

## PROCESSO DE BOLONHA

### UM BREVE PANORAMA DO ACTUAL ENSINO SUPERIOR NA EUROPA

#### (CONTRIBUTO PARA A DISCUSSÃO DO CASO PORTUGUÊS)

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Discute-se actualmente em Portugal a adequação do Ensino Superior ao sistema de graus previsto na Declaração de Bolonha. A Senhora Ministra da Investigação e do Ensino Superior quer avançar rapidamente com a questão, e tem razão, porque Portugal (acompanhado provavelmente pela Grécia) é o país da EU mais atrasado na sua implementação.

A implementação do sistema de Bolonha prossegue em diversas velocidades. Pode-se encontrar na revista World Education News & Reviews <http://www.wes.org/ewenr/> um balanço actualizado da situação em diversos países europeus (ver Anexo 1).

As Engenharias são uma das áreas que tem levantado maiores dificuldades. Excluída a possibilidade de manutenção, a prazo, dos cursos actuais de 5 anos de duração (sistema 0+5), há uma grande discussão sobre as vantagens comparativas dos sistemas 3+2 e 4+1, ambos enquadráveis no sistema de Bolonha. Têm-se passado discussões semelhantes em diversos outros países e a situação, na União Europeia, incluindo os novos membros, caracteriza-se ainda por alguma diversidade.

Na Europa do Norte e Escandinávia prevalece o sistema 3+2 (Bachelor + MSc) ou o sistema 0+5 (o Engenheiro é MSc., como na Suécia e na Noruega, não passando pelo grau prévio Bachelor, o que é chamado *5 years integrated Master degree*). A Alemanha, Bélgica, Holanda e Dinamarca já adoptaram o sistema 3+2 (na Alemanha mantém-se ainda, em paralelo, também o 0+5).

Na Inglaterra prevalece actualmente o grau MEng (Master of Engineering, 4 anos) como o 1º grau nos cursos de Engenharia, embora em muitas Universidades exista também o grau BSc (Bachelor of Engineering, 3 anos). Ambos são reconhecíveis pelas organizações profissionais (equivalentes à nossa Ordem dos Engenheiros) mas a Inglaterra tem uma particularidade: não é suficiente ter-se um grau académico (qualquer que ele seja) para se ter Carteira Profissional de Engenheiro (*Chartered Engineer*). Ter um grau académico reconhecido é um requisito mínimo. Para além disso é necessário ter experiência e treino profissionais, sujeitar-se a uma avaliação de desempenho profissional e eventualmente a um exame de admissão (ver mais em <http://www.engc.org.uk/registration/index.asp> ou no Anexo 2).

Na Europa do Sul prevalece actualmente a via 3+2, com excepção da Grécia e de Portugal (e também da Turquia que segue o sistema Americano). A Itália estabeleceu o sistema 3+2 já há alguns anos. A França está a convergir para ele (ver <http://www.amue.fr/Dossier/LMD/>), muitos cursos de Engenharia seguem-no já, o mesmo acontecendo em Espanha.

Em Portugal a Ordem dos Engenheiros defende que o grau de Engenheiro exige 300 ECTS de créditos académicos, o que corresponde a 5 anos lectivos (60 ECTS por ano é o padrão de Bolonha, Anexo 3). Esta exigência parece ser comum às organizações profissionais europeias. Nos países que já adoptaram o sistema 3+2, o BSc tem 180 ECTS e o MSc 120 ECTS, perfazendo assim 300 ECTS. O equivalente ao tradicional diploma de Engenheiro é concedido apenas no 2º ciclo: os Engenheiros possuem o Mestrado. Com o *Bachelor* é-se “Técnico” ou “Engenheiro Técnico”.

Há também quem defenda que o grau de Engenheiro se possa alcançar após 4 anos de estudos, portanto com 240 ECTS. Mesmo que a nossa Ordem dos Engenheiros reconhecesse tais cursos, se fosse implementado, e tendo em conta as tendências actualmente dominantes na Europa, ela poria a Engenharia Portuguesa numa posição de inferioridade, mesmo que se adoptasse um sistema de acreditação profissional análogo ao Inglês. De facto em tal caso os nossos Engenheiros seriam considerados “Bachelor” e não “Master”, isto é, Engenheiros Técnicos. Tendo em conta que no futuro uma parte significativa dos nossos Engenheiros irá

trabalhar para o estrangeiro, poderia ser um factor negativo nas suas carreiras profissionais.

O sistema 3+2 coloca grandes desafios às Universidades. Obriga-as a repensarem globalmente o seu ensino: formar profissionais competentes (engenheiros técnicos) para o mercado europeu em três anos, formar engenheiros de concepção e de projecto (Mestres, MSc) em dois anos suplementares. Será isso possível ?

O sistema 4+1 permite que o 1º grau tenha maior profundidade científica mas não permite formar engenheiros de concepção e de projecto. Um ano adicional não é suficiente para marcar a diferença.

O sistema 3+2 possibilita a criação de cursos de Engenharia de 2º ciclo (Mestrado) com maior diversidade e liberdade de escolha, a partir de troncos comuns de 3 anos (em Cambridge e Oxford os cursos de Engenharia têm 4 anos, sendo os dois primeiros tronco comum).

Alguns países mantêm uma situação interessante: as Universidades mantêm cursos de 5 anos concedendo o grau de Mestre em Engenharia (com nomes diversos) sem que antes tenham obtido o BSc. Esta possibilidade está contemplada num dos projectos da nossa Lei de Bases do Sistema Educativo.

Há um importantíssimo problema a considerar. A formação de 2º grau em Engenharia (seja 3+2 seja 4+1) tem que ser considerada tendencialmente gratuita como a do 1º grau. Se Portugal quiser recuperar o atraso e ser um actor interveniente na sociedade do conhecimento, a nossa Engenharia tem que se manter ao melhor nível, e isso só será possível com uma frequência numerosa do 2º ciclo de formação. Só com custos, para os estudantes, semelhantes aos do 1º grau, será isso possível. É aliás o que está a acontecer por essa Europa fora. A reestruturação do sistema de graus académicos não pode ser transformada apenas numa ocasião para a redução da responsabilidade do Estado no bem público e estratégico que é a Educação Superior.

Em Junho de 2003, James M. Tien, Vice-Presidente do IEEE para *Educational Activities*, publicou no Boletim *The Institute* (Vol. 27, Nº 2) do IEEE, um artigo intitulado *Time to Think About a Masters of Engineering* no qual escreve "... I propose restructuring the US undergraduate and graduate degrees into a professional oriented program based on a five-year European model such as the *Diplomingeniur* program in Germany, which includes writing of a master thesis similar to that required by current US masters's of business administration. ..." "... One solution is to split the five years into a two-years preparatory or associate's degree followed by a professional three-year study leading to a master's-rather than to a bachelor's - degree as the first professional degree....".

