

Pharmacy education & training in

SWEDEN

2011

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. The PHARMINE paradigm can be found here (we will include a web reference to the PHARMINE paradigm text).

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 or 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 – SWEDEN” was produced by:

Jeffrey ATKINSON
PHARMINE Executive director
Pharmacolor Consultants Nancy
12 rue de Versigny
54600 Villers
France.
jeffrey.atkinson@orange.fr
www.pharmine.org

Ronnie HANSSON
Faculty of Pharmacy
Uppsala University
Box 256
751 05 Uppsala
Sweden
Ronnie.Hansson@farmbio.uu.se
<http://www.farmfak.uu.se/english>

Gunnar TOBIN
Sahlgrenska Academy
405 30 Göteborg
Sweden
Gunnar.tobin@pharm.gu.se
www.sahlgrenska.gu.se

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/

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

Contacts in Sweden.

	First contact	Second contact
Name	Erik Björk	Ronnie Hansson
HEI	Uppsala university, Faculty of Pharmacy	Uppsala university, Faculty of Pharmacy
Street	Box 256	Box 256
City, zip	751 05 Uppsala	751 05 Uppsala,
Country	Sweden	Sweden
Telephone	+46 18 4714388	+46 18 4714278
Fax	--	--
e-mail	erik.bjork@farmaci.uu.se	<u>Ronnie.Hansson@farmbio.uu.se</u>
Website	http://www.farmfak.uu.se/english	

	First contact	Second contact
Name	Gunnar Tobin	Ann-Britt Fernhall
HEI	Sahlgrenska Academy	Sahlgrenska Academy
Street	Box 400	Box 400
City, zip	405 30 Göteborg	405 30 Göteborg
Country	Sweden	
Telephone	+46 31 786 34 42	+46 31 786 30 27
Fax		+46 31 786 3899
e-mail	Gunnar.tobin@pharm.gu.se	Ann-britt.fernhall@gu.se
Website	www.sahlgrenska.gu.se	

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Summary.

In Sweden the duration of education for Master of Science in pharmacy degree is 5 years of which 6 months consist of compulsory traineeship in community or hospital pharmacy. Currently two universities, at Uppsala University and Sahlgrenska Academy, are running the education to master degree but two more universities will in 2012 start the master programme. There is a possibility to do a 3 years bachelor of science in pharmacy programme and work as a “*prescriptionist*”. This is today possible at 5 different universities in Sweden. The Bachelor programme includes a 10 weeks compulsory traineeship in a community pharmacy. For the moment it is not possible to study for 3 years for Bachelor degree and then additional 2 years for Master degree, as these are two separate programmes with separate applications and intake. However, in the coming years this will be possible at, at least, one university. Both Bachelor and Master degree includes Bachelor/Master thesis and advance elective courses. Bachelors and Master can obtain a licence as pharmacist in Sweden.

The Masters and Bachelors are both qualified to manage a pharmacy, to dispense prescription drugs and OTC drugs, advice patients and to act as responsible persons in community pharmacy, according to the Swedish law. The Bachelor degree is more practically oriented and aimed to prepare for the basic requirements for working in the community pharmacies. The Master degree will give a solid background for work as a registered pharmacist in the community or hospital pharmacy with advanced counselling as well as with research and development in industry. Masters are working in hospitals in collaboration with physicians and nurses and are also qualified for PhD studies.

The need for skills in clinical pharmacy is increasing in Sweden and for pharmacist with a Master degree it is possible to take 1-year courses for specialisation in clinical pharmacy.

From 1971 to 2009 the ownership of pharmacies was an exclusive right of the State. In 2009 the law was changed and ownership is now open for every one, not just pharmacists. Since 2010 the number of pharmacies has increased by more than 20 % and today Sweden has about 1200 pharmacies (8300 inhabitants per pharmacy). The State owns still about 350 pharmacies but the other pharmacies are owned by private persons and by international pharmacy chains.

Introduction.

Statistics for Sweden.

