Pharmacy education & training in

The NETHERLANDS

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Education and Culture DG
Lifelong Learning Programme

PHARMINE
Pharmacy Education in Europe

PHARMINE (PHARMacy education IN Europe) is a project funded by the European Commission (LLL programme, Erasmus). Its aims and objectives are to survey the present state of pharmacy education and training in Europe, and on the basis of this survey, formulate recommendations for new competence curricula for pharmacy education and training in the EU. A model for pharmacy education and training for candidate member states and other countries will be proposed. The opportunities for a quality assurance and accreditation scheme for EU pharmacy courses will be investigated.

PHARMINE will take into account two important issues, (i) the EU directive 2005/36/EC on the recognition of professional qualifications and, (ii) the Bologna declaration. PHARMINE will focus both on recommendations for core education and training and for activities such as industrial and hospital pharmacy.

The PHARMINE consortium consists of universities which are members of the European Association of Faculties of Pharmacy (EAFP) and EU partner associations representing community, hospital of industrial pharmacy, together with the European Pharmacy Students' Association and other interested bodies.

In order to reach the objectives of the PHARMINE project, a work-plan was set up and divided into 7 work-packages (WP).

The aims and objectives of PHARMINE WP7 are to:

1. Survey European higher education institutions (HEIs)
2. Produce a databank of pharmacy education and training courses in Europe leading to core pharmacist qualifications and to qualifications required for industrial and hospital pharmacy
3. Survey to what extent the "Bologna" (based on the principles enumerated in the Bologna declaration) and the "Sectoral profession" (based on 2005/36/EC) models for pharmacy education and training are compatible.

PHARMINE WP7 will produce several documents including a WP7 survey by country. **Such surveys are intended for the use of students and staff interested in mobility and/or contacts with the country in questions as well as educationalists working on pharmacy education and training in Europe.**

(see: The PHARMINE paradigm.pdf)

The "PHARMINE survey of European higher education institutions delivering pharmacy education & training – The Netherlands" was produced by:

Jeffrey ATKINSON
PHARMINE executive director
Pharmacolor Consultants Nancy
12 rue de Versigny
54600 Villers
France.
jeffrey.atkinson@pharma.uhp-nancy.fr
www.pharmine.org

Tom SCHALEKAMP, associate professor
Utrecht University, Faculty of Science
Department of Pharmaceutical Sciences
Sorbonnelaan 16
Postal address: P.O.Box 80082
Utrecht, 3508 TB
The Netherlands
T.Schalekamp@uu.nl
www.pharm.uu.nl

Professor Hidde J. HAISMA
University of Groningen,
School of Life Sciences,
Pharmacy and Pharmaceutical Sciences
Antonius Deusinglaan 1
Groningen, 9713 AV
The Netherlands
H.J.Haisma@rug.nl
www.rug.nl/farmacie

with the help of:

Daisy VOLMER
Lecturer
Department of Pharmacy
University of Tartu
50411 Tartu
Estonia
daisy.volmer@ut.ee
www.med.ut.ee/farmaatsia/

Christine CAPDEVILLE-ATKINSON
Vice-president
Nancy University – UHP
24-30 rue Lionnois - BP 60121
54 003 Nancy Cedex
France
christine.atkinson@uhp-nancy.fr
http://www.uhp-nancy.fr/

Lea NOEL
PHARMINE project assistant
Dept.MICH
Vrije Universiteit Brussel
Laarbeeklaan 103
B 1090 Brussel
Belgium
lea.noel@vub.ac.be
www.vub.ac.be/MICH

All the data and information provided in this document have been provided to the best of the knowledge of the authors. Any comments and suggestions will be welcomed : jeffrey.atkinson@pharma.uhp-nancy.fr

Contacts in The Netherlands.

