

Teaching and Examination Regulations 2020-2021 Master's degree programmes Biomedical Sciences and Medical Pharmaceutical Sciences

Appendix I Learning outcomes of the degree programme (art. 1.3)

Graduates Biomedical Sciences (BMS) are able to:

1. Explain in detail the major underlying principles of biomedical sciences (knowledge).
2. Manage and interpret (big) data and demonstrate proficiency in computing technology for biomedical sciences (application).
3. Formulate solutions to biomedical issues both theoretical, technical and in a practical laboratory setting (knowledge and application).
4. Critically evaluate scientific biomedical data and offer sound arguments to justify a position (judgement and communication).
5. Effectively communicate scientific concepts to specialists as well as to a lay audience through oral and written presentations (communication).
6. Critically appraise the role of 'biomedical sciences' and/or in the dedicated specialisms 'Biology of Ageing' or 'Biology of Cancer and Immune System', 'Biology of Food and Nutrition' and 'Neuroscience' research aiming on supporting healthy ageing (knowledge and judgement).
7. Work independently as well as in a team to solve scientific and societal challenges related to biomedical sciences (communication and application).
8. Independently draw conclusion on ethical issues in biomedicine and apply this to scientific or public discussions about the impact of such science on society (judgement).
9. Evaluate and reflect on personal capabilities and motivation for a (international) scientific, policy or business career (lifelong learning skills).
10. Develop an international perspective on up-to-date scientific advances and on-going biological science-related issues (knowledge and lifelong learning skills).

A graduate Medical Pharmaceutical Sciences (MPS) is able to:

- 1 Explain in detail the major underlying principles within the field of Medical and Pharmaceutical Sciences and integrate knowledge of etiology and pathophysiology of disease to design and develop more effective and safer drugs (knowledge).
- 2 Identify new developments within the field of Medical Pharmaceutical Sciences and can become familiar with these developments (Lifelong learning skills)
- 3 Critically appraise the results of research in 'medical pharmaceutical sciences' and/or in the dedicated specialisms 'drug toxicology and translational technology', 'pharmaceutical design and engineering' or 'pharmacoepidemiology and pharmacoconomics' (knowledge and judgement).
- 4 Formulate hypotheses, design and conduct scientific research, manage and interpret data and demonstrate proficiency in statistical analyses for Medical Pharmaceutical Sciences (application).
- 5 Systematically organize his/her work in scientific research and formulate realistic and original solutions to complex problems (application).

- 6 Critically evaluate scientific data from experiments or literature, and offer sound arguments to justify a position (judgment and communication).
- 7 Work independently as well as in a team to solve scientific and societal challenges related to medical pharmaceutical sciences (application).
- 8 Effectively communicate scientific concepts to specialists as well as to a lay audience through oral and written presentations (communication).
- 9 Identify societal and ethical implications of Medical Pharmaceutical Research and acts according to the scientific code of conduct (judgement).
- 10 Evaluate and reflect on personal capabilities and motivation for a (international) scientific, policy or business career, and has knowledge and skills to develop their own career (lifelong learning skills).

Appendix II Tracks of the degree programme (art. 2.2)