Total population: 9,078,000

Gross national income per capita (PPP international \$): 34,310

Life expectancy at birth m/f (years): 79/83

Healthy life expectancy at birth m/f (years, 2003): 72/75

Probability of dying under five (per 1 000 live births): 4

Probability of dying between 15 and 60 years m/f (per 1 000 population): 78/49

Total expenditure on health per capita (Intl \$, 2006): 3,119

Total expenditure on health as % of GDP (2006): 8.9

Detailed information is available at: World Health Statistics 2009:

<http://www.who.int/whosis/whostat/2009/en/index.html>

Highlights on health in Sweden.

Health Systems in Transition Sweden, 2005

<http://www.euro.who.int/en/home/projects/observatory/publications/health-system-profiles-hits/full-list-of-hits/sweden-hit-2005>

National system overviews on education systems in Europe and ongoing reforms SWEDEN, October 2010.

http://eacea.ec.europa.eu/education/eurydice/documents/eurybase/national_summary_sheets/047_SE_EN.pdf

Pharmaceutical pricing and reimbursement policies in Sweden <http://www.oecd.org/dataoecd/63/17/40699881.pdf>

Swedish Healthcare system <http://www.swedishhealthcare.se/swedenshealthcaresystem.html>

Quality and Efficiency in Swedish Health Care

<http://www.socialstyrelsen.se/publikationer2010/2010-4-37>

<http://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/18023/2010-4-37.pdf>

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

	Y/N, number or %	If you wish to expand your answer, please add your comments below.
Community pharmacy		
Number of community pharmacists	1400	Additional 1100 are working in drug industry and 400 in government /university
Number of community pharmacies	1200	Plus 70 hospital pharmacies. More community pharmacies will probably open as the government has open up for private pharmacies.
Competences and roles of community pharmacists		<ul style="list-style-type: none"> a. Supplying prescription medicines b. Managing medicines for some ailments c. Giving advice on medicines d. Services to nursing and care homes (medication reviews, advice on storage and administration of medicines) e. Other (please specify), information in schools about drugs
Is ownership of a community pharmacy limited to pharmacists?	No	Up to 2009 the State was the only owner of community pharmacies but now everyone can own a pharmacy, almost. Physicians and wholesalers are by law not allowed to be a sole owner of a pharmacy. The State owns still about 350 pharmacies but the rest are owned by private persons and by international pharmacy chains. In spring 2011 Sweden has about 1200 pharmacies, which is about 8300 inhabitants per pharmacy. There is an increase of pharmacies by more than 20 % since 2009 and the need for Masters and Bachelors is increasing and for the moment there is a shortage of pharmacists.
Are there rules governing the geographical distribution of community pharmacies?	No	
Are drugs and healthcare products available to the general public by channels other than pharmacies?	Yes	Some non-prescription drugs are available outside community pharmacies, in ordinary shops and petrol stations. The sale of non-pharmaceutical products is allowed to a limited extent. OTC drugs and prescription drugs can be bought via the Internet through some of the pharmacy companies. And also special machines in shops are available for the customers to deliver some non-prescription drugs.
Are persons other than pharmacists involved in community practice?	Yes	
Their titles and number(s)	5500 bachelors. 1300 pharmacy technicians	Prescriptionist/bachelor Pharmacy technician

