

Informatics education in Europe: institutions, degrees, students, positions, salaries. Key Data 2008-2013

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**Informatics Education in Europe:
Institutions, Degrees, Students,
Positions, Salaries. Key Data 2008-2013**

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ABOUT THIS REPORT

The publication in 2013 of the first Key Data Report on Informatics Education in Europe, covering the 2008-2012 period, was a milestone event. For the first time could policy makers, education and research professionals and the general public obtain precise information on the state of education in the area of highest importance for the future of Europe: information technology. Instead of relying on rumors and guesses, discussions and decisions could now take advantage of verified data on the key parameters in various countries, beginning with the exhaustive list of institutions offering education in the field and continuing with a precise exact description of the degrees offered, the student and graduates numbers at every level, with distribution by gender, the maze of faculty and researcher positions and titles, and the most controversial topic of all: faculty and researcher salaries.

Like its predecessor, the report emanates not from a government body or a group with a specific political agenda, but from professionals in the field, represented by Informatics Europe (the association of academic and industrial research institutions in the field), with the sole purpose of furthering the understanding of the discipline's parameters through the provision of basic, factual data.

The introduction to the first edition clearly stated that it was a first step. Citing:

"The picture presented here is a snapshot of the informatics situation in the period 2008-2012. It will be regularly updated and extended to continue providing the European Informatics community with a clear picture of the key academic and economic parameters defining its situation and evolution."

Encouraged by the community's enthusiastic reception, we have indeed continued, updated and improved the work, enlarging its scope with the help of two new authors. **Informatics Education in Europe: Institutions, Degrees, Students, Positions, Salaries. Key Data 2008-2013** provides a stunning picture of the state of Informatics education in Europe today. Based on an enormous amount of information from representative countries, it presents a wealth of fundamental data, starting from a list of institutions awarding degrees in the field and continuing with student enrollments, degrees awarded, gender information, academic titles, as well as precise and much-needed data about academic salaries across European countries.

This second edition brings with it a number of improvements. On form, the presentation now includes numerous graphics, making the salient trends more clear. On substance, the study has added a number of countries to those already covered. This extension respects the report's fundamental rule of favoring precision over coverage: we only include data about countries where the sources are available and verifiable. Thanks to the active participation of new collaborators acknowledged below, the report now covers Austria, Ireland and Turkey in addition to the original countries (Denmark, Germany, Italy, Netherlands, Switzerland, and France for salaries). In all countries, the descriptions have been not only updated but improved in numerous respects to provide the reader with an accurate picture and enable meaningful comparisons. An important change is the decision, taken after considerable discussion, of including data about University of Applied Sciences for countries where such institutions exist distinct from traditional Universities.

The Informatics Key Data report series will continue to provide the community with the precise and objective information that is indispensable for understanding the field and making informed, effective policy decisions.

Disclaimer: *All facts and figures were obtained from publically available sources. Although extreme care has been taken to ensure the data of interest was correctly extracted from these sources we give no warranty, express or implied, as to the accuracy, reliability, utility or completeness of this information. The reader assumes all risks and is solely responsible for any conclusions drawn from the information portrayed in this report as well as for the use of the data presented. Please report any incomplete or erroneous data to administration@informatics-europe.org.*

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Executive Summary

Informatics, the science behind IT, is a core enabler of Europe's future success. Crucial to that success is the availability of superb Informatics education throughout Europe.

In this report series, the first to attempt a general study of the state of the art in European Informatics education, the emphasis is on raw facts and figures rather than deep analysis; it provides the material for such analyses as others may wish to perform. Still, a number of salient points emerge:

- The field in Europe suffers from a **serious branding problem**. Even after an approximate translation to English, a good dozen terms are used to denote what is fundamentally the same discipline.
- The quantity and quality of available data varies considerably from country to country. In the interest of reliability, this report has mostly used data from countries where a solid and reasonably complete picture could be drawn from official sources. Even when available, the data does not always allow direct comparisons, since definitions and methods of collection vary significantly from country to country. It is important for the field to ensure that **consistent, solid Informatics education data becomes available in all European countries**.
- Informatics is a well-developed academic field, with **hundreds of accredited institutions** training huge numbers of students for bachelor, master and PhD degrees.
- Extrapolating from precise data in specific countries, we come to a rough estimate that **over three quarters of a million students are enrolled in Informatics bachelor's programs** across Europe.
- The corresponding estimated figure **for master students is over hundred thousand**.
- In some countries, the presence of "Universities of Applied Sciences" alongside traditional Universities **complicates the picture**.
- The **status of faculty** varies considerably across Europe.
- **The salaries vary even more**. Our detailed study of the exact salaries of faculty in seven of the most advanced economies in Europe (Austria, France, Germany, Italy, Netherlands, Switzerland, UK) **shows, for a similar faculty position, a difference in salaries that can reach a factor of four or even more**. For example a full professor at the top level receives, in some countries, the salary of a high-level industry executive, whereas in others the compensation is more comparable to that of a junior engineer in the IT industry.

1 Introduction

The quality of higher education in Informatics, the science behind information technology (IT)¹, is critical to the future of Europe. Guaranteeing and improving this quality is of paramount concern to the Informatics community; it is part of the mandate of Informatics Europe, the association of university departments and industrial research laboratories in the field, to help achieve this goal.

Any coherent attempt at improvement must begin with a clear understanding of the current situation, supported by credible qualitative and quantitative data². Examples of fundamental questions that can only be answered seriously by relying on such data include:

- What exactly makes up an Informatics education program, and under what other names can such programs be found?
- What degrees are available, and how do they compare across countries?
- How many students are studying for such degrees?
- How have these student enrollment numbers evolved in response to the ups and downs of the economy and of the popular perceptions of information technology, for example as a result of concerns about outsourcing?
- Are there significant differences in the state of education in different European countries? Differences with other industrialized countries such as the USA and Australia?
- What are typical salaries in Informatics for PhD students, postdoctoral researchers, assistant professors, associate professors, full professors and other ranks for educators and researchers?

The example of the Computing Research Association's surveys in the USA — such as the annual "Taulbee Survey" on Informatics PhDs — shows that providing well-supported data can play a crucial role in the development of the community and the discipline.

Until the publication of the first Informatics Europe Key Data report in 2013, there had not been any concerted effort at a Europe-wide collection of data that would permit answering such questions on a trans-national basis. Some national repositories of data exist, but they do not readily give a general European perspective: they can be hard to find; they are at different levels of advancement, some detailed, others partial; they do not necessarily measure exactly the same things, sometimes with subtle differences; they are based on different methodologies; and, naturally enough in light of Europe's diversity, they use different languages.

The present report is the continuation of this concerted effort to provide the European Informatics community with solid information on the state of higher education. It concentrates on the following key aspects:

- Names of the "Informatics" subjects in various countries (Section 3).
- Detailed description of the different national higher education systems (Section 4)
- Student enrollment and gender information (Section 5).
- Degrees awarded and gender information (Section 6).
- Academic positions (Section 7).
- Academic salaries (Section 8).
- List of institutions teaching Informatics (Appendix A).

The principal differences with the preceding edition are:

¹ Another term for Informatics, prevalent in the USA, is "computer science". For other alternative names, see Section 3.

² Here and in the rest of this report we follow the IT industry's practice of using "data" as a singular noun.

- The inclusion, in addition to tables, of graphical representations to make the key information more vividly understandable.
- The inclusion of new countries: Austria, Ireland, Turkey. We hope to continue expanding the country scope in the following years, with the rule that countries can only be included under the condition that precise, verified data is available. We welcome contributors willing to work on providing such data.
- The inclusion of data pertaining to Universities of Applied Sciences in countries where such institutions exist as a separate category.

The last point deserves clarification. Austria, Denmark, Ireland, Germany, The Netherlands and Switzerland include, in addition to traditional Universities, institutions known in English as Universities of Applied Sciences (UAS) (in Ireland, Institutes of Technology) with a focus on education although many do engage in research [EU1]. Their inclusion in the report is potentially controversial, since Universities sometimes view UAS as competitors benefitting from not having to meet the same requirements regarding research. Without taking a stand on these issues, the authors considered that excluding the UAS from the analysis would result in a skewed result, particularly for the following two reasons: UAS do train information technology experts, whom industry hires along with university graduates; and not including them would result in a biased picture in comparison with countries where the distinction does not exist. For clarity and accuracy, the corresponding tables account for UAS programs and graduates separately.

2 Sources of data

2.1 Methodology

There is no European-wide source for data relative to the topics of this report. It consequently relies on national data repositories. Not all countries, however, have equally accessible and credible repositories.

One possible choice would have been to attempt to cover all European countries, using whatever data one can find in each case. The clear disadvantage of this approach is that the quality of the result may be determined by the quality of the weakest source. Instead, the choice was made to **limit the study to countries for which reliable data was available in accessible form**. To complement this approach, some extrapolations are made to the Europe-wide situation, using simple indicators; these are only extrapolations, and should be taken with caution.

The methodologies for data collection, analysis and reporting (documented on the web site of the organizations consulted) vary, adding to the general difficulty of cross-country comparisons.

2.2 Data sources for subjects, student enrollments, degrees and institutions

For subjects, student enrollments, degrees and institutions (Sections 3, 5, 6 and Appendix A) the report concentrates on nine countries for which reliable data is available from official organizations:

- Austria: *Bundesministerium für Wissenschaft, Forschung und Wirtschaft* (www.en.bmwf.gv.at)
- Denmark: *StatBank Denmark* (www.statbank.dk)
- Germany: *Statistisches Bundesamt* (www.destatis.de)
- Ireland: Higher Education Authority (www.hea.ie)
- Italy: *Ufficio di Statistica - Ministero dell'Istruzione, dell'Università e della Ricerca* (statistica.miur.it)
- Netherlands: *Centraal Bureau voor de Statistiek* (statline.cbs.nl)
- Switzerland: *Bundesamt für Statistik* (www.bfs.admin.ch)
- Turkey: *OSYM "National Evaluation, Selection and Placement Center"* (www.osym.gov.tr)
- UK: Higher Education Statistics Agency (www.hesa.ac.uk)

The data provided by these sources are public-domain except in the UK case, where HESA sells its reports.

For the list of institutions (Appendix A), several sources were consulted in each country, including references AT1-AT2, DK1-DK2, GE1-GE3, IT1, NE1-NE2, SW1-SW3, UK1-UK3 and university web sites.

The university system of these countries (and others) varies considerably (see Section 4). Unlike its predecessor, this report includes numbers not only from traditional Universities but also from **"Universities of Applied Sciences"**: *Fachhochschulen* (Austria, Germany and Switzerland ³), *Hogescholen* (Netherlands), *Professionshøjskolerne* (Denmark), Institutes of Technology (Ireland). Omitting this information would have an important downward effect on the reliability of the results since a significant proportion of Informatics students (e.g. the majority in the Netherlands and Switzerland, about half in Germany) study in such institutions. In addition, it would skew comparisons with the UK, where "polytechnics", formerly the equivalent of Universities of Applied Sciences, no longer exist as a separate category, having as a result of the Further and Higher Education Act 1992 been either turned into universities or incorporated into existing universities [UK4].

³ For discussions of institutions, programs and degrees in Switzerland, we rely on English terminology when in common use, or otherwise on German terminology. French and Italian versions of these terms are used in the corresponding regions.

2.3 Data sources for salaries

For salaries (Section 8), reported at the level of PhD Candidate, Postdoctoral Researcher and several Professor ranks, the present report is based on data from Austria, France, Germany, Italy, The Netherlands, Switzerland and the UK, where information on the base gross salaries of academics is publicly available and reported by higher education and research ministries, academics associations, unions, or directly by the universities.

2.4 A general warning

This report has chosen, as noted, precision and exactness over generality. We have limited ourselves to countries and parameters for which reliable official data was available⁴. We have high confidence in the quality of the results presented here, and ask the reader to be wary of hasty reactions if some results do not immediately seem believable. Even if you think *you* know the situation in your country inside out, and a particular figure does not “look right”, please remember the following observations:

- Do not jump to conclusions after reading the results in a table without consulting the notes that follow it. This comment is particularly important for the salary tables of Section 8, since salary conditions vary considerably across countries.
- Student number comparisons must take into account the differing definitions of universities, in particular the notion of “University of Applied Sciences” as it exists in some of the countries surveyed.
- All numerical information comes from official governmental sources⁵. In some cases colleagues told us that they had doubts about some of the resulting figures. Our view has been that, whatever their possible limitations, we were better off trusting government statistical offices than relying on private sources.

Genuine errors may of course have crept in, and we will be grateful for corrections.

⁴ The two exceptions, clearly marked as such, are the rough extrapolations in Sections 5.4 and 6.4.

⁵ Here too exceptions are marked clearly, for example with the mention “X, personal communication”.

3 Names of subjects

Informatics is known under different names in different European languages and countries, and in English as well. Table 1 lists the subject names that were used to identify Informatics programs in the countries selected for the survey of institutions in Appendix A.

When a clear translation of foreign terms into English exists, it is given in parentheses. Not included are some programs with Informatics content taught in non-informatics curricula, for example in Electrical Engineering in universities where this discipline is separated from Informatics. Note that we used the term “Informatics” as a translation of *Informatik/Informatica/Informatique* although some departments in Austria, Germany, Switzerland and the Netherlands translate it as “Computer Science” in the English versions of their web sites.