1. Within the degree programmes, the student chooses one of the Research-tracks written below (R-track), or one chooses the **Science, Business and Policy**-track ("SBP-track"), which prepares for professions in a societal, political and/or commercial context.
2. Within the degree programme Biomedical Sciences, the general R-track **Biomedical Sciences Research** track, provides students training as a researcher in various fields of biomedical sciences.
3. Within the degree programme Biomedical Sciences, the R-track **Biology of Ageing**, provides students training as a researcher mainly in the field of ageing and age-related pathologies.
4. Within the degree programme Biomedical Sciences, the R-track **Biology of Cancer and Immune System**, provides students training as a researcher mainly in the field of fundamentals and mechanisms of immunology, oncology, cell biology and related pathologies. This track is not only focussed on disease but also on how immunity and mammalian cells behave in health.
5. Within the degree programme Biomedical Sciences, the R-track **Biology of Food and Nutrition**, provides students training as a researcher mainly in the importance of food for a healthy microbiota in relation to brain function, metabolism and immunity.
6. Within the degree programme Biomedical Sciences, the R-track **Neuroscience**, provides students training as a researcher mainly in the field of Neuroscience. The track focuses on the role of higher brain functions both in health and in disease.
7. Within the degree programme Medical Pharmaceutical Sciences, the general R-track **Medical Pharmaceutical Sciences Research** track, provides students training as a researcher in various fields of medical pharmaceutical sciences.
8. Within the degree programme Medical Pharmaceutical Sciences, the R-track **Toxicology and Drug Disposition**¹, provides students training as a researcher mainly in the field of adverse drug reactions.
9. Within the degree programme Medical Pharmaceutical Sciences, the R-track **Pharmacoepidemiology**², provides students training as a researcher in the area of pharmacovigilance, database research, observational and trial intervention methodology and utilization studies with specific attention to the role of pharmaceuticals in healthy ageing.

¹ As of the academic year 2021-2022 this track will be renamed Drug Toxicology and Translational Technology.

² As of the academic year 2021-2022 this track will be renamed Pharmacoepidemiology and Pharmacoeconomics,

10. Within the degree programme Medical Pharmaceutical Sciences, the R-track **Pharmaceutical Design and Engineering**, provides students training as a researcher in the areas of target identification, drug design, biologics, biotechnology, and innovative drug and dosage forms.

Appendix III. Content of the degree programme (art. 2.3)

The degree programme Biomedical Sciences offers the following Research tracks (R-track): Biomedical Sciences Research, Biology of Ageing, Biology of Cancer and Immune System, Biology of Food and Nutrition and Neuroscience.

The degree programme Medical Pharmaceutical Sciences offers the following Research tracks (R-track): Medical Pharmaceutical Sciences Research, Toxicology and Drug Disposition, Pharmacoepidemiology and Pharmaceutical Design and Engineering.

Both programmes offer a Science, Business and Policy track (SBP-track).

General requirements for all BMS R-Track:

Course unit	ECTS	Assessment	Practical	Entry requirements
research project (RP)	40	technical and/or laboratory skills, written report, oral presentation	x	Safe Microbiological Technique certificate [#]
research project (RP)	30	technical and/or laboratory skills, written report, oral presentation	x	Safe Microbiological Technique certificate [#]
colloquium	5	oral presentation	x	RP
essay	5	written report	x	-
master courses	≥ 30	see appendix IV	see app. IV	see appendix IV
electives	≤ 10	see appendix IV	see app. IV	see appendix IV

[#] Students who have not obtained a Safe Microbiological Technique certificate (VMT in Dutch) have to include the MBS course in the first year of their study programme.

General requirements for all MPS R-Tracks:

Course unit	ECTS	Assessment	Practical	Entry requirements
research project (RP)	40	technical and/or laboratory skills, written report, oral presentation	x	Safe Microbiological Technique certificate [#]
research project (RP)	30	technical and/or laboratory skills, written report, oral presentation	x	Safe Microbiological Technique certificate [#]
colloquium	5	oral presentation	x	RP
essay	5	written report	x	-
master courses	≥ 25-26*	see appendix IV	see app. IV	see appendix IV
electives	≤ 10-15*	see appendix IV	see app. IV	see appendix IV

[#] Students who have not obtained a Safe Microbiological Technique certificate (VMT in Dutch) have to include the MBS course in the first year of their study programme.

* Depending on the chosen track.

General requirements for the SBP-track:

Course unit	ECTS	Assessment	Practical	Entry requirements
research project (RP)	40	technical and/or laboratory skills, written report, oral presentation	x	Safe Microbiological Technique certificate [#]
colloquium	5	oral presentation	x	RP
master courses	5	see appendix IV	see app. IV	see appendix IV
course units: Science & Business and Science & Policy	2x10 = 20	assignment, exam	x	-
internship SBP	40	performance, written report, reflection report	x	RP, course units S&B and S&P
electives	≤ 10	see appendix IV	see app. IV	see appendix IV

[#] Students who have not obtained a Safe Microbiological Technique certificate (VMT in Dutch) have to include the MBS course in the first year of their study programme, unless the student will conduct a research project that does not involve any laboratory work.