Their qualifications		
Organisation providing and validating the E&T		<p>Bachelor education is at university level. The validating organisation: Swedish National agency for higher education (http://www.hsv.se/2.539a949110f3d5914ec800056285.html)</p> <p>Technician education is on post-secondary school level, not on university level. These schools are called vocational training schools, and the students have 12 years undergraduate studies before starting the education. Validating organisation: Swedish National Agency for Higher Vocational Education (http://www.yhmyndigheten.se/english)</p>
Duration of studies (years)	Bachelor 3 years Technician 1,5 years	
Subject areas		
Competences and roles		<p>Bachelor: counselling, supplying prescription drugs and non-prescription drugs.</p> <p>Technician: supplying and counselling on OTC drugs and non-pharmaceutical products.</p>
Hospital pharmacy		
Does such a function exist?	Y	
Number of hospital pharmacists	200	
Number of hospital pharmacies	73	The number of hospital pharmacies will decrease as more hospitals will take care of the drug distribution and management of drugs inside the hospital and employ pharmacists to be part of that.
Competences and roles of hospital pharmacists		<ul style="list-style-type: none"> a. In wards or outpatient clinics b. Consultant in specialised clinical areas such as paediatrics or intensive care c. Part of multidisciplinary patient-care team d. Monitoring of drug use e. Unit-dose drug distribution f. Production of patient-specific medicines (e.g. cytotoxic preparations) g. Other (please specify) <p>One year programme in clinical pharmacy in Uppsala to add to the five years to pharmacist/master, specialisation in clinical pharmacy to qualify for working in health care teams.</p>
Pharmaceutical and related industries		
Number of companies with production, R&D and distribution	5 big companies and several smaller drug and biotech companies, about 80	<p>Some of the drug companies:</p> <p>Pfizer AB (www.pfizer.se), GlaxoSmithKline AB (www.glaxosmithkline.se), Merck Sharp & Dohme (Sweden) AB (www.msds.se), Novartis Sverige AB (www.novartis.se), AstraZeneca Sverige AB (www.astrazeneca.se), Bayer AB (www.bayer.se), Boehringer Ingelheim AB (www.boehringer-ingelheim.se), Bristol-Myers Squibb A (www.bms.se) Ferring Läkemedel AB (www.ferring.se),</p>

		Eli Lilly Sweden AB (www.lilly.se). More information at http://www.lif.se/cs/default.asp?id=40897
Number of companies with production only		
Number of companies with distribution only		
Number of companies producing generic drugs only		
Industrial pharmacy		
Number of pharmacists working in industry	1100-1200	
Competences and roles of industrial pharmacists		<ul style="list-style-type: none"> a. Synthesis and production of new chemical entities and drugs b. R&D – drugs c. R&D – health care products other than drugs d. Preclinical drug evaluation (safety and efficacy) e. Clinical drug evaluation (safety and efficacy) f. Marketing g. Distribution h. Medical devices i. Drug evaluation and registration (governmental and industrial) j. Other (please specify)
Other sectors		
Number of pharmacists working in other sectors	400	
Sectors in which pharmacists are employed		University, government, FDA, regulatory authorities,
Competences and roles of pharmacists employed in other sectors		Regulatory affairs, research/teaching, drug evaluation and registration
Roles of professional associations		
Registration of pharmacists	Yes	The National Board of Health and Welfare http://www.socialstyrelsen.se/english
Creation of community pharmacies and control of territorial distribution	Yes	Medical Products Agency http://www.lakemedelsverket.se/english/
Ethical and other aspects of professional conduct	Yes	The National Board of Health and Welfare http://www.socialstyrelsen.se/english

Quality assurance and validation of HEI courses for pharmacists	Yes	Swedish National Agency for Higher Education http://www.hsv.se/2.539a949110f3d5914ec800056285.html
Other (please specify)		

References	
References to texts and articles of national law	http://www.lakemedelsverket.se/english/overview/Legislation/
Bibliographic references (EU, national, international)	

Chapter 2. Pharmacy HEIs, students and courses

	Y/N, number or %	If you wish to expand your answer, please add your comments below.
Total number of HEIs in your country	2	Uppsala: Faculty of Pharmacy, Uppsala University http://www.farmfak.uu.se/english Gothenburg: Sahlgrenska Akademy http://www.sahlgrenska.gu.se In 2012 additional 2 HEI will start, at university of Lund and Umeå
Public	2	
Private	0	
Organisation of HEIs		
Independent faculty	Yes	At Faculty of pharmacy, Uppsala University.
Attached to a science faculty	No	
Attached to a medical faculty	Yes	At Sahlgrenska Akademy.
Other (please specify)		
Do HEIs offer B + M degrees?	Yes	Two separate programmes in Uppsala, 3 years programme for B and 5 years programme for M, separate applications as well.
Do HEIs offer an M. Pharm. after a B degree in another HEI?	Yes/No	Yes in Sahlgrenska Not in Uppsala
Do HEIs offer a B. Pharm. followed by an M. Pharm. in the same HEI or elsewhere?	Yes	A B Pharm from Uppsala may in Uppsala study for M pharm level to get license as a pharmacist according to the European standard. That will take about 2,5 years of study as the B and M programme have different curriculum and the first 3 years of M programme are not identical with the 3 years B programme. In Uppsala students with a B degree are offered to study for a general Master degree, a Master programme in drug discovery and development or a Master programme in drug management, for 2 years. After these years they are not able to get a license as a pharmacist/European standard but they still have license as a Bachelor/prescriptionist.
Sahlgrenska Akademy		
Teaching staff		
Number of teaching staff (nationals)	50	
Number of international teaching staff (from EU MSs)		
Number of international teaching staff (non EU)		
Number professionals		