Table 1. Names of Informatics subjects	
Austria	<i>Angewandte Informatik</i> (Applied Informatics); Applied Image and Signal Processing; <i>Bioinformatik</i> (Bioinformatics); Computational Intelligence; <i>Informatik</i> (Informatics); <i>Medieninformatik</i> (Media Informatics); <i>Medizinische Informatik</i> (Medical Informatics); Pervasive Computing; Scientific Computing; Software & Information Engineering; Software Engineering & Internet Computing; <i>Technische Informatik</i> (Computer Engineering); Visual Computing; <i>Wirtschaftsinformatik</i> (Business Informatics)
Denmark	Bioinformatics; Computer Science; Data Engineering; Digital Communication; Digital Innovation & Management; Digital Media and Design; Electronics and Computer Engineering; Embedded Software Systems; Games; Global Business Informatics; Human Centered Informatics; Informatics; Information and Communications Technology; Information Management; Information Technology; IT and Cognition; IT Management & Business; IT Network and Electronics Technology; IT Product Design; IT, Communication and New Media; Machine Intelligence; Media Technology and Games; Multimedia Design and Communication; Networks and Distributed Systems; Software Development and Technology; Software Development; Vision, Graphics and Interactive Systems; Web Development
Germany	<i>Bioinformatik</i> (Bioinformatics); <i>Computer- und Kommunikationstechniken</i> (Computer and Communications Engineering); <i>Informatik</i> (Informatics); <i>Ingenieurinformatik/Technische Informatik/Informationstechnik</i> (Computer Engineering); <i>Medieninformatik</i> (Media Informatics); <i>Medizinische Informatik</i> (Medical Informatics); <i>Wirtschaftsinformatik</i> (Business Informatics or Information Systems)
Ireland	Applied Computing; Business and Information Technology; Business Information Systems; Computational Problem-Solving; Computational Thinking; Computer and Communications Engineering; Computer Applications; Computer Forensics & Security; Computer Games Development; Computer Networks and Systems Management; Computer Science and Business; Computer Science and Language; Computer Science, Mathematics and Philosophy; Computer Science; Computer Systems; Computer, Electronic and Communications Engineering; Computing - Games Design and Development; Computing in Multimedia Systems/Web Engineering; Computing with Cloud; Computing with French; Computing with Mobile App Development; Computing with Multimedia; Computing with Software Development; Electronic and Computer Engineering; Enterprise Computing; Green Information Technology; Information Systems Management; Information Technology; Interactive Applications Design and Development; Internet Systems Development; Management Science and Information Systems Studies; Multimedia Programming and Design; Software Design and Development; Software Development and Computer Networking; Software Development; Software Engineering; Web Development
Italy	<i>Bioinformatica</i> (Bioinformatics); <i>Comunicazione Digitale</i> (Digital Communication); <i>Comunicazione Multimediale</i> (Multimedia Communication); <i>Informatica</i> (Informatics); <i>Informatica Musicale</i> (Musical Informatics); <i>Informatica per le Discipline Umanistiche</i> (Informatics for Humanities); <i>Informatica per il Management</i> (Management Informatics); <i>Ingegneria dell'Informazione</i> (Information Engineering); <i>Ingegneria Informatica</i> (Informatics Engineering); <i>Scienze e Tecnologie dell'Informazione</i> (Information Science and Technology); <i>Sicurezza Informatica</i> (Informatics

	Security); <i>Tecniche e Metodi per la Società dell'Informazione</i> (Techniques and Methods for the Information Society)
Netherlands	<i>Bedrijfskundige Informatica</i> (Business IT & Management); <i>Bio-informatica</i> (Bioinformatics); Business Informatics; <i>Communicatiesystemen</i> (Communication Systems); Communication and Multimedia Design; Embedded Systems; Game and Media Technology; <i>Informatica</i> (Informatics); <i>Informatiekunde</i> (Information Science); Information Security; Kunstmatige Intelligentie (Artificial Intelligence); Software Engineering; <i>Technische Informatica</i> (Computer Science and Engineering)
Switzerland	<i>Bioinformatik</i> (Bionformatics); <i>Computerlinguistik</i> (Computer Linguistics); <i>Geoinformatik</i> (Geoinformatics); <i>Informatik</i> (Informatics); <i>Ingenieurinformatik/Technische Informatik</i> (Computer Engineering); <i>Kommunikationssysteme</i> (Communication Systems); <i>Medieninformatik</i> (Media Informatics); <i>Neuroinformatik</i> (Neuroinformatics); <i>Rechnergestützte Wissenschaften</i> (Computational Science and Engineering); <i>Softwaresysteme</i> (Software Systems); <i>Wirtschaftsinformatik</i> (Business Informatics or Information Systems)
Turkey	<i>Bilgisayar Bilimleri</i> (Computer Science); <i>Bilgisayar Mühendisliği</i> (Computer Engineering); <i>Bilgisayar Teknolojisi ve Bilişim Sistemleri</i> (Computer Technology and Information Systems); <i>Bilgisayar ve Enformasyon Sistemleri</i> (Computer and Information Systems); <i>Bilgisayar ve Öğretim Teknolojileri Öğretmenliği</i> (Computer and Instructional Technology Teacher Education); <i>Bilgisayar ve Yazılım Mühendisliği</i> (Computer and Software Engineering); <i>Bilgisayar-Enformatik</i> (Computer and Informatics); <i>Bilişim Sistemleri Mühendisliği</i> (Information Systems Engineering); <i>Bilişim Sistemleri ve Teknolojileri</i> (Information Systems and Technologies); <i>İşletme Bilgi Yönetimi</i> (Business Information Systems); <i>İşletme Enformatiği</i> (Management Informatics); <i>Matematik ve Bilgisayar</i> (Mathematics and Computer); <i>Matematik ve Bilgisayar Bilimleri</i> (Mathematics and Computer Science); <i>Teknoloji ve Bilgi Yönetimi</i> (Technology and Information Management); <i>Yazılım Mühendisliği</i> (Software Engineering); <i>Yönetim Bilişim Sistemleri</i> (Management Information Systems)
UK	Artificial Intelligence; Broadly-based programs within Computer Science; Computer Science; Information Systems; Software Engineering; Others in Computing Sciences

For Switzerland, this table uses the German names, but universities in French-speaking and Italian-speaking parts of the country rely on equivalents in their respective languages.

For the UK, the names listed are those used by HESA, the government Higher Education Statistics Agency. The actual practice is much more diverse, as universities use a variety of names, partly with eyes on marketing the subjects to prospective students⁶.

It is clear from this table that the discipline has a branding problem in Europe. While tradition is an obstacle, converging on a single name would help convey the discipline's fundamental unity.

⁶ Jane Hillston, personal communication. As an exhaustive list of these names does not appear to exist, we will attempt to produce one for the next edition of this report.

4 Systems of Higher Education

In the United States of America, another major region with a modern, advanced, influential and prestigious network of universities⁷, the system of higher education is well-understood. It is also homogeneous in the sense that most universities rely on a considerable collection of common rules, practices, conventions and assumptions, covering the definition of degrees, the modes of recruitment, the role of universities, the status of faculties and other essential ingredients of the structure of higher education. Most features of this system also apply to Canada.

Europe knows no such consistency. Universities as they exist in Europe today are the result of an evolution that is not only long and prestigious, going back to the eleventh and twelfth centuries (Bologna, Paris, Oxford, Salamanca and many others); Europe can lay claim to the invention not only of the notion of University but also of the modern research-oriented ("*Humboldtian*") University. This long and prestigious history has led to diversity, compounded even more in the twentieth century by the application, in the eastern part of the continent, of a Soviet-influenced model, where research occurs in part in academies of sciences rather than universities.

As in other spheres of social activity, this diversity and the richness of national traditions is part of Europe's strengths, but it also complicates analysis (as it complicates cooperation). This section provides some background on the specifics of education among the countries surveyed in the rest of the report.

The discussion makes frequent references to the "Bologna" process, a wide-ranging effort to harmonize European Union systems of higher education, started by a meeting of education ministers in Bologna in 1999 [EU2]. Most European countries (including non-EU members such as Switzerland) have adopted the Bologna standards or are still in the process of applying them.

4.1 Austria

Austrian degree programs are offered by traditional (research) Universities (*Universitäten*) and by Universities of Applied Sciences (*Fachhochschulen*). Their contents and objectives are defined by the universities and are subject to approval by the ministry of education. Universities can be public or private but in either case they have to be consistent with the ministry's requirements.

A diploma from the secondary school (=Matura) is required as general qualification for university admission. Traditional universities do not require any additional entrance exam in Informatics; Universities of Applied Sciences may apply their own requirements.

Higher education in Austria is organized according to the Bologna agreement in three levels (this is the case for traditional Universities and also for Universities of Applied Sciences):

- Bachelor program (three years)
- Master program (two years)
- PhD program (minimum three years)

Only traditional Universities have the authorization to award doctoral degrees. PhD Candidates (*Prädocs*) can be financed by the university. In this case they are employed as *Universitätsassistent*. Or, they can be financed by grants, funds or industrial cooperation and be employed as *Forschungsassistent* / *Projektassistent*. There are also PhD Candidates who are not funded at all and who do not have any employment contract.

⁷ Other obvious examples of such networks exist in Australia, Japan and Singapore.

The same system applies for Postdoctoral Researchers (*postdocs*) who can be employed as *Universitätsassistent* or *Forschungsassistent / Projektassistent*, depending on their funding source.

The academic year in Austria is divided into semesters (winter and summer semester) and starts in October. Degree programs may start in the winter semester only (= October), or they can start both in winter and summer semester (= March).

Higher education in Informatics is usually provided at faculties of Informatics, faculties of sciences, faculties of engineering, and to a smaller extent at other areas.

At bachelor & master level there are numerous degree programs with different names.

Depending on the degree program the following degrees are awarded:

At the bachelor level:

- Bachelor of Science

At master level:

- *Diplom-Ingenieur/Diplom-Ingenieurin (Dipl.-Ing / DI)*, comparable with Master of Science
- Master of Science

The course load for a bachelor program is 180 ECTS in total, for a master program 120 ECTS, and for a PhD program 180 ECTS. For all three degree programs a final thesis has to be submitted.

To the best of our knowledge internships within a company are not required, although a lot of computer science students work in the field of Informatics either during their holidays or they work part-time during the year.

4.2 Denmark

Danish higher education institutions use the European Credit Transfer System (ECTS) for measuring study activities. 60 ECTS correspond to one year of full time study. Public higher education institutions are regulated by national legislation concerning degree structures, teacher qualifications and examinations. All programs are accredited by national, independent accreditation agencies and the Accreditation Council.

There are four types of institutions offering higher education programs, each with well-defined profiles:

- Academies of Professional Higher Education (*Erhvervsakademi*) offering professionally oriented first cycle degree programs.
- University Colleges (*Professionshøjskole*) offering professionally oriented first cycle degree programs.
- Research Universities (*Universitet*) offering first, second and third cycle degree programs in all academic disciplines.
- University level institutions offering first, second and third cycle degree programs in subject fields such as architecture, design, music and fine and performing arts.

Most of the higher education institutions are regulated by the Ministry of Science, Innovation and Higher Education. The Ministry of Culture regulates a small number of higher education institutions offering first, second and third cycle degree programs in fine and performing arts.

Degrees

The Academy Profession degree is awarded after 90-150 ECTS and includes a period of work placement of at least 15 ECTS. The programs are development-based and combine theoretical studies with a practical approach. The

Danish title is “field of study” followed by the abbreviation AK and the English title is AP Graduate in “field of study”.

The Professional Bachelor’s degree is awarded after 180-240 ECTS and includes a period of work placement of at least 30 ECTS. The programs are applied programs. They are development-based and combine theoretical studies with a practical approach. The Danish title is *Professionsbachelor i* [field of study] and the English title is Bachelor of [field of study].

The Bachelor’s degree from a University is awarded after 180 ECTS. The programs are research-based and are offered in all scientific fields. The Danish title is *Bachelor (BSc) i* [field of study] and the English title is Bachelor (BSc) of Science in [field of study].

The Master’s degree is awarded after 120 ECTS. The programs are research-based and are offered in all scientific fields. The Danish title is abbreviated to *Cand.* [latin abbreviation of academic area] *i* [field of study]. The English title is *Master of Science (MSc)* in [field of study].

The PhD degree is awarded after 180 ECTS. PhD programs are offered by the Universities and some university level institutions offering degrees in the artistic and cultural field.

Admission and progression

General access to higher education in Denmark requires an Upper Secondary School Leaving Certificate or comparable qualifications. Admission to some particular programs requires entrance examination or submission of a portfolio of artistic work.

Completion of a short-cycle degree qualifies students for admission to a first cycle program. Holders of an Academy Profession degree can obtain a Professional Bachelor’s degree within the same field of study through a top-up program. Completion of a first cycle degree qualifies students for admission to the second cycle.

The 7 point grading scale is used in all state-regulated education programs as of September 2007 is the 7 point grading scale. Apart from the 7 point grading scale, pass/fail assessment may also be used. 2 is the minimum grade for passing an exam.

4.3 France

Even though France only figures in the Positions and Salaries part of this report (Sections 7 and 8), it is useful to describe briefly some peculiarities of the French system of higher education, particularly as they pertain to Informatics.

Outsiders to the French system often miss its most distinctive characteristic and, when they discover it, find it baffling. That French exclusive is the coexistence between two components:

- Universities, as known in the rest of the world (and pioneered by France with the Sorbonne, the original University of Paris, from about 1150 on).
- *Grandes Écoles* (literally: great schools), some of them known more specifically as *Écoles d’Ingénieurs* (engineering schools).

The *Grandes Écoles* distinguish themselves from Universities through the following traits:

- They are ranked in the public mind according to a non-official but well-understood hierarchy.
- Those at the top of that hierarchy, particularly *École Polytechnique* and *École Normale Supérieure* (the Paris branch) are extremely prestigious, and better considered than universities. Polytechnique has been, since Napoleon used it to ensure that artillery would have competent engineers, the golden path to

technocratic and administrative careers (complemented, for administration, by the *École Nationale d'Administration*). *Normale Supérieure* is the most prestigious path to research careers particularly in mathematics, physics and the humanities. Just behind them in the ranking and also very prestigious are *École Centrale*, *École des Mines*, *École des Ponts et Chaussées*, *École Nationale Supérieure des Télécommunications* and a few others.

- Part of the source of the prestige is the competitive nature of entrance to these schools. They only provide a set number of places every year, awarded on the basis of competitive examinations, some specific to a given school, some shared. In contrast, admission to universities (outside of specific subjects such as law and medicine) is not subject to a *numerus clausus* but dependent only on a high-school degree (*baccalauréat*), awarded to about 80% of an age group [FR1].
- For most of these schools, preparation to the competitive examination takes place not in universities but in two-year special programs (*classes préparatoires*, preparatory curriculum) physically held in high-schools (*lycées*). These programs are extremely intensive, because of the specter of the competitions, in an atmosphere that is significantly different from universities.
- For those admitted after these two years (or three, since the second preparatory year may usually be repeated once in case of initial failure at the competitive exam), the program in the *Grande École* itself is generally two years, sometimes three.
- The focus of the preparatory programs and the *Grandes Écoles* is on teaching rather than research. This observation applies less to those at the top hierarchy; Polytechnique, for example, has numerous research laboratories of excellent standing, and *École Normale* is one of the high places of French research. But in the *Grandes Écoles* system at large the students get less exposed to research than they would in a Humboldt-style research university.
- Administratively, while universities are under the control of the ministry of education, some *Grandes Écoles* report to and get their financing from other departments. Polytechnique, for example, traditionally enjoys good funding though being formally a military school, managed by the department of defense.

The two systems, universities and *Grandes Écoles*, are not entirely disjoint, and efforts have taken place over recent years to establish bridges and build consortia. As an example of a bridge, paths exist for the best university students to transfer to a *Grande École* outside of the usual competition system; the other way around, many *Grandes Écoles* students take advanced degrees in universities, or pursue research there. As an example of a consortium, created in particular to achieve a scaling-up effect with a view to better positioning in international rankings, the new Paris-Saclay university brings together over 20 institutions including Paris-Sud university and the Polytechnique, Centrale and HEC *Grandes Écoles*. The fundamental division remains, however, and the differences of prestige remain firmly anchored in the French mindset. (The French equivalent of the popular saying “*This is not rocket science*” is “*This does not require a degree from Polytechnique*”.)

While universities in general have not encountered undue difficulties in moving to the Bologna system, the *Grandes Écoles* are having a harder time. The problem is in part the existence of the two-year preparatory system, which does not give students any degree (they are supposed to get into some *Grande École*, and those who fail can usually transfer to the third year of a University), and would be too short for a bachelor’s anyway. *Grande École* degrees are usually positioned as equivalent to a master’s.

The planned inclusion of French student and degree data in future editions of this report will have to take into account these important peculiarities of the French system of higher education, which are particularly relevant to education in Informatics.