O quadro seguinte sintetiza as informações dos anexos, no respeitante ao ensino de Engenharia, excluindo o Doutoramento (sobre o qual não há grandes diferenças) (dados recolhidos na Internet de entre 12 e 15 de Março de 2004).

País	3+2	4+1ou 4+2	0+5	Outros	Notas
Alemanha	•		•		0+5 acabará em 2010
Áustria	•				
Bélgica	•				
Checa Rep.	•		•		0+5 cada vez menos
Chipre		•			Parece seguir a Inglaterra
Dinamarca	•				
Eslováquia Rep.	•		•		0+5 em casos excepcionais
Eslovénia			•	0+4	0+4 não pode aceder a pos-grad
Espanha	•		•		0+5 cada vez menos
Estónia	•				
Finlândia				5+2	Sistema binário sem comunicação Engenheiro é MSc e a 1ª pós grad é <i>Licenciate</i> ; sistema em mudança. O modelo 3+2 será implementado a partir de 2005 em todo o Ensino Superior.
França	•		•		Verifica-se uma convergência para 3+2

Grécia			•		Grande oposição a Bolonha
Holanda	•				
Hungria			•		3+2 nos politécnicos, 0+5 nas universidades
Inglaterra	•	•			Necessária experiência profissional
Islândia	•	•			Poucos MSc, sistema em mudança
Itália	•				
Letónia	•				
Lituânia		•			Em discussão
Malta		•			
Noruega	•				
Polónia		•	•		0+5 master of engineering
Portugal	•		•		3+2 nos Politécnicos
Suécia				5+2	Sistema binário sem comunicação Engenheiro é MSc e a 1ª pós grad é <i>Licenciate</i> . Prevista adaptação a Bolonha em finais de 2004.
Turquia		•			Segue o modelo dos EUA

### Conclusões:

- verifica-se uma convergência (relativamente rápida) para o sistema 3+2+3
- o grau de Engenheiro é equivalente ao grau de Mestre (MSc.), o 2º de Bolonha.
- a duração do grau de Engenheiro converge para 5 anos.

As dados constantes dos anexos foram compilados na Internet entre 12 e 15 de Março de 2004.

### ANEXO 1: ALGUNS DADOS CONCRETOS DE PAÍSES E UNIVERSIDADES

(manteve-se a língua original das fontes utilizadas).

#### ALEMANHA

Introduziu o sistema 3+2, mantendo embora o sistema 0+5 em funcionamento durante alguns anos.

Technical University of Darmstadt

<http://www.tu-darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/>

introduziu o sistema 3+2, mantendo também o 0+5.

<http://www.hst.tu-darmstadt.de/epe/bachelor.html> ou

[http://www.informatik.tu-](http://www.informatik.tu-darmstadt.de/1_0Studium_1und_1Lehre/1_0Studieng_aenge/1_08_0Bachelor_1of_1Science/1_08.05.03%20Informatik-BA-MA-StudOrd.html)

[darmstadt.de/1\\_0Studium\\_1und\\_1Lehre/1\\_0Studieng\\_aenge/1\\_08\\_0Bachelor\\_1of\\_1Science/1\\_08.05.03%20Informatik-BA-MA-StudOrd.html](http://www.informatik.tu-darmstadt.de/1_0Studium_1und_1Lehre/1_0Studieng_aenge/1_08_0Bachelor_1of_1Science/1_08.05.03%20Informatik-BA-MA-StudOrd.html)

Power Engineering

Bachelorstudium: 6 semestres

Masterstudium: 4 semestres

Informations- und Kommunikationstechnik

Bachelor of Science: 6 semester [http://www.tu-](http://www.tu-darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/bachelor_master/ba_ikt.tud)

[darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/bachelor\\_master/ba\\_ikt.tud](http://www.tu-darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/bachelor_master/ba_ikt.tud)

Master of Science: 4 semester [http://www.tu-](http://www.tu-darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/bachelor_master/ma_ice.tud)

[darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/bachelor\\_master/ma\\_ice.tud](http://www.tu-darmstadt.de/zsb/studienmoeglichkeiten/studiengaenge/bachelor_master/ma_ice.tud)

Karlsruhe Universität

[http://www.zvw.uni-karlsruhe.de/seite\\_1533.php](http://www.zvw.uni-karlsruhe.de/seite_1533.php)

Tem os sistemas 3+2 (Bachelor-/Master-Studiengang) e 0+5 (Diplomstudiengang)

- [Elektrotechnik und Informationstechnik \(Diplom\)](#)
- [Elektrotechnik und Informationstechnik \(Bachelor\)](#)
- Elektrotechnik und informationstechnik (Master)

## AUSTRIA

Adoptou em 1999 o sistema 3+2+3

**Bakkalaureat : 6 a 8 semestres (em ciências sociais e humanas 6 semestres)**

**Master: 2 a 4 semestres**

**Technical University of Wien**

[http://www.tuwien.ac.at/zv/stud/englisch\\_courses.shtml](http://www.tuwien.ac.at/zv/stud/englisch_courses.shtml)

**Bachelor: 6 semestres**

**Masters: 4 semestres**

*Doktoratsstudium: 3 anos.*

(<http://www.wes.org/ewenr/04Jan/Feature.htm>)

**Engineering & Science**

Bachelor Program: 6 - 8 semesters

Academic Degree: Bachelor of \_\_\_\_

Master's Program: 2 semesters

## BÉLGICA

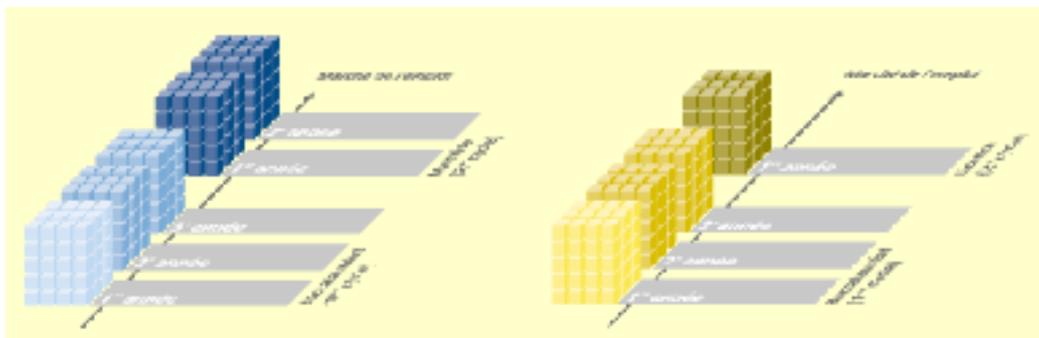
<http://www.ucl.ac.be/etudes/organisation.html>

**Baccalauréats: 3 anos**

**Maîtrises: 2 anos**

Les programmes de formation universitaire sont divisés en deux cycles : le [baccalauréat](#) en trois ans et la [maîtrise](#) en deux ans. Le cursus complet se donnera donc en cinq ans. Le baccalauréat vise à apporter à l'étudiant une formation de base dans une discipline, mais aussi à développer les capacités transversales propres à la formation universitaire : autonomie dans le travail, esprit critique, compréhension, recherche en rapport avec le domaine du savoir choisi.

