

# ANNEX B: PHARMACY 2021-2022

## Articles

### Article 2.1 – Admission

1. Equivalent programmes are:
  - The Netherlands:
    - i. pre-university education certificate awarded under the old system (*vwo op basis van vakkenpakket*)
    - ii. pre-university education certificate awarded under the old subject clusters (vwo final examination taken under the requirements of the Higher Education Act as it read until 31 July 2007).
    - iii. gymnasium diploma awarded under the Higher Education Act 1876 (*Hoger Onderwijswet 1876*)
    - iv. secondary school (*hbs*) diploma awarded under the Secondary Education Act (*Middelbaar Onderwijswet*)
  - International Baccalaureate
    - i. Transcript of the Diploma of the international baccalaureate awarded by the International Baccalaureate Office in Geneva.
  - Surinam
    - i. Certificate pre-university education.
2. Anyone who does not hold a diploma with the pre-university profile 'Natuur & Gezondheid' with Physics or 'Natuur & Techniek' with Biology (which immediately grants admission to the study programme), but does hold an equivalent diploma which grants admission on the basis of the Act or paragraph 1, may register for the study programme only after demonstrating that she<sup>1</sup> has sufficient knowledge, at the level of the final pre-university education examination, of the following subjects of the required pre- university profile:
  - Mathematics A or B

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<sup>1</sup> For the sake of readability, 'she' is used in the text. Where it says 'she', of course, 'he' can also be read.

- Physics
  - Chemistry
3. Anyone who does not hold a diploma with the pre-university education profile (which gives direct admission to the study programme), but who does hold a first-year diploma awarded by a university of applied sciences (*'hogeschool'*), may register for the study programme only after demonstrating that he has sufficient knowledge, at the level of the pre-university education final examination, of the following subjects:
- Mathematics A or B
  - Physics
  - Chemistry

### **Article 2.3 – Entrance examination**

The entrance examination referred to in art. 7.29 of the Higher Education and Research Act, concerns the following subjects at the level indicated:

- Mathematics A or B at pre-university level
- Physics at pre-university level
- Chemistry at pre-university level
- Biology at pre-university level
- English at pre-university level

### **Article 3.1.2 – Intended learning outcomes**

A graduate of the bachelor's degree programme Pharmacy:

1. Knowledge and understanding. The graduate has knowledge of and insight into:
  - the chemical and physicochemical properties as well as the analysis of low- and high molecular pharmaceuticals and pharmaceutical excipients;
  - the formulation of drugs and the processing of such formulation into drugs, in association with related quality criteria;
  - the effect of physicochemical properties of chemical compounds on their therapeutic applicability;
  - drug targets in the body, from target response at the site of action to changes at the molecular level;

- processes and factors relevant for absorption, disposition and elimination of drugs as well as processes that determine the availability of drug substances in the body;
  - pathophysiological processes that underlie diseases, as well as basic anatomy and physiology related to health and disease;
  - the pharmacotherapy of a number of important disorders, including the mechanism of drug action and underlying pathophysiology;
  - intended and unintended drug effects on the biological system;
  - the most important patient- and product characteristics that may affect drug efficacy, as well as diagnostic (analytical) methods used to assess drug efficacy;
  - the process of drug discovery and development;
  - the design, (analytical) methods and (statistical) data processing used in pharmaceutical research.
2. Application of knowledge and insight. The graduate:
- can apply qualitative, quantitative and statistical methods in pharmaceutical research;
  - is able to formulate a specific pharmaceutical research question, put forth a hypothesis and is able to come up with relevant explanations;
  - is able to acquire pharmaceutical data and to analyse these data qualitatively and quantitatively;
  - has demonstrated that she can apply the acquired knowledge, insights and skills to solve pharmaceutical issues while using the empirical cycle as part of the Final project.
3. Judgement. The graduate:
- understands the context in which the pharmaceutical science as a discipline operates; and is aware of ethical and societal aspects, as well as the history and philosophy of science relevant to the pharmaceutical sciences;
  - is able to read, understand and critically evaluate pharmaceutical, (analytical) chemical and biomedical literature;
  - is able to assess the quality of collected pharmaceutical and biomedical data;
  - is able to reflect on pharmaceutical issues, taking into account relevant social, clinical, scientific and ethical aspects;
  - is able to relate pharmaceutical issues with adjacent disciplines (for

example medicine, biology, chemistry, physics).

