
A student who passes the final examination of a programme is awarded a Master of Science degree. This can also be a joint degree. The degree awarded is stated on the diploma.

Article 4.10 – *Majors/Minor*
1. The student can choose between one of the three majors or one minor, provided that they are offered within the specific programme. The majors and minor are:
    a. Major Science in Society;
    b. Major Science Communication;
    c. Major Teaching;
    d. Minor Tesla.
2. Regarding the Major Science in Society:
   The Major in Science in Society consists of 60 EC. It has to be combined with a research programme, comprising at least 60 EC (courses, Master Thesis and literature review), and with the general compulsory components in order to meet the general requirements of the programme. The exit qualifications of this major can be found as an appendix to Part B of

these Regulations. Further information on this major can be found on the website of VU University Amsterdam.

3. Regarding the Major Science Communication:
The Major in Science Communication consists of 60 EC. It has to be combined with a research programme, comprising at least 60 EC (courses, Master Thesis and literature review), and with the general compulsory components in order to meet the general requirements of the programme. The exit qualifications of this major can be found as an appendix to Part B of these Regulations. Further information on this major can be found on the website of the VU University Amsterdam.

4. Regarding the Major Teaching:
The Major Teaching consists of 60 EC. It has to be combined with a research programme, comprising at least 60 EC (courses, Master Thesis 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. The exit qualifications of this major can be found as an appendix to Part B of these Regulations. Further information on this major can be found on the website of the 'Interfacultaire Lerarenopleidingen (ILO)' of the University of Amsterdam.

5. Regarding the Minor Tesla:
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 websites of the Graduate School of Science and the Graduate School of Life and Earth Sciences.

6. Students have to go through a separate intake procedure for admission to the major in the Science in Society, the major in Science Communication, major the Teaching and the minor Tesla.

7. Students first have to finish the obligatory research part of the programme (60 EC) before starting one of the majors or the minor.

8. It is not permitted to take the obligatory research part of the programme and the major or the minor simultaneously.

Article 4.11 – Participation in courses and rules for priority admission
1. Every student must enrol for every course component. To participate in courses, the student must enrol within the period indicated in the UvA Course Catalogue and according to procedures mentioned there. The student may be refused the opportunity to participate if he/she does not enrol or fails to enrol in time.

2. Admission to courses with limited capacity takes place based on previously established and published admission criteria in the UvA Course Catalogue and rules for priority admission, on the understanding that students enrolled in the programme are given priority over others when enrolling for courses in the compulsory part of their programme.

3. Persons who are not enrolled at the University have no right to participate in teaching and examinations.

Article 4.12 – 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.

Article 4.13 – Minimum and maximum number of participants
1. In case there is a maximum capacity for courses, this is indicated in the Course Catalogue.
2. When less than eight participants have registered for a course, the programme director may cancel the course. This has to be announced to the participant at least two weeks prior to the start of this course. When courses are cancelled, registration of the student for another course will be enabled.

Chapter 5. Transitional and final provisions

Article 5.1 – Amendments
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.
4.

Article 5.2 – Cancelled programme components
Not applicable

Article 5.3 - *Publication*
1. The dean shall ensure a fitting publication of part A and B of these Regulations and the rules and guideline referred to in the Act.
2. These regulations can be accessed at the website of the Faculty and the UvA Course Catalogue.

Article 4.2 – *Effective date*

Part B of these Regulations shall come into force as of September 1ˢᵗ, 2014
Adopted by the dean on 30 September 2014

Appendix 1   **List of courses provided by the study programme.**

Course	Code	Study load (EC)	Period	Teaching Method	Type of Test
Advanced modelling in Systems Biology	5304AMIS6Y	6	5	L & T	W
Algorithms in Sequence Analysis	5304AISA6Y	6	2	L & T	W
Basic models of Biological Networks	5304BMBN6Y	6	4	L & T	W
Bioinformatics for Translational Medicine	5304BFTM6Y	6	5	L & T	W
Biosystems Data Analysis	5304BIDA6Y	6	3	L & T	W
Fundamentals of Bioinformatics	53048FUB6Y	6	1	L & T	W & O
Introduction to Systems Biology	5304ITSB6Y	6	1	L & T	W & O
Molecular Microbial Physiology	5304MRMP6Y	6	6	L & PT	W
Molecular Structure in Biology	5304MSIB6Y	6	1	L, PT & T	W
Programming in R	5304PRIR6Y	6	5		W
Structural Bioinformatics	5304STBI6Y	6	4	L & T	W & O
Synthetic Biology and Biomedicine	5304SYBB6Y	6	4	L, PT & T	W & O
Systems Biology Grant Application	53048SBG6Y	6	6	L & PT	W & O
Systems Biology in Practice	5304SBIP6Y	6	2	L & PT	W & O

Lectures = L; Practical Training = PT; Tutorials = T; Written Examination = W and Oral Examination = O

Appendix B   **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 behavioural 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 communciaction 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 judgements
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 meansthat 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 exhibitionsfrom 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 bevorder 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.

<u>D. Learning Objectives Tesla</u>

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 21th 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