La maîtrise, lieu de la spécialisation et de l'approfondissement d'un savoir, permet à l'étudiant d'acquérir les connaissances en rapport avec la discipline ainsi que les compétences et l'expertise nécessaires pour l'exercice d'une profession, l'enseignement ou la recherche. Une licence en un an (à raison de 60 [unités ECTS](#)) pourra être organisée pour certains diplômes.



Présentation réalisée sur base de l'Avant-Projet de décret harmonisant l'enseignement supérieur, 20/10/2003. Les termes utilisés sont susceptibles d'être modifiés.

## CHECA (REPUBLICA)

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

**Stage I & II:** Despite the introduction of bachelor-type degrees, universities continue to offer one-tiered, integrated master's degree programs that take between four-to-six years, although these long programs are now an exception rather than the norm. Post-graduate programs that follow the *Bakalár* take one-to-three (most commonly two) years of study, and lead to the *Magistr* in the humanities, natural sciences, mathematics and theology. The title of *Inzenyr* is awarded in technical, agricultural and economic fields. Finally, the title of *Doctor Medicíny* as the result of a first degree is now awarded in the medical sciences (medicine 6 years, dentistry 5-6 years, veterinary medicine and pharmacy 5 years). The fields of architecture and law also only offer integrated programs.

**Stage III:** Doctoral programs (*Doktor*) have a standard length of three years of full-time study beyond the master's level. Doctoral programs require the defense of a dissertation and the passing of an *Examen Rigorosum*.

**CHIPRE** (<http://www.wes.org/ewenr/04Jan/Practical.htm>)

- The degree structure at the University of Cyprus, the only institution with full accreditation, is based on three main cycles.

**Stage I:** The undergraduate cycle normally lasts four years, but may be extended to six years in special cases, and leads to a *Ptychio* (bachelor's degree).

**Stage II:** The graduate cycle takes 18 months to three years and leads to a *Metaptychiako* (master's degree). Some private colleges offer a short graduate master's program.

**Stage III:** The doctoral cycle has a minimum duration of four semesters and leads to a *Didaktoriko* (doctorate).

- In an effort by the ministry of education and culture, for a common language in awarding qualifications, all private institutions of higher education have adopted the following framework of qualifications: one year – certificate; two years – diploma; three years – higher diploma; four years – bachelor.

#### **DINAMARCA**

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

- The Danish higher education system is divided into two sectors: university and college (professionally oriented higher education sector).

- As a result of reforms in the late 1980s, Danish higher education has switched from a one-tier qualification structure to a two-tier structure with bachelor's, master's (*candidatus*) and doctoral degrees. Previously, all university study programs took between four and 6½ years and led to the award of the *candidatus* degree.

- Starting in 1988, students who completed three years of a *candidatus* program were awarded a bachelor's degree and could use the title B.A. (humanities, theology, social science) or B.S. (natural science, health science).

- In 1993, a general bachelor's degree structure was introduced (the so-called 3+2+3 system). As a result, almost all university programs now consist of a bachelor program (*B.A./B.S.*), a *candidatus* program and a doctoral program. The bachelor program constitutes a complete program in itself, but most students still continue their studies in a *candidatus* program.

- A few *candidatus* programs are still organized as one unbroken course, without the bachelor level, such as pharmacy, dentistry, architecture and land surveying. Medicine currently is being restructured from a 6½-year unbroken course into a three-year bachelor plus three-year *candidatus* course.

- These reforms are statutory as of this year with the new Act on Universities, which lays down the degree structures for university programs. The changes are nearly complete, but universities are developing them further to give more flexible study and exam forms. An example is the University of Copenhagen, which is introducing a thorough revision of curricula and structure of

its BSc and MSc programs, to come into effect from Sept. 2004.

- The aim of the new act is to improve the conditions and opportunities of the universities to give multi-disciplinary and strategic priorities to the composite educational, research and dissemination activities. Universities are to enjoy greater autonomy and have strengthened management structures. It is also designed to increase student mobility between Danish universities and to/from foreign universities.
- For medium-cycle higher education programs, the professional bachelor's degree was introduced in 2000. The programs, mostly aimed at the education and health sectors, have been reformed to fulfill the new requirements. In 1997, short-cycle higher education programs introduced a new sector in Danish higher education, namely a two-year professionally oriented higher education program.

## ESLOVÁQUIA (REPUBLICA)

Slovak University of Technology in Bratislava <http://www.stuba.sk/eng1/study/index.html>

The title acquired after successful completion of a master programme in technology in Slovakia is "Engineer" (Ing). This title is still applied in a number of European countries and is fully equivalent to MSc.

1) Bachelor, engineering, master and doctoral study programs are realised at the STU or at its faculties. A bachelor study program (bachelor study) is realised as the first degree program, an engineering and master study program (engineering and master study) as the second degree program and a doctoral study program (doctoral study) as the third degree program.

1) Standard length of a study is the length of a study defined in a study program [§ 51 section 4 letter h) of the Act] expressed in years.

2) Standard length of a study for a bachelor study program, including vocational training, consists of minimally three years and maximally of four years.

3) Standard length of a study of a study program at the second degree, including vocational training, is minimally one year and maximally three years, it means that the total standard length of a study of a bachelor study program and of a consequent study program in the second degree in the same or related study course equals to minimum of five years.

4) Standard length of a study for a doctoral study program in the daily form is three years minimally and four years maximally, within the external form of a study the total length is five years.

Informática: [http://www.fiit.stuba.sk/site.php?id=\\_studium&cmd=](http://www.fiit.stuba.sk/site.php?id=_studium&cmd=)

Bachelor Degree in Informatics: 3 anos

Master Degree : 2 anos

PhD: 3 anos

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

The new Slovak Higher Education Law of April 1, 2002 distinguishes between study programs of the first stage (bachelor's), second stage (master's) and third stage (doctoral). It states that tertiary-level education occurs through study programs on three levels: bachelor, master and doctorate.

**Stage I:** The *Bakalár* is awarded after three to four years of full-time study. The requirement for admission to bachelor- or integrated-level studies is the *Maturita* examination.

**Stage I & II:** The duration of second-tier studies is one to three years, and the combined duration of first- and second-tier studies should be no less than five years. The basic requirement for entry into a master's program is the successful completion of the bachelor. Despite the introduction of bachelor-type degrees, universities continue to offer four to six-year integrated master's programs, although they are offered only in special areas and cases (see below). Graduates of second-level programs (both "short" and "long") are awarded the academic degree *Magister*, graduates from engineering programs are awarded the academic title *Inžinier*, and graduates of integrated medical programs are awarded the title *Doctor Mediciny*.

