

Pharmacy education & training in

ICELAND

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.

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 - ICELAND was produced by:

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Summary.

Pharmacy practice

About 1/3 pharmacists work in community pharmacy, about 1/3 in industry (which is mainly generics pharmaceuticals manufacturing and representation of international pharmaceutical companies), and 1/3 in government, hospitals, research, and teaching.

In 2010 there were 411 practicing pharmacists in Iceland. There are about 60 pharmacies in Iceland, most of them are only manned by one pharmacist at any given time. Legislation nr. 93/1994 is the law on pharmaceuticals. Parts of it did not come into effect until 1996 dealing with ownership of community pharmacies. Before 1996 ownership was reserved to the profession of pharmacy, but thereafter opened up to other parties. Pharmacists in industry are mostly involved in marketing activities, and a few in manufacturing. The largest employer of pharmacists is the generics producer Actavis.

Regulation of pharmacy practice and pharmacists

Pharmacy practice is regulated by law nr. 93/1994 with associated regulations. The main chapters are:

I: Medicines Agency

II: Definitions

III: Pharmacopeias (Ph.Eur.)

IV: Product licencing and clinical testing of drugs

V: Prescribing, filling prescriptions, and labelling drugs

VI: Advertising and representing of drugs. Pharmacovigilance

VII: Establishing community pharmacies and licence to run pharmacies (Almost no drugs allowed to be sold outside pharmacies in Iceland). (Pharmacies have to be run by a licensed pharmacist, but ownership is open, except to medical doctors)

VIII: Community pharmacy operations (Pharmaceutical Care is written into the law here, although no regulation follows on carry it out)

IX: Databases (two databases are generated by the pharmacy prescription filling information, one is with personal identifiers and one without for administrative purposes)

X: Practical training of pharmacy students and pharmacy technicians (about the responsibility of pharmacies to train these students)

XI: Prescription filling (Pharmacists are responsible for filling prescriptions. There is a rule about 2 pharmacists per pharmacy, but it opens to a possible exception if a pharmacy's operation is small)

XII: Import, wholesale and parallel import of drugs

XIII: Production / compounding of drugs (Pharmacist has to head a production facility)

XIV: Pharmacy services in hospitals and other health care institutions (Pharmacist has to lead a hospital pharmacy)

XV: Drug pricing (Price setting on OTCs is unregulated, price setting and reimbursement for prescription drugs is in the hands of the Drug Pricing and Reimbursement Committee).

In addition to clauses in the law nr. 93/1994, pharmacists are regulated according to law nr 35/1978. This law is getting old and there is a proposal pending in the parliament which will cover all health care practitioners in Iceland. A new regulation covering pharmacists will be drafted in the wake of this new law, hopefully by mid-2011.

The main characteristic of the law is that pharmacists hold certain privileges: they are the only profession allowed to head a pharmacy and hospital pharmacy, in addition to pharmaceutical production facilities. The training of pharmacists is also set down in this law as 9 months practical training, 6 months pre-graduation and 3 months post-graduation.

Basic pharmacy course

According to Bologna agreement, the pharmacy course at the University of Iceland is 3+2 years. Master of Science degree required for registration as pharmacist.

The first 2 years are mainly basic science subjects such as chemistry, math, physics, and statistics and some biological sciences such as physiology, microbiology, and molecular biology. Many of the basic courses are taught by the School of Engineering and Natural Sciences where students from other science disciplines are taught together with

pharmacy students. Parts of the 2nd year and the 3rd year are pharmacy specific topics such as physical pharmacy, pharmaceuticals, medicinal chemistry, pharmacoepidemiology, and natural products chemistry. The didactic teaching is mainly done by lectures and lab exercises in the first years, but as students move towards the masters level, they increasingly have project based learning. The last semester of the masters level consists of thesis project work which ends in a defence of a thesis typically in May of the graduation year.

Specialisation in practice

In the law nr. 35/1978 there is a clause that a pharmacist can seek recognition as a specialist in a sub-field of pharmacy. Not many pharmacists have sought such recognition. A few pharmacists, mainly employed at the university hospital have done a masters course in clinical pharmacy in the UK. Other official specialisation is not common, but many have done MBAs and a few have PhDs.

Introduction.

