

Assessment plan for the curriculum of the Bachelor's degree programme in Pharmacy, 2024-2025

Programme director: Prof. dr. K. Taxis

Date advice Board of Examiners: 14-06-2024

Date approval Faculty Board:

1. Vision on assessment

1. Assessment guides and evaluates student's learning to stimulate a well-founded understanding of the pharmaceutical sciences rooted in the natural sciences.
2. Assessment stimulates the development of student's capacity in solving pharmaceutical problems using a scientific approach to promote an academic attitude.
3. Assessment stimulates the development of student's skills in communicating about pharmaceutical problems with scientists, the general public, health care professionals and patients (written and oral communication skills).
4. Assessment stimulates students in developing a professional attitude as outlined in the Pharmacist Competency Framework & Domain-specific Frame of Reference for the Netherlands.

2. Assessment guidelines

Please explain the general assessment procedures that are used in the programmes. For example, 4-eyes principle in test design, standardised grading forms, rubrics.

1. There is a mix of modes of summative assessment across the bachelor which fit the constructive alignment of the courses.
2. Summative grading is done using valid and reliable grading tools, as described in the test matrix.
3. Written reports need to include at least one round of directed feedback.
4. Courses should include (a mix of) formative assessments which are planned in such a way that the formative assessment prepares the students for the summative assessment.
5. In assignments in which students have to create written products, how AI tools are allowed to be used should be discussed for all stages of the writing process. Students need to report if they used AI tools and how they used those tools.

3. Learning outcomes of the degree programme

Learning outcomes of the BSc Pharmacy programme according to the 2016 Pharmacy Competency Framework (Raamplan Farmacie 2016):

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 play a role in the route of administration and biological action of medicines and the pharmacokinetics 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.

4. Overview of assessment methods, test moments for course units, and examiners

Year 1 Bachelor							
Period	Course unit	Course code	ECTS	First examiner	Second examiner	Assessment methods ¹	Does (part of the) assessment have a formative function?
whole year	Professionalism in Pharmacy 1	WBFA061-03	5	B. van Basten	K. Taxis	P, AST, PR	No
1a	Molecular Biology of the Cell 1	WBFA006-04	4	G.J. Poelarends	S. Schmidt	MC	No
1a	Molecular Biology of the Cell 2	WBFA007-04	4	G.J. Poelarends	A.P. Nagelkerke	MC	No
1a	Genetics	WBFA004-03	5	G.J. Poelarends	W.Y. Wu	MC	No
1a	The Cell, a Practical Approach	WBFA010-03	3	G.J. Poelarends	R.H. Cool	PR, R	
1b	Mathematics and Statistics	WBFA054-05	5	S. Mubarik	E. Hak	WE	Yes
1b	Pharmaceutical Technology and Biopharmacy 1	WBFA017-05	5	H.J. Woerdenbag	H.W Frijlink	MC	Yes
1b	Physiology and Pharmacology	WBFA020-05	5	M. Schmidt	A.J.W. Scheurink	MC, PR	No
2a	Human Physiology	WBFA022-03	3	C.M. Drion	A.J.W. Scheurink	MC, PR	Yes
2a	Molecules and Reactivity	WBFA055-05	5	J. Broos	W.C. Szymanski	WE	No
2a	Pathology	WBFA024-05	5	K. Poelstra	B.N. Melgert	MC, AST	
2b	Global Health and Pharmacotherapy	WBFA034-05	5	K. Taxis	E.C. Weening	MC, P, AST	Yes
2b	Pharmaceutical Analysis	WBFA035-05	5	E.M.J. Verpoorte	G. Lageveen-Kammeijer	WE, PR, R	
2b	Receptor Pharmacology	WBFA036-05	5	M. Schmidt	A. Dolga		No

¹ WE = Written Exam; MC = Multiple Choice; R = Report; P = Presentation; PR = Practical Work; AST = Assignment; MT = midterm; IT = Interim Test

