



Faculty of Science

Teaching and Examination Regulations

MASTER's Degree Programme

B. Programme-specific section

M Neurosciences (60806)

Academic year 2017-2018

Section B: Programme-specific section

- 1. General provisions**
 - Article 1.1 Degree programme information
 - Article 1.2 Intake dates

- 2. Programme objectives and exit qualifications**
 - Article 2.1 Programme objective
 - Article 2.2 Exit qualifications

- 3. Further admission requirements**
 - Article 3.1 Admission requirements
 - Article 3.2 Pre-Master's programme
 - Article 3.3 Limited programme capacity [*or: not applicable (n.a.)*]
 - Article 3.4 Final deadline for registration
 - Article 3.5 Dutch language requirement for Dutch-language Master's programmes
 - or*
 - Article 3.5 English language requirement for English-language Master's programmes
 - Article 3.6 Free curriculum

- 4. Curriculum structure**
 - Article 4.1 Composition of programme
 - Article 4.2 Compulsory units of study
 - Article 4.3 Practical training [*or: n.a.*]
 - Article 4.4 Electives [*or n.a.*]
 - Article 4.5 Sequence of examinations
 - Article 4.6 Participation in practical training and tutorials [*of: n.a.*]
 - Article 4.7 Maximum exemption [*or: n.a.*]
 - Article 4.8 Validity period for results
 - Article 4.9 Degree

- 5. Transitional and final provisions**
 - Article 5.1 Amendments and periodic review
 - Article 5.2 Transitional provisions
 - Article 5.3 Publication
 - Article 5.4 Effective date

Section B: Programme-specific section

1. General provisions

Article 1.1 Degree programme information

1. The research master program Neurosciences CROHO number 60806 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 unit of study comprises 6 EC or a multiple thereof.
4. The following units of study are different in size:
3 ECTS: AM_1123 Writing a research proposal,
3 ECTS: AM_1018 Neurophilosophy and ethics,
8 ECTS: AM_471110 Literature Survey
27 ECTS: AM_471108 Internship Neurosciences I
25 ECTS: AM_471108 Internship Neurosciences II

Article 1.2 Intake dates

The programme starts in the first semester of the academic year (4 September). The intake date(s) mentioned in this paragraph ensure(s) that the program can be completed within the nominal study duration set for the program.

2. Programme objectives and exit qualifications

Article 2.1 Programme objective

The programme aims to train students to become neuroscientists that are able to independently conduct neuroscientific research. Students will acquire the required knowledge, insight and skills related to neurosciences, as well as the academic skills including a critical disposition, insight in societal and ethical aspects of neuroscience research.

Article 2.2 Exit qualifications

Graduates of the research master of Neurosciences have an academic attitude and are academically skilled researchers in the field of Neurosciences.

Knowledge and Understanding

Master's graduates

1. have an overview of the conceptual framework in the field of neuroscience, including the state of the art in terms of new theories and current research challenges;
2. *appreciate* the position of the neurosciences within biology, biomedical sciences, medicine and psychology;
3. *appreciate* the scientific and social relevance of the neurosciences
4. *understand* that science is a team effort

Applying Knowledge and Understanding

Master's graduates have demonstrated the ability to:

5. *acquire, structure and integrate* information in the field of neuroscience to generate novel hypotheses that further the field;
6. *conceive, design, implement and adapt* neuro-scientific experiments;
7. *produce* written reports and verbal research presentations in English;

Making judgments

Master's graduates have demonstrated the ability to:

8. critically *analyse* and *interpret* neuro-scientific research, in relation to design, performance, and results obtained;
9. *evaluate* their performance as neuro- scientific researcher, both introspectively and in conversation with others;
10. *think* in multidisciplinary terms;
11. *reflect* on ethical aspects of neuroscience research, and include these in decision-making processes;

Learning focus

Master's graduates have the learning skills:

12. to further study in a largely self-directed or autonomous manner;
13. to *collaborate* with researchers from other disciplines;
14. to *pursue* a career as independent neuroscience researcher either in- or out-side of academia;

Communication

Master's graduates have demonstrated the ability to:

15. *contribute* to scientific discussions;
16. *discuss* neuroscience related topics with peers, the larger scholarly community and with society as a whole;
17. *efficiently communicate* in interdisciplinary research teams.