4.4 Germany

Education in Germany is governed and organised by the states (*Länder*), not by the federal government. Therefore, one has to deal with 16 state university laws that in some respect show slight differences. Nevertheless, the 16 states agree on the general structural properties of higher education. The standing conference of Ministers of Education (*Kultusministerkonferenz, KMK*) releases common regulations that the states are expected to observe.

Higher education in Germany differentiates three types of institutions: Universities (*Universitäten*), Universities of Applied Sciences (*Fachhochschulen*) and Universities of Cooperative Education (*Duale Hochschulen*).

Universities are the traditional institutions of higher education. They are research oriented and offer Bachelor, Master, and PhD degrees. The Universities' bachelor Informatics programs provide the scientific and methodological foundations of the discipline. Master programs are research oriented involving students in the current research activities of the Universities and allow a smooth transition to PhD programs. Qualification for professors is a PhD and the Habilitation or equivalent achievements.

Fachhochschulen are the successors of the previous engineering schools. They have in general a limited scope of topics (mostly engineering and business administration). Education at *Fachhochschulen* is more application oriented providing knowledge and skills directly needed by the job market. Despite the different profile academic degrees from University and *Fachhochschule* are formally equivalent which means that graduates from *Fachhochschule* may continue a master program at a University and vice versa. Qualification for a professor at *Fachhochschule* is a PhD and 5 years of practical work experience.

Duale Hochschule is the new name for what was previously called a *Berufsakademie* (vocational academy). In some states the *Duale Hochschulen* are recognized as academic institutions. They offer Bachelor degrees in cooperation with companies. The education is organised as phases where students work at their company interleaving with phases in classes at the University. The students finish with a bachelor's degree, which also formally entitles them to continue with a master program at *Fachhochschule* or University, if the institution is officially recognized as academic. Students are from the very beginning employees of the company and earn some money. Qualification for a professor at *Duale Hochschule* is an academic degree and 5 years of practical work experience.

Students in Informatics are enrolled in roughly equal numbers in University and *Fachhochschule*. In terms of student numbers, *Duale Hochschule* does not play a major role. For the remainder of this document, we refer to Universities only, since they represent the members of Informatics Europe in Germany.

The structure of an Informatics program is usually a 3-year Bachelor (180 cp) and a 2-year master (120 cp). Bachelor programs may be up to 4 years, but in this case the corresponding consecutive master program has to be only 1 year, since the complete bachelor-master-cycle has to be 5 years corresponding to 300 cp. Basic entrance requirement for bachelor programs is the school leaving certificate ("*Hochschulreifezeugnis*"). In recent years, some state University laws also allow students who have finished a vocational training. This type of permeability between academic and vocational education has high priority at the political agenda, despite problems of qualification mismatch.

The German constitution ensures free choice of profession which includes the right to enter higher education programs. A German University can limit the access only if there are more applicants than places. Otherwise, any applicant fulfilling the formal requirements has to be accepted. There are laws regulating the calculation of places based on the number of teaching personnel and the respective curriculum (*Kapazitätsrecht*). Some universities limit the number of places (*numerus clausus*), some don't. If a limitation is in place a ranking has to be calculated based on grades and some other criteria to select the admitted applicants. Students are expected to earn 30 credits per semester. Depending on the state's University law, some universities set an upper bound for the

individual study duration or a lower bound for the study progress (ECTS/semester) but in general there is only little pressure to finish in time.

The programs are organized in modules which consist of one or more courses and are finished by one exam. The size of a module is usually between 5 and 12 ECTS. Each program requires submitting a thesis at the Last Semester. A Bachelor thesis is worth 12 ECTS, a Master thesis 30 ECTS.

The academic year consists of two semesters and starts at October 1st with the winter semester. The summer semester starts on April 1st. Classes in the winter semester usually begin Oct. 15 and end Feb 15, classes in the summer semester run from April 15 to July 15. Directly after the lectures are finished, there is 2- or 3-week examination period.

The prevailing bachelor program is called "*Informatik*" (Informatics, Computer Science), but there is also "*Technische Informatik*" (Computer Engineering) offered. Also common are blended programs like Business Informatics, Bioinformatics, or Media Informatics. At the master's level there is even more specialization available, e.g. programs like e.g. Embedded Systems, Computer Security or Computational Neuroscience.

The academic degree of the first cycle is "Bachelor of Science" (B.Sc.), at the second cycle "Master of Science" (M.Sc.). At the doctoral level you get either a *Dr.-Ing.* (Doctor in Engineering) or a *Dr.rer.nat.* (Doctor of Natural Sciences). This depends on the doctoral regulations of the respective faculty. The usual way to obtain a PhD in Informatics is to apply for a position as a research assistant at a University. This is a full-time position typically for up to 5-6 years that has some teaching obligation (4 weekly hours) but leaves sufficient time to work on a PhD thesis.

4.5 Ireland

In Ireland, the Bologna style degree has not been implemented, but the European Credit Transfer System is used to define courses load. Presently degrees are typically four years long. Some universities offer three-year degree but this are normally class as ordinary level degrees and are less common for computer science and technical degrees.

Public higher education institutions are regulated by national legislation. There are two types of institutions offering higher education programs, Universities and Institutes of Technologies. The Universities are governed by the Universities Act. Their role is explicit to "to advance knowledge through teaching, scholarly research and scientific investigation". Institutes of Technology (IOT) are governed by Institutes of Technologies Act. Their principal function is "to provide vocational and technical education and training for the economic, technological, scientific, commercial, industrial, social and cultural development". IOT do engage in research and many are also PhD granting institutions, differently than the Universities of Applied Sciences in the other countries included in this report, to which IOT have comparable profile.

Students who wish to enter a University or a IOT must normally hold a secondary school degree. In order to obtain a place on a particular course, candidates must obtain sufficient 'points' on the senior cert examinations. The 'points' for a various course vary based on demand and number of places. There is also a constraint for most Informatics degrees in universities on the grade obtained in secondary school mathematics. There are some small caveats: if a student fails to obtain the requisite grade in mathematics, special university run entrance exams are sometime provided.

There is also an alternative route (known as the access program) for students from non-typical educational backgrounds, who can, based on an application and interview process, enter into a one year preparation course; if requisite scores are obtained, they can progress to first year of the degree.

A bachelor's program typically includes a final year project and report performed over seven months (taken in parallel with coursework). A practical internship in a company during the studies is required (typical duration: 5-9 months, depending on the University).

There are examinations and continuous assessment every year. If a student fails to pass the examinations and assessment, they may repeat examinations in the autumn. Failure to pass the examinations as a whole in autumn warrant repeating the year (or component thereof). The rules for compensation vary across universities.

If a student fails to complete examinations for a particular year in a requisite time (normally four attempts in two years), they may have to leave the course. Permission to try to pass the examinations again is usually at the discretion of the Department or Faculty.

A master's research program includes a thesis, performed over 18-24 months. A taught master's program usually has course work for 60 ECTS and then a mini-thesis worth 30 ECTS. There are some exceptions to the above. Students are not expected to have a practical internship in a company during the master studies

Progress in taught masters is evaluated every year, either through continuous control or through end-of-year exam), with possibility of being expelled from the program if failing. For masters by research evaluation is done at the end of the master's program.

Normally, to start a PhD, candidates must hold a first class or second class *honours* bachelor degree in computer science or related discipline. Candidates may be accepted under circumstances, e.g., a primary degree and sufficient relevant experience. A candidate will also be accepted with a Master's degree in a relevant discipline.

A PhD leads to a dissertation which is subject to a private defense currently restricted to the external examiner(s), internal examiner(s), supervisor and usually Professor of the discipline (or nominee) as chair. Publications are not formal requirement to conclude a PhD, but the candidate is expected to publish papers in well ranked peer reviewed conferences and/or paper in well ranked journal.

4.6 Italy

Higher education in Italy is organized according to the Bologna agreement in two levels: a Bachelor degree level (called *Laurea* or *Laurea Triennale*) and a Master degree level (called *Laurea Magistrale*). Degree programs are defined by the Ministry at a very high level in terms of teaching goals and required disciplines. Each University can then specialize this general framework, subject to approval by the Ministry itself. Universities can be public or private, but in either case they have to conform to Ministry regulations in terms of degree programs and their requirements. A University can provide just a few or many degrees. The standard name is "*Università*", but some universities are called "*Politecnico*" (Polytechnic) simply because for historical reasons they have focused on teaching and researching in technical areas. Medical schools are usually part of Universities. There is no classification in "Research" Universities and "Applied Sciences" University: therefore any University is able to offer doctoral programs as well as professionally oriented degrees. Most universities are public, and private universities have to follow the same requirements set forth by the Ministry.

Higher education in Informatics is provided in the classes of degrees in Sciences and in the classes of degrees in Engineering, and to a smaller extent in other areas.

At the bachelor level there are the following degree programs:

- *Laurea in Scienze dell'Informazione* (L-31), in the area of Science.
- *Laurea in Ingegneria dell'Informazione* (L-8), in the area of Engineering

At the master level there are the following degree programs:

- *Laurea Magistrale in Informatica* (LM-18), in the area of Science

- *Laurea Magistrale in Ingegneria Informatica* (LM-32), in the area of Engineering
- *Laurea Magistrale in Metodologie Informatiche per le Discipline Umanistiche* (LM-43), in the area of Humanities
- *Laurea Magistrale in Tecniche e Metodi per la Società dell'Informazione* (LM-91), also in the area of Humanities
- *Laurea Magistrale in Sicurezza Informatica* (LM-66), in the area of Science

Any student with a secondary level degree (called *Maturità*) can enter a University, but for areas regulated by the European Union (e.g., Medicine, Architecture,...) there is an entrance exam to comply with the *numerus clausus* requirement. Some universities or degrees may have an entrance evaluation, which is not selective, but may impose some additional teaching duties to students below a given threshold. This may happen for Informatics degrees.

Teaching is usually organized in semesters of about 13 weeks each, typically October-January and March-June. Course load is always measured in ECTS. For Informatics degrees, it's typical to use courses of 6 credits (one semester course) or 12 credits (two semester course).

Company internship is foreseen by the national regulation only at the bachelor level. It is not required, but if performed credits are assigned to students, up to a maximum of 15 credits. Internship can be done in every period, but is usually done during the last year.

Both for bachelor and master there is some kind of final work to be done. It is typically 6 credits for the bachelor and 30 for the master. While for the master it is explicitly envisaged the production of a written thesis, for bachelor each University can freely decide the format of such a work.

4.7 The Netherlands

Higher education in The Netherlands is organized at two levels:

- scientific education (*Wetenschappelijk Onderwijs*, WO) – at Universities (*Universiteiten*)
- higher vocational education (*Hoger Beroepsonderwijs*, HBO) – at Universities of Applied Sciences (*Hogescholen*)

The Bachelor-Master system is used in Dutch higher education. Course loads are expressed in terms of the European Credit Transfer System.

Informatics at Universities

Bachelor's programs at Universities span 3 years (180 ECTS). There are two Informatics programs:

- Informatics (*Informatica*), at Universities
- Technical Informatics (*Technische Informatica*), at Universities of Technology

This division has a historical background. In practice the differences between these programs is very small.

For admission, a diploma of pre-university education (VWO) is necessary. There are additional requirements regarding the presence of an elective mathematics subject in the student's secondary school exam.

Dutch universities offer several related bachelor's programs, including Information Science and Artificial Intelligence, with slightly different admission requirements.

A bachelor's program contains a thesis (typically 9–15 ECTS), often written in parallel with courses. A practical internship is usually not required.

Dutch universities offer a variety of master's programs in Informatics and Informatics-related areas, including programs such as: Artificial Intelligence, Bioinformatics, Business Information Systems, Computing Science, Embedded Systems, Game and Media Technology, Human Media Interaction, Parallel and Distributed Computer Systems, and Telematics.

Master's programs are typically research-oriented and two years in duration (120 ECTS). In the second year a substantial MSc project is carried out, completed by a MSc thesis. Some one-year master programs exist (60 ECTS), in applied areas. MSc projects are carried out internally, in a research group at the university, or externally, on selected projects in companies.

For admission, a University bachelor degree (Informatics or Technical Informatics) is necessary. Additional requirements apply for admission with a related bachelor degree, or for admission to specific tracks within a master's program.

Students with a vocational bachelor's degree in an informatics-related discipline are usually required to complete an additional pre-master program in order to be admitted to a University master.

PhD Candidates in The Netherlands are not regarded as students, but are normally employed by the university as "*promovendus*" (PhD Researcher) with mainly research tasks and some teaching duties. For admission to the PhD examination, a Master's degree (or equivalent) is required. After their manuscript is approved by their PhD supervisor, PhD Candidates submit a thesis, which is examined by a reading committee, typically consisting of 4-5 qualified members. After approval there is a public defense in front of a bigger committee including the reading committee.

Informatics at Universities of Applied Sciences

Education at this level concerns mostly bachelor's programs. There are only a few 'professional master's' programs. Awarding PhDs is restricted to Universities.

Vocational bachelor's programs span 4 years (240 ECTS). They include: Informatics, Technical Informatics, business it & management, communication & multimedia design.

For admission, a diploma of senior general secondary education (HAVO) is necessary. For Technical Informatics, a specific elective mathematics subject is required to be part of the student's exam.

Vocational bachelor's programs are practice oriented. The programs contain an internship (usually about 30 ECTS, including a thesis or internship report).

4.8 Switzerland

Three distinctive properties set the Swiss system of higher education apart from the situation in many neighboring countries:

- The Swiss government does not wish to increase the share of the population going to Universities. In fact the minister of education explicitly stated in 2012 that it was already too high [SW4].
- This view follows from a general policy of dividing education into tracks at different levels, including a strong emphasis on apprenticeship and the presence of Universities of Applied Sciences (*Fachhochschulen*, *Écoles des Hautes Études*, *Scuola Universitaria Professionale*) alongside Universities. Where France, for example, awards the *Baccalauréat* (high-school degree) to 87.9% of students (80% of a generation) [FR1] the corresponding *Maturität/Maturité* figure in Switzerland is only about 20% [SW4]. The avowed purpose is to avoid channel less *gifted students* into tracks where they have little chance of succeeding.

- As in other aspects of Swiss life, local devolution plays an important role. Most Swiss Universities are cantonal: University of Basel, Bern, Fribourg, Geneva, Lausanne, Lucerne, Lugano, Neuchatel, St. Gallen, Zurich. Only two Universities are under the responsibility of the Federal Government, the two Federal Institutes of Technology, ETH Zurich and EPF Lausanne. Cantonal Universities receive financial support from the Confederation and from those cantons which do not have their own University.

Since 2001, Swiss Universities have been rapidly adjusting their curricula to comply with the Bologna Declaration. Today, all degree courses have been adapted to the Bologna system. Under the Bologna system the Bachelor's degree is the first step in scientific formation, allowing students to acquire a methodological and scientific approach to their education. In the Bologna system, one academic year corresponds to 60 ECTS credits, which are equivalent to 1,500-1,800 hours of study. This includes contact hours (lectures, seminars, practical work, etc.), as well as independent study at home or in a library. Attainment of the Bachelor's degree requires three years of full-time study (180 ECTS-credits). The Bachelor's degree is a pre-requisite for enrollment in a Master's program. It can in some cases lead directly to a Master of Advanced Studies (MAS). However, a Bachelor's degree is not sufficient for enrollment in a doctoral program, which requires the attainment of a Master's degree as well.