Year 2 Bachelor							
Period	Course unit	Course code	ECTS	First examiner	Second examiner	Assessment methods	Does (part of the) assessment have a formative function?
whole year	Professionalism in Pharmacy 2	WBFA062-04	4	B. van Basten	K. Taxis	R, P en AST	No
1a	Instrumental Analysis	WBFA005-06	6	E.M.J. Verpoorte	G. Lageveen-Kammeijer	WE, PR en R	
1a	Biostatistics	WBFA011-05	5	P.L. Horvatovich	S. Mubarik	WE	
1b	Pharmacoepidemiology	WBFA028-05	5	E. Hak	S. Mubarik	MC en WE	Yes
1b	Metabolism and Toxicology	WBFA016-05	5	I.A.M. de Graaf	A.P. Nagelkerke	MC, WE, PR, R en P	
1b	Pharmacokinetics	WBFA018-05	5	M. Balogh	P. H. C. Aberg	WE, PR, R	Yes
2a	Pharmaceutical Microbiology (the VMT-test is a mandatory part of the course)	WBFA025-05	5	P. Olinga	R.H. Cool	MC, WE, PR	
2a	Pharmaceutical Technology and Biopharmacy 2	WBFA026-05	5	W.L.J. Hinrichs	H.J. Woerdenbag	WE en PR	
2a	Organic and Biosynthesis	WBFA008-05	5	K. Haslinger	P. Fodran	WE, PR en R	Yes
2b	Immunopharmacology	WBFA015-05	5	B.N. Melgert	M. Schmidt	MC, AST en IT	Yes
2b	Medicines Group: Drugs for the Central Nervous System	WBFA033-05	5	A.M. Dolga	M. Balogh	MC en WE	Yes
2b	Bioanalysis	WBFA032-05	5	G. Lageveen-Kammeijer	P.L. Horvatovich	WE en PR	

Year 3 Bachelor							
Period	Course unit	Course code	ECTS	First examiner	Second examiner	Assessment methods	Does (part of the) assessment have a formative function?
1a	Medicinal Chemistry and Biophysics	WBFA038-05	5	M.R. Groves	W.C. Szymanski	WE	
1a	MG: Endocrine System and Digestive and Respiratory Tract	WBFA039-05	5	R. Gosens	M. Schmidt	MC en WE	Yes
1b	MG: Infectious diseases and Oncology	WBFA041-05	5	M. Balogh	K. Haslinger	MC	Yes
1b	Organic Chemistry Practical	WBFA056-05	5	N.N.H.M. Eisink	W.C. Szymanski	WE, PR en R	Yes
1	Pharmacology Practical	WBFA019-05	5	H.A. Baarsma	R. Gosens	R en MT	
1	MG: Circulatory Tract	WBFA040-05	5	H.A. Baarsma	M. Schmidt	MC en WE	
1a/1b/2a/2b	Bachelor Research Project	WBFA902-14	14	List of examiners	List of examiners	PR, R, P	
2	Professionalism in Pharmacy 3	WBFA063-01	1	B. van Basten	K. Taxis	AST	No
2a	From clinical trials to big data research	WBFA050-05	5	F. Klont	E. Hak	WE, R, P en AST	No
2a	Introduction to PharmacoEconomics	WBFA047-05	5	T.L. Feenstra	A.D.I. van Asselt	WE, P, AST, IT	Yes
2a	Patient Perspectives in Pharmacy	WBFA046-05	5	C.E.M.J. van Dijk	K. Taxis	R,P, AST	
2b	Advanced Human Disease Model Technologies	WBFA051-05	5	A.M. Dolga	R. Gosens	MC, P, AST	Yes
2b	Drug Toxicology and Translational Technology	WBFA049-05	5	A.P. Nagelkerke	I.A.M. de Graaf	WE, P en AST	Yes
2b	Pharmacology of Chronic Diseases and Ageing	WBFA048-05	5	H.A. Baarsma	M. Schmidt	R, P en AST	
2b	Pharmaceutical Techn. and Biopharm. 3	WBFA059-05	5	W.L.J. Hinrichs	H.W. Frijlink	MC	
2b	Intro. to Nanomed. and Drug Targeting	WBFA060-05	5	A. Salvati	K. Poelstra	MC, WE en AST	Yes
2b	Herbal Medicine	WBFA058-05	5	K. Haslinger	H.A. Baarsma	MC	No

