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Teaching and Examination Regulations 2021-2022

Appendices for the Bachelor's degree programme in Pharmacy

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Appendix I Learning outcomes of the Bachelor's degree programme (Article 3.1.1)

The learning outcomes of the Bachelor's degree programme **Pharmacy** according to the 2016 Competency Framework are as follows:

A. Knowledge and understanding
Students who successfully complete a Bachelor of Pharmacy degree possess knowledge and understanding of:
1. The structural and physiological properties of cells and tissues and the links between the two.
2. The pathophysiological processes that underlie diseases and the relevant basic anatomy and physiology.
3. The binding sites of active pharmaceutical ingredients in the body, down to a molecular level.
4. The processes and factors that a play role in the route of administration and biological action of medicines and the pharmacon released in the body.
5. The chemical and physicochemical properties and analysis of low and high-molecular-weight active pharmaceutical ingredients and auxiliary pharmaceutical substances.
6. The compounding of medicines in appropriate pharmaceutical dosage forms and the associated quality criteria.
7. How the physicochemical properties of chemical compounds affect their potential use as medicine.
8. The (background to the) medicinal treatment of a number of common health conditions.
9. Desirable and undesirable effects of medicines in the biological system.
10. The main patient characteristics and product properties that may influence the effects of medicines and the diagnostic measurement methods used to assess them.
11. The links between genetic information and the associated phenotype and nongenetic factors that affect this phenotype.
12. The processes involved in the development of medicines.
13. The set-up, measurement methods and (statistical) data processing methods used in pharmaceutical research.
14. The pharmacy as an organisation and the pharmacist's role in healthcare.
15. Basic health psychology.

B. Skills
Students who successfully complete a Bachelor of Pharmacy degree:
1. Are able to apply qualitative, quantitative and statistical techniques in pharmaceutical research.
2. Are able to define a specific pharmaceutical research question, develop hypotheses and articulate explanations.
3. Knowhow to find relevant pharmaceutical and related medical information and perform qualitative and quantitative analysis.
4. Have demonstrated, in a graduation project, the ability to apply the knowledge, understanding and skills they have acquired to resolve pharmaceutical issues using the empirical cycle.
5. Possess knowledge and understanding of the context of pharmaceutical science, which encompasses philosophical, historical, ethical and/or social perspectives.
6. Are able to read, understand and critically assess pharmaceutical and biomedical professional literature, perform a review of the literature and critically assess relevant publications.
7. Are able to evaluate the quality of pharmaceutical and biomedical information they find.
8. Are aware of the principles of fundamental and applied scientific research.

9. Are able to form an opinion on pharmaceutical issues, based partly on a consideration of relevant societal, clinical, scientific and ethical aspects.
10. Are able to relate pharmaceutical issues to adjacent disciplines (such as medical, social and behavioural sciences, psychology, biology, chemistry and physics).
11. Are able to integrate their knowledge of the different subdomains of pharmacy in dealing with specific pharmaceutical issues.
12. Are able to communicate effectively and efficiently in Dutch and English, both verbally and in writing, tailoring their language to the target group.
13. Are able to adequately report, both verbally and in writing, on scientifically and socially relevant matters that pertain to pharmacy.
14. Are able to make an essential contribution to a scientific discussion.
15. Are able to form, and defend, well-reasoned opinions.
16. Are able to perform, and work independently on scientifically and socially relevant issues that pertain to pharmacy, as part of a team.
17. Are able to apply basic communication skills when conversing with (actors posing as) patients.

C. Professional behaviour
Students who successfully complete a Bachelor of Pharmacy degree:
1. Are able to independently conduct a targeted search for knowledge to deepen their understanding of pharmaceutical issues that are new to them.
2. Are able to think and act at an academic level, and are willing and able to keep developing their professional expertise. They have developed sufficient academic intellectual and professional proficiency to be able to embark on a master program that follows on from the bachelor program.
3. Know how to keep up with, and apply their knowledge of, developments relevant to the profession.
4. Are able to adopt a multidisciplinary approach and identify connections between different disciplines.
5. Are able to reflect on their own development and academic career and make informed decisions regarding appropriate next steps.
6. Are able to reflect on their actions and give, receive and implement (peer) feedback.
7. Demonstrate professional behaviour in pharmacy practice, when acting as an educator, and when performing research relevant to professional practice.
8. Understand the social significance of pharmacy and the associated responsibilities of pharmaceutical and pharmacy professionals.
9. Are aware of the career opportunities open to pharmaceutical and pharmacy professionals.