All Bachelor programs are open to students in possession of a valid secondary school diploma, a Swiss school-leaving certificate, or a foreign degree that has been deemed equivalent. The prerequisite for access to a Master's program is a successfully completed Bachelor's program. Each University makes its own decisions as to whether a Bachelor's degree obtained in a foreign country gives its holder access to Master's programs - with or without entrance examinations, under certain conditions, with further requirements, or no access at all. The University may set additional requirements, equally applicable to all candidates, for admission to specialized Master's programs.

In the second cycle of studies, students will further advance their knowledge and specialize in a particular field, or acquire an interdisciplinary formation. This program is completed with the writing of a master's thesis. In the Bologna system, a Master's program lasts three to four semesters (depending on the field of study) and awards 90 to 120 ECTS credits.

Doctorate degrees are generally awarded after 3-5 years of postgraduate research and study, and submission of a thesis. A Master's degree and a high grade average during the Master's studies are the main pre-requisites for admittance to a doctoral program. In Switzerland, only the twelve state-run university institutions of academic learning (10 cantonal Universities, plus 2 Federal Institutes of Technology) are allowed to award doctoral degrees.

Application to a doctoral program is subject to specific conditions, the most important of which are the acceptance of the thesis proposal by the Faculty and a professor willing to be the supervisor. The doctoral candidate must perform original research for the thesis and defend the thesis content before a committee of professors. In some universities, depending on the Faculty or the field of research, the student must also complete an advanced course of study, and pass comprehensive examinations on the subject, or/and attend specific doctoral seminars offered by the University. PhD Candidates in Switzerland are usually employed by the Universities, having temporary contracts as research assistants. Their tasks include research, teaching and supervision of undergraduate students. For admission to the PhD examination, a Master's degree (or equivalent) is required. PhD Candidates submit a thesis, which is examined by a (usually small, e.g., 3 members) 'manuscript committee'. After approval there is a public defense in front of a bigger committee including the manuscript committee.

4.9 Turkey

The higher education system in Turkey is supervised by the Council of Higher Education (CoHE: <http://www.yok.gov.tr>, <https://bologna.yok.gov.tr>). The CoHE is an autonomous institution which is responsible

for the planning, coordination and governance of the higher education system in Turkey in accordance with the Turkish Constitution and the Higher Education Law. The Council's Evaluation Committee annually investigates the teaching and research activities of each University and reports to the Council.

Higher education institutions in Turkey can be categorised as public Universities, private non-profit foundation Universities and Institutes of Technology. Private universities differ from the others only for the financial and administrative issues.

The offered programs at higher education institutions are:

- Associate's degree programs
- Bachelor's degree programs
- Graduate programs (Master's and Doctoral)

The overall organization of the higher education is similar to Bologna Style where the Bachelor's degree is 4 years, Master's without thesis 2 years, Master's with thesis 4 years and PhD is 4 to 7 years.

Associate programs are two year vocational programs. Vocational high school graduates can qualify for the associate's degree programs without taking any centralized exam. The data regarding associate programs has not been included in this report.

For Bachelor's degree programs, high school graduates must take the central national University entrance examinations and identify their choices for the University-Department. Placement to university departments are made by the National Evaluation, Selection and Placement Center (www.osym.gov.tr). Typical mode of examination in bachelor's courses is continuous including quizzes, homeworks, projects, midterm examinations and finals. Those who fail a course have one chance of taking a re-take examination after the semester ends. Students are never expelled from bachelor's program and may continue as long as they want. The proportion of elective courses usually differs according to the department. A rough proportion of required courses at bachelor's level is around 75% and elective courses are placed in the third and fourth years of the curriculum.

Higher education institutions use both the national credit system and European Credit Transfer System. A bachelor's program does not include a thesis. Although a practical internship in a company is not mandatory, most of the programs include practical internships as a required course, generally to be completed during the summer months. The duration of the internships ranges from 30 working days to 3 months.

There are two types of Master's programs: with thesis and without thesis. It is not very common to complete practical internship at companies during Master's studies.

The major requirement in order to apply to a master's program is to have graduated from a bachelor's program and to have received at least 55/100 from the national central examination called ALES (Academic Personnel and Graduate Study Admission Examination). Additionally, each University and research institute has its own regulations regarding the admission process. The requirements may include the submission of results from an international examination such as TOEFL, GRE, GMAT, recommendation letters from instructors or others qualified to evaluate academic ability, as well as interviews. Typical mode of examination in master's courses is continuous including quizzes, homeworks, projects, midterm examinations and finals. Students who fail a master's course can try again provided that all courses are completed successfully in the given time period.

Conditions for admission to a PhD degree program are the same as those for the Master's degree programs. Although some PhD programs allow admission directly after obtaining a bachelor's degree, most programs require a master's with thesis degree. For the PhD degree, successful completion of the following are the basic requirements:

- At least 7 courses (minimum 21 credits)
- Qualifying examination,

- Dissertation and Dissertation defense.

The jury for the dissertation defense is comprised of five professors, where at least one must be from a different University than the candidate. The defense is public.

4.10 UK

In England, Wales and Northern Ireland bachelor's degrees are usually three year programs, with students' studies focused almost exclusively on the degree discipline. In Scotland the bachelor's degree is usually a four year degree, and during the first two years the students spend one third of their time on Informatics, one third on Mathematics and one third on any other subjects of their choice. Of course there are some exceptions to these general patterns; for example, some degrees include a year of industrial placement. Most degrees are termed *Honours* degrees, and the final years, where more advanced material is taught are called the *Honours* years. The alternative is an Ordinary degree. This is typically a premature exit route, or lower degree offered to those unable to complete the *Honours* degree. For example, in Scotland this is offered to students who successfully complete the first three years of the degree but do not enter or successfully complete fourth year. All students generally enter the University registered for an *Honours* degree.

Entry to University is centrally organized by UCAS (Universities and College Admissions Service). In the autumn of the final year of secondary school students apply to up to five programs through UCAS. They may receive offers based on their actual or predicted grades in national exams (A-levels in England, Wales and Northern Ireland, Highers and Advanced Highers in Scotland). Many courses have standard offers in terms of the grades that they expect students to have achieved before entering the program, but they may relax these for individual students that they particularly want. In the spring students must select a preferred offer, and a secondary offer (usually with lower grades). The national exams are taken in May and results are published in August. Students who match their preferred offer grades take up the places offered. Other students enter a process known as Clearing, in which UCAS tries to match them with programs in the same discipline that still have places and are willing to accept the lower grades.

Most MSc courses in the UK are one year programs, taking a full 12 months (in contrast to undergraduate programs which usually only operate over 9 months of the year). Entry into the program is made on the basis of the applicant's undergraduate degree. For UK students at least an upper second class degree is expected. Entrance is handled by each program within each University in a distributed manner: there is no equivalent to UCAS.

Within the UK there is a standard of transferrable credits system. This is not ECTS (European Credit Transfer System) but is compatible with it, so that the equivalent ECTS values can be found when necessary. Within the UK credit systems, 10 credits corresponds to a module entailing approximately 100 hours of work, and would be typically be one course over one semester. The standard load for undergraduates is 120 credits per year; for MSc students, 180 credits.

In the undergraduate programs, progression is judged from year to year and generally requires that the requisite number of credits at the appropriate level have been achieved in the previous year. In bachelor's degrees the major component of assessment will be written exams, either taken at the end of the course or at the end of the year. For computer science there will also typically be some practical component. For *Pre-Honours* years, students who fail a course may resit⁸ the exam, up to three times. Exams are usually offered twice per year: in

⁸ "Resit" and "diet" are commonly used academic terms in the UK. A resit is a repeat exam in the sense that the student is examined on the material as previously presented although the examination paper is new — no further teaching is involved before the examination. The term "resit" is widely used but it is not universal (for example, at the University of Southampton these are called "referred exams"). Exams are only offered at certain times of the year and each of these times is known as

the main diet⁸ and in the resit diet⁸. Thus a student who fails an exam twice will be required to repeat the year. Once students have entered the *Honours* years they usually need to pass the exams at the first sitting to achieve *Honours*.

MSc students are assessed in a similar way, with exams at the end of the course or the end of the year, although it is a little more likely here to have some courses that are assessed on the basis of coursework only, without a written exam. Students must successfully pass all courses before they are allowed to progress to the project. Some universities permit resits for MSc exams, but many do not. Successful completion of the MSc degree requires both the taught element and the project to be passed. Students who successfully complete some courses but not sufficient to gain admittance to the project stage of the MSc are awarded a Post-graduate Certificate or Post-graduate Diploma depending on the number of credits achieved.

A dissertation project is an integral part of an *Honours* degree and is typically performed over six months in parallel with courses in the final year. Failure of the project will generally mean that the student cannot be awarded an *Honours* degree and will be awarded an Ordinary degree instead. Students who do not manage to pass the requisite number of courses for an Ordinary degree may be awarded a Certificate of Higher Education.

For an MSc program, the dissertation project typically takes place after courses have been completed (and successfully passed), and lasts for about 3 months at the end of the program.

With a few exceptions, industrial placements or internships are not required for most undergraduate or MSc degrees in the UK. However, many undergraduates undertake internships during the summer vacation before their final year. This is encouraged by the Universities but does not accrue any credit for the student's program. Since the MSc program is typically a full 12 months there is no opportunity for industrial placements or internships during the program.

Like admission to MSc programs, admission to PhD programs is handled in a distributed manner for each department, or even subgroups within departments. Each applicant is judged on a case-by-case basis so it is difficult to give any general rules. However, if the applicant is from the UK a bachelor's degree of at least upper second class will be required. Most PhD programs do not require an MSc, but some programs funded by the UK government through the Engineering and Physical Sciences Research Council (EPSRC) as Centres of Doctoral Training, are four year programs and incorporate a Masters degree within the first year. However this is often a MRes (MSc by research) rather than a taught MSc, and has a much higher proportion of dissertation work and only a few taught courses.

Students are often admitted to PhD programs on one year probation, and only gain full admission to the program at the end of the first year after some progression hurdle. This typically involves writing a thesis proposal document and defending it to a small committee of academics. The final examination of a PhD is through the written dissertation and a closed oral examination, termed a *viva*. Each student has two examiners: one from another University, one from the same department who has not been formally involved in the supervision of the student. The student submits a version of the dissertation to be assessed by the examiners before the *viva*, and then has an opportunity to discuss the work in the *viva*. After the *viva* the examiners make recommendations about the award of the degree and any corrections that they require to the dissertation.

Practice varies between universities, but vivas are generally closed with only the examiners, student and possibly the supervisor present. There is no formal requirement for publications from the dissertation to have appeared before the viva, although in practice most students will have at least two or three publications at this stage. Most universities have a minimum period of study of three years for a PhD and a maximum of four years.

⁸"diet". For example in Edinburgh there is the December diet, the April diet and the August diet (which is the resit diet) [Jane Hillston, personal communication]

5 Student enrollments

The following tables show enrollment and ratios both for population and gender at the bachelor's and master's levels in the selected countries.

Table 2 provides information on first-year students, which is particularly interesting to track for trends in enrollment resulting in part from changes in the popularity of Informatics. Table 3 covers bachelor-program students, or "undergraduates" in the American terminology. Table 4 covers master-program data where available.

Any country comparisons made on the basis of these tables must **exercise caution** because of three factors: differing degree programs, explained after each table; differing notions of "Informatics", in particular for mixed degrees, as discussed in Section 3; different organization of the systems of higher education, as discussed in Section 4, where in some countries there is an explicit distinction between "Research Universities" and "Universities of Applied Sciences". In all tables for those countries where such a distinction exists, data has been presented separately: in these cases, the line marked "RU" refers to data from "Research Universities" and the line marked "UAS" refers to data from "Universities of Applied Sciences".

Numbers per 1,000,000 inhabitants were calculated, for all years, using as basis the most recent data available for the national populations: Austria (8,504,850), Denmark (5,627,235), Germany (80,716,000), Ireland (4,593,100), Italy (60,782,668), Netherlands (16,848,600), Switzerland (8,136,700), Turkey (76,667,860), UK (63,705,000).

5.1 First year

Table 2 presents numbers of first year students at bachelor level.

Table 2. Students in Informatics bachelor's programs (first year)													
<i>(W% = women percentage)</i>													
		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14	
		Total	W%	Total	W%	Total	W%	Total	W%	Total	W%	Total	W%
(RU)	Austria	(b)	(b)	(b)	(b)	2,141	23.6	1,958	19.7	1,949	21.1	(a)	(a)
(UAS)	Austria	(b)	(b)	(b)	(b)	492	16.3	500	18.2	530	21.9	(a)	(a)
(RU)	Denmark	530	12.1	685	11.8	779	13.7	971	13.4	1,071	16.1	1,095	14.2
(UAS)	Denmark	0	0	9	0	147	10.9	130	14.6	133	6.0	188	6.4
(RU)	Germany	11,323	19.7	11,535	19.3	12,303	19.4	16,136	19.7	16,605	21.5	(a)	(a)
(UAS)	Germany	14,014	17.8	15,135	18.2	15,467	18.8	18,087	19.9	19,159	21.7	(a)	(a)
(RU)	Ireland	584	11.8	706	15.0	792	12.0	819	17.6	890	16.5	(a)	(a)
(UAS)	Ireland	1,370	14.5	1,693	15.2	1,720	17.1	1,859	13.9	2,070	14.1	(a)	(a)
	Italy	14,738	18.9	14,631	17.7	14,551	17.9	15,404	18.9	15,005	18.9	(a)	(a)
(RU)	Netherlands	817	9.3	891	13.0	964	11.9	1,022	11.8	1,094	13.8	1,374	14.9
(UAS)	Netherlands	4,641	14.0	5,453	14.0	5,142	14.6	5,512	15.9	5,604	16.1	6,203	17.3
(RU)	Switzerland	348	12.6	356	15.6	387	14.0	396	13.1	408	10.3	462	13.4
(UAS)	Switzerland	634	5.7	640	8.6	645	9.1	667	7.5	742	10.1	811	8.6
	Turkey	8,219	27.7	10,253	35.1	10,511	35.5	11,057	36.0	12,584	35.0	(a)	(a)
	UK	31,920	19.8	33,125	18.9	31,120	18.1	29,880	17.0	25,475	15.9	(a)	(a)

Numbers in italics: updated since the previous edition of the report, for reasons that are explained in the country notes.

(a) Data will be available in the next edition of the report

(b) Data not available due to changes in the archival system

The definition of bachelor programs is the following for each country considered:

Austria RU: studies aiming at a Bachelor degree offered by Universities (*Universitäten*) [AT3].

Austria UAS: studies aiming at a Bachelor degree offered by Universities of Applied Sciences (*Fachhochschulen*) [AT3].