	First contact	Second contact
Name	Schalekamp, Tom	Haisma, Hidde J.
HEI	Utrecht University, Faculty of Science Department of Pharmaceutical Sciences	University of Groningen, School of Life Sciences, Pharmacy and Pharmaceutical Sciences
Street	Sorbonnelaan 16 Postal address: P.O.Box 80082	Antonius Deusinglaan 1
City, zip	Utrecht, 3508 TB	Groningen, 9713 AV
Country	The Netherlands	The Netherlands
Telephone	+ 0031 30 2534042	+0031 50 3633275
Fax	+ 0031 30 2539166	+0031 50 3637943
e-mail	T.Schalekamp@uu.nl	H.J.Haisma@rug.nl
Website	www.pharm.uu.nl	www.rug.nl/farmacie

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Summary.

The pharmacy diploma is obtained after a six year masters degree course at one of 2 universities: Groningen or Utrecht.

Specialisation occurs following graduation.

The 6th year is roughly split into traineeship and elective courses. Traineeship is approximately half community and half in a hospital pharmacy. There is also early traineeship in the form of a 1 month community pharmacy traineeship in the 4th year.

Introduction.

Total population: 16,379,000

Gross national income per capita (PPP international $): 37,940

Life expectancy at birth m/f (years): 78/82

Healthy life expectancy at birth m/f (years, 2003): 70/73

Probability of dying under five (per 1 000 live births): 5

Probability of dying between 15 and 60 years m/f (per 1 000 population): 81/59

Total expenditure on health per capita (Intl $, 2006): 3,383

Total expenditure on health as % of GDP (2006): 9.3

Figures are for 2006 unless indicated. Source: World Health Statistics 2008

Chapter 1. Organization of the activities of pharmacists, professional bodies

The *Koninklijke Nederlandse Maatschappij ter bevordering der Pharmacie* (http://www.knmp.nl/) helped with this section.

	Y/N, number or %	Comments.
Community pharmacy		
Community pharmacists	3100	
Community pharmacies	2000	
Competences and roles of community pharmacists		Drug distribution, medication surveillance and information (patient care), pharmaco-therapeutic consultancy with prescribers, medication review, drug compounding and quality management.
Is ownership of a pharmacy limited to pharmacists?	No	
Rules governing the distribution of community?	No	
Healthcare products available through channels other than pharmacies?	Yes	General Sales List products are available from drugstores.
Are persons other than pharmacists involved in community practice?	Yes	There are technicians who work under the responsibility of the community pharmacists, but they work within community pharmacies.
Their titles and number(s)	17,000	3 to 10 in every community pharmacy,
Their qualifications		
Organisation providing and validating the E&T		
Duration of studies (years)	3	
Subject areas		Assistance of community pharmacists
Competences and roles		They do distribution tasks, compounding, and advice to patients.
Hospital pharmacy		
Hospital pharmacists	400	
Hospital pharmacies	100	
Competences and roles of hospital pharmacists		Drug distribution, medication policy, medication surveillance, clinical pharmacy, drug safety, drug compounding, quality management
Pharmaceutical and related industries		
Companies with production, R&D and distribution		
Production only		
Distribution only		
Generic drugs only		
Industrial pharmacy		
Number of pharmacists working in industry		

Competences and roles of industrial pharmacists		
Other sectors		
Pharmacists in other sectors	1500	
Sectors		Government, universities, consultancy, wholesale
Competences and roles		Wide : marketing, GMP, marketing authorization review, Inspectorate Public Health
Roles of professional associations		
Registration of pharmacists	Yes	
Creation of pharmacies and control of territorial distribution	No	
Ethical and other aspects of professional conduct	Yes	
Quality assurance and validation of HEI courses for pharmacists	No	