Appendix II Majors and Minors of the degree programme (Article 3.6.4)

The degree programme has the following Major(s):

- a major Pharmacy (165 ECTS) combined with a set of electives in Pharmacy (15 ECTS)
- a major Medical Pharmaceutical Sciences (135 ECTS) combined with
  a) a set of electives in Pharmacy (15 ECTS)
  b) a minor of choice (30 ECTS)

The degree programme has the following Minor(s):

- minor Pharmacy
  MG: Endocrine System and Digestive and Respiratory Tract
  Medicinal Chemistry and Biophysics*
  MG: Circulatory Tract
  MG: Infectious diseases and Oncology
  Pharmacology practical*
  Organic Chemistry practical*

*only when the course capacity is not met yet and/ or the course unit does not overlap with courses of the students major. The academic advisors can propose adjustments to this minor,

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Appendix III Course units in the propaedeutic phase

- **List of course units; Article 4.1.1**
- **Compulsory order of examinations; Article 9.3**

Course unit name	ECTS	Practical	Entry requirements
Academic Research & Communication Skills 1	5	x	-
Molecular Biology of the Cell 1	4	x	-
Molecular Biology of the Cell 2	4	x	-
Genetics	3	x	-
The Cell, a practical approach	3	x	-
Mathematics and Statistics	5		-
Pharmaceutical Technology and Biopharmacy 1	5		-
Physiology and Pharmacology	5	x	-
Molecules and Reactivity	5		-
Human Physiology	3	x	-
Pathology	5		-
Pharmaceutical Analysis	5	x	-
Receptor Pharmacology	~~5~~	-	-
Global Health and Pharmacotherapy	3	x	-

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Appendix IV Course units in the post-propaedeutic phase

- **List of course units; Article 7.1.1**
- **Compulsory order of examinations; Article 9.3**

Course unit name	ECTS	Practical	Entry requirements
Academic Research and Communication Skills 2	4	x	
Academic Research and Communication Skills 3	1	x	ARCS Y1
Bachelor Research Project	14	x	130 ECTS incl. ARCS 2
Bioanalysis	5	x	Pharmaceutical Analysis
Biostatistics	5	x	-
Immunopharmacology	5	1	
Instrumental Analysis	6	x	Pharmaceutical Analysis
Medicinal Chemistry and Biophysics	5		-
Medicines Group: Drugs for the Central Nervous System*	5		-
Medicines Group: Drugs for the Circulatory System*	5		-
Medicines Group: Drugs for the Endocrine System, Digestive and Respiratory System*	5		-
Medicines Group: Drugs for Infectious diseases and Oncology*	5		-
Metabolism and Toxicology	5	x	The Cell, a Practical Approach, Physiology and Pharmacology
Organic Chemistry practical	5	x	Molecules and Reactivity
Organic Synthesis and Biosynthesis	5		-
Pharmaceutical Microbiology	4	x	MBOC 1 and 2, The Cell, a Practical Approach
Pharmaceutical Technology and Biopharmacie 2	5	x	MBOC 1 and 2, The Cell, a Practical Approach, Pharm. Technology and Biopharmacy 1
Pharmacoepidemiology	5	x	
Pharmacokinetics	5	x	The Cell, a Practical Approach, Physiology and Pharmacology, ARCS Y1
Pharmacology practical	5	x	The Cell, a Practical Approach, Physiology and Pharmacology, Human Physiology, Receptorpharmacology
Sets of electives			
Advanced Bioanalysis	5		Pharmaceutical Analysis, Instrumental Analysis and Bioanalysis
Proteins for Biopharmaceuticals and Drug Discovery	10		
From clinical trials to big data research	5		
Patient perspectives in Pharmacy	5		

Introduction into Pharmacoeconomics	5		
Drug Toxicology and Translational Technology	5		
Advanced Pharmaceutical Technology and Therapeutics	10		
Pharmacology of Chronic Diseases and Ageing	5		
Advanced Human Disease Model Technologies	5		
Patient cases in laboratory medicine	5		
Electives in the major MPS			
Thermodynamics	5		
Organic Chemistry Practical	5		Molecules and Reactivity; Organic Synthesis and Biosynthesis
Collected Medicine Groups*	5		

*The students that follow the major MPS can choose either a MG-course or Collected Medicine Groups, but need to follow at least one to meet het learning outcomes of the Bachelor Pharmacy.