(pharmacists and others) from outside the HEIs, involved in E&T		
Students		
Number of places at traditional entry (beginning of S1 of B1, following secondary school)	90	
Number of applicants for entry	1,4	
Number of graduates that become registered/professional pharmacists.	80	
Number of international students (from EU member states)	0	
Number of international students (non EU)	0	
Entry requirements (beginning of S1 of B1, following secondary school)		
Your HEI has a specific pharmacy-related entrance examination	No	
Fees per year		
For home students	0	
For EU MS students	0	
For non EU students	2350 €	
Length of course	5 years	
Specialization		
Do HEIs provide specialized courses?	Yes	
In which years?	4, semester 8	
In which specialisation (industry, hospital...)?		
What are the student numbers in each specialization?	15-25	
Past and present changes in E&T		
Have there been any major changes since 1999?	No	
Are any major changes envisaged before 2019?		

Faculty of Pharmacy, Uppsala university		
Teaching staff		
Number of teaching staff (nationals)	120	Including all teaching personal, also some PhD students that teach.
Number of international teaching staff (from EU MSs)	0	
Number of international teaching staff (non EU)	0	
Number professionals (pharmacists and others) from outside the HEIs, involved in E&T	20	Professionals from the industry, hospitals, and pharmacies are involved in lecturing and tutoring, bringing experiences from the field outside the faculty to the faculty, for example patient case studies.
Students		
Number of places at traditional entry (beginning of S1 of B1, following secondary school)	90 each semester, that is 180 each year	Students will enter the studies twice a year, in January 90 students and in September 90 students, will enter the first semester, that is each year 180 students will be accepted.
Number of applicants for entry	160-190 each semester	160-190 applicants twice a year, in January and in September
Number of graduates that become registered/professional pharmacists.	120-130 /year	Out of the students who started the first semester, some drop out and some have not passed all exams at the end of the fifth year, and need some more time before graduation.
Number of international students (from EU member states)	0	
Number of international students (non EU)	0	
Entry requirements (beginning of S1 of B1, following secondary school)		
Your HEI has a specific pharmacy-related entrance examination	No	
Advanced entry		
At which level?		S4 B2 S7 M4 S10 M5
What are the requirements?		For entry to S4 Students must have passed 1 year courses For entry to S7 students must have passed 5 semesters courses For entry to S10, pharmacy internship/traineeship, students must have passed all courses S1-S9
Specific requirements for international students (EU or non EU).		No
Fees per year		
For home students	0	