Chapter 2. Pharmacy HEIs, students and courses

	Y/N, number or %	Comments.
HEIs the Netherlands	2	Utrecht: www.pharm.uu.nl In English http://www.uu.nl/EN/Pages/default.aspx Groningen: http://www.rug.nl/farmacie/index university: http://www.rug.nl/corporate/index
Public	2	
Organisation of HEIs		
Attached to a science faculty	Yes	
Do HEIs offer B + M degrees?	Yes	
Do HEIs offer an M. Pharm. after a B degree in another HEI?	Partially	It is possible to be admitted to a M.Pharm programme with another bachelor, but only after some "reparation" courses, especially in the areas of drug compounding and (sometimes) pharmacology.
Number of international students (non EU)	Number: 0	
Entry requirements (beginning of S1 of B1, following secondary school)		
Specific pharmacy-related examination	No	
Other form of entry requirement at a national level	Yes	Profiles 'Nature and Health' or 'Nature and *technics'* in secondary school
Is there a national *numerus clausus*?	No	
Advanced entry		
At which level?		Master, for pharmacists from outside the EU or for students with a bachelor other than the B.Pharm. or master after some "reparations"
What are the requirements?		Bachelor or master in a chemical and/or biological area. Dutch language skills for the M.Pharm.
Specific requirements for international students		Dutch language skills for the master programme.
Fees per year		
For home students		2010/2011: 1672,-- euro/year We do not get an amount for each starting student but we get an amount related to the number of students who obtain a B.Pharm. degree.
For EU MS students		2010/2011: 1672,-- euro/year
For non EU students		2010/2011: 1672,-- euro/year
Length of course: 6 years		
Specialization		
Do HEIs provide specialized courses?		Specialization will take place after graduation

Groningen		
Teaching staff		
Number of teaching staff (nationals)	82	And 8 international teaching staff (EU) and 2 form outside the EU
Number professionals (pharmacists and others) from outside the HEIs, involved in E&T	10	Difficult to estimate as a lot of pharmacists are invited for lectures
Students		
Places at entry following secondary school		Not a fixed number
Number of applicants for entry	150	This number is variable
Graduates that become registeredl pharmacists.	40-60	This is approximately the number of graduates who become MSc with the title of pharmacist.
International students (from EU)	?	There is not a fixed number. We rarely have a student from another EU state, but a major problem is of course command of Dutch language which is understandably required for a Dutch pharmacist.
International students (non EU)		
Length of course	**6 years**	For the master programme; we sometimes also impose 1 year a premaster programme on candidates for the master programme.
Specialization		
Does your HEI provide specialized courses?	No	There are some elective courses (in year 5 and 6), but I would not designate them as specialized courses. During the master course students can choose some electives of which are product-oriented or patient-oriented.
Past and present changes in E&T		
Have there been any major changes since 1999 at your HEI?	Yes	During the last years our curriculum changed. This started in 2006/2007 by the introduction of a new first year of our bachelor programme. This year (2010/2011) our fifth year is renewed and next year our final year will be improved.
Major changes before 2019?	No	
Is Groningen typical of the Netherlands?	Yes	

Chapter 3. Teaching and learning methods

Student hours

Groningen

Method	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
HEIs courses (2005)						
Lecture	278	288	199	172	30	51
Tutorial	93	15	57	162	45	52
Practical	306	594	533	318	180	9
Project work	125	0	263	170	1255 (including 880 hours research*; see also electives/choice)	236
Self guided learning	878	783	628	738	170	72
Traineeship						
Hospital	0	0	0	0	0	320
Community	0	0	0	160	0	240
Other (please specify)	0	0	0	0	0	320: students can choose to do their final traineeship in a hospital, or community pharmacy
Electives						
Choice			Students are free to choose the subject of their Bachelor project and thesis (440 hours)		1) * Students can choose a research project from a whole range of pharmaceutical/medical /chemical research areas 2) Students have to choose electives (560 hours)	560 (students can choose between a more patient-oriented or product-oriented courses)