The following rules apply to all programmes:

- the first research project must be performed at the Faculty of Science and Engineering (FSE) or the University Medical Center Groningen, under supervision of one of the appointed examiners for the respective master programme. The grade of the first research project must be registered before a second research project or the SBP-internship can be started.
- the student chooses a study mentor from the list of each master programme to advise and discuss the contents of the individual degree programme, before sending a signed programme proposal for approval to the Board of Examiners. The tracks Biology of Ageing, Biology of Cancer and Immune system, Biology of Food and Nutrition, Neuroscience, Drug Toxicology and Drug Disposition, Pharmacoepidemiology and Pharmaceutical Design and Engineering have designated mentors, as mentioned on the student portal.
- all elements of the individual programme must be approved by the Board of Examiners before their start. The research projects, colloquium and essay must deal with different research subjects, and must be supervised by different examiners. The subject of the SBP-track internship must be clearly related to the scientific domain of the chosen master programme (see Appendix I). To conduct an SBP-internship, you will need 1. an SBP-examiner, and 2. a 'non-SBP examiner'. The colloquium cannot be done in the Science & Society group (or under supervision of an SBP-examiner) in case you follow the SBP-variant.
- electives can be:
 - o an extension of a research project. The research project can be registered as 30, 35, 40, 45 or 50 ECTS project. Propositions for extensions of 10-15 ECTS must be requested before the start of the research project. Arrangements for extensions of 5-10 ECTS may also be made during the midterm evaluation. The research project cannot exceed 50 ECTS.
 - o extra master course units, including course units that are especially assigned as possible elective course units (see appendix IV).
 - o bachelor course units to repair specific deficiencies (maximum 10 ECTS).
 - o a research assignment of 5 or 10 ECTS.

Additional requirements for Biomedical Sciences

Additional requirements for the general research track Biomedical Sciences Research

- 30 ECTS master courses are filled with the following courses:
 - a. Courses (10 ECTS)

Course unit	ECTS
Biomedical Sciences: Professional Perspectives	5
Data Science in Biomedicine	5

- b. 20 ECTS of other master courses chosen from the BMS master courses as listed in appendix IV.

Additional requirements for the research track Biology of Ageing:

- topics of both research projects, essay, and colloquium are chosen within the biology of ageing research area.
- 30 ECTS master courses are filled with the following courses:
 - a. Courses (20 ECTS)

Course unit	ECTS
Biomedical Sciences: Professional Perspectives	5
Data Science in Biomedicine	5
Current Themes in Healthy Ageing	5
Molecular Biology of Ageing and Age-related Diseases	5

- b. 5 ECTS from the following list of courses:

Course unit	ECTS
Advanced Metabolism & Nutrition	5
Immunology: from Bedside to Bench and Back	5
Neurodegenerative Diseases	5
Stem Cells & Regenerative Medicine	5
Microbiome and Health	5

- c. 5 ECTS from the following list of courses:

Course unit	ECTS
Advanced Light Microscopy	5
Advanced Imaging Techniques	5
Practical Bioinformatics for Biologists	5
Scientific Writing	5
From Big Data to Personalised Medicine	5
Editing, Regulating and Targeting Genomes with CRISPR-Cas9	5

Additional requirements for the research track Biology of Cancer and Immune System:

- the subject of one research project (≥ 40 ECTS) and the subject of either the essay or the colloquium is chosen in the field of cancer and immune system research area.
- 30 ECTS master courses are filled with the following courses:
 - a. Courses (15 ECTS)

Course unit	ECTS
Biomedical Sciences: Professional Perspectives	5
Data Science in Biomedicine	5
Immunology: from Bedside to Bench and Back	5

b. 15 ECTS from the following list of courses:

Course unit	ECTS
Current Themes in Oncology [#]	5
Cancer Research [#]	5
Stem Cells & Regenerative Medicine	5
Microbiome and Health	5
Editing, Regulating and Targeting Genomes with CRISPR-Cas9	5
From Big Data to Personalised Medicine	5
Translational Research in Respiratory Disease	5

[#] choose at least one of these 2 course units

Additional requirements for the research track Biology of Food and Nutrition:

- topics of both research projects, essay, and colloquium are chosen within the food and nutritional life sciences research area.
- 30 ECTS master courses are filled with the following courses:
 - a. Courses (15 ECTS)

Course unit	ECTS
Biomedical Sciences: Professional Perspectives	5
Data Science in Biomedicine	5
Advanced Metabolism & Nutrition	5

b. 15 ECTS from the following list of courses:

Course unit	ECTS
Nutrition in Medicine	5
Neurobiology of Nutrition	5
Microbiome and Health	5
Nutrition, Brain Development and Cognition	5
From Big Data to Personalised Medicine	5

Additional requirements for the research track Neuroscience:

- topics of both research projects, essay, and colloquium are chosen within the neuroscience research area.
- 30 ECTS master courses are filled with the following courses:
 - a. Courses (25 ECTS)

Course unit	ECTS
Biomedical Sciences: Professional Perspectives	5
Data Science in Biomedicine	5
Neurodegenerative Diseases	5
Behavioral Pharmacology	5
Neurobiology of Psychiatric Disorders	5

b. 5 ECTS from the following list of courses:

Course unit	ECTS
Advanced Imaging Techniques	5
Nutrition, Brain Development and Cognition	5
Molecular Biology of Ageing and Age-related Diseases	5

Additional requirements for Medical Pharmaceutical Sciences:

Additional requirements for the general research track Medical Pharmaceutical Sciences Research:

- 25 ECTS master courses are filled with the following courses:

a. Courses (5 ECTS)

Course unit	ECTS
Drug Development: from Design to Evaluation	5

- b. 20 ECTS of other master courses chosen from the MPS master courses as listed in appendix IV.

Additional requirements for the research track Toxicology and Drug Disposition:

- the subject of one research project (≥40 ECTS) and the subject of either the essay or the colloquium is chosen in the field of Toxicology and/or advanced translational models for drug testing.
- 25 ECTS master courses are filled with the following courses:

a. Courses (15 ECTS):

Course unit	ECTS
Drug Development: from Design to Evaluation	5
Molecular Toxicology	5
Advanced Pharmacokinetics	5

b. A minimum of 5 ECTS from the following list:

Course unit	ECTS
Pharmacovigilance	5
Animal and Human Experimentation*	5
Reproductive Toxicology and Epidemiology	5
Nanomedicine and Nanosafety	5
Clinical Toxicology	5

* In consultation with the study mentor students can either follow this course or the 4 ECTS course handling laboratory animals (ex. Art.9 Experiments on Animals Act).

- c. 5 ECTS of other master courses chosen from the MPS master courses as listed in appendix IV.

Additional requirements for the research track Pharmacoepidemiology:

- the subject of one research project (≥40 ECTS) and the subject of either the essay or the colloquium is chosen in the field of Pharmacoepidemiology.
- 26 ECTS master courses are filled with the following courses:

a. Courses (26 ECTS):

Course unit	ECTS
Drug Development: from Design to Evaluation	5
Medical Statistics	3
Basics in Medicine	8
Pharmacoepidemiology*	5
Pharmaco-epidemiology in Practice OR Pharmacoeconomics	5

* students who accomplished the equivalent course phar-epi (= pharmacoepidemiology (EN)/farmacoepidemiologie (NL)) in their bachelor programme will be exempted from this requirement. The remaining 5 ECTS should be considered as 5 ECTS extra electives in their master programme.