All institutions of higher education that have received accreditation for postgraduate programs can offer master-level programs. However, they remain more typical for universities than for the non-university type institutions introduced by the Higher Education Law of 2002.

**Stage III:** The standard length of doctoral studies is between three and four years. Graduates are awarded the title PhD. Completion of a second-level program is required for entry into a doctoral program — there is currently no provision for entry into a doctoral program directly from a completed bachelor's program.

- Integrated bachelor/master programs are still recognized by the Accreditation Commission in subject areas such as medicine, pharmaceuticals and veterinary science, all of which are explicitly excluded by law from the 'Bologna' format. Only in exceptional cases and after authorization from the ministry may universities combine programs of the first and the second levels into one long program. Integrated programs are particularly favored by forestry, architecture and certain fields of study at military higher education institutions.

## ESLOVÉNIA

University of Ljubljana [http://www.fri.uni-lj.si/Html\\_e/study.html](http://www.fri.uni-lj.si/Html_e/study.html)

The Faculty of Computer and Information Science offers two undergraduate educational programmes:

- [a four year programme](#) (six semesters of lectures, 15 weeks of practice, 6 months of Diploma thesis work), which leads to the degree "Dipl. Ing. of Computer and Information Science", and
- [a five year "university programme"](#) (nine semesters of lectures, 6 months of Diploma thesis work), which leads to the degree "University Dipl. Ing. of Computer and Information Science".

The entry requirement for the four year programme is completion of a four year secondary education. For the five year "university" programme the national secondary school baccalaureate is mandatory. The four year programme is more application oriented, while the five year programme offers more extensive and in depth theoretical knowledge. Only graduates of the five year programme can continue their education at the postgraduate level.

Both undergraduate programmes have a general core-curriculum which consists mainly of mathematics and theoretical foundations of computer and information science, and three elective modules in:

- Information Science,
- Computer Logic and Systems, and
- Computer Software.

Students must choose one of the three modules after the first year on the four year programme and after the second year on the five year "university" programme.

Postgraduate programmes at the Faculty of Computer and Information Science consist of two years (four semesters) of course work. This can be followed by a Masters thesis leading to a M.Sc. degree and subsequently by a Doctoral thesis leading to a Ph.D. degree in Computer and Information Science. Under special circumstances, the Masters thesis can be avoided and students can go straight to work on their Doctoral thesis.

## ESPAÑA

Universidad Complutense de Madrid: <http://www.ucm.es/UCMD.html>

Primeiro Ciclo, 3 anos: *Diplomaturas e Licenciaturas Técnicas*

Segundo Ciclo, 2 anos: *Licenciaturas e Ingenierías*

Só segundo ciclo, 5 anos: *Licenciaturas e Ingenierías*

Parece seguir um sistema misto, podendo-se obter o segundo diploma directamente, o que

acontece também em outras (p.ex Valência <http://www.upv.es/informa/estudiosc.html> , Fac. Informatica, I. Informático))

Universidade Politécnica da Catalunha, <http://www.upc.es/>

- 1º ciclo: 2 anos
- 2º ciclo, 3 anos, diploma de “*enginyer*”
- 3º ciclo, 3 (?) anos, doutoramento

Universidade do País Basco: <http://www.upv.es>

- 1º ciclo, 3 anos: diploma de *Ingeniero Técnico*
- 2º ciclo, 2 anos, diploma de *Ingeniero*
- 3º ciclo :?

## ESTÓNIA

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

[http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) Estonian higher education has undergone a number of reforms since the country gained its independence from the Soviet Union. In terms of study cycles, these reforms – in 1990, 1995 and 1999 – have resulted in the phasing out of the Soviet integrated degree in favor of a system based on the bachelor (*baccalaureus*) and master (*magister*) cycles. Between 1991 and 1994, the length of the first stage of study was four to five years. Between 1994 and 1999, the length of study for a bachelor qualification was generally four years.

- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) In 1999, Estonian higher education underwent extensive reform with regard to curriculums and the transition to another two-tiered system of studies. Parliament passed amendments to the Universities Act in 2002, and these reforms went into effect in the 2002-03 academic year. Transition to new curriculums has taken place in the majority of major Estonian universities, with the focus of the first stage of study being general education and skills in specialty areas necessary for master studies.
- The latest reforms are geared more toward European integration, and thus the new system is closely aligned to the Bologna two-tier model. At the bachelor level, length of study is predominantly three years, and the capacity of study is 120 national credit points, or 180 European Credit Transfer System (ECTS) points. Some bachelor programs are four years in length (240 ECTS points). Master studies are one to two years in length or 40 to 80 credits (60 to 120 ECTS points), but along with bachelor's studies not less than five years (200 credits/300 ECTS points).
- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) Beginning in 2005-06, institutions of applied higher education will also be able to provide master studies, but only in cooperation with universities and taking into account regional needs.
- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) In addition to the two-tier model, professional studies such as medicine, veterinary medicine and architecture still follow the integrated, one-stage model of five to six years (300 to 360 ECTS points). New, one-tier programs in civil engineering and primary school teacher training were introduced in 2002-03.
- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) The length of doctoral studies has been revised from the fixed, four-year program to three to four years in length.

## FINLÂNDIA (em 2005 terá implementado 3+2)

Oulu University , Engenharia  
MSc: 5-6 anos  
Licenciate: 2 anos  
PhD: 3 anos.

<http://www.edu.fi/english/SubPage.asp?path=500;4699>

Bachelor: 3 anos

Master : 5 anos (incluindo Master of Engineering)  
Pós-graduação: *Licenciate*  
*Doctorate*

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

The structure of the university degree system in Finland was reformed in the early 1990s to provide broad, flexible and internationally compatible programs. As a result, a degree system based on two main cycles was introduced in most fields of study, with the exception of medicine, technology and architecture.

- Despite these reforms, a stand-alone, first-level qualification never really materialized. The bachelor programs that were introduced did not lead to independent degrees but were part of the five-year master programs, and were largely overlooked in the labor market as stand-alone qualifications.
- The Finnish Higher Education Council published an evaluation report on the existing master programs in February 2002. In academic year 2000-01, there were 167 programs in 19 universities.
- The government is introducing a bill in Parliament this fall to address the need for a system that is more internationally compatible. According to the ministry, the reforms, if passed, would be in force by summer 2005. The two-tier degree structure with an obligatory bachelor phase would be introduced in all fields of study except in medicine, where faculties would have the choice of using the new structure or the old integrated model.
- The ministry has earmarked funding to facilitate the transfer to the new degree structure and promote universities' cooperation in implementing the reforms.
- Currently, polytechnics can offer bachelor-level degrees in all fields and postgraduate degrees in select fields. The postgraduate programs currently are offered on an experimental basis. Although these degrees are a second cycle of 60 to 90 European Credit Transfer System (ECTS) credits in length, they are not strictly master programs. The government approved all the programs after an external evaluation; according to the most recent ministry report, the future of the polytechnics' degree structure will likely be decided by the end of 2004.

