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Teaching and Examination Regulations 2020-2021

Appendices Bachelor's degree programme Pharmacy

Appendix I Learning outcomes of the Bachelor's degree programme (Article 1.3.a)

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 2.1.4)

The Bachelor's degree programme in Pharmacy comprises:

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

Appendix III Course units in the propaedeutic phase

- **List of course units (Article 3.1.1);**
- **Course units with practical (Article 3.2);**
- **Compulsory order of examinations (Article 8.2)**

Course unit name	ECTS	Practical	Entry requirements
Academic Research & Communication	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	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	-

Appendix IV Course units in the post-propaedeutic phase

- **List of course units (Article 3.1.1);**
- **Course units with practical (Article 3.2);**
- **Compulsory order of examinations (Article 8.2)**

Course unit name	ECTS	Practical	Entry requirements
Academic Research and Communication	4	x	ARCS Y1
Academic Research and Communication	1	x	ARCS Y1
Bachelor Research Project	14	x	150 ECTS incl. ARCS 2
Bioanalysis (*F.K.A. FA-C)*	5	x	Pharmaceutical Analysis A, ARCS Y1
Biostatistics	5	x	-
Immunopharmacology	5	1	
Instrumental Analysis	6	x	Pharmaceutical Analysis A, ARCS Y1
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, ARCS Y1
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

Pharmaceutical Technology and Biopharmacie 2	5	x	MBOC 1 and 2, The Cell, a Practical Approach, Pharm. Analyse A, 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
Deepening minor			
Advanced Bioanalysis	5		PA, IA and Bioanalysis
Proteins for Biopharmaceuticals and Drug Discovery	10		
Innovative Patient Care in Pharmacy	5		
From human experiments to big data research	5		
Pharmacoeconomics	5		
Drug Toxicology and Translational Technology	5		
Advanced Pharmaceutical Technology and Therapeutics	10		
Pharmacology of Chronic Diseases and	5		
Advanced Human Disease Model	5		
Diagnostic Approaches for Endocrinologic and Metabolic Diseases	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 this course or a different one (WHICH ones still has to be decided)

Appendix V Entry Requirements (art. 10.2.1)

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
Informatica *Computing Science* **Technische Bedrijfskunde** *Industrial Engineering and Management Science* **(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 science) propaedeutic certificate, other universities

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 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:

IELTS (Academic)	6.5 - no less than 6.0 on each section
TOEFL IBT (internet-based test)	92 - no less than 21 on each section
TOEFL CBT (computer-based test)	237 - no less than 21 on each section
TOEFL PBT (paper-based test)	580 - no less than 55 on each section
Cambridge English	CAE or CPE Certificate
English language test - University of Groningen Language Centre	Minimum section scores C2 or C1 (one B2 allowed)

3. The Admissions Board Bachelor's 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:

IELTS (Academic)	6.5 - no less than 6.0 on each section
TOEFL IBT (internet-based test)	92 - no less than 21 on each section
TOEFL CBT (computer-based test)	237 - no less than 21 on each section
TOEFL PBT (paper-based test)	580 - no less than 55 on each section
Cambridge English	CAE or CPE Certificate
English language test - University of Groningen Language Centre	Minimum section scores C2 or C1 (one B2 allowed)

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

D. German diploma

1. A Zeugnis der Allgemeinen Hochschulreife ('Abitur') is required.

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

Degree Programme	
B Biology	wi (LK or GK) na (LK or GK) sk (LK or GK) bio (LK or GK) (at least one subject at Leistungskursniveau)
B Pharmacy B Life Science and Technology B Chemistry B Chemical Engineering	wi (LK or GK) na (LK or GK) sk (LK or GK) (at least one subject at Leistungskursniveau)
B Informatica B Wiskunde B Technische Wiskunde B Kunstmatige Intelligentie	wi (LK)
B Natuurkunde B Sterrenkunde B Technische Natuurkunde	wi (LK) na (LK of GK)
B Technische Bedrijfskunde	wi (LK of GK) na (LK of GK) (tenminste één vak op Leistungskursniveau)

LK = Leistungskursniveau; GK is Grundkursniveau followed for 13 or 12 years (in case the gymnasium counts 12 years).