Chapter 4. Subject areas

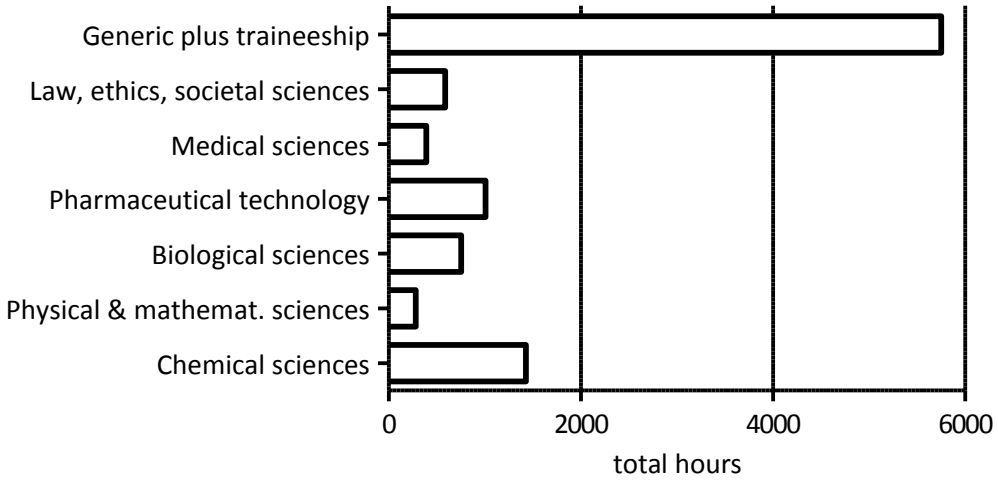
Student hours

Groningen (2010/2011)

Subject area	Year 1	Year 2	Year 3
CHEMSCI	Pharmaceutical analysis (5 ECTS) Molecules and reactions (5 ECTS) → 280 hours	Bio-organic chemistry (5 ECTS) Pharmaceutical analysis (5 ECTS) Pharmaco-chemistry & spectrometry (5 ECTS) Organic chemistry practicals (5 ECTS) →560 hours	Pharmaceutical analysis (10 ECTS) → 280 hours
PHYSMATH	Mathematics and statistics (5 ECTS) → 140 hours	Biostatistics (5 ECTS) → 140 hours	
BIOLSCI	Cell biology 1 (4 ECTS) Cell biology 2 (4 ECTS) Genetics (4 ECTS) Human Physiology (5 ECTS) Practical anatomy and physiology (2 ECTS) Practicals cell biology (3 ECTS) → 616 hours	Pharmaceutical microbiology (5 ECTS) → 140 hours	
PHARMTECH	Pharmaceutical technology (5 ECTS) → 140 hours	Drug formulation & biophysics (10 ECTS) → 280 hours	
MEDISCI	Physiology/Pharmacology (4 ECTS) Immunology/Oncology (2 ECTS) Pathology (5 ECTS) → 308 hours		
LAWSOC	Ethics. (5 ECTS) → 140 hours		Pharmaceutical technology, ethics and society (5 ECTS) → 140 hours
GENERIC	Poster presentation (2 ECTS) → 56	Pharmacokinetics (5 ECTS) Pharmacology Practicals (5 ECTS) Metabolism and Toxicology (5 ECTS) Receptor pharmacology (5 ECTS) → 560 hours	Bachelor project (10 ECTS) Bachelor thesis (5 ECTS) Drugs of CNS (5 ECTS) Drugs of Endocrinology (10 ECTS) Pharmaceutical genetics and Immunology (5 ECTS) Pharmaco-epidemiology (5 ECTS) Drugs Infections and Tumours (5 ECTS) → 1260 hours

Subject area	Year 4	Year 5	Year 6
CHEMSCI	Pharmaceutical inorganic Chemistry (3 ECTS) Pharmaceutical Chemistry (3 ECTS) → 308 hours		
PHARMTECH	Drug Production and Research (9 ECTS) Manufacturing of Drugs theory and practice (12 ECTS) → 588 hours		
MEDISCI	Clinical Chemistry and Pathophysiology (3 ECTS) → 84 hours		
LAWSOC	Management in Pharmacy (2 ECTS) → 56 hours		Law and ethics (3 ECTS) Pharmacy 'game' (6 ECTS) → 252 hours
GENERIC	Pharmacotherapy (12 ECTS) Phytotherapy (3 ECTS) Behavior And Communication (4 ECTS) Drug Safety (3 ECTS) Traineeship (6 ECTS) → 786 hours	Research project in an research area of choice and electives → 1680 hours	Traineeships → 848 hours Patient or product oriented courses → 560 hours

Student hours by subject area.