## FRANÇA

(ver LMD : <http://www.amue.fr/Dossier/LMD/>)

Universidade de Nantes: [http://www.univ-nantes.fr/84253500/0/fiche\\_\\_\\_pagelibre/](http://www.univ-nantes.fr/84253500/0/fiche___pagelibre/)

*Licence: bac+ 3 anos (bac em França é o ano terminal do secundário)*

*Master: bac+5*

*Doctorat: bac+8*

INPG- *Institut National Polytechnique de Grenoble* [http://www.inpg.fr/INPG/fr\\_forma.html](http://www.inpg.fr/INPG/fr_forma.html)

*Licence: bac + 3*

*Master: bac+5*

*Doctorat: bac+8*

INSA Toulouse: [http://www.insa-tlse.fr/formation/formation\\_fr.htm](http://www.insa-tlse.fr/formation/formation_fr.htm)

*Bachelor : bac + 3*

1 ano tronco comum a todos os cursos

2 anos de "pré-orientation"

*Master Recherche: bac + 5 (a partir de 2004)*

*Doctorat : bac + 8*

Está a convergir para o sistema *License-Master-Doctorat* (3/5/8)

*École Polytechnique:* <http://www.polytechnique.fr/enseignement/diplomes.php>

Cycle Polytechnicien, 4 anos : Gradué de l'École Polytechnique  
Ingénieur de l'École Polytechnique  
Diplôme de l'École Polytechnique

Programme Master : Master de l'École Polytechnique (não indica a duração, funciona pela 1ª vez em 2004)

**Formation doctorale**

Diplôme d'Etudes Approfondies  
Docteur de l'École Polytechnique

## GRÉCIA

Universidade Nacional Técnica de Atenas:

Undergraduate: 10 semestres (incluindo o "Diploma Thesis")

Pósgraduate: "Post Graduate Specialisation Diploma", with a minimum duration of 17 months

Doutoramento: 3 a 6 anos

Universidade de Atenas (clássica): Faculdade de Informática e Telecomunicações

<http://www2.di.uoa.gr/en/lessonsemest.php>

8 semestres

Universidade Aristotélica de Thessaloniki:

[http://genesis.ee.auth.gr/SITE\\_AUTH\\_UNIVERSITY/SITE\\_EDEPARTMENT/homepage.html](http://genesis.ee.auth.gr/SITE_AUTH_UNIVERSITY/SITE_EDEPARTMENT/homepage.html)

9 semestres com disciplinas (provavelmente o 10º é para estágio)

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

Higher education in Greece is provided by university (AEIs) and non-university higher institutions (TEIs).

**Stage I:** Programs offered by technical educational institutes (T.E.I.) leading to a professionally-oriented first degree (**Ptychio**) last three-and-one-half to four years. All programs require one semester of practical training and a thesis.

T.E.I.s do not offer post-graduate programs.

**Stages I and II:** The first higher-education degree in Greece is the **Ptychio**, which is awarded after four to five years (six in the case of medicine) at the university level, and 3½ to four years at TEIs in such professional disciplines as business, technology and allied health.

- Universities also offer post-graduate programs, requiring one-to-two years of study, leading to certificates and diplomas (**diploma metaptychiakon spoudon**) in a limited number of fields. **Ptychio**-holders are admitted by examination.

**Stage III:** The **Didaktoriko** (doctorate) normally takes three years, and is a prerequisite for teaching at the university level.

- Although the system consists of two main tiers, the vast majority (approximately 75 percent) of students leave the system with first-level qualifications and do not continue their studies further. There is general opposition from the universities to shortening the first-tier qualification to three years.

- Second-cycle programs are awarded only by the university sector. However, there is a provision in a recent law amendment that allows TEIs to work at a higher level. The new law allows TEIs, after successfully passing a quality-assessment procedure, to cooperate with universities in the realization of master's study by contributing staff, facilities or equipment. However, the master's degree is still awarded by the university in all cases.

- A recent proposal by the government to introduce a second type of master's degree, called "diploma of advanced studies," was withdrawn after universities and students protested. The

degree offered a broader profile than the existing master's degree.

- First-cycle degrees provide access to the second cycle irrespective of the sector (university or technological). Holding a second-tier degree is not a prerequisite for doctoral studies, which can be accessed directly by graduates of the first cycle.
- According to the latest government report on implementing the proposals of the Bologna Declaration, the consensus in Greece on the existing degree structure from virtually all parties involved is "the first-cycle degrees should continue to be obtained in Greece after at least four years of studies, and any ideas for first-cycle degrees obtained after three years of studies are totally rejected." Furthermore, "the requisite restructuring of the curricula will result in the restriction of the academically oriented courses and to the preservation of those courses which have a more or less direct relevance to employment needs ... leading to the 'professionalisation' and 'de-academisation' of the first-cycle studies."
- The government sees the current degree structure as consistent with the Bologna structure, and therefore states that "it is not going to change it."
- A related issue is the current debate on the reform of the existing legislative framework for postgraduate studies in Greece. Reformists point to a need for the reorganization and restructuring of master's programs and to the introduction of structured advanced courses at the doctoral level, thus introducing the concept of doctoral studies. The debate has been ongoing at universities for the last three years, but the government has not yet introduced a related bill before parliament.

## HOLANDA

Delft University of Technology

<http://www.tudelft.nl/index.cfm/site/TU%20Delft%20Portal/pageid/66142C30-8C71-EDEB-0B3DAB237F2A7EDD/language/en/index.cfm>

BSc: 3 anos

MSc: 2 anos

PhD: 3 anos

## HUNGRIA

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

**Stage I:** *Főiskola* (colleges) offer bachelor-level degrees (***Főiskolai Oklevél***) with the possibility to continue on for a master's degree at a recognized university. Although most programs take three years to complete, upper primary teaching programs require four years.

**Stage I & II:** Universities generally follow a one-tier system leading to an integrated master-level degree (***Egyetemi Oklevél***) that requires a total of five years of study (six years for medicine). Holders of the *főiskolai oklevél* can continue on for a master's, which requires an additional two to three years of study. Normally this requires that the student take additional subjects before or during the master's program that are included in the first three years of the long, one-tier master's program, but not in the bachelor's program.

**Stage III:** The Hungarian doctoral degree corresponds closely to what is known and recognized internationally as a PhD degree.