4. Communication. The graduate:

- is able to clearly and efficiently communicate to a target audience, both orally and in writing, in Dutch as well as in English;
- is able to report about research (results) both orally and in writing;
- is able to substantively contribute to a scientific discussion;
- is able to form a well-argued opinion and to defend her view;
- is able to work in teams.

5. Learning skills. The graduate:

- is able to independently gather relevant information and gain insight required to address unfamiliar pharmaceutical issues;
- can function at an academic level, and is motivated to continuously improve this level;
- is able to follow novel developments in the field and to apply these;
- is able to think in a multidisciplinary way and to make connections between different disciplines;
- is able to make an informed choice when applying for a master's degree or considering her options for a future career;
- is able to reflect on her own conduct, and is open to giving, receiving and processing feedback;
- shows professional behaviour within pharmaceutical and professional practice-oriented education and research.

### **Article 3.3 – Language in which the degree programme is taught**

The College of Pharmaceutical Sciences (CPS) is an international study track. English is the language of instruction because English is the main language in scientific research in the pharmaceutical sciences. The study track CPS is meant to attract both Dutch and international students to create an international classroom setting and community. The use of English as main language may facilitate this further.

### **Article 3.5 – Major**

1. The Bachelor's degree programme Pharmacy includes a major related to Pharmaceutical Sciences with a study load of 135 credits. Among these, the courses indicated in overview 1 are mandatory.

2. A thesis, with a credit load of at least 7.5 credits, is part of the major. As proof of competency the student performs a final project, in which the acquired knowledge, skills and attitudes of the major are combined.

### **Article 3.6 – Double degree program**

Pharmacy is not part of a double degree program.

### **Article 3.7 – Optional extension courses**

The course “Farmaceutisch Nederlands” (FA-BA131, 7.5 credits) is required for students that have failed the entry-exam.

### **Article 3.11 – Honours Programmes in the Science Honours Academy**

The Honours programme has a total study load of 45 credits, of which 15 credits are extracurricular and at least 15 credits are within the major, as being curricular credits. The Honours programme includes the following mandatory activities<sup>2</sup>:

1. Extracurricular (at least 15 credits):
  - Inter-disciplinary module together with students of the Science Honours Academy: BETA-B2HRI 7.5 credits
  - Departmental module of the Honours Programme in Pharmaceutical Sciences HPPS: BETA-B3DHB 7.5 credits
2. Curricular, at Honours level (15 to 30 credits)
  - The bachelor thesis / research project at honours level with a study load of 15 credits
  - Optional choices: within the curriculum the honours student completes courses of 7.5 credits at Honours level, with as options:
    - i. Regular courses of 7.5 credits, upgraded to Honours level by

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<sup>2</sup> For additional information please visit: <http://students.uu.nl/beta/farmacieb/onderwijs/honours/honoursprogrammas-beta> and more specifically: <https://sciencehonours.sites.uu.nl/students/pharmacy/>

- an in-depth assignment and/or
- ii. Taking Honours courses of 7.5 credits within the optional extension courses (e.g. the Descartes College). See overview 2 for optional courses.
  - iii. For CPS students all mandatory courses of the major are at Honours level
3. Each honours student is expected to participate actively in extracurricular activities within the honours community. Students gain international and/or interdisciplinary and/or societal experience within the honours programme, e.g. take part in a study trip.
  4. Participants are selected in the second semester of the first year by a selection committee, on the basis of the average grade (at least 7.5 in the first semester), experimental skills, theoretical knowledge, number of credits obtained, a letter of motivation, curriculum vitae and possibly an interview.