Denmark RU: studies aiming at a Bachelor degree offered by Universities (*Universiteter*) [DK3].

Denmark UAS: studies aiming at a Professional Bachelor degree offered by University Colleges (*Professionshøjskoler*) [DK3].

For Denmark numbers are updated once each year. In connection with the next updating the numbers of the most recent year will be subject to changes, they are regarded as temporary and will be replaced by new numbers in the subsequent year. This explains the small difference in the 2012/2013 data (in this and all subsequent tables) when compared to the corresponding tables in the previous edition of this report.

Germany RU: studies aiming at a University degree (*Universitärer Abschluss*) including Bachelor, *Lizenziat/Diplom* and Others (phasing out after the Bologna reform) [GE4-GE5]. Numbers for studies aiming at a teaching degree (*Lehramtsprüfung*) were not included.

Germany UAS: studies aiming at a University of Applied Sciences degree (*Fachhochschulabschluss*) including Bachelor and *Diplom* [GE4-GE5].

Ireland RU: studies aiming at a Bachelor degree offered by Universities [IR1].

Ireland UAS: studies aiming at a Bachelor degree offered by Institutes of Technology [IR1].

Italy: studies aiming at a Bachelor degree (*Laurea Triennale*) offered by Universities, both in Science faculties (*Scienze e Tecnologie Informatiche* degree) and in Engineering faculties (*Ingegneria dell'Informazione* degree) [IT2]. Degree programs according the pre-Bologna system have not been accounted.

Netherlands RU: studies aiming at Bachelor and *oude stijl doctoraalopleidingen* degree (old-style doctoral program, phasing out after the Bologna reform [NE3]) in Research Universities (*Wetenschappelijk onderwijs*) [NE4].

Netherlands UAS: studies aiming at a Bachelor degree in University of Applied Sciences (*Hogescholen, Hoger Beroepsonderwijs*) [NE4].

Switzerland RU: studies aiming at Bachelor, *Lizenziat/Diplom* and Others (phasing out after the Bologna reform) degrees in research Universities (*Universitäten*). Numbers for studies aiming at a teaching (*Lehramtsprüfung*) were not included. [SW5-SW6]

Switzerland UAS: studies aiming at Bachelor and *Diplom* (phasing out after the Bologna reform) [SW5] in Universities of Applied Sciences (*Fachhochschulen*) in the following programs: Informatics, Information Technology and Medical Informatics [SW5-SW6].

Turkey: studies aiming at a Bachelor degree offered by Universities [TK1].

UK: numbers include studies aiming at “First Degree” and “Other Undergraduate” degree [UK5]. The UK has a unique higher-education system, with a variety of degrees at the undergraduate level and a complex system of options [UK6]. In addition, the numbers include full and part-time students (full time: attending an institution for periods amounting to at least 24 weeks within the year of study) [UK6].

5.2 Bachelor

Tables 3 and 3bis give the data for all students enrolled in bachelor programs. Sources and footnotes are the same as for table 2 and 2bis. Additional footnotes provide detail for specific situations in some country.

		<i>Table 3. Students in Informatics bachelor's programs (all semesters)</i>						<i>(Ratio = Total/1,000,000 inhabitants)</i>					
		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14	
		Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio
(RU)	Austria	(b)	(b)	(b)	(b)	8,564	1,007	8,342	981	7,976	938	(a)	(a)
(UAS)	Austria	(b)	(b)	(b)	(b)	1,098	129	1,106	130	1,141	134	(a)	(a)
(RU)	Denmark	1,693	301	1,881	334	2,071	368	2,400	426	2,628	467	2,921	519
(UAS)	Denmark	0	0	9	2	147	26	139	25	184	33	224	40
(RU)	Germany	56,275	697	54,711	678	53,339	661	57,828	716	61,351	760	(a)	(a)
(UAS)	Germany	57,055	701	58,800	728	59,796	741	64,770	802	68,867	853	(a)	(a)
(RU)	Ireland	1,993	434	2,227	485	4,224	920	4,614	1,005	2,770	603	(a)	(a)
(UAS)	Ireland	1,154	251	4,275	931	6,307	1,373	7,501	1,633	2,845	619	(a)	(a)
	Italy	74,148	1,220	71,051	1,169	68,251	1,123	67,198	1,106	66,887	1,100	(a)	(a)
(RU)	Netherlands	6,081	361	6,049	359	6,125	364	6,368	378	6,637	394	7,545	449
(UAS)	Netherlands	20,638	1,225	21,937	1,302	22,292	1,323	23,458	1,392	24,012	1,425	25,969	1,541
(RU)	Switzerland	1,787	220	1,260	155	1,386	170	1,505	185	1,557	191	1,627	200
(UAS)	Switzerland	2,394	294	2,334	287	2,336	287	2,425	298	2,558	314	2,722	335
	Turkey	32,104	419	38,008	496	40,395	527	46,857	611	55,685	726	(a)	(a)
	UK	74,375	1,167	76,900	1,207	76,540	1,201	76,590	1,202	73,015	1,146	(a)	(a)

Netherlands: unlike for other countries, data includes students enrolled at all levels (*Ingeschrevenen*) including Bachelor and the old-style doctoral program (phasing out after the Bologna reform [NE3]) as well as a Master and PhD [NE4]. Separate numbers for the distinct levels were not available⁹. Note also that the numbers for the UAS are considerably higher than the numbers for RU in part because Bachelor studies at RU are 3-year programs while at UAS 4-year programs (see Section 4.7).

⁹ Centraal Bureau voor de Statistiek, personal communication.

Table 3 graph: Students in informatics bachelor's programs (all semesters) per 1,000,000 inhabitants

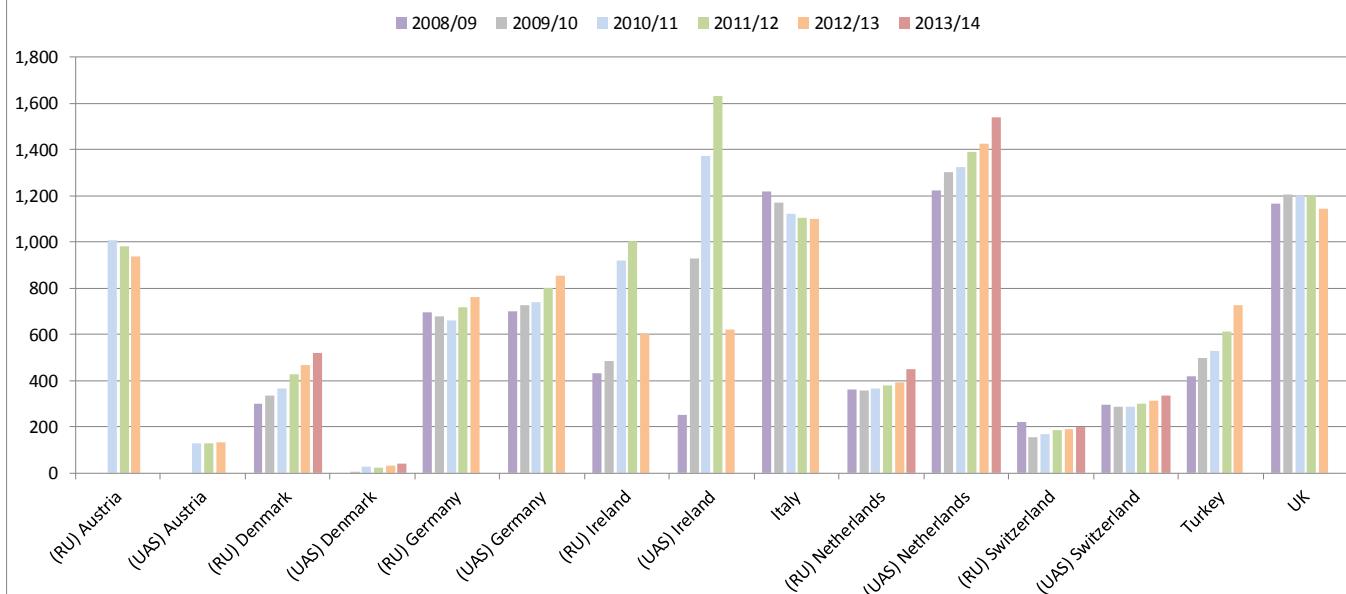
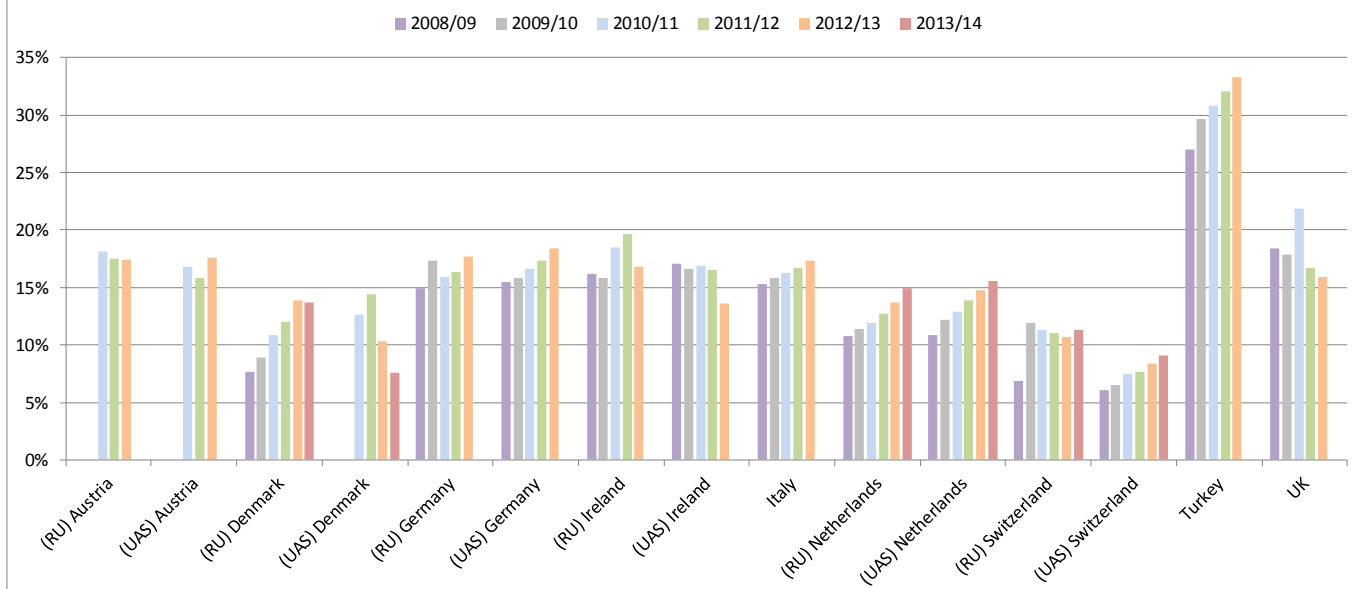


Table 3bis. Women percentage of total students in Informatics bachelor's programs (all semesters)

		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
(RU)	Austria	(b)	(b)	18.1	17.5	17.4	(a)
(UAS)	Austria	(b)	(b)	16.8	15.8	17.6	(a)
(RU)	Denmark	7.7	8.9	10.9	12.0	13.9	13.7
(UAS)	Denmark	0	0	12.6	14.4	10.3	7.6
(RU)	Germany	14.9	17.3	15.9	16.4	17.7	(a)
(UAS)	Germany	15.5	15.8	16.6	17.3	18.4	(a)
(RU)	Ireland	16.2	15.8	18.5	19.6	16.8	(a)
(UAS)	Ireland	17.1	16.6	16.9	16.5	13.6	(a)
	Italy	15.3	15.8	16.3	16.7	17.3	(a)
(RU)	Netherlands	10.8	11.4	11.9	12.7	13.7	14.9
(UAS)	Netherlands	10.9	12.2	12.9	13.9	14.8	15.6
(RU)	Switzerland	6.9	11.9	11.3	11.0	10.7	11.3
(UAS)	Switzerland	6.1	6.5	7.5	7.7	8.4	9.1
	Turkey	27.0	29.7	30.8	32.1	33.3	(a)
	UK	18.4	17.9	21.9	16.7	15.9	(a)

Table 3bis graph: Women percentage of total students in informatics bachelor's programs (all semesters)



5.3 Master

Table 4 and 4bis give the data for all students enrolled in master's programs. Sources and footnotes are the same as for table 2 and 2bis. Additional footnotes provide detail for specific situations in some country.

Table 4. Students in Informatics master's programs													
<i>(Ratio = Total/1,000,000 inhabitants)</i>													
		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14	
		Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio
(RU)	Austria	(b)	(b)	(b)	(b)	3,210	377	3,288	387	3,316	390	(a)	(a)
(UAS)	Austria	(b)	(b)	(b)	(b)	450	53	474	56	530	62	(a)	(a)
(RU)	Denmark	1,814	322	1,799	320	1,906	339	2,078	369	2,394	425	2,654	471
(RU)	Germany	5,125	63	7,000	87	9,421	117	12,221	151	15,888	197	(a)	(a)
(UAS)	Germany	3,391	42	4,662	58	5,970	74	6,951	86	7,839	97	(a)	(a)
(RU)	Ireland	495	108	623	136	628	138	640	139	1,011	220	(a)	(a)
(UAS)	Ireland	229	50	221	48	175	38	153	33	150	33	(a)	(a)
	Italy	10,700	176	10,493	173	10,023	165	9,504	156	9,478	156	(a)	(a)
(RU)	Switzerland	614	75	633	78	737	91	814	100	892	110	900	111
(UAS)	Switzerland	166	20	423	52	566	70	565	69	528	65	584	72
	Turkey	3,185	42	3,492	46	4,438	58	6,047	79	7,550	98	(a)	(a)
	UK	16,960	267	19,115	300	17,735	278	14,265	224	12,045	189	(a)	(a)

Denmark: Master studies in Informatics not offered by University Colleges (*Professionshøjskoler*) [DK3].

Netherlands: separate numbers for enrollments in the distinct levels (bachelors, masters, doctorates) are not available: see Table 2 for the aggregated total

No hasty conclusion should be drawn from the rapid growth of master's student registrations in Germany and (less pronouncedly) Switzerland, since the transition was still in progress, during the period considered, from the older German system based on the "*Diplom*", a five-year degree, to the "Bologna" bachelor-master setup (3 + 2). Part of the growth is clearly genuine, but some of it simply reflects the growing inclusion, as years go by, of students who previously would have been in the last two years of a "*Diplom*" and hence not counted in the master's statistics, even though their concrete course of study would have been essentially the same. We have not attempted to determine the respective part of these two forms of growth, genuine and Bologna-induced.