## INGLATERRA

Imperial College of Science, Technology and Medicine: <http://www.ic.ac.uk/P1554.htm>

BEng : 3 anos

MEng: 4 anos (directo)

MSc: 1 ano (full-time)

PhD: 2 anos (mínimo)

Cambridge <http://www.cam.ac.uk/cambuniv/ugprospectus/courses/engineering2.html>

MEng: 4 anos, directo (os dois primeiros comuns a todos os ramos de Engenharia)  
<http://www.admin.cam.ac.uk/univ/gsprospectus/subjects/intro1.html>  
MSc: 2 anos  
PhD: 3 anos

Oxford: <http://www.admissions.ox.ac.uk/courses/engi.shtml>  
MEng: 4 anos, directos (os dois primeiros comuns a todos os ramos de Engenharia)  
MSc: 1 ano (<http://www.admin.ox.ac.uk/gsp/courses/msc.shtml>)  
PhD: 3 anos

UMIST, Manchester:  
[http://www.umist.ac.uk/prospectivestudents/undergraduate/courseinfo/atoz2004\\_bydept.htm#computation](http://www.umist.ac.uk/prospectivestudents/undergraduate/courseinfo/atoz2004_bydept.htm#computation)  
BEng: 3 anos  
MEng: 4 anos  
PhD: 3 anos

## ISLÂNDIA

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

- In most fields, the degree structure in Iceland is based on the two-tier system of bachelor and master programs. The longer (four to six years), integrated *candidatus* degree still exists, however, in certain fields – theology, medicine, pharmacy, law, business administration, engineering and dentistry – at the University of Iceland. The long master programs account for only 4 percent of all graduate programs.
- Some faculties that still offer the *candidatus*, such as the law school at the University of Iceland, are considering changing their structure to a 3 + 2 system.
- The *B.A.* degree is awarded to students who have completed three to four years of study in the fields of humanities, theology, social sciences, visual arts and design and who have satisfactorily completed a final thesis or research project.
- The *B.S.* degree is awarded to students who have completed three to four years of study in the fields of economics, management or business administration, natural sciences, health sciences, agricultural science, computer science or technical engineering subjects, and who have passed the prescribed examinations and completed the final thesis or research project.
- Most graduate programs in Iceland are relatively new, and the curriculum is still being developed. They are largely research-oriented, they consist of 30 to 60 study credits or 60 to 120 European Credit Transfer System (ECTS) credits and the length of study is one or two years. A research project and a thesis can amount to 15, 30 or 45 credits. There are some master programs, such as the master's in business administration, that are considered somewhat more professional than the usual master's of arts or master's of science.
- Higher education is based primarily on two main cycles. Access to the second cycle requires successful completion of the first cycle, and lasts at least three years. The second cycle leads to a master's degree.

## ITÁLIA

Adoptou em 1999 o sistema 3+2+3.

Politécnico de Milão: <http://www.polimi.it/english/?id=3>

*Laurea BA*, 3 anos  
*Laurea Specialista (MA)*, 5 anos (3+2)  
*Dottorato di Ricerca*, 8 anos (3+2+3)

### Universidade de Roma La Sapienza

<http://w3.uniroma1.it/pololatina/inginformazione/manifesto.htm>  
*Laurea*, 3 anos

Dottorato di Ricerca: 3 anos <http://www.dis.uniroma1.it/~dottorato/>

## LETÓNIA

<http://www.rtuasd.lv/Courses.html>

Riga Technical University

**Bachelor: 3 anos**

**Engineering or Master: 2 anos**

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

[http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) According to the 1991 Higher Education Law, "Higher education comprises higher academic education and higher professional education." Different objectives were set for those branches.

- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) The law also provided for the replacement of integrated, five-year programs leading to a higher education diploma with a two-tier system with bachelor and master cycles. The subsequent Law on Higher Education Establishments (1995) further strengthened the bachelor-master structure in universities but failed to implement the same structure for professional qualifications. Amendments to the Law on Higher Education Establishments in 2000 allowed for the introduction of a two-tier system with bachelor and master cycles in professional education, allowing for further progression to doctoral studies.

- The current structure of higher education allows for academic bachelor programs (*bakalaura diploms*) of three to four years, which qualify students for one to two years of study at the master level. Bachelor degrees in professional disciplines are awarded after studies of at least four years in duration, and master degrees after no less than five years, including the bachelor phase. Successful students can then qualify for doctoral programs. The bachelor/master/doctorate cycles are, since 2000, applicable to both academic and professional programs. The 2000 amendments do not, however, include a provision abolishing the existing four- to six-year [240 - 360 European Credit Transfer System (ECTS) credits] integrated professional program that leads to a professional diploma, but not to doctoral studies. There will be a transition period during which the new professional bachelor and master programs will coexist with those professional programs leading to a diploma.

- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) The new master's degrees are called *magistra grads*. The long programs in medicine and dentistry lead to *arsta grads* and *zobarsta grads*.

- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) The total duration of first and second cycle studies combined should not be less than five years (300 ECTS). This means that 3+2, 4+1 and 4+2 structures are legal and in existence. In addition, there are some examples of 3+3 structures at Riga Technical University and 5+2 law programs at the University of Latvia.

- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) Two more documents – "Academic Education Standard" and "Second-Level Higher Education Standard" – have been adopted to supplement the Law on Higher Education Establishments. These documents obscure the difference between academic and professional higher education and ensure employability of graduates at all levels.

- [http://www.cepes.ro/hed/recogn/network/Riga\\_enic/final\\_rec.htm](http://www.cepes.ro/hed/recogn/network/Riga_enic/final_rec.htm) Further progression of the two-tier structure in Latvia foresees transfer from one sector of higher education to the other at every level. For example, successful completion of a professional bachelor program will provide eligibility for entry into both an academic and a professional master program. Long, one-tiered programs will be kept in areas where such programs are likely to be kept in a number of other European countries, e.g., medicine and dentistry.

## LITUÂNIA

Vilnius Technical University

<http://www.vtu.lt/english/studies/?PHPSESSID=c65a4449b0170c9a0d126f16beef5a9e>

Bachelor : 4 anos

Master : 2 anos

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

- <http://www.bmbwk.gv.at/start.asp?isllink=1&bereich=1&l1=&l2=&l3=&OID=9054>As a result of initiatives by institutions of higher education and changes to the law since independence, a three-tier system of higher education, similar to that proposed under the Bologna Declaration, has been introduced.
- <http://www.bmbwk.gv.at/start.asp?isllink=1&bereich=1&l1=&l2=&l3=&OID=9054>Undergraduate university studies last 3½ to 4½ years. Non-university studies last three to four years. Upon completing a bachelor program, a specialized professional or academic master program can be undertaken. Master courses last 1½ to two years. Integrated courses incorporating first- and second-level studies lead to a master's degree and last up to five years. Integrated master studies are offered in such disciplines as medicine, pharmacy and agriculture.
- <http://www.bmbwk.gv.at/start.asp?isllink=1&bereich=1&l1=&l2=&l3=&OID=9054>Short master's degrees build on bachelor programs requiring an average of four years (240 credits), thus bringing the overall length of study to more than five years, or 300 credits.
- <http://www.bmbwk.gv.at/start.asp?isllink=1&bereich=1&l1=&l2=&l3=&OID=9054>Lithuanian authorities see no further need to change the degree structure.