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Appendix V Entry requirements (Article 2.1, article 2.3, article 2.2, article 2.5)

A. (Deficient) VWO-diploma

1. The following requirements apply to the entrance examination as defined in Article 7.28.3 of the Act:

Bacheloropleiding *Bachelor's degree programme*	**N+T**	**N+G**	**E+M**	**C+M**
Biologie *Biology*	Biologie	Natuurkunde	Wiskunde A of B Natuurkunde Scheikunde Biologie	Wiskunde A of B Natuurkunde Scheikunde Biologie
Farmacie *Pharmacy*	V	Natuurkunde	Natuurkunde Scheikunde	Wiskunde A of B Natuurkunde Scheikunde
Life Science and Technology **Scheikunde** *Chemistry* **Scheikundige Technologie** *Chemical Engineering*	V	Wiskunde B Natuurkunde	Wiskunde B Natuurkunde Scheikunde	Wiskunde B Natuurkunde Scheikunde
Biomedische Technologie *Biomedical Engineering*	V	Wiskunde B Natuurkunde	Wiskunde B Natuurkunde	Wiskunde B Natuurkunde
Informatica *Computing Science* **Technische Bedrijfskunde** *Industrial Engineering and Management* **(Technische) Wiskunde** *(Applied) Mathematics*	V	Wiskunde B	Wiskunde B	Wiskunde B
Kunstmatige Intelligentie *Artificial Intelligence*	V	V	V	Wiskunde A of B

(Technische) Natuurkunde *(Applied) Physics* **Sterrenkunde** *Astronomy*	V	Wiskunde B Natuurkunde	Wiskunde B Natuurkunde	Wiskunde B Natuurkunde

2. The Admissions Board Bachelor's programmes FSE will determine whether deficiencies have been compensated satisfactorily.

B. HBO (university of applied sciences) or academic propaedeutic certificate

1. The following requirements apply to the entrance examination as defined in Article 7.28.3 of the Act:

Bachelor's degree programme	**Subjects at VWO (pre-university) level**
B Biology	wia or wib + na+sk+bio
B Pharmacy	wia or wib + na+sk
B Life Science and Technology	wib+na+sk
B Biomedical Engineering	wib + na
B Computing Science	wib
B Artificial Intelligence	wia or wib
B Physics	wib+na
B Chemistry	wib+na+sk
B Astronomy	wib+na
B Mathematics	wib
B Chemical Engineering	wib+na+sk
B Industrial Engineering and Management Science	wib
B Applied Physics	wib+na
B Applied Mathematics	wib

wia = Mathematics A; wib = Mathematics B; na = Physics; sk = Chemistry; bio = Biology

2. In addition, candidates are required to be competent in English:

Score -> **Test**	**Overall**	**Reading**	**Listening**	**Speaking**	**Writing**
IELTS (Academic)	6.5	6.5	6.5	6.5	6.5
TOEFL IBT (internet-based)	90	21	21	21	24
Cambridge English	CAE or CPE Certificate with a minimum score of 180				
English language test – TC UG	n/a	B2	B2	B2	C1

Applicants with a Dutch VWO or equivalent diploma are exempt for an English language test as are native English speakers.

3. The Admissions Board Bachelor programmes FSE will determine whether deficiencies have been compensated satisfactorily.

C. Foreign qualifications (EEA)

1. Any certificate that grants access to a university in a European country will also grant access to Dutch universities.

2. In the entrance examination, as referred to in art. 7.28, paragraph 3 of the Act, per country and educational institution specific training conditions are mentioned. These are standardized. The entrance examination is, in accordance with the Admissions Board Bachelor's programmes FSE, carried out by the Admissions Office. If for a specific diploma no standardisation has taken place then the requirements as formulated for candidates with a HBO (university of applied science) propaedeutic certificate will apply to these candidates in the entrance examination as defined in Article 7.28.3 of the Act (see A).

3. In addition, candidates are required to be competent in English:

Score -> **Test**	**Overall**	**Reading**	**Listening**	**Speaking**	**Writing**
IELTS (Academic)	6.5	6.5	6.5	6.5	6.5
TOEFL IBT (internet-based)	90	21	21	21	24
Cambridge English	CAE or CPE Certificate with a minimum score of 180				
English language test – TC UG	n/a	B2	B2	B2	C1

Applicants with a Dutch VWO or equivalent diploma are exempt for an English language test as are native English speakers.

4. The Admissions Board Bachelor's programmes FSE will determine whether deficiencies have been compensated satisfactorily.

D. Foreign qualifications (non-EEA)

1. A non-European certificate that according to NUFFIC and/or NARIC standards is equivalent to a Dutch VWO certificate will grant access to university in the Netherlands.