Table 4 graph: Students in informatics master's programs per 1,000,000 inhabitants

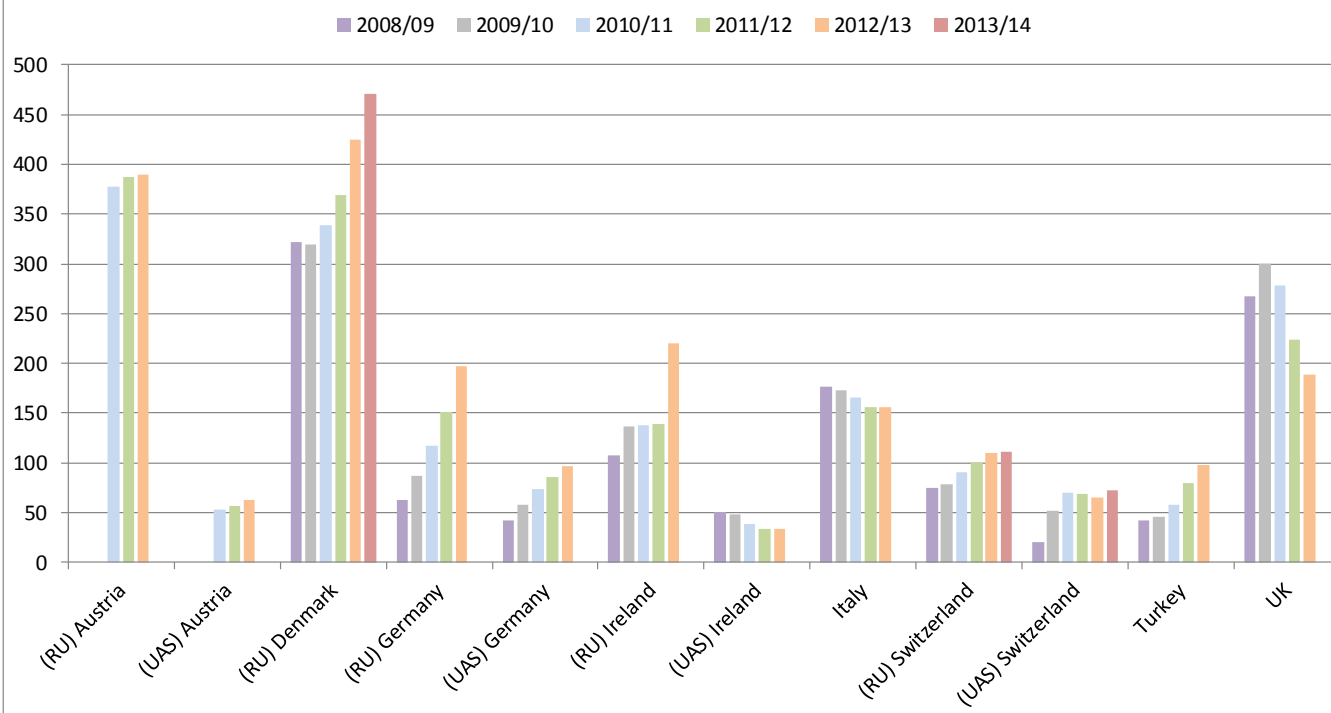
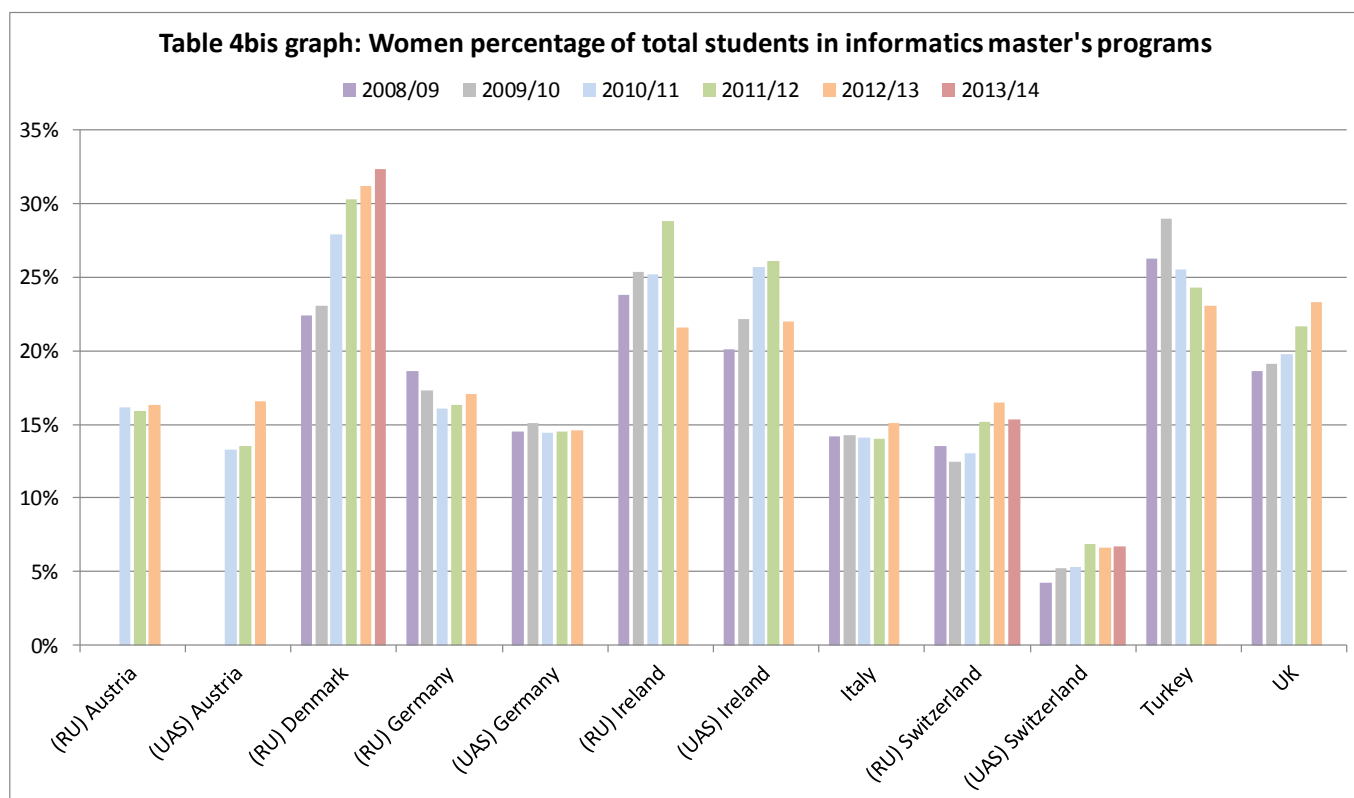


Table 4bis. Women percentage of total students in Informatics master's programs

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
(RU) Austria	(b)	(b)	16.2	15.9	16.3	(a)
(UAS) Austria	(b)	(b)	13.3	13.5	16.6	(a)
(RU) Denmark	22.4	23.1	27.9	30.3	31.2	32.4
(RU) Germany	18.6	17.3	16.1	16.3	17.1	(a)
(UAS) Germany	14.5	15.1	14.4	14.5	14.6	(a)
(RU) Ireland	23.8	25.4	25.2	28.8	21.6	(a)
(UAS) Ireland	20.1	22.2	25.7	26.1	22.0	(a)
Italy	14.2	14.3	14.1	14.0	15.1	(a)
(RU) Switzerland	13.5	12.5	13.0	15.2	16.5	15.3
(UAS) Switzerland	4.2	5.2	5.3	6.9	6.6	6.7
Turkey	26.3	29.0	25.5	24.3	23.1	(a)
UK	18.6	19.1	19.8	21.7	23.3	(a)



5.4 Tentative extrapolation to the whole of Europe

It is possible to attempt a rough estimate of how the preceding measurements generalize to Europe as a whole, defined here as the member countries of the Council of Europe. The population of the countries used for this study (see Section 5) is around 44% of the population of Europe (325,626,025 inhabitants out of 742,452,000). A simple rule of thirds gives the following approximation (rounded) for the data from 2012/2013:

- First-year students in Informatics: 235,000
- Bachelor students in Informatics¹⁰: 835,000
- Master students in Informatics¹⁰: 148,000

Unlike the carefully documented measurements of the preceding tables, these numbers cannot be taken as exhibiting any degree of precision. They do, however, suggest an order of magnitude. If they are indeed within range, we note that more Europeans are in an Informatics bachelor program than live in Marseille, the second most populated city in France, or Frankfurt, the fifth most populated city in Germany.

¹⁰ Note that for the total number of bachelor and master students the extrapolation did not include the Netherlands since separate numbers for enrollments at bachelor and master levels were not available (see table 3 and 4)

6 Degrees

The tables that follow present data about degrees awarded: bachelor's in tables 5 and 5bis; master's in tables 6 and 6bis; doctorate's in tables 7 and 7bis. Source and footnotes are the same as tables 2 and 2bis and table 3 and 3bis. Additional footnotes following each table provide detail for specific situations in some countries. Also as before, any comparison must take into account the difference of definitions between countries.

6.1 Bachelor's degrees

		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14	
		Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio
(RU)	Austria	(b)	(b)	613	72	561	66	509	60	(a)	(a)	(a)	(a)
(UAS)	Austria	(b)	(b)	267	31	326	38	295	35	(a)	(a)	(a)	(a)
(RU)	Denmark	170	30	223	40	273	49	327	58	312	55	375	66
(UAS)	Denmark	0	0	0	0	0	0	89	16	51	8	107	19
(RU)	Germany	7,277	90	6,899	85	6,764	84	6,688	83	6,640	82	(a)	(a)
(UAS)	Germany	8,183	101	9,164	114	9,112	113	8,911	110	8,927	111	(a)	(a)
(RU)	Ireland	(b)	(b)	(b)	(b)	428	93	487	106	375	82	(a)	(a)
(UAS)	Ireland	(b)	(b)	(b)	(b)	532	116	713	155	543	118	(a)	(a)
	Italy	9,900	163	9,657	159	9,221	152	8,615	142	8,352	137	(a)	(a)
(RU)	Netherlands	731	43	598	35	544	32	591	35	676	40	(a)	(a)
(UAS)	Netherlands	3,355	199	3,326	197	3,303	196	3,035	180	3,318	197	(a)	(a)
(RU)	Switzerland	335	41	170	21	187	23	179	22	200	25	(a)	(a)
(UAS)	Switzerland	590	73	507	62	432	53	427	52	437	54	(a)	(a)
	Turkey	5,761	75	5,327	69	5,382	70	6,344	83	(a)	(a)	(a)	(a)
	UK	17,175	269	17,150	269	17,320	272	18,010	283	17,865	280	(a)	(a)

Germany: a significant error in the degrees awarded in Germany (Bachelor and Master - table 6 and 6bis), for all years, was identified in the previous edition of the report. In the annual reports from the *Statistisches Bundesamt* (*Fachserie 11 Reihe 4.2*) the numbers for *Bachelor-abschluss* and *Master-abschluss* presented in the table consulted (ZUS-04) are indeed a *sum* of the Bachelor and Master degrees awarded at traditional Universities *and* at Universities of Applied Sciences [GE5]. Our interpretation was that the table presented Bachelor and Master degrees awarded only at Universities (since there is no explicit definition). A more detailed analysis of the subsequent tables, especially TAB-03 (which was not considered in the first edition, since we did not include numbers from Universities of Applied Sciences) revealed that the numbers were a *sum* of the degrees awarded by both types of universities [GE5]. Note however that the *Diplom* degrees from the Universities of Applied Sciences were not counted in the sum, these are clearly reported separated throughout the *Fachserie 11 Reihe 4.2* [GE5].

UK: there is a small difference between the bachelor degree numbers presented here and in the previous edition of the report. The numbers in "Other Undergraduate" also included "Foundation" and "HND/DipHE" degree [UK6]. A more careful analysis of the different study levels and degree types by colleagues from the UK led to the conclusion that these two types of degrees are indeed below Bachelor and not at the same level as we have interpreted¹¹.

¹¹ Jane Hillston, personal communication.

Table 5 graph: Informatics bachelor's degrees awarded per 1,000,000 inhabitants

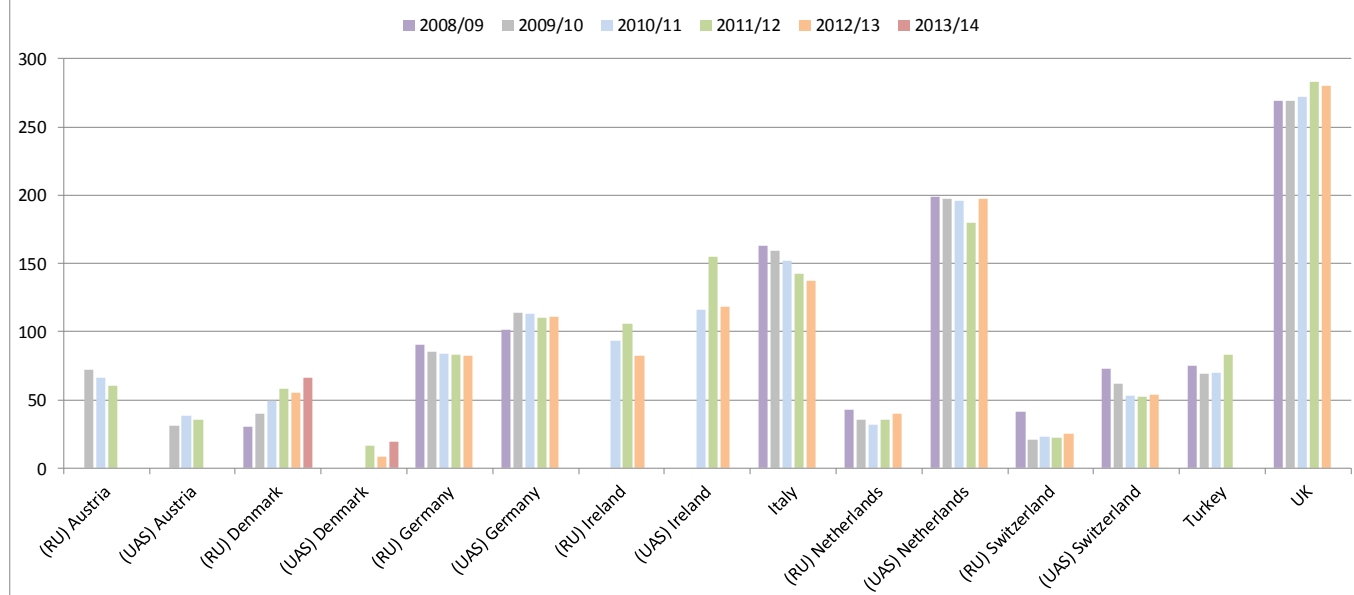
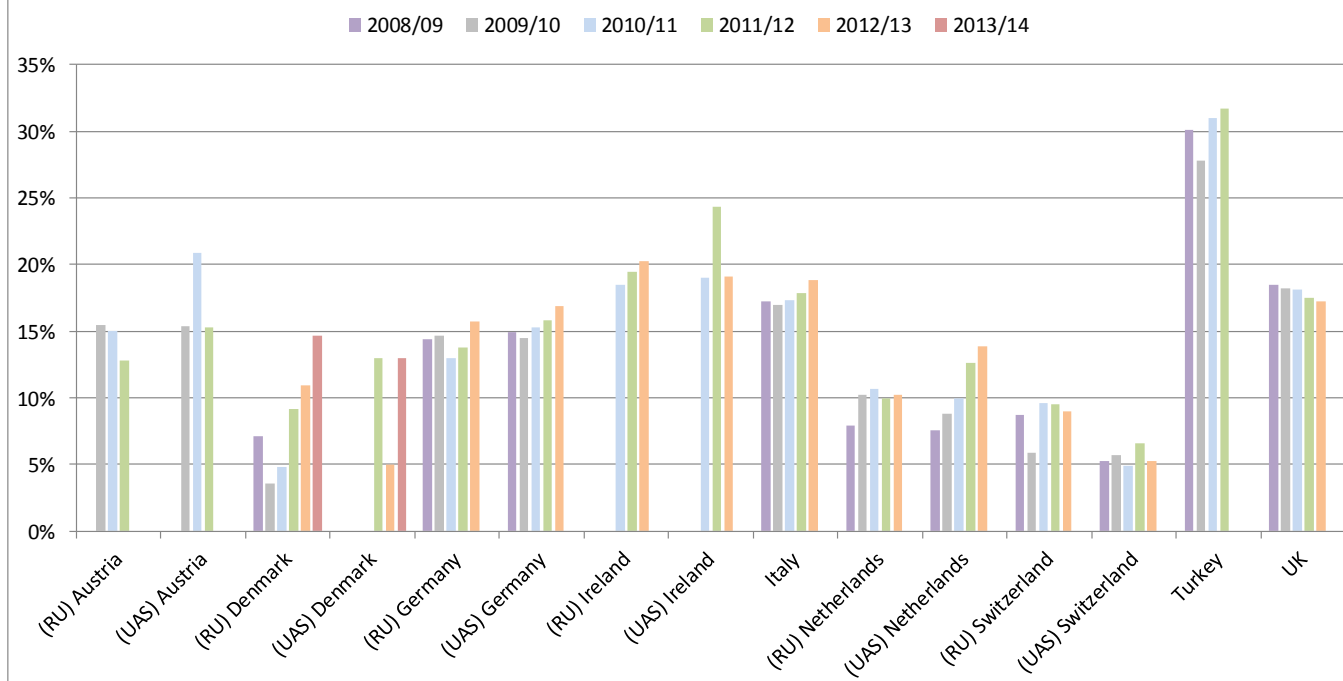