3. Further admission requirements

Article 3.1 Admission requirements

Research master

1. Admission to the Research Master program of Neurosciences is possible for an individual who can demonstrate that he/she has the following knowledge, understanding and skills at the Bachelor's degree level, obtained at an institution of academic higher education:
 - a) knowledge: knowledge of basic neurobiological principles, statistics
 - b) understanding: understanding of these principles
 - c) skills: well-developed academic skills including writing and presentation skills, the ability to evaluate and apply knowledge, and engage in critical thinking.
2. The Admissions Board will determine whether the applicant meets the admission requirements.
3. In addition to the requirements referred to in the first paragraph, the Board will also assess requests for admission according to the following criteria:
 - d) talent and motivation; applicants should have an active interest in neuroscience research and have clear ideas about their scientific careers.

In addition, the applicant should have obtained high grades and have performed at above average level:

 1. minimum undergraduate grade-point average of 7.5 (or international equivalent, e.g. a B+, or a GPA of 3.4).
 2. A minimum grade of 8 (or international equivalent, e.g. an A, or a GPA of 4.0), for both the Bachelor's thesis and neuroscience-related courses.
4. A student can only enter the research master program of Neurosciences after successful completion of a bachelor program.

Article 3.2 Pre-Master's programme

Not applicable

Article 3.3 Limited programme capacity

1. The program accepts a maximum of 40 students per year.
2. Candidates will be selected in the following way:
 - The applicant provides his/her CV, grade list, BSc diploma (if already obtained), a motivation letter, two reference letters, and the results of an English language proficiency test. Once the applicant has provided all necessary documents, the admissions board carefully reads and evaluates all information provided by the

applicant to determine whether the candidate meets the admission requirements (article 3.1). When the information in these documents indicates that the applicant meets the admission requirements, the applicant will be invited for an interview to assess the applicant's motivation.

- The final decision on admission or rejection to the Research Master program of Neurosciences, will be based on an evaluation of the applicant's motivation revealed during this interview. In all cases, decisions will be made within 6 weeks after application.
- The board holds the right to deviate from the specific admission requirements when exceptional circumstances apply. If the applicant believes that his/her case is subject to such exceptional circumstances, this should be explained in the letter of application.
- The admission criteria are published on the VU website:
<http://www.vu.nl/nl/opleidingen/masteropleidingen/opleidingenoverzicht/m-o/neurosciences/admission-and-application/index.aspx>

Article 3.4 Final deadline for registration

A candidate must submit a request to be admitted to the programme through Studielink before 1 June 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:
 - IELTS: 6.5 5 - *please note that candidates must take the **Academic** test and not the General test!*

Below you will find the minimum English test scores for the Neurosciences programme:

IELTS (academic):

- Minimum Overall Band Score 6.5
- Minimum Sub-score Listening 6.0
- Minimum Sub-score Reading 6.0
- Minimum Sub-score Writing 6.5
- Minimum Sub-score Speaking 6.0

TOEFL:

- Paper-based test; 580
- Minimum Sub-score Structure/Written Expression: 59

Internet-based test; 92

- Minimum Sub-score Reading 18
- Minimum Sub-score Listening 19
- Minimum Sub-score Speaking 19
- Minimum Sub-score Writing 24

Cambridge English:

- Cambridge Advanced Exam A, B, C
- Cambridge Proficiency Exam A, B, C

2. Exemption is granted from the examination in English referred to in the first paragraph to students who, within two years of the start of the programme:
 - met the requirements of the VU test in English language proficiency TOEFL ITP, with at least the scores specified in paragraph 1, or
 - had previous education in secondary or tertiary education in an English-speaking country as listed on the VU website, or
 - have an English-language 'international baccalaureate' diploma
 - have obtained a BSc degree with a curriculum entirely taught in English

Article 3.6 Free curriculum

1. Subject to certain conditions, the student has the option to obtain 6 EC outside the regular curriculum of his/her own choice.
2. The details of such a curriculum must be approved beforehand by the appropriate Examinations Board.
3. The free choice curriculum (6 EC) is chosen by the student from the units of study offered by a Dutch university offering a Masters Neurosciences or Psychology program and must at least have the quality and level of the regular curriculum.
4. The following conditions must have been met in order to be eligible for the Master's degree:
 - a. at least 114 EC must be obtained from the regular curriculum,
 - b. the level of the programme must match the objectives and exit qualifications that apply for the programme for which the student is enrolled.