Student hours **Utrecht**

Subject area	Year 4	Year 5	Year 6
CHEMSCI	200		
PHYSMATH		960: research project	
BIOLSCI			
PHARMTECH	400	3x 200 optional	1 x 200 optional 120
MEDISCI	390	40 2 x 200 optional	1 x 200 optional 240
LAWSOC	200	200 optional	
GENERIC	10	Optional 10 (in one of the MEDISCI courses)	16

In years 5 and 6 we offer 8 electives of 5 weeks each, of which students have to choose 4. 4 are MEDISCI, 1 is LAWSOC (epidemiology) and 3 are MEDISCI.

Chapter 5. Impact of the Bologna principles

Bologna principle	Is the principle applied? Y/N or partially	Comments.
1. Comparable degrees / Diploma Supplement	Yes	We have only one MSc degree, which is also the (basic) pharmacist degree.
2. Two main cycles (B and M) <u>with entry and exit at B level</u>	No	No specific exit at B level.
3. ECTS system of credits / links to LLL	Yes	ECTS system
4. Obstacles to mobility		There are no obstacles for mobility, there is no specific staff exchange. We encourage students to do their research project abroad and we facilitate that by providing information and helping them to acquire funding for a stay abroad.
5. European QA	No	
6. European dimension	No	

ERASMUS staff exchange to Groningen from elsewhere (2009/2010)	Number of staff months:
ERASMUS staff exchange from Groningen to other HEIs (2009/2010)	Number of staff months: 1
ERASMUS student exchange to Groningen from elsewhere (2009/2010)	Number of student months: 60
ERASMUS student exchange from Groningen to other HEIs (2009/2010)	Number of student months: 40 (+ 60 months student exchange to HEIs outside Europe/outside ERASMUS programm)

Chapter 6. Impact of EC directive 2005/36/EC

The directive states	How does this directive statement affect pharmacy E&T?
"Evidence of formal qualifications as a pharmacist shall attest to training of at least five years' duration,…"	
"…four years of full-time theoretical and practical training at a university or at a higher institute of a level recognised as equivalent, or under the supervision of a university;"	We have even longer period of 5 years full-time theoretical and practical training.
"…six-month traineeship in a pharmacy which is open to the public or in a hospital, under the supervision of that hospital's pharmaceutical department."	We do have a six-month traineeship. It is divided over years 4 and 6 in community as well as hospital pharmacies.
"The balance between theoretical and practical training shall, in respect of each subject, give sufficient importance to theory to maintain the university character of the training."	We do respect the theoretical training. Our bachelor programme is largely theoretical and directed at a broad scientific education. The master programme has a balance of theoretical, practical and communication training, combined with a research project and traineeships in community pharmacies and hospital pharmacies.

Directive annex	Subjects to be added or removed?
V.6. PHARMACIST **5.6.1. *Course of training for pharmacists*** **Plant and animal biology / Physics / General and inorganic chemistry / Organic chemistry / Analytical chemistry / Pharmaceutical chemistry, including analysis of medicinal products / General and applied biochemistry (medical) / Anatomy and physiology; medical terminology / Microbiology / Pharmacology and pharmacotherapy / Pharmaceutical technology / Toxicology / Pharmacognosy / Legislation and, where appropriate, professional ethics.**	Subjects important in the Netherlands are communication with patients and other health care workers, professional attitude of pharmacists, and more patient related subjects (pharmaceutical patient care), structure and financing of the health care system, information and registration systems.

Coordinator: Bart Rombaut, School of Pharmacy, Vrije Universiteit Brussel, Brussels, Belgium. brombaut@vub.ac.be
Executive Director: Jeff Atkinson, Pharmacolor Consultants Nancy, Villers, France. jeffrey.atkinson@orange.fr

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Website: www.pharmine.org