Table 5bis. Women percentage of total Informatics bachelor's degrees awarded

		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
(RU)	Austria	(b)	15.5	15.0	12.8	(a)	(a)
(UAS)	Austria	(b)	15.4	20.9	15.3	(a)	(a)
(RU)	Denmark	7.1	3.6	4.8	9.2	10.9	14.7
(UAS)	Denmark	0	0	0	13	5	13
(RU)	Germany	14.4	14.7	13.0	13.8	15.7	(a)
(UAS)	Germany	14.9	14.5	15.3	15.8	16.9	(a)
(RU)	Ireland	(b)	(b)	18.5	19.5	20.3	(a)
(UAS)	Ireland	(b)	(b)	19.0	24.3	19.1	(a)
	Italy	17.2	17.0	17.3	17.9	18.8	(a)
(RU)	Netherlands	7.9	10.2	10.7	10.0	10.2	(a)
(UAS)	Netherlands	7.6	8.8	10.0	12.6	13.9	(a)
(RU)	Switzerland	8.7	5.9	9.6	9.5	9.0	(a)
(UAS)	Switzerland	5.3	5.7	4.9	6.6	5.3	(a)
	Turkey	30.1	27.8	31.0	31.7	(a)	(a)
	UK	18.5	18.2	18.1	17.5	17.2	(a)

Table 5bis graph: Women percentage of total informatics bachelor's degrees



6.2 Master's degrees

Table 6. Informatics master's degrees awarded

(Ratio = Total/1,000,000 inhabitants)

		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14	
		Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio
(RU)	Austria	(b)	(b)	440	52	446	52	430	51	(a)	(a)	(a)	(a)
(UAS)	Austria	(b)	(b)	138	16	168	20	194	23	(a)	(a)	(a)	(a)
(RU)	Denmark	452	80	442	79	469	83	510	91	556	99	646	115
(RU)	Germany	1,022	13	1,096	14	1,142	14	1,632	20	2,407	30	(a)	(a)
(UAS)	Germany	802	10	876	11	1,056	13	1,455	18	1,736	22	(a)	(a)
(RU)	Ireland	(b)	(b)	(b)	(b)	595	130	529	115	600	131	(a)	(a)
(UAS)	Ireland	(b)	(b)	(b)	(b)	149	32	141	31	114	25	(a)	(a)
	Italy	2,394	39	2,556	42	2,618	43	2,519	41	2,520	41	(a)	(a)
(RU)	Netherlands	753	45	824	49	858	51	852	51	993	59	(a)	(a)
(RU)	Switzerland	206	25	268	33	215	26	239	29	254	31	(a)	(a)
(UAS)	Switzerland	0	0	0	0	79	10	178	22	216	27	(a)	(a)
	Turkey	833	11	871	11	885	12	901	12	(a)		(a)	(a)
	UK	6,060	95	7,670	120	9,225	145	8,345	131	6,590	103	(a)	(a)

Table 6 graph: Informatics master's degrees awarded per 1,000,000 inhabitants

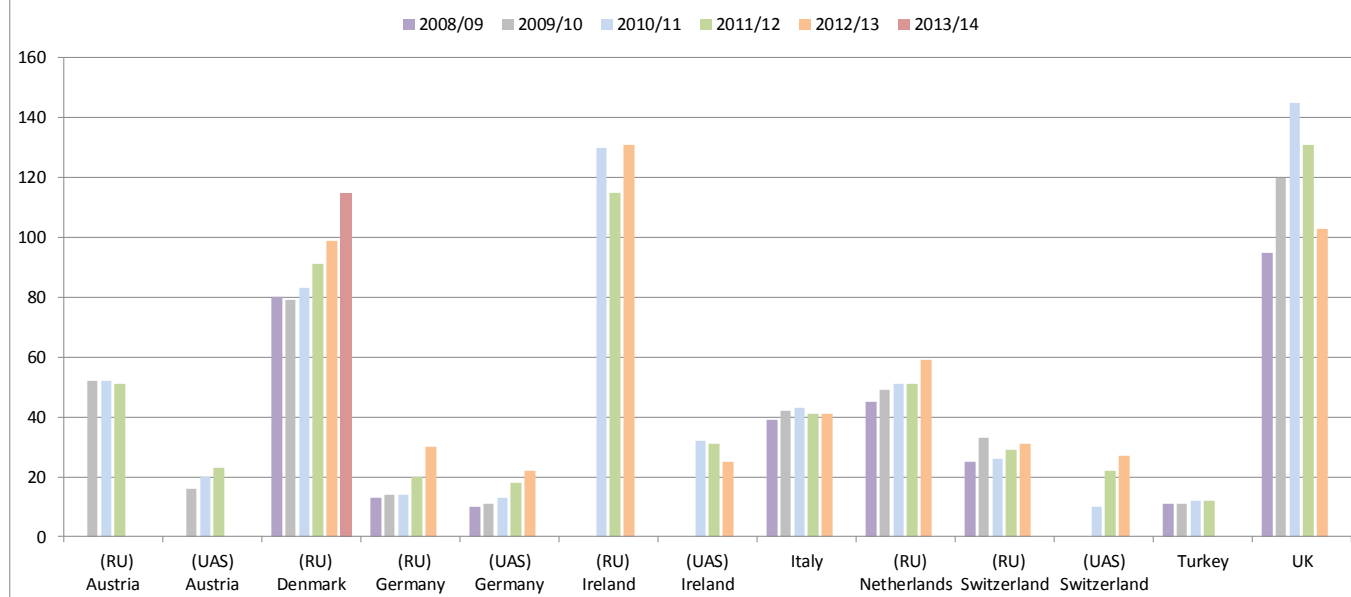
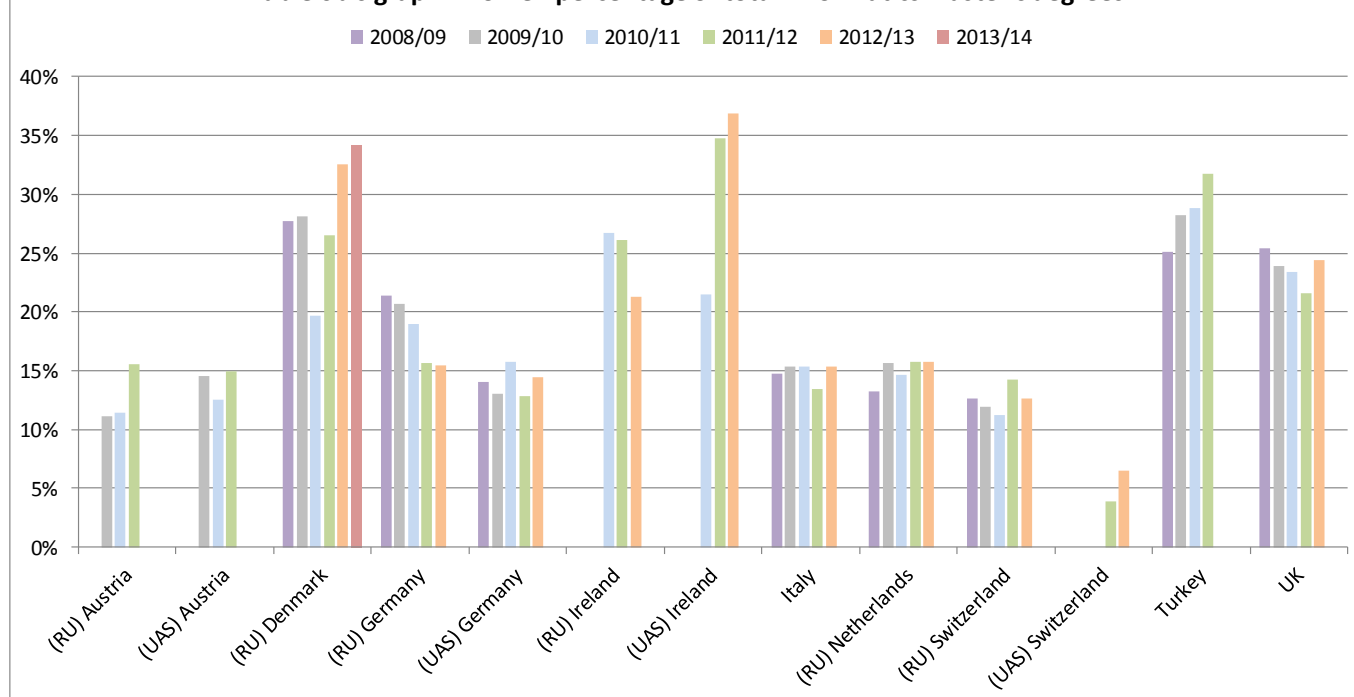


Table 6bis. Women percentage of total Informatics master's degrees awarded

		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
(RU)	Austria	(b)	11.1	11.4	15.6	(a)	(a)
(UAS)	Austria	(b)	14.5	12.5	14.9	(a)	(a)
(RU)	Denmark	27.7	28.1	19.7	26.5	32.5	34.2
(RU)	Germany	21.4	20.7	19.0	15.7	15.5	(a)
(UAS)	Germany	14.0	13.0	15.8	12.8	14.4	(a)
(RU)	Ireland	(b)	(b)	26.7	26.1	21.3	(a)
(UAS)	Ireland	(b)	(b)	21.5	34.8	36.9	(a)
	Italy	14.7	15.4	15.4	13.4	15.4	(a)
(RU)	Netherlands	13.2	15.7	14.6	15.8	15.8	(a)
(RU)	Switzerland	12.6	11.9	11.2	14.2	12.6	(a)
(UAS)	Switzerland	0.0	0.0	0.0	3.9	6.5	(a)
	Turkey	25.1	28.2	28.8	31.7	(a)	(a)
	UK	25.4	23.9	23.4	21.6	24.4	(a)

Table 6bis graph: Women percentage of total informatics master's degrees



6.3 Doctoral degrees

Table 7. Informatics doctoral (PhD) degrees awarded

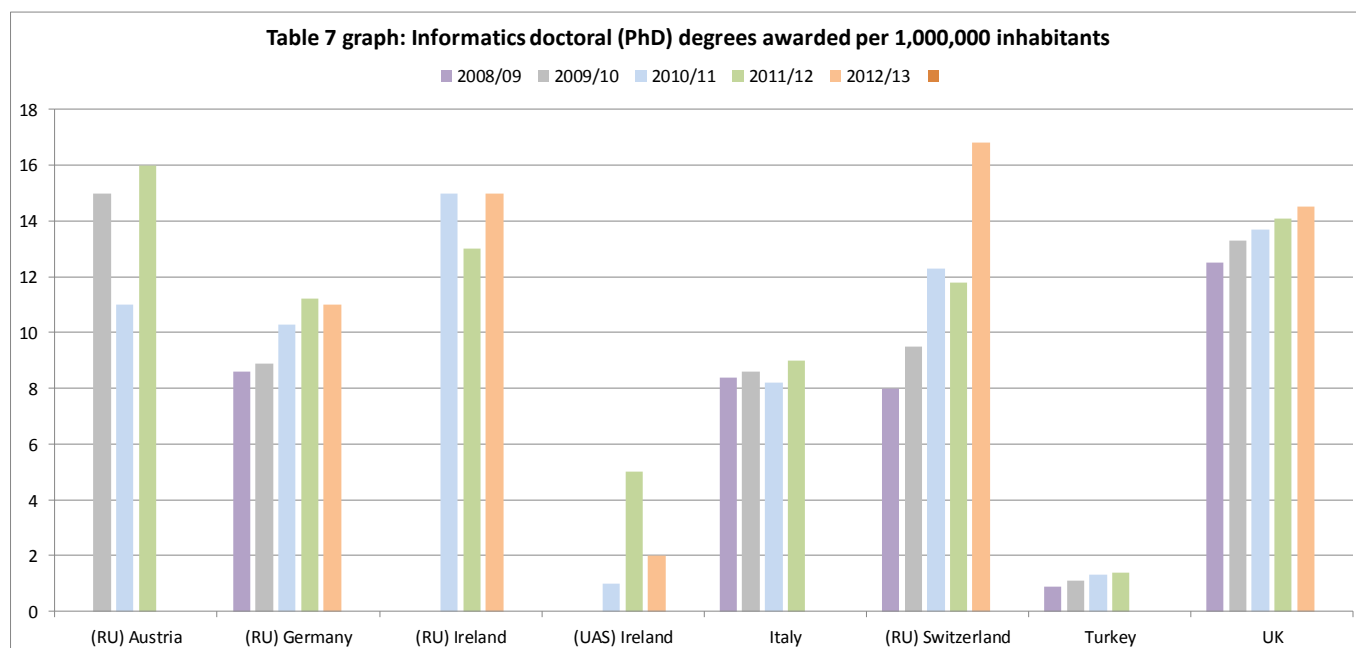
(Ratio = Total/1,000,000 inhabitants)

		2008/09		2009/10		2010/11		2011/12		2012/13		2013/14	
		Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio	Total	Ratio
(RU)	Austria	(b)	(b)	127	15.0	95	11.0	139	16.0	(a)	(a)	(a)	(a)
(RU)	Germany	695	8.6	719	8.9	832	10.3	902	11.2	885	11.0	(a)	(a)
(RU)	Ireland	(b)	(b)	(b)	(b)	68	15.0	59	13.0	69	15.0	(a)	(a)
(UAS)	Ireland	(b)	(b)	(b)	(b)	3	1.0	24	5.0	7	2.0	(a)	(a)
	Italy	508	8.4	521	8.6	500	8.2	547	9.0	(a)	(a)	(a)	(a)
(RU)	Switzerland	65	8.0	77	9.5	100	12.3	96	11.8	137	16.8	(a)	(a)
	Turkey	66	0.9	88	1.1	98	1.3	109	1.4	(a)	(a)	(a)	(a)
	UK	795	12.5	845	13.3	870	13.7	900	14.1	925	14.5	(a)	(a)

Denmark: numbers were not available since PhD degrees are reported combined across the entire field of “Natural Sciences”¹²

Netherlands: numbers were not available since PhDs are reported across the entire field of “Natural Sciences”⁹

In all countries included in this study, except Ireland, PhD degrees are only awarded by traditional Universities and not by University of Applied Sciences/University Colleges.