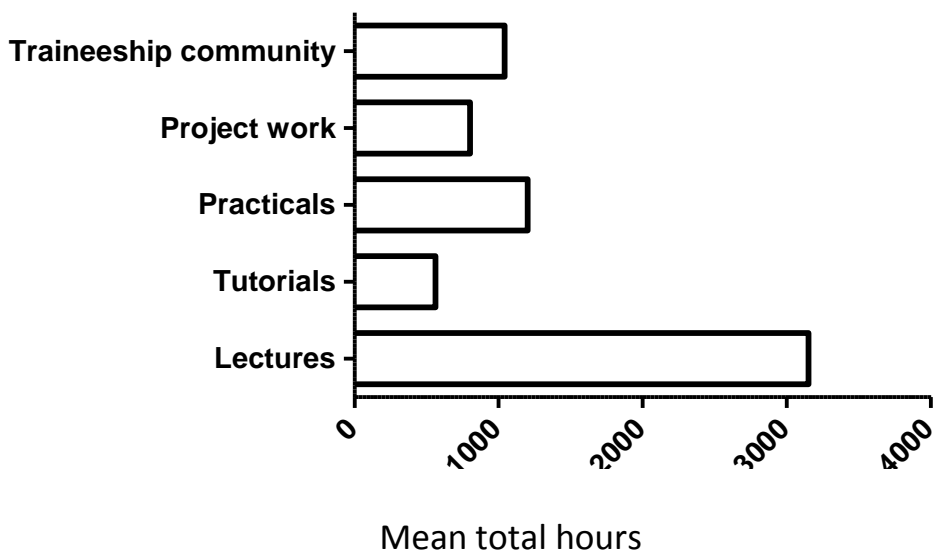
For EU MS students	0	
For non EU students	15000 €	€
Length of course	5 years	5-10 weeks per course in general
Specialization		
Does your HEI provide specialized courses?	Yes	Elective courses at semester 8 are specialized.
In which years?	Years: 4 semester 8 5 semester 9	S8 specialized elective courses S9 individual research project
In which specialisation (industry, hospital...)?		In pharmaceutical biosciences, pharmacy and medicinal chemistry
What are the student numbers in each specialization?	10-20	
Past and present changes in E&T		
Have there been any major changes since 1999 at your HEI?	Yes	Expanded from 4 years curriculum to 5 years
Are any major changes envisaged before 2019 at your HEI?	No	
Is your HEI typical of all HEIs in the country?	No	Typical in general but Uppsala has two intake a year as the Sahlgrenska faculty in Gothenburg has one intake a year
If your HEI is not typical, how do HEIs differ (e.g. in terms of organisation, subject areas, specialization...)?		In Sweden there is just one faculty of pharmacy, in Uppsala, and the faculty has the competence to teach in all subjects for the 5 years curriculum for pharmacists and the faculty has research competence in all area of pharmacy that are taught at the faculty. Not all but most of the teachers are pharmacists and almost all have a PhD with just a few exceptions.

References	
References to texts and articles of national law	http://www.hsv.se/lawsandregulations.4.5161b99123700c42b07ffe3904.html

Chapter 3. Teaching and learning methods

Student hours						
Sahlgrenska academy						
Method	Year 1	Year 2	Year 3	Year 4	Year 5	Total
HEIs courses						
Lecture	20-25/w x 40w 800-1000	20-25/w x 40w 800-1000	20-25/w x 40w 800-1000	20-25/w x 20w 400-500		2800-3500
Tutorial	2-5/w x 40 w 80-200	2-5/w x 40 w 80-200	2-5/w x 40 w 80-200	2-5/w x 40 w 80-200		320-800
Practical	5-10/w x 40w 200-400	5-10/w x 40w 200-400	5-10/w x 40w 200-400	5-10/w x 40w 200-400		800-1600
Project work					40/w x 20w 800	800
Traineeship						
Hospital						
Community					40/w x 26w 1040	1040
Industrial (academic or industrial)						
Other (please specify)						
Electives						
Choice						
Optional				40/w x 20w 800		800
Total	1080-1600	1080-1600	1080-1600	1480-1900	1840	