4. Curriculum structure**Article 4.1 Composition of programme**

1. The programme consists of the following components:
 - a. compulsory units of study: From molecule to mind (6 EC), Data Analysis and Visualisation (6 EC), Clinical neurosciences (6 EC), Behavioural genetics (6 EC), Neurogenomics (6 ECTS), Writing a research proposal (3 EC), Neurophilosophy and ethics (3 EC), Literature survey (8 EC);
 - b. practical exercise Internship 1 (27 EC), Internship 2 (25 EC);
 - c. electives at least 3 of the 4 electives in the first semester of year 2 (6 EC per course, 18 EC minimum) (for overview see article 4.2)

Article 4.2 Compulsory units of study

The compulsory units of study are:

Year 1

Course Code	Name of course component	EC	Period	Level
AM_1005	Clinical Neurosciences	6	2	400
AM_1006	Behavioral Genetics	6	2	400
AM_1007	Neurogenomics	6	3	500
AM_1123	Writing a Research Proposal	3	2	
AM_1190	From Molecule to Mind (6 EC)	6	1	400
AM_1191	Data Analysis and Visualisation	6	1	400
AM_471108	Internship Neurosciences I	27	Ac. Year	600

Year 2

Course Code	Name of course component	EC	Period	Level
AM_1018	Neurophilosophy and Ethics	3	3	500
AM_471109	Internship Neurosciences II	25	Ac. Year	600
AM_471110	Literature Survey Neurosciences	8	Ac. Year	600

Electives at least 3 of the 4 electives in the first semester of year 2 (6 EC per course, 18 EC minimum)

Course Code	Name of course component	EC	Period	Level
AM_NEURO-CTN	Track Clinical and Translational Neurosciences Constrained choice: 24 ec required			
AM_1003	Rhythms of the brain	6	2	600
AM_1014	Advanced Clinical Neurosciences	6	1	600
AM_1195	Neuropsychiatric Genetics	6	2	500
AM_470700	Exp. & Clinical Neuroendocrinology	6	2	500
AM_470715	Functional brain imaging	6	1	500
AM_470718	Neuro- and psychopharmacology	6	2	600
AM_470736	Psychophysiology	6	1	400

AM_NEURO-FN	Track Fundamental Neurosciences: compulsory modules			
AM_470717	Advanced Neurogenomics	6	1	600
AM_470726	Live cell imaging	6	1	500
	Constrained choice: 6 EC required			
AM_1001	Neuronal Networks in Vivo	6	2	600
AM_470712	System neurosciences	6	2	500
	Constrained choice: 6 EC required			
AM_470713	Developmental neurobiology	6	2	500
AM_470728	Behavioral Neurosciences	6	2	500

AM_NEURO-GN	Track Genetics in Neurosciences: compulsory modules			
AM_1008	Genomic Data Analysis	6	2	500
AM_1040	Statistical Genetics for Gene Finding	6	1	500
AM_1195	Neuropsychiatric Genetics	6	2	500
AM_470733	Complex Trait Genetics	6	1	500

Article 4.3 Practical exercise

Not applicable

Article 4.4 Electives

Not applicable

Article 4.5 Sequence of examinations

Students may participate in examinations for the units below only if they have passed the examination or examinations for the units mentioned:

Advanced Neurogenomics after passing Neurogenomics

Advanced Clinical Neurosciences after passing Clinical Neurosciences

Article 4.6 Participation in practical exercise and tutorials

1. In the case of a practical training, the student must attend at least 100 % of the practical sessions. Should the student attend less than 100 %, he/she must repeat the practical training, or the examiner may have one or more supplementary assignments issued.
2. In the case of tutorials with assignments, the student must attend at least 100 % of the tutorials. Should the student attend less than 100 %, he/she must repeat the study group, or the Examinations Board may have one or more supplementary assignments issued.
3. In exceptional circumstances, the Examinations Board may, at the request of the student, permit an exemption from this requirement if, in the opinion of the Board, the assessment of the intended skills is also possible with a lesser percentage of participation, with or without the imposition of supplementary requirements.