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

IELTS (Academic)	6.5 - no less than 6.0 on each section
TOEFL IBT (internet-based test)	92 - no less than 21 on each section
TOEFL CBT (computer-based test)	237 - no less than 21 on each section
TOEFL PBT (paper-based test)	580 - no less than 55 on each section
Cambridge English	CAE or CPE Certificate
English language test - University of Groningen Language Centre	Minimum section scores C2 or C1 (one B2 allowed)

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

E. 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:

IELTS (Academic)	6.5 - no less than 6.0 on each section
TOEFL IBT (internet-based test)	92 - no less than 21 on each section
TOEFL CBT (computer-based test)	237 - no less than 21 on each section
TOEFL PBT (paper-based test)	580 - no less than 55 on each section
Cambridge English	CAE or CPE Certificate
English language test - University of Groningen Language Centre	Minimum section scores C2 or C1 (one B2 allowed)

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

F. 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:

IELTS (Academic)	6.5 - no less than 6.0 on each section
TOEFL IBT (internet-based test)	92 - no less than 21 on each section
TOEFL CBT (computer-based test)	237 - no less than 21 on each section
TOEFL PBT (paper-based test)	580 - no less than 55 on each section
Cambridge English	CAE or CPE Certificate
English language test - University of Groningen Language Centre	Minimum section scores C2 or C1 (one B2 allowed)

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

Appendix VI Clustering of Bachelor's degree programmes (Article 4.3.4, Article 4.6.1)

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

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56857	B Chemistry
56960	B Chemical Engineering

56965	B Applied Mathematics
50206	B Physics
56980	B Mathematics
56960	B Chemical Engineering
56857	B Chemistry

Appendix VII Admission to the post-propaedeutic phase (Article 5.1.1)

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 phase (Article 2.4)

Bachelor jaar 1	
Type of contact	**Number of contact hours per year**
Lectures	278
Tutorials	93
Practical (including computer practical)	220
Study support/ Mentor groups	10
Internship support and guidance	-
Examinations	36

Appendix IX University Minors of the faculty of Science and Engineering (Article 7.5.1)

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

   Future Planet Innovation (taught in English):
   - Global Challenges (10 ECTS)
   - Sustainability in perspective (5 ECTS)
   - Sustainable contributions to society (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
   - Quantum World
   - Building blocks of matter

2. The Programme Committee for the Bachelor’s degree programmes in Biology and Life Science & 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 & 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 & Technology and the Master’s degree programmes in Biology, Ecology & Evolution, Marine Biology and Molecular Biology & 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 & 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.

Appendix X Transitional arrangement (Article 12.1)

For cohort 2017-2018 and earlier

Course unit	**May be replaced with**	**Reason**
Beroepsvoorbereiding 1 Eerstejaars Symposium	Academic Research & Communication Skills	Curriculum change in 2018-2019: first course is no longer offered, second course in new curriculum
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
Celbiologie 1	Molecular Biology of the Cell 1	Curriculum change in 2018-2019: first course is no longer offered, second course in new curriculum
Celbiologie 2	Molecular Biology of the Cell 2	idem
Farmacie in Perspectief	Global Health and Pharmacotherapy	idem
Practicum Minimale Cel	The Cell, a practical approach	idem
Practicum Anatomie en Fysiologie	Human Physiology (practical part)	idem
Humane Fysiologie Pathologie	Human Physiology Pathology	idem idem
Receptorfarmacologie	Receptor Pharmacology (y1)	Curriculum change in 2019-2020: first course is no longer offered in year 2, but moved to year 1
Farmacie,	Academic Research &	Curriculum change in

Technologie, Ethiek en Maatschappij	Communication Skills 2 (except tutor meetings)	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 + elective	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	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.