2. In the entrance examination, as referred to in art. 7.28, paragraph 3 of the Act, per country and educational institution specific training conditions are mentioned. These are standardized. The entrance examination is, in accordance with the Admissions Board Bachelor's programmes FSE, carried out by the Admissions Office. If for a specific diploma no standardisation has taken place then the requirements as formulated for candidates with a HBO (university of applied science) propaedeutic certificate will apply to these candidates in the entrance examination as defined in Article 7.28.3 of the Act (see A).

3. In addition, candidates are required to be competent in English:

Score -> Test	Overall	Reading	Listening	Speaking	Writing
IELTS (Academic)	6.5	6.5	6.5	6.5	6.5
TOEFL IBT (internet-based)	90	21	21	21	24
Cambridge English	CAE or CPE Certificate with a minimum score of 180				
English language test – TC UG	n/a	B2	B2	B2	C1

Applicants with a Dutch VWO or equivalent diploma are exempt for an English language test as are native English speakers.

4. The Admissions Board Bachelor's programmes FSE will determine whether deficiencies have been compensated satisfactorily.

E. Entrance examination (Colloquium Doctum)

1. The following requirements apply to the entrance examination as defined in Article 7.29 of the Act:

Degree programme	Nature and Health VWO level	or	Nature and Technology VWO level
B Biology	en, wia or b, sk, bio, na		en, wib, na, sk, bio
B Pharmacy	en, wia or b, sk, bio, na		en, wib, na, sk
B Life Science and Technology	en, wib, sk, bio, na		en, wib, na, sk
B Computing Science	en, wib, sk, bio		en, wib, na, sk
B Artificial Intelligence	en, wia or b, sk, bio		en, wib, na, sk
B Physics	en, wib, sk, bio, na		en, wib, na, sk
B Chemistry	en, wib, sk, bio, na		en, wib, na, sk
B Astronomy	en, wib, sk, bio, na		en, wib, na, sk
B Mathematics	en, wib, sk, bio		en, wib, na, sk
B Chemical Engineering	en, wib, sk, bio, na		en, wib, na, sk
B Industrial Engineering and Management Science	en, wib, sk, bio		en, wib, na, sk
B Applied Physics	en, wib, sk, bio, na		en, wib, na, sk
B Applied Mathematics	en, wib, sk, bio		en, wib, na, sk

en = English; wia = Mathematics A; wib = Mathematics B; na = Physics; sk = Chemistry; bio = Biology

2. In addition, candidates are required to be competent in English:

Score ->	Overall	Reading	Listening	Speaking	Writing

Test					
IELTS (Academic)	6.5	6.5	6.5	6.5	6.5
TOEFL IBT (internet-based)	90	21	21	21	24
Cambridge English	CAE or CPE Certificate with a minimum score of 180				
English language test – TC UG	n/a	B2	B2	B2	C1

Applicants with a Dutch VWO or equivalent diploma are exempt for an English language test as are native English speakers.

3. The Admissions Board Bachelor's programmes FSE will determine whether deficiencies have been compensated satisfactorily.

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Appendix VI Clustering of Bachelor's degree programmes (Articles 2.9.4, 5.3.3, 5.3.4, 5.6.1)

Degree programme CROHO code	Name of degree programme	Clustered with CROHO code	Name of degree programme
56286	B Life Science and Technology	56860 56157	B Biology B Pharmacy
56860	B Biology	56286 56157	B Life Science and Technology B Pharmacy
56157	B Pharmacy	56860 56286	B Biology B Life Science and Technology
56980	B Mathematics	56965 50206 56962 50205	B Applied Mathematics B Physics B Applied Physics B Astronomy
56965	B Applied Mathematics	56980 50206 56962 50205	B Mathematics B Physics B Applied Physics B Astronomy
50206	B Physics	56962 50205 56965 56980	B Applied Physics B Astronomy B Applied Mathematics B Mathematics
56962	B Applied Physics	50206 50205 56965 56980	B Physics B Astronomy B Applied Mathematics B Mathematics
50205	B Astronomy	56962 56965 50206 56980	B Applied Physics B Applied Mathematics B Physics B Mathematics
56857	B Chemistry	56960	B Chemical Engineering
56960	B Chemical Engineering	56857	B Chemistry

Appendix VII Admission to the post-propaedeutic phase (Article 6.1.1)

The following candidates will be admitted to the post-propaedeutic phase:

1. Students who have been issued a positive study advice from the degree programme in question
2. The owner of a propedeutical certificate of the Bachelor programme Biofarmaceutische Wetenschappen of the Leiden University;
3. The owner of a propedeutical certificate of the Bachelor programme Farmacie of the Utrecht University

Appendix VIII Contact hours propaedeutic and post-propaedeutic phase (Article 3.5.3)