Article 4.7 Maximum exemption

A maximum of 27 EC of the curriculum can be accumulated through granted exemptions.

Exemption can be granted for the courses

- writing a research proposal (3 ECTS), in case a course with similar objectives, and at least of equal workload (ECTS), was part of the BSc curriculum.
- In case a student was previously enrolled in the VU MSc Biomedical Sciences curriculum, but is now enrolled in MSc Neurosciences, exemption can be granted for the courses listed below, to a maximum of 24 ECTS:
 - Rhythms of the brain, AM_1003, 6 EC
 - Experimental and clinical neuroendocrinology, AM_470700, 6 EC
 - Functional Brain Imaging, AM_470715, 6 EC
 - Psychophysiology, AM_470736, 6 EC
 - Complex Trait Genetics, AM_470733, 6 EC

- Genomic Data Analysis, AM_1008, 6 EC
- Statistical Genetics for Gene Finding, AM_1040, 6 EC

Article 4.8 Validity period for results

The validity period for results is 6 years.

Article 4.9 Degree

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

Track name will be stated on the diploma, either 'Track Fundamental Neurosciences', or 'Track Clinical Neurosciences' or 'Track Genetics in Neurosciences' if one has successfully completed at least 24 EC of the specific track; otherwise no track name will be stated on the diploma.

5. Transitional and final provisions

Article 5.1 Amendments and periodic review

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

Article 5.2 Transitional provisions

Notwithstanding the current Teaching and Examination Regulations, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:

1. Compulsory components that have been replaced

The compulsory components below have been replaced in academic year 2014-2015:

New component	Former component
AM_1123 Writing a Research Proposal (3 EC)	AM_471023 Scientific Writing in English (3 EC)

From 1 September 2014 students have to pass the new course unless they previously passed the old course.

The compulsory components below have been replaced in academic year 2011-2012:

New component	Former component
AM_1004 Molecule to Mind (12 EC)	470701 Principles of Neuroscience (6 EC) <i>and</i> 815054 Quantitative Methods in Neuroscience and Genetics (5 EC)

From 1 September 2011 students have to pass the new course unless they passed the old course.

The compulsory components below have been replaced in academic year 2016-2017:

New component	Former component
AM_1190 Molecule to Mind (6 EC) and AM_1191 Data Analysis and Visualisation (6 EC)	AM_1004 Molecule to Mind (12 EC)

From 1 September 2016 students have to pass the new course unless they passed the old course.

2. Compulsory components that do not apply for students that started before 2012-2013

For students who started their program before academic year 2012-2013 the courses below are not compulsory:

- AM_1018 Neurophilosophy and Ethics (3 EC)

3. **Elective components that have been removed from the curriculum**

The courses below are no longer available in the program but are still elective components for students who started their program before academic year 2016-2017 and have passed the courses' examinations.

Courses ended in academic year 2014-2015

AM_471018 Neurobiology of Animal Behaviour

AM_1009 Synaptic and Cellular Neurophysiology

The courses below are no longer available in the program but are still elective components for students who started their program before academic year 2011-2012 and have passed the courses' examinations.

Courses ended in academic year 2010-2011:

- 470725 Bioinformatics (6 EC)
- 470735 Cognition and Attention (5 EC)
- 470711 Emotional and Cognitive Neuroscience (4 EC)
- 470714 Experimental Neurophysiology (6 EC)
- 470727 In Vivo Neurophysiology (6 EC)
- 470724 Neuroinformatics (6 EC)

4. **Total of 120 EC**

The final examination program should always total at least 120 EC.

Article 5.3 Publication

1. The faculty board will ensure the appropriate publication of these Regulations and any amendments to them.
2. The Teaching and Examination Regulations will be posted on VUnet.

Article 5.4 Effective date

These Regulations enter into force with effect from 1 September 2017.

Advice from Programme Committee, on 6 April 2017.

Approved by authorized representative advisory body, on 6 July 2017

Adopted by the Faculty Board, on 21 July 2017

Appendix I

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

Section A

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

Section B

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