

UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE

**TEACHING AND EXAMINATION REGULATIONS
PART B**

Academic year 2017-2018

MASTER'S PROGRAMME LIFE SCIENCES

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Chapter 1. General Provisions

Article 1.1 – Definitions

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

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| a. Course | Education imparted in a series of lectures or meetings |
| b. Literature Review | A component of 6 EC 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 in collaboration with the Vrije Universiteit (VU, Amsterdam) and the language of instruction is English.
2. The programme has a workload of 120 EC.
3. Within the programme the following track is offered: Systems Biology and Bioinformatics.
4. 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 compulsory educational programmes of these variants are fully completed.

Article 1.3 – Enrolment

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 practical skills, knowledge and insights into bioinformatics and systems biology;
- enabling students to perform research in various application fields of bioinformatics and systems biology;
- teaching key techniques and formalisms, while providing sufficient options for differentiation;
- teaching student the technical skills of programming and modelling, all applied to problems in molecular biology and genomics;
- providing a student-oriented education that is of high, internationally recognised quality;
- providing a feasible study programme to a heterogeneously composed student population in an inspiring academic learning environment of two universities.

Article 2.2 – Exit qualifications

1. The graduate of the Master's programme Life Sciences [between brackets the most associated Dublin descriptor(s)]:
 - has both a solid academic basic as well as specialist knowledge and understanding in the field of bioinformatics and systems biology and in one or more sub-areas of bioinformatics and systems biology, and related fields such as biophysics, biochemistry, mathematic modelling and cell biology [Knowledge and understanding];
 - has acquired profound knowledge, insight and practical experience in at least one specialist area of bioinformatics or systems biology [Knowledge and understanding, Applying knowledge and understanding];
 - has knowledge and understanding of the iterative process i.e. the relation between model, experiment and reality, of systems biology [Knowledge and understanding, Making judgements];
 - has the ability to access and use international professional literature and master current scientific research developments and has knowledge of current scientific developments within relevant subdomains of bioinformatics and systems biology [Knowledge and understanding];
 - has the ability to get acquainted with a field of study and acquire specialist knowledge, understanding and skills in a short period of time [Making judgements];
 - has insight of the applications of bioinformatics and systems biology in general and specific specialisations in particular and is able to apply this knowledge in new and continuously changing practical situations, also in broader, multidisciplinary contexts [Applying knowledge and understanding];
 - is capable of writing research or project proposals on the basis of realistic problem descriptions or to write a critical essay based on literature within a specialised field of study and one's opinion [Knowledge and understanding, Applying knowledge and understanding, Making judgements];
 - has the ability to independently set up and implement experiments contributing to a line of research [Applying of knowledge and understanding, Learning skills];
 - has the skills to analyse and interpret biological patterns and processes in both a qualitative and quantitative sense and make inferences based on these scientific results [Applying knowledge and understanding];
 - has the skills to present research projects and results both orally and written in English, at various scales and levels of abstraction, and communicate these to specialist and non-specialist audiences [Communication];
 - has an attitude that enables critical reflection and discussion [Making judgements, Learning skills];
 - has 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];
 - 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 organisations of government, civil society or business and industry [Applying knowledge and understanding, Making judgements].
2. In addition to paragraphs 1, the graduate who has chosen to do the minor Tesla as mentioned in article 4.4, obtains the exit qualifications as listed in the appendix.

Chapter 3. Further admission requirements

Article 3.1 – Entry requirements

1. A student, who has obtained a Bachelor's degree in Biology, Biomedical Sciences, (Bio/Medicinal)Chemistry, Computer Sciences, Engineering, Health Sciences, (Bio)Informatics, Mathematics, Medical (Natural) Sciences, Medicine, Pharmaceutical Sciences or Physics from the University of Amsterdam (UvA) or from the Vrije Universiteit VU; Amsterdam) may enter the programme.
2. Candidates possessing an equivalent (as compared to the programmes mentioned in paragraph 1) BSc degree from a Dutch University may enter 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 Admissions Board may, after asking advice of the programme director, decide whether a candidate 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 candidate must have fully completed the Bachelor's programme allowing admission to this Master's programme.

Article 3.2 – Premaster's programme

Not applicable.

Article 3.3 – Limited programme capacity

Not applicable.

Article 3.4 – Intake dates

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 Admissions Board may consider a request submitted after this closing date.