#### **Article 4.2 – Entry requirements for courses; required prior knowledge**

<b>Enrolment in:</b>	<b>Entry requirement:</b>
Mandatory course level 3	All mandatory level 1 courses have been successfully completed
FA-BA301	Has previously actively participated in FA-BA203
FA-BA303	Has previously actively participated in FA-BA201
FA-BA305	Has previously actively participated in FA-BA202
FA-CPS-380	All mandatory major CPS courses have been successfully completed

#### **Article 4.6 – Finalizing courses for international exchange students before the Christmas holiday**

See overview 3.

**Article 5.5 – Re-sit: Additional or substitute test**

A student who is unable to take a test due to illness should inform the course coordinator and the Student Desk. Personal circumstances beyond his/her control should be reported to the study advisor.

**Article 5.10 – Period of validity**

Partial test results and assignments will lose their validity if the course within which they were taken was not passed, with exemption of assignments and partial tests of the following courses:

Course code	Title
FA-BA100	Academische vaardigheden Farmacie 1
FA-BA200	Academische vaardigheden Farmacie 2
FA-BA300	Academische vaardigheden Farmacie 3

**Article 6.2 – Distinction of cum laude**

The distinction of 'cum laude' will be awarded to the Bachelor's Degree examination if each of the following conditions has been fulfilled:

- a weighted average mark of at least 8.0 has been earned for the courses of the Bachelor's Degree Programme and a mark of at least 8.0 has been obtained for the bachelor thesis/bachelor research project;
- in the course of the bachelor program, not more than 1 course was repeated;
- exemptions that do not count have been obtained for not more than 60 credits;
- the Board of Examiners has not taken the decision (as referred to art. 5.14, paragraph 4 under b) stating that fraud/plagiarism has been ascertained and that the student therefore is not eligible for a positive degree classification (cum laude);
- has passed the final examination of the Bachelor's Degree Programme within four years.

**Article 7.4.12 – (binding) study advice**

No negative binding recommendation can be issued if the student has passed all the tests relating to the courses in the first year of the degree programme with a combined study load of 60 credits.

The courses of the first year of the bachelor's programme Pharmacy, track Pharmacy and track Pharmaceutical Sciences are:

<b>Course code:</b>	<b>Couse name:</b>
FA-BA100	Academische vaardigheden Farmacie 1
FA-BA101	Inleiding farmacie
FA-BA102	Chemie van geneesmiddelen
FA-BA103	Toedienen van geneesmiddelen
FA-BA104	Werking van geneesmiddelen
FA-BA105	Kinetiek van geneesmiddelen
FA-BA106	Therapie met geneesmiddelen
FA-BA107	Onderzoek naar geneesmiddelen
###	Elective course

The courses of the first year of the bachelor's programme Pharmacy, track College of Pharmaceutical Sciences are:

<b>Course code:</b>	<b>Couse name:</b>
FA-CPS101	Epidemiology and Clinical Development of Drugs
FA-CPS102	Behaviour of the drug in the human body
FA-CPS103A	The drug and the cell
FA-CPS104	The drug molecule
###	Elective course

**Article 8.5 – Transitional arrangement**

See overview 4.



## Overviews

Overview 1a: Major Pharmacy, track Pharmacy

BA-Exam programme: Pharmacy	Number of credits	Comments
1- Major	135	
<ul style="list-style-type: none"> <li>• mandatory</li> </ul>	135	Including FA-BA380 or FA-BA381 Bachelor thesis or project
<ul style="list-style-type: none"> <li>• electives major</li> </ul>	-	
2- Optional extension courses	45	
Total	180	

### 1. Mandatory major courses

Course code	Course name	Credits	Level
FA-BA101	Inleiding farmacie	7.5	1
FA-BA102	Chemie van geneesmiddelen	7.5	1
FA-BA103	Toedienen van geneesmiddelen	7.5	1
FA-BA104	Werking van geneesmiddelen	7.5	1
FA-BA105	Kinetiek van geneesmiddelen	7.5	1
FA-BA106	Therapie met geneesmiddelen	7.5	1
FA-BA107	Onderzoek naar geneesmiddelen	7.5	1
FA-BA100	Academische vaardigheden Farmacie 1	0	1
FA-BA200	Academische vaardigheden Farmacie 2	0	2
FA-BA300	Academische vaardigheden Farmacie 2	0	3
FA-BA201	Infectie en afweer	7.5	2
FA-BA202	Productzorg	7.5	2