Hours per learning methods



Student hours

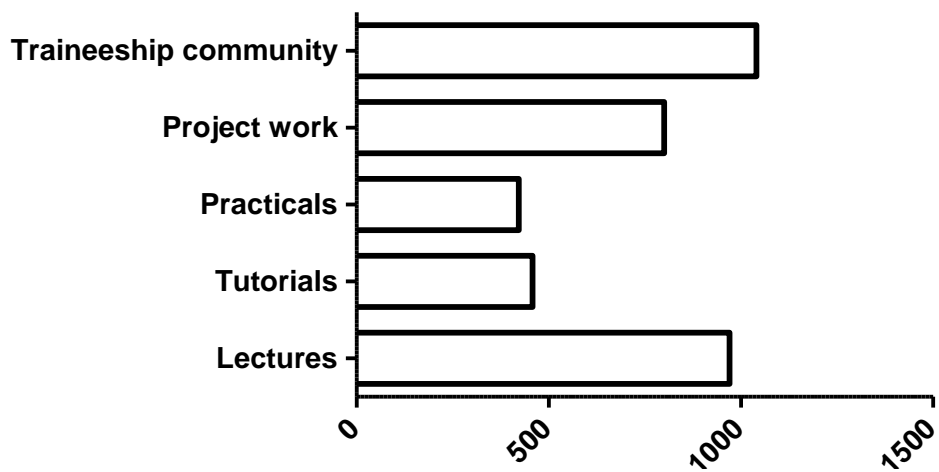
Faculty of Pharmacy, Uppsala University

Method	Year 1	Year 2	Year 3	Year 4	Year 5	Total
HEIs courses						
Lecture	260	326	233	151		970
Tutorial	116	107	134	101		458
Practical	118	74	226	4		422
Project work					40/w x 20w 800	800
Traineeship						
Hospital						
Community					40/w x 26w 1040	1040
Industrial (academic or industrial)						
Other (please specify)						
Electives						
Choice						
Optional				20-25/w x 20w 400-500		400-500
Total	494	507	593	656-756	1840	4090-4190

If you wish to expand your answer, please add your comments below.

	1	2	3	4	5	6
HEI courses				During the course <i>Product and process analytical chemistry</i> the students have scheduled 64 hours to work for themselves to prepare a paper. During the course <i>Regulatory requirements and quality assurance</i> the students have 9 hours scheduled to prepare a paper and 15 hours for visiting some drug industries		
Electives				Elective courses during semester 8, in pharmaceutical biosciences, pharmacy or medicinal chemistry		

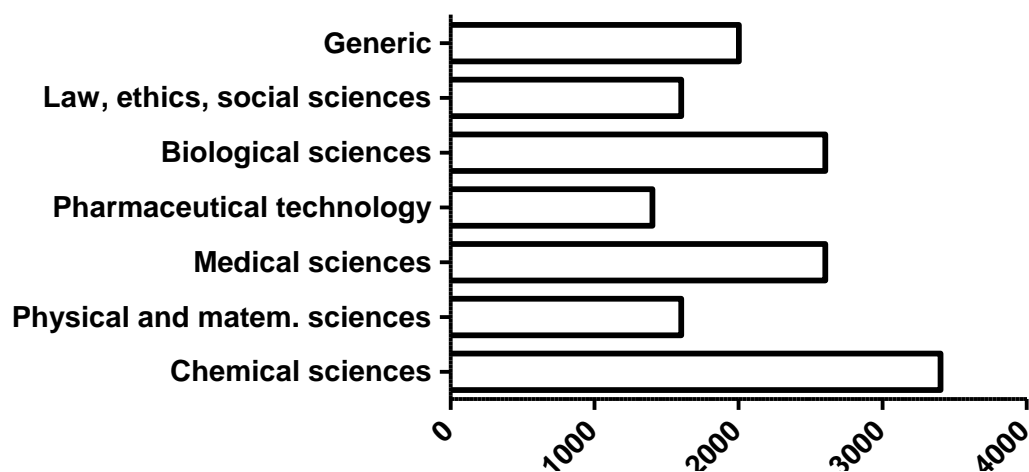
Hours per learning methods



Chapter 4. Subject areas

Student hours						
Sahlgrenska academy						
Subject area	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHEMSCI	40 h/w x 20w 800	40 h/w x 10w 40 /w x 5 w 600	40 h/w x 10w 400	(electives 40h/w x 20w in any area) 800	Project work (40/w x 20w in any area) 800	3400
PHYSMATH		40/w x 5w 200		40/w x 15w (electives in any area) 600	Project work (40/w x 20w in any area) 800	1600
BIOLSCI	40 /w x 20w 800	40/w x 5w 200		(electives 40/w x 20w in any area) 800	Project work (40/w x 20w in any area) 800	2600
PHARMTECH			40/w x 10 w 400	40/w x 5w (electives in any area) 200	Project work (40/w x 20w in any area) 800	1400
MEDISCI		40 /w x 5w 200	40 /w x 20 w 800	(electives 40h/w x 20w in any area) 800	Project work (40/w x 20w in any area) 800	2600
LAWSOC				(electives 40/w x 20w in any area) 800	Project work (40/w x 20w in any area) 800	1600
GENERIC				(electives 40/w x 20w in any area) 800	Traineeship (40/w x 30w) 1200	2000