## MALTA

Malta University <http://www.um.edu.mt/courses/prospectus/eng.html>

Segue o sistema de Inglaterra:

Bachelor of Engineering (Honours): 4 anos

Master of Science in Engineering: 1 ano

PhD: 2-3 anos

**NORUEGA** (<http://www.wes.org/ewenr/04Jan/Practical.htm>)

new degree structure is being introduced in Norway that consists of an undergraduate and graduate cycle of three years and two years, respectively. This 3+2 structure replaces most existing degrees in Norway with few exemptions. In addition, the old doctorate degree has been replaced by a three-year Ph.D. degree. Transfers between institutions are encouraged and simplified by the degree system.

- The bachelor's degree is a three-year degree consisting of 180 ECTS-equivalent credits (*studiepoeng* – see below); the master's consists of 120 credits. However, there are exceptions, with some master's degrees weighted at 90 credits (1½ years) with at least two years of relevant work experience. In a few exceptional cases, some institutions have been allowed to continue awarding a one-year master's degree, but strict rules apply in relation to the subject area of the degree, language of teaching, etc.
- Students enrolled in such areas as odontology, engineering and pharmaceuticals participate in five-year integrated degree courses.
- Some degrees from the former structure remain, including degrees and titles in medicine, theology, psychology and veterinary science.
- Most institutions incorporated the new degree structure in academic year 2002-03. All were required to do so by the start of the current academic year (2003-04). The old and new degree structures will co-exist for one to three years (depending on study program) to ensure a smooth transition.

- In addition to the master program requiring 120 European Credit Transfer System (ECTS) credit points, there is an international master's degree (60 to 90 ECTS credits) and an experience-based master's degree (60 to 90 ECTS credits). All public higher education institutions offer the new degrees.

## POLÓNIA

Warsaw University of Technology <http://www.ire.pw.edu.pl/zejim/ece/under.html>

BSc: 4 anos

MSc: 3 anos (máximo)

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

**Stage I: *Licencjat*** (Licentiate) and ***Tytul Inzynier*** (Title of Engineer) degrees are awarded by universities and other higher education institutions after three or four years of full-time study (3.5 to 4 in engineering). Graduates of Specialized Foreign Language Teacher Training Colleges functioning within the academic structure are awarded the *licencjat* degree after three years of study. The ***Dyplom Ukonczenia*** (certificate of completion of a given post-secondary teacher-training college) is awarded after three years of study in primary education. Three-year university-level *licencjat* degrees from teacher training colleges (*Kolegium Nauczycielskie*) are also available in primary education. The entrance requirement for all three qualifications is the ***Swiadectwo Dojrzalosci*** (high school maturity certificate).

**Stage I & II: *Tytul Magister*** (Title of Master) is awarded after 4-5 years of study, which includes the defense of a thesis and a final examination. For professional qualifications, the title of the subject is included: ***Tytul Magister Inzynier*** (Title of Master in Engineering — 5 years of study), ***Tytul Magister Lekarz*** (physician - six years of study), ***Tytul Lekarza Stomatologa*** (Dental Physician - 5 years of study) and the ***Tytul Lekarza Weterynarii*** (Veterinary Physician - 5 to 5.5 years of study). Master's studies (***Uzupelniajace Studia Magisterskie***) of 1.5 to 2.5 years are available to holders of *licencjat* or *inzynier* degrees, and lead to the award of the *Tytul Magister*. Integration into the European Higher Education Area seems to have increased the availability and popularity of this second-tier qualification (see below).

**Stage III:** There are two levels of doctoral degree. The lower degree of ***Doktor*** includes three to four years of postgraduate study, the submission and successful defence of a doctoral dissertation, and doctorate examinations. Candidates for the higher degree, ***Doktor Habilitowany*** (Habilitation Doctor), must have remarkable scientific or artistic achievements; submit a habilitation dissertation; receive a favourable assessment of his/her dissertation; pass a habilitation examination and deliver a favourably assessed habilitation lecture.

### Current Trends

- Until recently the two-tier structure had not succeeded in attracting wide interest from students and employers, who preferred the traditional integrated study programs. However, over the last few years, an increasing number of higher education institutions have abandoned the traditional model of integrated master programs and moved to a two-tier structure in which the first degree (*licencjat* or *inzynier*) corresponds to a bachelor degree, to be followed by a master degree (*Uzupelniajace studia magisterskie*) of 1.5 to 2.5 years. These first-tier degrees are considered more academic than they traditionally were, however, this difference is not reflected in the degree title. Although the two-tier structure appears to now be more common, the two systems currently exist in parallel.
- Most universities are also adapting to the demand from non-state first-tier degree holders for second-tier programs. These programs are often organized as part-time studies (for which universities may charge fees).
- The transition has not been a centralized move and, as a result, different institutions have developed different versions of the system with regard to the length of the first and second tier and the conditions for moving from the first to the second one.
- Legal restrictions exclude medicine, pharmacy, dentistry, veterinary science, psychology and

law from the two-tier structure. The new structure seems to be preferred by certain disciplines such as fine arts, archaeology, etc.

- Most technical universities have introduced the two-tier system. In the other universities the situation is less cohesive, with some departments introducing the new structure, while others not. No urgent need is felt by the ministry, institutions, and students to change the present situation of two systems existing in parallel.
- Not all institutions of higher education are entitled to offer master's programs (short or long). Therefore, only approximately 40 out of more than 200 private institutions are authorized to run master's programs.

## SUÉCIA

### Royal Institute of Technology, Estocolmo

<http://www.kth.se/eng/education/programmes/index.html>

BSc: 3 anos (Bachelor of Science (BSc) programmes in Applied Engineering)

MSc: 5 anos (Master of Science (MSc) programmes in Engineering)

(o BSc não dá acesso ao MSC, mas são cursos alternativos)

Pós-Graduação: *Licenciate*: 2 anos

PhD: 2 anos

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

Undergraduate degrees are divided into general degrees and professional degrees.