FA-BA203	Neurologie	7.5	2
FA-BA204	Biologische geneesmiddelen	7.5	2
FA-BA205	Hormonale aandoeningen	7.5	2
FA-BA301	Psychofarmacologie	7.5	3
FA-BA302	Cardiovasculaire aandoeningen	7.5	3
FA-BA303	Chronisch inflammatoire aandoeningen	7.5	3
FA-BA304	Oncologie	7.5	3
FA-BA305	Dermatica en huidaandoeningen	7.5	3
FA-BA380	Bachelorwerkstuk	7.5	3

## Overview 1b: Major Pharmacy, track Pharmaceutical Sciences

BA-Exam programme: Pharmaceutical Sciences	Number of credits	Comments
1- Major	135	
<ul style="list-style-type: none"> <li>mandatory</li> </ul>	75	Including FA-BA381 Bachelor project
<ul style="list-style-type: none"> <li>electives major</li> </ul>	60	
2- Elective course profile	45	
Total	180	

## 1. Mandatory major courses

Course code	Course name	Credits	Level
FA-BA101	Inleiding farmacie	7.5	1

FA-BA102	Chemie van geneesmiddelen	7.5	1
FA-BA103	Toedienen van geneesmiddelen	7.5	1
FA-BA104	Werking van geneesmiddelen	7.5	1
FA-BA105	Kinetiek van geneesmiddelen	7.5	1
FA-BA106	Therapie met geneesmiddelen	7.5	1
FA-BA107	Onderzoek naar geneesmiddelen	7.5	1
FA-BA311	Ontwikkelen van nieuwe geneesmiddelen	7.5	3
FA-BA381	Bachelorwerkstuk	15	3
FA-BA100	Academische vaardigheden Farmacie 1	0	1
FA-BA200	Academische vaardigheden Farmacie 2	0	2
FA-BA300	Academische vaardigheden Farmacie 3	0	3

## 2. Major bound electives track Pharmaceutical Sciences

Courses offered by the department of Pharmaceutical Sciences or equivalent courses at other programmes. Within the freedom of choice the following rules apply:

- at least 7.5 EC have to be obtained with courses in the field of product care and in the field of chemical analysis or bioanalysis;
- at least 15 EC have to be obtained in the field of drugs and diseases;
- at least 22.5 EC in electives in the major and optional extension courses should be at level 3;
- at least 15 EC on courses has to be chosen at level 2. This amount may be reduced to the extent in which the minimum at level 3 is exceeded.

Overview 1c: Mandatory and elective courses major College of Pharmaceutical Sciences<sup>3</sup>

BA- Exam programme: CPS	Number of credits	Comments
1- Major	135	
<ul style="list-style-type: none"> <li>mandatory</li> </ul>	120	Including FA-CPS-380 Research Project
<ul style="list-style-type: none"> <li>electives major</li> </ul>	15	
2- Optional extension courses	45	
Total	180	

1. Mandatory major courses

Course code	Course name	Credits	Level
FA-CPS101	Epidemiology and clinical development of drugs	15	1
FA-CPS102	Behaviour of the drug in the human body	15	1
FA-CPS103A	The drug and the cell	7.5	1
FA-CPS104	The drug molecule	15	1
FA-CPS212	Immunopharmacology	7.5	2, HB
FA-CPS213	Psychopharmacology	7.5	2, HB
FA-CPS221	Analytical methods	7.5	2, HB
FA-CPS322	Pharmaceutical biotechnology	15	3, HB
FA-CPS-380	Research Project	30	3, HB
FA-CPS-390	Portfolio	0	3, HB

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<sup>3</sup> Students that enrolled the CPS programme before September 1, 2021 may graduate under the old exam programme CSP2010 until August 31, 2025 at the latest.