Article 3.5 – English Language Requirements 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 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 programme is put together by the students from 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 programme,
 - b. The level of the free curriculum programme must match the objective 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 84, including Research Projects
 - b. Specialisation-specific compulsory components amounting to 18 EC
 - c. Practical components
 - d. Elective components amounting to a maximum of 18 EC

Article 4.2 – Compulsory components

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

3. For each specialisation the compulsory components are given below:

Specialisation Bioinformatics – Compulsory components						
Component	Code	Study Load	Period	Teaching Method	Test	Level
Algorithms in Sequence Analysis	5304AISA6Y (UvA) X_405050 (VU)	6 EC	2	L & PT	P & WE/OE	400
Bioinformatics for Translational Medicine	5304BFTM6Y (UvA) X_405092 (VU)	6 EC	5	L & PT	P, E & WE/OE	400
Biosystems Data Analysis	5304BIDA6Y (UvA) X-437001 (VU)	6 EC	3	SS, L & PT	P, E, OP & WE	-
Fundamentals of Bioinformatics	53048FUB6Y (UvA) X_405052 (VU)	6 EC	1	L & PT	A & WE/OE	400
Introduction to Systems Biology	5304TTSB6Y (UvA) X_428565 (VU)	6 EC	1	L & PT	A	400
Structural Bioinformatics	5304STBI6Y (UvA) X_405019	6 EC	4	L & PT	??	??
Research Projects ¹	5304RP00Y (UvA) X_405027/032 (VU)	60 EC	1-6	PT	P, OP & E	500/600
Literature Review or Seminar Series and Writing a Research Proposal ²	5304TSBB6Yor 53048SBG6Y (UvA) X_400594 (VU)	6 EC	1-6	L	E or E & OP	500

Specialisation Systems Biology – Compulsory components						
Component	Code	Study Load	Period	Teaching Method	Test	Level
Basic Models of Biological Networks	5304BMBN6Y (UvA) X_418154 (VU)	6 EC	2	L, SS, PT & T	A & WE	400
Biosystems Data Analysis	5304BIDA6Y (UvA) X-437001 (VU)	6 EC	3	SS, L & PT	P, E, OP & WE	-
Introduction to Systems Biology	5304TTSB6Y (UvA) X_428565 (VU)	6 EC	1	L & PT	A	400
Fundamentals of Bioinformatics	53048FUB6Y (UvA) X_405052 (VU)	6 EC	1	L & PT	A & WE/OE	400
Systems Biology in Practice	5304SBIP6Y (UvA) X_418157 (VU)	6 EC	4	L & PT	P, OP & E	-
Research Projects ¹	5304RP00Y (UvA) X_405027/032 (VU)	60 EC	1-6	PT	P, OP & E	500/600
Literature Review or Seminar Series and Writing a Research Proposal ²	5304TSBB6Yor 53048SBG6Y (UvA) X_400594 (VU)	6 EC	1-6	L	E or E & OP	500
Constrained List Courses (6 EC compulsory)						
Advanced Modelling in Systems Biology	5304AMIS6Y (UvA) X_418155 (VU)	6 EC	5	L, SS, PT & T	A & WE	500
Statistics with R	53048STI6Y (UvA) X_418156 (VU)	6 EC	5	L, SS, PT & T	A	400

Abbreviations: A=Assignments; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; SS=Self Study; T=Tutorials; WE=Written Examination

¹Two Research Projects with a minimum of 18 EC and a maximum of 42 EC each. Participation in iGEM (<http://igem.org>) will account for a 36 ECTS credits Research Project provided that requirements for a Research Project are full-filled. ²Students may choose between Literature Review or Seminar Series and Writing a Research Proposal;

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 the 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 must choose 18 EC of the components below without asking prior approval of the Examinations Board.