Hours by subject area



Student hours

Faculty of Pharmacy, Uppsala University

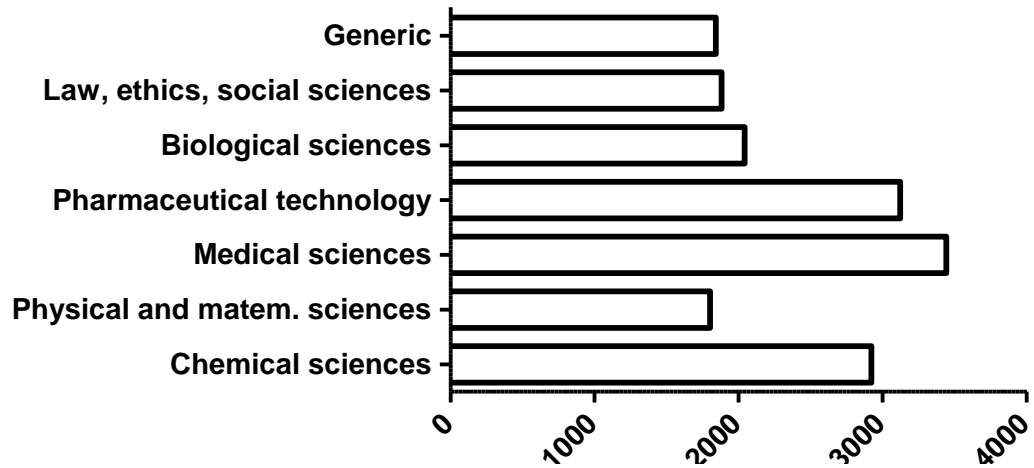
Subject area	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHEMSCI	40 h/w x 24w 960 h	40 h/w x 4w 160 h	40 h/w x 5w 200 h	electives 40h/w x 20w in any area 800 h	Project work (40h/w x 20w in any area) 800 h	2920
PHYSMATH	40 h/w x 5 w 200 h			electives 40h/w x 20w in any area 800 h	Project work (40h/w x 20w in any area) 800 h	1800
BIOLSCI	40 h/w x 6w 240 h	40/w x 5w 200 h		(electives 40h/w x 20w in any area) 800 h	Project work (40h/w x 20w in any area) 800 h	2040
PHARMTECH	40 h/w x 3 w 120 h	40 h/w x 2 w 80 h	40h/w x 25 w 1000 h	electives 40h/w x 20w in any area 800 h + 40 h/w x 8 w 320 h	Project work (40h/w x 20w in any area) 800 h	3120
MEDISCI	40 h/w x 2 w 80 h	40 h/w x 29w 1160 h	40 h/w x 10 w 400 h	electives 40h/w x 20w in any area 800 h + 40 h/w x 5 w 200 h	Project work (40h/w x 20w in any area) 800 h	3440
LAWSOC				electives 40h/w x 20w in any area 800 h + 40 h/w x 7 w 280 h	Project work (40h/w x 20w in any area) 800 h	1880
GENERIC				electives 40h/w x 20w in any area 800 h	Traineeship (40h/w x 26w) 1040 h	1840

If you wish to expand your answer, please add your comments below.

	1	2	3	4	5	6
CHEMSCI				Electives are courses at the faculty or outside the faculty that students are free to study during semester 8 (20w), at least courses for 15 weeks out of the 20 weeks semester must		

				cover some of the area taught during the first 7 semesters (medicinal chemistry, pharmaceutical biosciences or pharmacy), 5 weeks can cover something taught outside the faculty	
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Hours by subject area