Total population: 298,000

Gross national income per capita (PPP international \$): 33,740

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

Healthy life expectancy at birth m/f (years, 2003): 72/74

Probability of dying under five (per 1 000 live births): 3

Probability of dying between 15 and 60 years m/f (per 1 000 population): 68/49

Total expenditure on health per capita (Intl \$, 2006): 3,319

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

Figures are for 2006 unless indicated. Source: [World Health Statistics 2008](#)

For further information, see:

Directorate of Health www.landlaeknir.is

Icelandic Medicines Agency <http://www.imca.is>

The Pharmaceutical Society of Iceland

http://www.lfi.is/index.php?option=com_content&task=view&id=215&Itemid=126

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

	Y/N, number or %	Comments
Community pharmacy		
Community pharmacists	137	www.lfi.is
Community pharmacies	56	
Competences and roles of community pharmacists		<p>Legally/professionally responsible for community pharmacies:</p> <ol style="list-style-type: none"> Supplying prescription medicines Managing medicines for some ailments Giving advice on medicines Screening services Services to the housebound Services to nursing and care homes (medication reviews, advice on storage and administration of medicines) Other <p>Pharmacists provide blood pressure and lipid measurements. They have not been involved much in health campaigns.</p>
Is ownership of a community pharmacy limited to pharmacists?	No	Parties that may have a conflict of interest, most notably MDs are not. Chains are allowed and insurance companies (not health insurance) have been owners.
Rules on geographical distribution of pharmacies?	Yes	The community councils can veto a new pharmacy's proposed location, but this has only happened once since the change in the legislation in 1996.
Drugs and healthcare products available by channels other than pharmacies?	Yes	Only possible to buy nicotine products outside pharmacies. There are a few places in scarcely populated areas where medicines are dispensed either in the doctor's office or in a shop owned by the pharmacy, but staffed with unskilled staff.
Are persons other than pharmacists involved in community practice?	Y/N: Yes	Pharmacy technicians and unskilled staff.
Their titles and number(s)	400 <i>Lyfjatæknir</i> (<i>pharmacy technician</i>)	Pharmacy technicians are trained in a 3 year programme on a secondary technical school level.
Organisation providing and validating the E&T		<p>Medical Directorate of Iceland</p> <p>The Directorate of Health is a government agency headed by the Medical Director of Health. Its five divisions are responsible for administration, public health and clinical quality, infectious disease control, health statistics, and finance.</p> <p>From their website: http://www.landlaeknir.is/?pageid=945</p>
Duration of studies (years)	Number: 3	Secondary school level, , Traineeship in pharmacies for 4 months in the 3-year programme
Competences and roles		Regulation nr. 199/1983 states that their competences and roles are within the realm of drug dispensing and manufacturing under the guidance and responsibility of a licensed pharmacist.
Hospital pharmacy		
Does such a function exist?	Yes	Hospital pharmacy as a function is officially recognised by the government as seen in law nr. 93/1994 Chapter XIV. Regulation nr. 241/2004 further details

		the function of hospital pharmacies. However, no official definition and recognition of a hospital pharmacist as a specific profession exists. Consequently, no registration or examination is required to exercise this function.
Hospital pharmacists	19	17 work at the Landspítali University Hospitals and 2 in Akureyri Hospital.
Hospital pharmacies	2	
Competences and roles of hospital pharmacists		As above for community pharmacists plus provision of a medication information centre.
Pharmaceutical and related industries		
Companies distributing drugs	2	
Companies producing generic drugs	1	
Industrial pharmacy		
Number of pharmacists working in industry	154	The status of qualified person (QP) exists and is restricted to pharmacists.
Competences and roles of industrial pharmacists		<ul style="list-style-type: none"> a. Preclinical drug evaluation (safety and efficacy) b. Marketing c. Distribution d. Medical devices e. Cosmetology f. Drug evaluation and registration (governmental and industrial) g. generic drug formulation, bio-equivalency studies
Other sectors		
Number of pharmacists working in other sectors	80	Univ.of Iceland: 17 Government authorities: 21 Other sectors/not employed: 42
Sectors		Authorities (Medicines Agency, Ministry of Health, Social Insurance Institute), Univ.of Iceland, Secondary school E&T (biology, clinical chemistry...)
Roles of professional associations		
Lyfjafraeðingafélag Íslands (Icelandic Pharmaceutical Society) www.lfi.is		
Registration of pharmacists	No	The Directorate of Health registers pharmacists on the basis of a pharmacy degree from a recognized institution with 6 months practical training period. In addition there has been a clause in the law on pharmacists that they should train 3 months post graduation, but this requirement is likely to be revoked when a new law on health care practitioners comes into force.
Creation of pharmacies and control of distribution	No	The Icelandic Medicines Agency has oversight by law.
Ethics/professional conduct	Yes	
QA and validation of HEI courses	No	The Ministry of Education validates the whole programme.