Specialisation Bioinformatics – Elective Courses						
Component	Code	Study Load	Period	Teaching Method	Test	Level
Advanced Modelling in Systems Biology	5304AMIS6Y (UvA) X_418155 (VU)	6 EC	6	L, SS, PT & T	A & WE	500
Basic Models of Biological Networks	5304BMBN6Y (UvA) X_418154 (VU)	6 EC	4	L, SS, PT & T	A & WE	400
Data Mining Techniques	52848DAM6Y (UvA) X_400108 (VU)	6 EC	5	L, PT	A	500
Machine Learning	X_400154 (VU)	6 EC	4	L, PT	WE, E	300
Statistics with R	53048STI6Y (UvA) X_418156 (VU)	6 EC	5	L, SS, PT & T	A	400
Systems Biology in Practice	5304SBIP6Y (UvA) X_418157 (VU)	6 EC	4	L & PT	P, OP & E	-

Specialisation Systems Biology – Elective Courses						
Component	Code	Study Load	Period	Teaching Method	Test	Level
Advanced Modelling in Systems Biology	5304AMIS6Y (UvA) X_418155 (VU)	6 EC	5	L, SS, PT & T	A & WE	500
Algorithms in Sequence Analysis	5304AISA6Y (UvA) X_405050 (VU)	6 EC	2	L & PT	P & WE/OE	400
Bioinformatics for Translational Medicine	5304BFTM6Y (UvA) X_405092 (VU)	6 EC	5	L & PT	P, E & WE/OE	400
Data Mining Techniques	52848DAM6Y (UvA) X_400108 (VU)	6 EC	5	L, PT	A	500
Machine Learning	X_400154 (VU)	6 EC	4	L, PT	WE, E	300
Statistics with R	53048STI6Y (UvA) X_418156 (VU)	6 EC	5	L, SS, PT & T	A	400
Structural Bioinformatics	5304STBI6Y (UvA) X_405019	6 EC	4	L & PT	??	??

Abbreviations: A=Assignments; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; SS=Self Study; T=Tutorials; WE=Written Examination

2. The student can choose to participate in the minor Tesla.
 - a. The Minor Tesla consists of 30 EC. The minor must be combined with a research programme, comprising at least 90 EC of the general compulsory components (courses, research project and literature study) 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. Further information on this minor can be found at <http://www.student.uva.nl>
 - b. Students have to go through a separate intake procedure for admission to the minor Tesla.
 - c. Students first have to finish at least 60 EC of the compulsory part of the programme (60 EC) before starting the minor.
 - d. It is not permitted to take the obligatory research part of the programme and the minor simultaneously.
 - e. The student can participate in the minor Tesla without prior approval of the Examinations Board when following the programme as described below

Specialisation Bioinformatics	Programme with Minor Tesla
Compulsory Courses	36 EC
<i>Algorithms in Sequence Analysis</i>	6 EC
<i>Bioinformatics for Translational Medicine</i>	6 EC
<i>Biosystems Data Analysis</i>	6 EC
<i>Introduction to Systems Biology</i>	6 EC
<i>Fundamentals of Bioinformatics</i>	6 EC
<i>Structural Bioinformatics</i>	6 EC
Elective courses	18 EC
Research Project ¹	30 EC
Literature Review or Seminar Series and Writing a Research Proposal	6 EC
Components Minor Tesla	30 EC
Total Study Load	120 EC

Specialisation Systems Biology	Programme with Minor Tesla
Compulsory Courses	36 EC
<i>Basic Models of Biological Networks</i>	6 EC
<i>Biosystems Data Analysis</i>	6 EC
<i>Introduction to Systems Biology</i>	6 EC
<i>Fundamentals of Bioinformatics</i>	6 EC
<i>Systems Biology in Practice</i>	6 EC
<i>Advanced Modelling in Systems Biology or Statistics with R</i>	6 EC
Elective courses	18 EC
Research Project ¹	30 EC
Literature Review or Seminar Series and Writing a Research Proposal	6 EC
Components Minor Tesla	30 EC
Total Study Load	120 EC

¹One Research Project of 30 ECTS. Participation in iGEM is not permitted within the minor Tesla during the Master's programme.

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.

Article 4.5 – Sequence and admission requirements

1. Students may participate in examinations (and/or practical exercises) of the units below if they have passed the examination or examinations for the units mentioned hereinafter:
 - a. The student has to successfully complete 18 EC of compulsory courses prior to approval and starting of the Research Project.

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. 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 the Research Project 2.
4. Exemptions from examinations (or parts thereof), if granted, will be valid for the same period of examinations.

Article 4.8 – Validity period for results

The validity period of passed interim examinations and exemptions 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

1. Any amendment to the Teaching and Examination Regulations will be adopted by the dean after taking advice, and if necessary approval by 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 as stated in the WHW.
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 the rules 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.

Thus drawn up by the Dean of the Faculty of Science on 30 August 2017.