Chapter 5. Impact of the Bologna principles

Bologna principle	Is the principle applied? Y/N or partially	How is it applied? Does your HEI have multilateral recognition and agreements? Other comments.
1. Comparable degrees / Diploma Supplement	Yes	Comparable to European standards in Uppsala university, Diploma supplement. Diploma Supplement in Sahlgrenska academy.
2. Two main cycles (B and M) <u>with entry and exit at B level</u>	No	In Uppsala: Two separate programmes, B for 3 years and M for 5 years A bachelor may work in a pharmacy, drug industry and government/pharmacy organisations. A bachelor from a HEI other than pharmacy can not enrol into the master program to become a registered pharmacist.
3. ECTS system of credits / links to LLL	Yes	In Uppsala: Project work during semester 9 (S9 M5) may be performed in other countries, also outside Europe, and are accepted as a part of the training to pharmacist and ECTS credits may be acquired from such projects. Elective courses from outside Sweden may also give ECTS credits.
4. Obstacles to mobility	No	In Uppsala: The faculty of pharmacy in Uppsala has agreements with several schools of pharmacy/universities/institutes in Europe, for the moment 16 universities, for student exchange. Uppsala faculty of pharmacy validate ECTSs obtained in other HEI in other countries in Europe. The faculty has a special staff engaged in student exchange and building up bridges and agreements with universities and schools of pharmacy around Europe.
5. European QA	No	
6. European dimension		
ERASMUS staff exchange to your HEI from elsewhere	0	
ERASMUS staff exchange from your HEI to other HEIs	0	
ERASMUS student exchange to your HEI from elsewhere	Number : refer to specifications in right column	Uppsala: 2010: 13 ERASMUS students were exchanged arranged by the faculty and 3 students were exchanged arranged by the university exchange office, each students were exchange for 5 month each 2009: 17 ERASMUS students were exchanged arranged by the faculty, each students were exchange for 5 month each
ERASMUS student	Number;	Uppsala:

exchange from your HEI to other HEIs	refer to specifications in right column	2010: 18 ERASMUS students were exchanged arranged by the faculty and 33 students were exchanged arranged by the university exchange office, each students were exchange for 5 month each 2009: 9 ERASMUS students were exchanged arranged by the faculty and 12 students were exchanged arranged by the university exchange office, each students were exchange for 5 month each
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References	
References to texts and articles of national law	
Bibliographic references (EU, national, international)	

Websites	
References to texts and articles of national law	

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

The directive states	How does / will this directive statement affect pharmacy E&T?	If you wish to expand your answer, please add your comments below. Do you consider the directive statement valid? If not how would you change it?
“Evidence of formal qualifications as a pharmacist shall attest to training of at least <u>five years' duration</u> ,...”	Already achieved	
“ <u>...four years of full-time theoretical and practical training</u> at a university or at a higher institute of a level recognised as equivalent, or under the supervision of a university;”	Not in Uppsala	
“ <u>...six-month traineeship in a pharmacy</u> which is open to the public or in a hospital, under the supervision of that hospital's pharmaceutical department.”	Already achieved	
“The balance between theoretical and practical training shall, in respect of each subject, give <u>sufficient importance to theory to maintain the university character of the training</u> .”	Already achieved	
Directive annex	How does / will this directive annex affect pharmacy E&T?	If you wish to expand your answer, please add your comments below. Do you consider the directive annex valid? If not how would you change it?
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	In Uppsala: Already achieved except for the course “Plant and animal biology”, this course is mostly focused on plants.	

<p>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.</p>		
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References	
<p>References to texts and articles of national law</p>	<p>http://www.lakemedelsverket.se/english/overview/Legislation/ http://www.socialstyrelsen.se/applicationforswedishlicencetopractiseeea/pharmacist http://www.socialstyrelsen.se/applicationforswedishlicencetopractiseothercountries/pharmacist</p>

The Swedish pharmacy education and training scheme

Undergraduate and graduate pharmacy programmes at Uppsala University

**PhD studies
(4 years)**

**Traineeship in a
pharmacy
(0,5 year)**

**M.Sc research project
- thesis (0,5 year)**

**Elective courses
(0,5 year)**

**Compulsory courses
in medicinal
chemistry,
pharmaceutical
biosciences and
pharmacy
(3,5 years)**

**Master
5 years**

**Master programme in
Drug Discovery and
Development
Or
Drug Management
(2 years)**

**B.Sc. research project
- thesis (0,25 year)**

**Elective courses
(0,25 year)**

**Compulsory courses in
medicinal chemistry,
pharmaceutical
biosciences and
pharmacy, including 9
weeks traineeship
(2,5 years)**

**Bachelor
3 years plus 2 years master programme**



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PHARMINE

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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