References and websites		
National law	Law nr. 93/1994 on Pharmaceuticals (Lyfjalög) Law nr 35/1978 on Pharmacists Law nr 41/2007 on the Directorate of Health Law nr 112(2008 on health insurance (Lög um sjúkratryggingar)	
EU, international	Directives: 92/109/EBE, 65/65/EBE, 75/319/EBE, 89/105/EBE, 92/25/EBE, 92/28/EBE, 93/41/EBE, 2002/98/EB, 2004/27/EB, 2004/28/EB, and 2004/33/EB	

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Chapter 2. Pharmacy HEIs, students and courses

	Y/N, number or %	Comments below
Number of HEIs in Iceland	1	Only one public HEI educating pharmacists in Iceland Faculty of Pharmaceutical Sciences University of Iceland, Reykjavik
Organisation of HEIs		
Independent faculty	Yes	Within the School of Health Sciences
Attached to a science faculty	No	Collaboration regarding teaching of some BS courses
Attached to a medical faculty	No	Medical faculty is also administratively in the School of Health Sciences
Do HEIs offer B + M degrees?	Yes	B. Sc. Pharm. students can leave the pharmacy faculty and find a job after only 3 years of study but they will not be licensed after 3 years. They can choose to go for a job that does not require licensure or a master's programme elsewhere, in pharmacy or other subject. Does the pharmacy faculty accept B. Sc. graduates from other areas (chemistry, pharmacology) into their M. Sc. Pharm. programme at the beginning of their 4 th year? No, they have to have a B.S. in pharmacy.
Reykjavik		
Teaching staff		
Number of teaching staff (nationals)	22	Permanent: 9; Adjunct teachers: 6; Ph.D.students and Postdocs: 7
Number of international teaching staff (from EU MSs)	3	Only Ph.D.students
Number of international teaching staff (non EU)	4	Only Ph.D.students/post-docs
Number professionals (pharmacists and others) from outside the HEIs, involved in E&T	Around 20	
Students		
Number of places at traditional entry (beginning of S1 of B1, following secondary school)	Unlimited	UI is required to accept all applicants with required secondary school education (usually 40-50 entering S1 of B1).
Number of applicants for entry	About 45	
Number of graduates that become registered/professional pharmacists.	About 17	45-17=28 students drop out, since we allow all who fulfil minimum requirements to enter the programme. This applies to most faculties/programmes offered at the University of Iceland.
Number of international students (EU)	1 (2009)	This is unusually low. We get about 5 from Europe each year.
Number of international students (non EU)	1 (2009)	

Advanced entry		
At which level?		1) MS 2) S2 of B1, S1 or S2 of B2, S1 or S2 of B3
What are the requirements?		1) BSc in Pharmacy 2) Coursework corresponding to required coursework for these semesters
Specific requirements for international students (EU or non EU).		No
Fees per year		
For home students	Amount (€): 0	
For EU MS students	Amount (€): 0	
For non EU students	Amount (€): 0	
Length of course	5 years	
Specialization		
Do HEIs provide specialized courses?	No	Only the MSc thesis is a specialization
Past and present changes in E&T		
Have there been any major changes since 1999?	Yes	In 2002 and again in 2006 The weight of basic subjects has been lessened in the BS programme to allow more space for pharmaceutically specific topics. More clinical pharmacy and pharmacy practice has been put into the MS programme where there is more space after some of the pharmacy topics such as physical pharmacy and pharmaco-epidemiology have moved down to BSc.
Are any major changes envisaged before 2019?	No	

References and websites	
National law	Lög um opinbera háskóla, nr. 85/2008 Law on public universities Lög um breytingu á lögum nr. 85/2008 um opinbera háskóla, nr. 50/2010, changes in law nr.85/2008 Lög um háskóla, nr. 63/2006 Law on universities Reglur um eftirlit með gæðum kennslu og rannsókna í háskólum, nr. 321/2009, Regulation on quality monitoring of teaching and research in Universities Reglur um viðurkenningu háskóla á grundvelli 3. gr. laga nr. 63/2006 um háskóla, nr. 1067/2006, Regulation on recognition of universities based on law nr.63/2006
EU, international	Iceland is a member of the European Economic Area and all the EU directives regarding HEIs are adopted by Iceland, as well as the Bologna principles.