List of examiners bachelor projects

Aberg, P.H.C.
Asselt, van, A.D.I.
Baarsma, H.A.
Balogh, M
Berg, van den, J.M.
Bock, de, G.H.
Boersma, H.H.
Boven, van, J.F.M.
Bult, W.
Burgess, J.K.
Daemen, C.A.H.H.
Deelman, L.E.
Dekker, F.J.
Denig, P.
Dijck-Brouwer, D.A.J.
Dijk, van, C.E.M.J.
Dolga, A.M.
El Aidy, S.
Feenstra, T.L.
Fodran, P.
Frijlink, H.W.
Gosens, R.
Graaf, de, I.A.M.
Groves, M.R.
Hak, E.
Haslinger, K.
Heeringa, P.
Heijink, H.I.
Henning, R.H.
Hinrichs, W.L.J.
Horvatovich, P.L.
Huckriede, A.L.W.
Ijzendoorn, van, S.C.D.
Jansman, F.G.A.
Kampinga, H.H.
Kamps, J.A.A.M.
Kema, I.P.
Klont, F.
Kosterink, J.G.W.
Lageveen-Kammeijer, G.S.M.
Lambers Heerspink, H.J.
Melgert, B.N.
Mol, P.G.M.
Molema, G.
Mubarik, S.
Muller Kobold, A.C.
Nagelkerke, A.P.

Olinga, P.
Poelarends, G.J.
Poelstra, K.
Puijenbroek, van, E.P.
Quax, W.J.
Rafie, K. (second examiner)
Salvati, A.
Schmidt, M.
Schmidt, S.
Szymanski, W.C.
Schuiling-Veninga, C.C.M.
Taxis, K.
Touw, D.J.
Trombetta-Lima, M.
Verpoorte, E.M.J.
Wu, W.Y. (second examiner)
Woerdenbag, H.J.
Zuhorn, I.S.

Dekkers, B.G.J.
Lub-de Hooge, M.N.
Sturkenboom, M.G.G. (second examiner)

5. Relationship between course units and details of the learning outcomes

Please note in the table below the course units per block in the programme. Indicate which learning outcomes are assessed in which courses by adding an X in the relevant cell. Please add extra rows if necessary.

Course units BSc year 1		Lo Knowledge and understanding															Lo Skills																	Lo Professional behaviour										
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	C1	C2	C3	C4	C5	C6	C7	C8	C9		
	Professionalism in Pharmacy 1																																											
	Molecular Biology of The Cell 1																																											
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	Human Physiology																																											
	Pathology																																											
	Pharmaceutical Analysis																																											
	Receptor Pharmacology																																											
Global Health and Pharmacotherapy																																												

light blue = small contribution; dark blue = large contribution

Course units BSc year 2		Lo Knowledge and understanding															Lo Skills																	Lo Professional behaviour										
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	C1	C2	C3	C4	C5	C6	C7	C8	C9		
	Professionalism in Pharmacy 2																																											
	Instrumental Analysis																																											
	Organic and Biosynthesis																																											
	Biostatistics																																											
	Metabolism and Toxicology																																											
	Pharmacokinetics																																											
	Pharmaceutical Microbiology (de VMT-toets is verplicht onderdeel van dit vak)																																											
	Pharmacoepidemiology																																											
	Bioanalysis																																											
	Immunopharmacology																																											
	Pharmaceutical Technology and Biopharmacy 2																																											
	Medicines Group: Drugs for the Central Nervous System																																											
	Organic Chemistry Practical																																											

	Lo Knowledge and understanding															Lo Skills																	Lo Professional behaviour											
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	C1	C2	C3	C4	C5	C6	C7	C8	C9			
Professionalism in Pharmacy 3																																												
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