## 2. Elective courses major

Course code	Course name	Credits	Level
FA-CPS222	Chemical techniques	7.5	2, HB
FA-CPS223	Cellular and molecular techniques	7.5	2, HB
FA-CPS230	In vitro disease models	7.5	2, HB
FA-CPS333	Pharma and nutrition	7.5	3, HB
FA-CPS338	Advanced epidemiology	7.5	3, HB
FA-CPS341	Omics in oncology	7.5	3, HB

For the elective courses the following rules apply:

1. 7.5 credits must be chosen from either FA-CPS222 Chemical techniques or FA-CPS223 Cellular and molecular techniques.
2. 7.5 credits must be chosen from either FA-CPS230 or FA-CPS333 or FA-CPS338 or FA-CPS341.

Terms for optional extension courses ('profileringsruimte') College of Pharmaceutical Sciences:

1. Courses selected at level 3 should add up to at least 22.5 credits.<sup>4</sup>
2. Courses selected at level 2 should add up to at least 7.5 credits. This amount may be reduced to the extent in which the minimum required number of ECs at level 3 is exceeded.

## Overview 2: Content Honours Programme in Pharmaceutical Sciences (HPPS)

## 1. Honours courses

Course code	Course name	Credits	Level
BETA-B2HRI	The interdisciplinary module	7.5	HB

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<sup>4</sup> Courses not selected as part of the electives major (FA-CPS230 or FA-CPS333 or FA-CPS338 or FA-CPS341) can be part of the elective course profile.

BETA-B3DHB	Departmental Honours meetings	7.5	HB
FA-BA381 or FA-CPS-380	Honours thesis or CPS research project	15-30	HB
Several course codes	Honours-level courses or additional assignments in regular courses	15	HB

2. Honours level courses offered within the curriculum Pharmaceutical Sciences<sup>5</sup>

Course code	Course name	Credits	Level
FA-CPS211	Intercellular communication	7.5	2, HB
FA-CPS212	Immunopharmacology	7.5	2, HB
FA-CPS213	Psychopharmacology	7.5	2, HB
FA-CPS221	Analytical methods	7.5	2, HB
FA-CPS222	Chemical techniques	7.5	2, HB
FA-CPS223	Cellular and molecular techniques	7.5	2, HB
FA-CPS230	In vitro models	7.5	2, HB
FA-CPS311T	Organic chemistry T	7.5	3, HB
FA-CPS311P	Organic chemistry P	7.5	3, HB
FA-CPS312T	Medicinal chemistry T	7.5	3, HB
FA-CPS312P	Medicinal chemistry P	7.5	3, HB
FA-CPS322	Pharmaceutical biotechnology	15	3, HB
FA-CPS333	Pharma and nutrition	7.5	3, HB
FA-CPS336T	Psychoneuropharmacology T	7.5	3, HB
FA-CPS336P	Psychoneuropharmacology P	7.5	3, HB
FA-CPS338	Advanced pharmacoepidemiology	7.5	3, HB
FA-CPS339T	Advanced immunopharmacology T	7.5	3, HB

<sup>5</sup> Additional information can be found at the website: <http://students.uu.nl/beta/farmacieb/onderwijs/honours/honoursprogrammas-beta>

FA-CPS339P	Advanced immunopharmacology P	7.5	3, HB
FA-CPS341	Omics in oncology	7.5	3, HB
FA-CPS345	Proteins and disease	7.5	3, HB
FA-CPS370	Honours literature thesis	7.5	3, HB

Overview 3: Courses for international exchange students that can be finished in period 2 before the Christmas holiday

Course code	Course name	Credits	Level
FA-CPS221	Analytical methods	7.5	2
FA-CPS370	Honours literature thesis	7.5	3

#### Overview 4: Transitional arrangement

Students who still have to pass FA-CPS103 The drug and the cell (15 credits) may contact the examiner of this course.