Degree programme year 1	
Structure contact hours	**Contact hours per year**
Lectures	278
Tutorial	93
Tutoring (study support / mentor groups)	10
Practical (including computer practical)	220
Supervision during an internship	-
Examinations	36

Degree programme year 2 and 3	
Structure contact hours	**Contact hours per year**
Lectures	100
Tutorial	40
Tutoring	4
Practical (including computer practical)	300
Supervision during an internship	-
Examinations	24

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Appendix IX University Minors of the Faculty of Science and Engineering (Article 8.5.1)

1. Neurosciences Minor (taught in English):
   - Neuroscience (15 ECTS)
   - Behavioural Neuroscience (15 ECTS)

   Astronomy through Space and Time Minor (taught in English):
   - The Evolving Universe (5 ECTS)
   - Cosmic Origins (5 ECTS)
   - Astrobiology (5 ECTS)

   Einstein's physics: Space-time and parallel worlds (taught in English):
   - Einstein's Universe (5 ECTS)
   - Quantum World (5 ECTS)
   - Building blocks of matter (5 ECTS)

   Future Planet Innovation (taught in English):
   - Global Challenges (10 ECTS)
   - Global Integration (5 ECTS)
   - Sustainable contributions to society (15 ECTS)

2. The Programme Committee for the Bachelor's degree programmes in Biology and Life Science and Technology also has authority in the field of the Minor "Neurosciences" and/or its course units.

   The Programme Committee for the Master's degree programme in Energy and Environmental Sciences also has authority in the field of the Minor "Future Planet Innovation" and/or its course units.

   The Programme Committee for the Bachelor's degree programme in Astronomy also has authority in the field of the Minor "Astronomy through Space and Time" and/or its course units.

   The Programme Committee for the Bachelor's degree programmes in Physics and Applied Physics also has authority in the field of the Minor "Einstein's physics: Space-time and parallel worlds" and/or its course units.

3. The Board of Examiners for the Bachelor's degree programmes in Biology and Life Science and Technology and the Master's degree programmes in Biology, Ecology and Evolution, Marine Biology and Molecular Biology and Biotechnology also has authority in the field of the Neurosciences Minor and/or its course units.

The Board of Examiners for the Master's degree programme in Energy and Environmental Sciences also has authority in the field of the "Future Planet Innovation" Minor and/or its course units.

The Board of Examiners for the Bachelor's degree programme in Astronomy also has authority in the field of the Astronomy through Space and Time Minor and/or its course units.

The Board of Examiners for the Bachelor's degree programmes in Physics and Applied Physics also has authority in the field of the Physics Minor "Einstein's physics: Space-time and parallel worlds" and/or its course units.

4. These Teaching and Examination Regulations also apply in their entirety to the Minors in Neurosciences, Future Planet Innovation, Astronomy through Space and Time and Einstein's physics: Space-time and parallel worlds and/or their course units.

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Appendix X Additional Requirements Open degree Programmes (Art. 7.3)

N.a. for the bachelor Pharmacy

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Appendix XI Transitional provisions (article 12.1)

For cohort 2017-2018 and earlier

Course unit	May be replaced with	Reason
Beroepsvoorbereiding 2	Academic Research & Communication Skills 2 (tutor meetings)	Curriculum change in 2019-2020: first course is no longer offered, second course in new curriculum
Beroepsvoorbereiding 3	Academic Research & Communication Skills 3	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum
Receptorfarmacologie	Receptor Pharmacology (y1)	Curriculum change in 2019-2020: first course is no longer offered in year 2, but moved to year 1
Farmacie, Technologie, Ethiek en Maatschappij	Academic Research & Communication Skills 2 (except tutor meetings)	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum.
Farmaceutische Analyse B	Instrumental Analysis	Curriculum change in 2019-2020: first course is no longer offered, second course in new curriculum
Farmaceutische Analyse C	Bioanalysis + Thermodynamics, Bioanalyse van Therapeutische Eiwitten or Advanced Bioanalysis (or any other elective, after permission of the Board of Examiners)	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum.
Farmaceutische Technologie en Biofarmacie 2	Pharmaceutical Technology and Biopharmacy 2 + elective, after permission of the Board of Examiners	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum.
GG voor Endocrien Systeem	MG: Drugs for the Endocrine, Digestive and Respiratory System	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum.
GG voor Tractus Circulatorius	MG: Drugs for the Circulatory System	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum.
GG voor Tractus Digestivus en Tractus Respiratorius	MG: Drugs for the Endocrine, Digestive and Respiratory System	Curriculum change in 2020-2021: first course is no longer offered, second course in new curriculum.