#### Current degree structure for general degrees:

- *Högskoleexamen* (university diploma): at least two years of full-time study, 80 Swedish credits (*poäng*) (120 ECTS credits)
  - *Kandidatexamen* (bachelor): at least three years of full-time study, either of a general nature or professionally oriented, 120 credits (180 ECTS credits)
  - *Magisterexamen med ämnesdjup* (master): at least four years of full-time study, 160 credits (240 ECTS credits)
  - *Magisterexamen med ämnesbredd*: awarded after studies of at least 40 credits to students with a degree of at least 120 credits or the equivalent.
  - *Licentiatexamen* (Licentiate): usually two years of full-time study after the completion of at least three years of full-time undergraduate study
  - *Doktorsexamen* (doctorate): usually four years of full-time study after the completion of at least three years of full-time undergraduate study
- Master's degrees of 40 credits (60 ECTS credits), after a bachelor of 120 credits (180 ECTS credits), are offered in all disciplines. Master's degrees are awarded at the level of four years/240 ECTS credits.
  - Review of the Bologna Declaration's division of higher education degrees into different cycles is still under review and will be available in December 2003. The analysis will clarify the division given in the declaration and will determine which programs will be affected by a division based on a system of bachelor's and master's degrees.
  - In addition to the existing degrees, a new type of professional master's degree has been introduced recently, called *magisterexamen med ämnesbredd*. This new professional master's degree is designed as an important element of progressing lifelong learning, aiming at candidates who are already in employment.
  - An interim report in March 2003 made proposals concerning the position of the master's in relation to other qualifications. These proposals are under review by higher education institutions and the National Students Union.

- Swedish officials stress the importance of the European Research Area, and the logical inclusion of a third cycle (doctoral studies) in the EHEA.

## TURQUIA

(<http://www.wes.org/ewenr/04Jan/Practical.htm>)

**Stage 1:** The *Lisans Diplomasi* (bachelor's degree) is awarded after completing four years of study. Dentistry, architecture and veterinary medicine require five years of study. Medicine takes six years, leading to the qualification of *Doktor*, which is awarded concurrently with the diploma. The *Muhendis Diplomasi* (engineering diploma) is awarded by technical universities and higher technical institutions after four to five years of study.

**Stage 2:** The *Yukse Lisans Diplomasi* and the *Yukse Muhendi Diplomasi* (higher engineering diploma) are awarded after two years of study beyond the undergraduate level, and require the preparation and defense of a thesis. Both qualifications are considered to be the equivalent of a master's degree.

**Stage 3:** The *Doktora* (doctorate) requires two to four years of study beyond the master's and the preparation of a doctoral thesis. The *Sanatta Yeterlik* (proficiency in art) is the equivalent of a doctorate in fine arts. The *Uzmanlik* (specialist degree) is equivalent to a doctorate in medical science.

- A 2003 ministerial report prepared for the [Berlin Summit](#) states that the current degree structure of Turkish higher education is already in line with the Bologna Declaration and therefore does not have to undergo reform.

## ANEXO 2. Obtenção de Cédula Profissional em Inglaterra.

How to Become a CEng, IEng or EngTech (<http://www.engc.org.uk/registration/index.asp>)

To become a CEng, IEng or EngTech you need to demonstrate you have appropriate competence and commitment. These are demonstrated by

- i) Your academic qualifications;
  - ii) Your experience and training,;
  - iii) By an assessment, the Professional Review, which may involve your writing a dissertation, attending an interview or sitting an examination; and
  - iv) By membership of a Licensed Member organisation.
- 2 If you are already a member of a [Licensed Member](#) organisation, you may well have achieved some or all of these requirements. If you are a member of a non-UK engineering organisation, or hold qualifications recognised by them, you also may have achieved some of the requirements.

### Academic Qualifications

- 3 Your first step is to check if your academic qualifications are recognised. The UK engineering profession has accredited [a large number of qualifications](#). However, if your qualifications are not on the list you may still be eligible. If you are in the UK, or a UK citizen, you should contact an appropriate Licensed Member organisation.
- 4 Choose one that is most aligned with your interests. Outside the UK you should contact your national engineering association or institution. If they are members of the [Washington Accord](#), the [Sydney Accord](#), the [Dublin Accord](#), the [International Register of Engineers \(Engineers' Mobility Forum\)](#), or [FEANI](#), and recognise your qualification themselves, you may be eligible.

- 5 If your qualifications are not immediately acceptable, you may be accepted by a Technical Report Procedure, involving an assessment conducted by a Licensed member Organisation against an appropriate exemplifying standard, or by taking all or part of the [Engineering Council Examination](#). In either case, you will be advised by the Licensed Member organisation you approach. It will probably require you to apply for membership, so your qualifications and experience may be properly assessed.

### **Experience, Training and Commitment**

- 6 Demonstrating your experience, training and commitment requires you to apply for membership of one of the Licensed Member organisations. When you contact them, state that you are looking to be registered - if possible stating the category of registration (CEng, IEng or EngTech) you require. The process of assessing your credentials can take up to six months, especially if an interview is required. Costs vary between £50 - £400, depending on the Member organisation approached, the status of your qualification and the registration category required.

### **The Professional Review**

- 7 CEng or IEng registration will usually require a professional review interview, undertaken by two trained representatives of the Licensed Member. It will be based on your submitted application and accompanying portfolio. Most Licensed Members can arrange the professional review interview to take place outside the UK, but London-based reviews are likely to be quicker to obtain.

### **UK-SPEC**

- 8 The detailed requirements for registration may be found in [UK-SPEC](#). Licensed Member Organisations will have membership application guidelines based on this document.

ANEXO 3. Resumo do Processo de Bolonha.

In <http://policy.iop.org/Policy/Bologna.doc>:

The Bologna Process, which follows the signing of the Bologna Declaration in June 1999 by higher education (HE) Ministers from 29 European nations, seeks to create a 'European Higher Education Area', characterised by a common structure of 'readable and comparable' degrees and other related features. The Process has the broad aims of improving quality, promoting mobility and increasing the attractiveness of Europe's universities to overseas students and to international employers of graduates. There is a commitment to implement a clear set of objectives and an accompanying action plan, which is embodied in the Process.

The most controversial objective of the Process is to introduce a system of 1<sup>st</sup> (Bachelors), and 2<sup>nd</sup> cycle (Masters) degrees to replace the single long degrees which have existed until now in most subjects in most European nations. This objective threatens the nature and existence of the 4-year first-degree qualifications, which are offered by subjects such as, physics (MPhys) and chemistry (MChem), and might remove the possibility of direct progression from BSc degrees to PhD programmes.

UK universities need to address the Process, which was overlooked in the DfES HE white paper, as it could affect the standing and recognition of its graduates in Europe. There is a special need for the UK physics and chemistry communities to respond to the challenge, because of the importance of the Masters level in their professions and the fact that most of the rest of Europe take a further year to reach Masters level.

### **ANEXO 3- ECTS**

**European Credit Transfer System (ECTS)** Based on student workload:

- 1 year full time study = 40 weeks = 60 Credits (approx 1600 hours)  
(i.e. 1 Credit = 25-30 hours study - 1 week of study = 1.5 Credits)

ECTS to evolve to a system of accumulation and transfer of general credits applicable to all students. UK Universities currently operate a credit system of 120 credits/year – will have to change to 60 credits per 40week year.

This infers a unified grading system: A mechanism to allow comparison between grading systems

**Titles/cycles** Bologna Declaration is based upon 2 consecutive cycles to obtain 'authoritative' degree. First cycle of 3 years to Bachelor Degree, Second cycle of 1-2 years to Masters Degree