Chapter 3. Teaching and learning methods

	1	2	3	4	5
HEI courses	60 ECTS	60 ECTS	60 ECTS	50 ECTS	30 ECTS
Traineeship				10 ECTS Students can choose between Hospital or Community pharmacy traineeship or a combination of the two.	
Electives					30 ECTS = 4 month Master's thesis Study trip (4 ECTS)

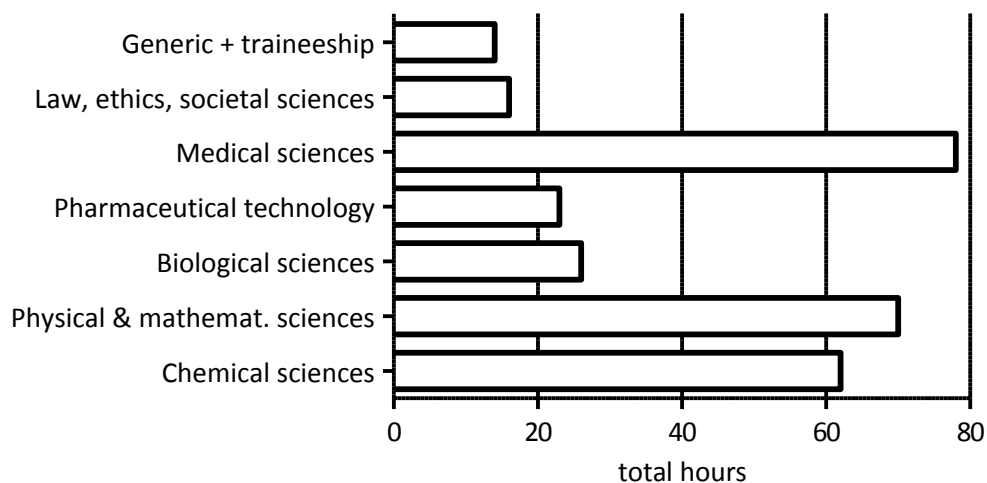
Chapter 4. Subject areas (ECTS)

	1	2	3	4	5	Total
CHEMSCI	22	40				62
PHYSMATH	20					20
BIOLSCI	14	12				26
PHARMTECH			16	8		24
MEDISCI		8	38	32		78
LAWSOC			6	10		16
GENERIC	4			*	**	
GENERIC + TRAINEESHIP	4			10	**	14

*Traineeship 10 ECTS.

**The distribution of elective versus compulsory courses has not been published for the new programme (30 ECTS), Master thesis 30 ECTS.

ECTS by subject area (years 1 through 4)