- b. ≤ 14 ECTS of other master courses chosen from the MPS master courses as listed in appendix IV.

Preferred courses in this elective space are:

Course unit	ECTS
Advanced Pharmacoeconomics	5
Pharmacovigilance	5
Reproductive Toxicology and Epidemiology	5

Additional requirements for the research track Pharmaceutical Design and Engineering:

- the subject of one research project (≥40 ECTS) and the subject of either the essay or the colloquium is chosen in the field of target identification, drug design, biologics, biotechnology, or innovative drug and dosage forms.

- 25 ECTS master courses are filled with the following courses:

- a. Courses (15 ECTS):

Course unit	ECTS
Drug Development: from Design to Evaluation	5
Pharmaceutical Biotechnology	5
Pharmaceutical Design and Engineering	5

- b. A minimum of 5 ECTS from the following list:

Course unit	ECTS
Molecular Toxicology	5
Translational Research in Respiratory Disease	5

- c. 5 ECTS of other master courses chosen from the MPS master courses as listed in appendix IV.

Suggested master courses and electives are given in table below:

Course unit	ECTS
Advanced Imaging Techniques	5
Nanomedicine and Nanosafety	5
Pharmaceutical Biology Practical	5
Medicinal Natural Products	10
Non-Sterile Dosage Forms*	6
Solving Problems in Product Technology *	6
Biotechnology*	5
Introduction to the Pharmaceutical Industry*	6-12
Pharmacology of Chronic Diseases and Ageing*	5
Quantitative Bioanalysis*	5

* Courses with an asterisks can only be chosen as electives.

Appendix IV Electives (art. 2.4)

Table 1-3 below list study elements that can be chosen as 'master courses' or 'electives' in BMS, MPS or both. Additional knowledge may be required in specific course units. These requirements will be published on Ocasys. For up to date information regarding the courses, such as assessment, entry requirements and learning objectives, Ocasys is leading.

Table 4 and 5 list courses that can only be chosen as 'electives' in BMS, MPS or both (see column right). After consultation with the study mentor and approval of the Board of Examiners, students may also choose from options available from other departments, other universities in the Netherlands or even abroad.

Table 1: Master courses available for BMS

Course	ECTS	Programme
Advanced Metabolism & Nutrition	5	BMS
Current Themes in Healthy Ageing	5	BMS
Current Themes in Oncology	5	BMS
Immunology: from Bedside to Bench and Back	5	BMS
Molecular Biology of Ageing and Age-related Diseases	5	BMS
Neurodegenerative Diseases	5	BMS
Scientific Writing	5	BMS, MPS
Stem Cells & Regenerative Medicine	5	BMS
Cancer Research	5	BMS
Nutrition in Medicine	5	BMS
Neurobiology of Nutrition	5	BMS
Microbiome and Health	5	BMS
Nutrition, Brain Development and Cognition	5	BMS
Editing, Regulating and Targeting Genomes with CRISPR-Cas9	5	BMS
Biomedical Sciences: Professional Perspectives [^]	5	BMS
Data Science in Biomedicine	5	BMS
From Big Data to Personalised Medicine	5	BMS, MPS
Translational Research in Respiratory Disease	5	BMS, MPS
Neurobiology of Psychiatric Disorders	5	BMS, MPS

[^]Students who follow the SBP-track cannot choose this course unit as part of the (elective) master courses.

Table 2: Master courses available for MPS

Course	ECTS	Programme
Academic Skills	5	MPS
Advanced Pharmacoeconomics	5	MPS
Advanced Pharmacokinetics	5	MPS
Drug Development: from Design to Evaluation	5	MPS, BMS
Medicinal Natural Products	10	MPS
Molecular Toxicology	5	MPS
Pharmaceutical Biology Practical	5	MPS
Pharmaceutical Biotechnology	5	MPS
Pharmacoeconomics	5	MPS
Pharmaco-epidemiology in Practice	5	MPS
Pharmacoepidemiology [*]	5	MPS
Pharmacovigilance	5	MPS
Reproductive Toxicology and Epidemiology	5	MPS
Clinical Toxicology	5	MPS
Nanomedicine and Nanosafety	5	MPS, BMS
Microbiological Safety	1	MPS, BMS
Pharmaceutical Design and Engineering	5	MPS