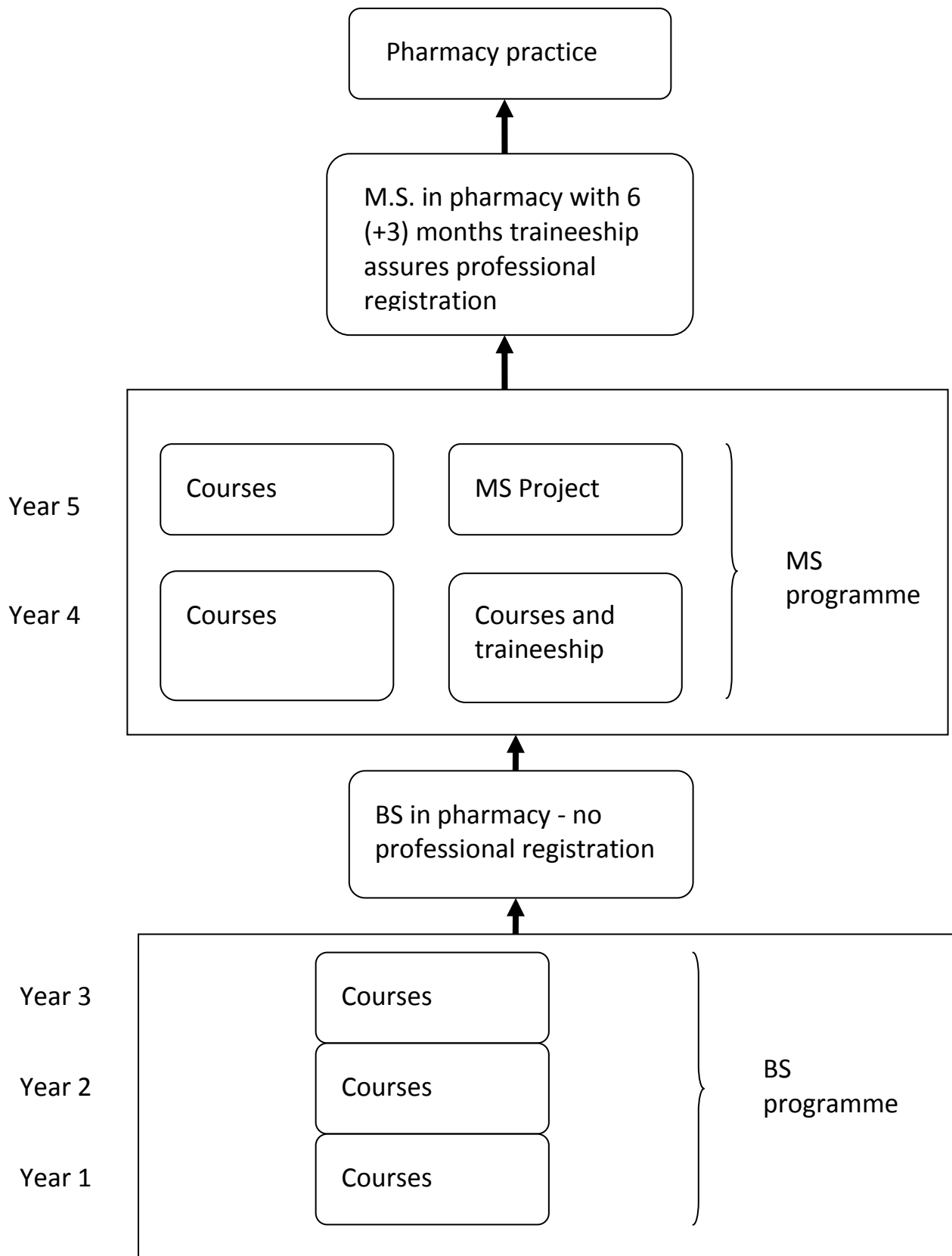
Chapter 5. Impact of the Bologna principles

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	The DS is in English.
2. Two main cycles (B and M) <u>with entry and exit at B level</u>	Yes	BSc Pharm degree can lead to an MSc degree other than pharmacy, but in order to study to become a licensed pharmacist, (to enter the MSc programme in pharmacy) a student has to have a BS degree in pharmacy.
3. ECTS system of credits / links to LLL	Yes	LLL/CPD is not compulsory for renewal of licence to practice. The ECTS systems used at pre- and post-graduate levels are linked only if the post-graduate takes recognized university courses will the ECTS system apply.
4. Obstacles to mobility	Yes	Teaching in Icelandic in most courses.
5. European QA	No	
6. European dimension		We have Erasmus agreements with a number of institutions.
ERASMUS staff exchange to Reykjavik	Staff months: 0,5	Two short visits in 2009
ERASMUS staff exchange from Reykjavik	Staff months: 0	
ERASMUS student exchange to Reykjavik	Student months: 3	
ERASMUS student exchange from Reykjavik	Student months: 5	

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

The directive states	Does this 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> ”	Yes	
“ <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;”	Yes	
“ <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.”		Iceland has a 9 month requirement (3 months after graduation in addition to 6 months during coursework). University of Iceland and Pharmaceutical Society of Iceland have asked for this to be revoked. UI is involved partially in the six month training (10 ECTS)
“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> ”	Yes	
Directive annex	Does this 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 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.	OK	This list is useful for maintaining pharmacists' authority/competency definition vis-a-vis regulations of who should be responsible for certain pharmaceutical functions.

The Icelandic pharmacy education and training scheme for students entering 2008 or later in the BS programme or in 2011 in the MS programme





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