^{*}See remarks under Additional requirements for the research track Pharmacoepidemiology

Table 3: General Life Sciences master courses

Course	ECTS	Programme
Advanced Light Microscopy	5	BMS
Advanced Imaging Techniques	5	BMS, MPS
Advanced Statistics	6	BMS, MPS
Animal and Human Experiment.: Design, Practice and Ethics [^]	5	BMS, MPS
Behavioural Pharmacology	5	BMS, MPS
Introduction to the Behavioural and Cognitive Neurosciences	4	BMS
Science & Business [#]	10	BMS, MPS
Science & Policy [#]	10	BMS, MPS
Orientation on International Scientific Careers	5	BMS, MPS
Programming in C++ for Biologists	5	BMS
Radioisotopes in Experimental Biology	5	BMS, MPS
Practical Bioinformatics for Biologists	5	BMS

[^] In consultation with the study mentor students can either follow this course or the 4 ECTS course handling laboratory animals, (ex. Art.9 Experiments on Animals Act). However, only one of these courses may be chosen as 'master course'.

[#] Students who follow a R-track/track may only choose one of these courses as part of the 'electives' and not as part of the 'master courses'.

Table 4: Elective master courses organized by other Master Programmes

Course	ECTS	Programme
DNA Micro-array Analysis	5	BMS, MPS
Skills in Science Communication (2a)	5	BMS, MPS
iGEM (International Genetically Engineered Machine competition)*	20	BMS, MPS
Non-Sterile Dosage Forms	6	MPS
Solving Problems in Product Technology	6	MPS
Biotechnology	5	MPS
Introduction to the Pharmaceutical Industry	6-12	MPS
Pharmacology of Chronic Diseases and Ageing	5	MPS
Quantitative Bioanalysis	5	MPS
Basiscursus Master Lerarenopleiding [^]	5	BMS, MPS
Masterstage 1 [^]	5	BMS, MPS

* Selection for this competition takes place in winter time, an advertisement about application details will be announced via the student portal during the academic year. Maximum of 10 ECTS of the available 20 ECTS can be registered within elective space, the rest will be extracurricular credits.

[^] Course unit offered in Dutch only.

Table 5: Elective master courses organised by The Donald Smits Center for Information Technology:

Course (max 2 ects per individual programme [^])	Half day unit [^]	Programme
Access basic	5	BMS, MPS
Excel basic	5	BMS, MPS
Excel module draaitabellen	1	BMS, MPS

[^] A minimum of 5 half day units is required for a study load of 1 ECTS, for 2 ECTS 11 units are needed. These courses have additional costs (low student tariff), which are at the student's own expenses. These courses are not available in Ocasys. Please consult the Center for Information Technology for further information, time schedules, language of instruction and enrolment details.

Appendix V Entry requirements and compulsory order of examinations (art. 3.4)

Course unit	Entry requirement
Research project	Safe Microbiological Technique certificate
Colloquium	Research project
Research project 2	Research project
Internship Science Business & Policy	Research project + courses Science & Business and Science & Policy

Appendix VI Admission to the degree programme and the different track/tracks (art. 5.1.1 + art. 5.2)

1. Requirements for admission to the master degree in Biomedical Sciences

Holders of the following Bachelor's degrees from the University of Groningen are considered to have sufficient knowledge and skills and can be admitted to the Master's degree programme in Biomedical Sciences on that basis:

- a Bachelor's degree in Biology with one of the following majors:
 - > Biomedical Sciences.
 - > Behavioural & Neurosciences including the course Immunology and a minimum of 20 ECTS of the following courses: Food and Metabolism, Evolutionary Medicine, Neurobiology of Ageing, Endocrinology, Epigenetics and Gene-editing, Big Data in Human Disease, Microbes and Infection, Medical Physiology.
 - > Molecular Life Sciences including the courses Immunology, Bio-organic chemistry and a total of 20 ECTS chosen from BMS electives taught in semester 2 of year two.
- a Bachelor's degree in Life Science & Technology with one of the following majors:
 - > Biomedical Sciences.
 - > Behavioural & Neurosciences including the course Immunology and a minimum of 20 ECTS of the following courses: Food and Metabolism, Evolutionary Medicine, Neurobiology of Ageing, Endocrinology, Epigenetics and Gene-editing, Big Data in Human Disease, Microbes and Infection, Medical Physiology.
 - > Molecular Life Sciences including the courses Immunology, Bio-organic chemistry and a total of 20 ECTS chosen from BMS electives taught in semester 2 of year two.
- a Bachelor's degree in Pharmacy with the following major:
 - Medical Pharmaceutical Sciences plus the courses (pharmaceutical/medical) microbiology and neurobiology.

Students lacking one or two of the above mentioned courses, may sometimes be admitted on the condition of including these courses within the electives of the master programme.

Students with a comparable Bachelor's degree from another Dutch or foreign university, focusing on knowledge and skills at the interface of molecular and cellular biology, organic chemistry and biochemistry, integrative physiology and behaviour, and medical sciences, may also qualify for admission. However, admission is then granted on an individual basis by the Admission Board.

2. Requirements for admission to the master degree in Medical Pharmaceutical Sciences

Holders of the following Bachelor's degrees from the University of Groningen are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Medical Pharmaceutical Sciences on that basis:

- a Bachelor's degree in Pharmacy.
- a Bachelor's degree in Life Science & Technology with one of the following majors:
 - > Biomedical Sciences with the minor Pharmacy (or a similar approve programme in the area of Pharmacy) including the following course units: 1. Drugs for Endocrine System 2. Organic Synthesis & Biosynthesis **OR** Medicinal Chemistry & Biophysics 3. Pharmacology Practical 4. Drugs for the D/R/C systems 5. Pharmacokinetics 6. Metabolism & Toxicology³.
 - > Molecular Life Sciences with the minor Pharmacy (or a similar approve programme in the area of Pharmacy) including the following course units: 1. Drugs for Endocrine System 2. Organic Synthesis & Biosynthesis **OR** Medicinal Chemistry & Biophysics 3. Pharmacology Practical 4. Drugs for the D/R/C systems 5. Pharmacokinetics 6. Metabolism & Toxicology⁴
- a Bachelor's degree in Biology with one of the following majors
 - > Biomedical Sciences with the minor Pharmacy (or a similar approve programme in the area of Pharmacy) including the following course units: 1. Drugs for Endocrine System 2. Organic Synthesis & Biosynthesis **OR** Medicinal Chemistry & Biophysics 3. Pharmacology Practical 4. Drugs for the D/R/C systems 5. Pharmacokinetics 6. Metabolism & Toxicology⁵.
 - > Molecular Life Sciences with the minor Pharmacy (or a similar approve programme in the area of Pharmacy) including the following course units: 1. Drugs for Endocrine System 2. Organic Synthesis & Biosynthesis **OR** Medicinal Chemistry & Biophysics 3. Pharmacology Practical 4. Drugs for the D/R/C systems 5. Pharmacokinetics 6. Metabolism & Toxicology⁶.

Students lacking one or two of the above mentioned courses, may sometimes be admitted on the condition of including these courses within the electives of the master programme.

Students with a comparable Bachelor's degree from another Dutch or foreign university, focusing on knowledge and skills at the interface of molecular and cellular biology, human physiology, organic chemistry and biochemistry, statistics and pharmaceutical sciences, may also qualify for admission. However, admission is then granted on an individual basis by the Admission Board.

³ The course units in this minor are with reservation, as the actual minor programme for the new curriculum will start in academic year 2020-2021.

⁴ Idem

⁵ Idem

⁶ Idem