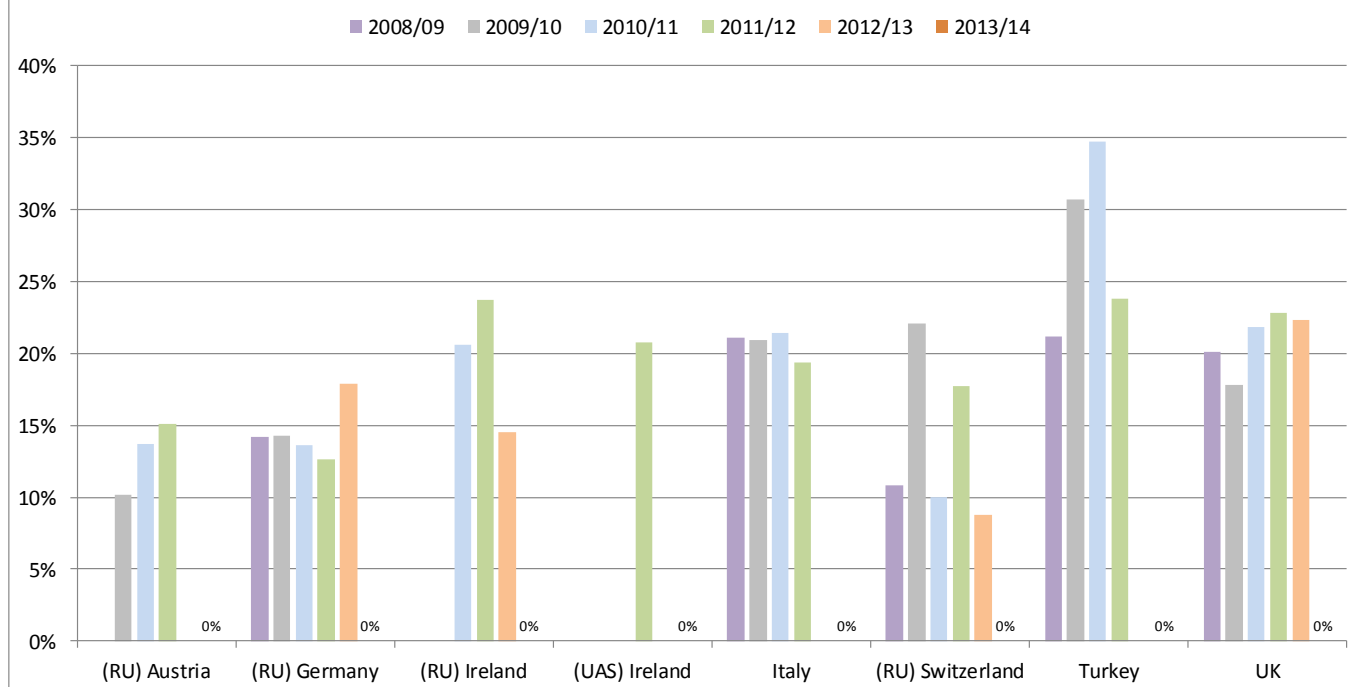


¹² StatBank Denmark, personal communication

Table 7bis. Women percentage of total Informatics doctoral (PhD) degrees awarded

		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
(RU)	Austria	(b)	10.2	13.7	15.1	(a)	(a)
(RU)	Germany	14.2	14.3	13.6	12.6	17.9	(a)
(RU)	Ireland	(b)	(b)	20.6	23.7	14.5	(a)
(UAS)	Ireland	(b)	(b)	0.0	20.8	0.0	(a)
	Italy	21.1	20.9	21.4	19.4	(a)	(a)
(RU)	Switzerland	10.8	22.1	10.0	17.7	8.8	(a)
	Turkey	21.2	30.7	34.7	23.8	(a)	(a)
	UK	20.1	17.8	21.8	22.8	22.3	(a)

Table 7bis graph: Women percentage of total informatics doctoral degrees



6.4 Tentative extrapolation to the whole of Europe

As discussed in Section 5.4, and with the same qualifications, it is possible from the 2012/2013 data to attempt a rough extrapolation to all of Europe, excluding Turkey for which the data was not yet available:

- Bachelor degrees awarded in Informatics: 145,000
- Master degrees awarded in Informatics: 50,000

6.5 Relationship between supply and demand

In light of the preceding figures, it is legitimate to ask how the supply of graduates meets society's demands. EU president Richard Burton declared in a speech [EU3] that:

The number of ICT graduates in Europe has decreased from 127,000 in 2006 to 114,000 in 2009 despite the growing pervasiveness of high level ICT occupations across all economies.

His basis at the time was the preliminary results of an analysis from a EU-commissioned survey ([EU4], pages 119-120). The graduate counts estimated in that survey raise questions; it gives for example a count of 2,420 ICT graduates (bachelor+master) in Italy in 2011, whereas the official Italian government source, as used for the present report [IT2], shows a count of 11,233. Other sources of uncertainty in that survey were recently reported [EU5].

An analysis from the European Commission on European Vacancy and Recruitment includes ICT positions (including IT consultants, IT support staff, software programmers, software developers, data processing technicians, database administrators, IT project leaders) as currently **top bottleneck occupations**, defined as those exhibiting recruitment difficulties across all of Europe [EU6]. The situation is exacerbated by the global war for talent with regard to attract the best skills in the ICT field.

The European Commission estimated that demand for e-skills in Europe in 2012 exceeded the available supply of graduates by around 255.000 [EU4,EU7]. In addition, that by 2015 the gap between demand and supply will grow significantly, to reach (depending on the forecasting scenario) a value of 372,000 to as much as 864,000 [EU4, EU7-EU8].

7 Positions and Titles

The present section describes some of the main positions (job titles) available to academics, and corresponding employment details, in the countries selected as per Section 2.3: Austria, France, Germany, Italy, Netherlands, Switzerland and UK.

The information generally applies to academics of all disciplines, not just Informatics, in each country.

Comparing salaries across different countries is complicated by the differences in career systems, career steps and progression. This makes it particularly important to define the different titles available in the countries considered. Section 8 will present the corresponding salary levels in the corresponding countries.

7.1 A basis for multinational comparison of academic positions

Tables 8 and 9 show the academic positions whose remuneration is described in Section 8, and the approximate equivalent in the various countries considered. For professor-level positions we used as a reference the nomenclature of the American higher education system: Assistant, Associate and Full Professor.

Table 8. Position correspondence: PhDs and Postdocs		
	PhD Candidate	Postdoctoral Researcher
Austria	<i>Universitätsassistent, Forschungsassistent / Projektassistent (Prädoc)</i>	<i>Universitätsassistent, Forschungsassistent / Projektassistent (Postdoc)</i>
France	<i>Doctorant</i>	<i>Post-doctorant</i>
Germany	<i>Doktorand / Wissenschaftlicher Mitarbeiter</i>	<i>Postdoktorand / Wissenschaftlicher Mitarbeiter / Oberassistent / Oberingenieur</i>
Italy	<i>Dottorando</i>	<i>Assegnista di Ricerca</i>
Netherlands	<i>Promovendus</i>	<i>Onderzoeker 4 / Docent 4</i>
Switzerland	<i>Doktorand / Wissenschaftlicher Assistenz I</i>	<i>Post-Doktorand / Wissenschaftlicher Assistenz II</i>
UK	PhD Students / Postgraduate Research Students	Research Assistants / Research Associates / Research Fellows

In Austria, Germany and Switzerland the term “Assistant” (assistant) is used for both PhD Candidates and Postdoctoral Researchers.

Table 9. Position correspondence: Professors

	Assistant Professor		Associate Professor		Full Professor	
Austria	<i>Assistenzprofessor</i>		<i>Assoziierter Professor / Außerordentlicher Universitätsprofessor</i>		<i>Universitätsprofessor</i>	
France	<i>Maître de Conférences</i>				<i>Professeur des Universités</i>	
Germany	<i>Juniorprofessor</i>		<i>Außerordentlicher Professor</i>		<i>Ordentlicher Professor</i>	
Italy	<i>Ricercatore a Tempo Determinato</i>		<i>Professore di Seconda Fascia (Professore Associato)</i>		<i>Professore di Prima Fascia (Professore Ordinario)</i>	
Netherlands	<i>Universitair Docent 2</i>	<i>Universitair Docent 1</i>	<i>Universitair Hoofddocent 2</i>	<i>Universitair Hoofddocent 1</i>	<i>Hoogleraar 2</i>	<i>Hoogleraar 1</i>
Switzerland¹³	<i>Assistenzprofessor</i>		<i>Außerordentliche Professor</i>		<i>Ordentlicher Professor</i>	
UK	<i>Lecturer</i>		<i>Senior Lecturer/Reader</i>		<i>Professor</i>	

7.2 Austria

PhD Candidates (so-called *PräDoc-Assistenten*) are typically employed as university assistants (if financed by the University they are called *Universitätsassistent*) or as project assistant (financed by grants, funds or industrial cooperations) at the institute of their academic supervisor. Their employment contracts are usually issued for four years and cannot be extended (in the case of employment as *Universitätsassistent*). However, in case PhD Candidates are employed as project assistant, contract extensions might be possible, depending on their funding source. Their duties include support in teaching, administrative tasks and doing research. PhD Candidates can also be financed by scholarships which are funded by national or local authorities, industry or others. Scholarship holders are on average funded for a period of three years. They do not have any teaching or administrative duties and can focus only on their thesis. Finally, there are also self-funded PhD students, doing their research in parallel to their “normal” work.

For Postdoctoral Researchers (*PostDoc-Assistenten*) a similar system applies. Depending on their funding source they are employed as university assistant (postdoc *Universitätsassistent*) or project assistant. Contracts of postdoc *Universitätsassistenten* are fixed for four up to a maximum of six years and cannot be renewed. The contracts for project assistants may be extended up to 10 or 12 years, depending on their funding source. Funding programs for Postdoctoral Researchers also enable them to apply for funding of their own independent position as part of a grant for a research project.

Professor positions are organized in three categories: Assistant Professor (*Assistenzprofessor*), Associate Professor (*Assoziierter Professor/Außerordentlicher Universitätsprofessor*) and Full Professor (*Universitätsprofessor*). Associate Professor and Full Professor positions are permanent. The initial appointment of Assistant Professors (tenure track positions) is for six years with the possibility of promotion to a permanent position as Associate Professor after a positive evaluation. There exists a specific tenure track system for the promotion from an Assistant Professor position to an Associate Professor position (for selected Assistant Professors who obtain the so-called *Habilitation*). However, there is not such a system for the promotion from an Associate Professor position to a Full Professor position. Being appointed as Full Professor requires a specific appointment procedure and in general they have a Chair (*Lehrstuhl*). Since the year 2000 Full Professors are no

¹³ German terms. French (*Professeurs Assistants, Professeurs Associés, Professeurs Ordinaries*) and Italian (*Professori Assistenti, Professori di Ruolo Straordinari and Professori di Ruolo Ordinario*) equivalents are used in the corresponding regions of Switzerland.

longer employed as civil servants, but as University employees (the same for Associate Professors and Assistant Professors since 2004).

7.3 France

The employment of PhD Candidates is defined in France by a “*doctoral contract*” ruled by public law since 2009 [FR2-FR4]. It consists of a fixed-term contract for a minimum period of three years, which may be extended for a maximum of one year (usually in case of special situations such as maternity/paternity leave, long sick or accident leave, etc). The doctoral contract may define a job where only research and work for the thesis completion are involved, or include other tasks such as teaching, scientific and technical information, development of research, consultancies or expertise to companies or public authorities [FR2-FR4]. The base salary is slightly higher in the case of a contract involving complementary duties (see below). Salaries paid in research institutes or in projects involving close collaboration with industry can also vary (see below).

Postdoctoral Researchers are employed in fixed-term working contracts (*contrats temporaires de chercheur*) which vary from one to three years, can be extended, but not surpass six years on the total. Funding for postdoctoral positions come from national, European or international funding agencies or projects developed with Industry.

University professors (*Maîtres de Conférences* and *Professeur des Universités*) have permanent, tenured positions including a number of levels (*classes*) [FR2, FR5-FR7]. In the statutory group of *Maîtres de Conférences* there are two levels: *classe normale* and *hors-classe*; in the statutory group of *Professeur des Universités* there are three levels: *deuxième*, *première*, and *classe exceptionnelle* [FR5-FR7].

7.4 Germany

PhD Candidates in Germany are typically employed as *Wissenschaftlicher Mitarbeiter* (research associate) having a fixed-term contract at the institute of their supervisor. The funding comes from the state, National Science Foundation (DFG), EU, ministries on federal or local level, industry, foundations and other sources. Duties include working on research projects, teaching, organizing seminars or performing administrative tasks [GE6-GE8], depending in part on the source of funding. In general the working contract is for a period of three years and can be renewed for an additional maximum period of three years. Funding can also be through scholarships provided by DFG, the *Alexander von Humboldt Foundation* and the *Deutsche Akademische Austauschdienst (DAAD)* [GE6-GE8]. Scholarships are usually for no more than 3 years.

Postdoctoral Researchers are also employed as *Wissenschaftlicher Mitarbeiter* (or alternative names shown in Table 8) and have fixed-term contracts that cannot be extended for more than six years. At entry level salaries are slightly higher than for PhD positions and depend on experience and family status (see below) [GE8-GE9]. Funding programs for Postdoctoral Researchers also enable them to apply for funding of their own independent position as part of a grant for a research project. The position can be at a University or an independent research institute, which must provide the necessary basic equipment and facilities for the development of the research project [GE8-GE9].

Professor positions are organized in three categories: *Juniorprofessor*, *Außerordentlicher Professor* and *Ordentlicher Professor*. *Juniorprofessor* positions, introduced by law in 2002, are time-limited (three years), can be renewed once, and provide the opportunity to apply for a permanent position after the sixth year without passing the *Habilitation* process (which junior professors still often do). Academics in these positions, although non-permanent, do not work as research assistants for permanent professors; they have their own research group and work autonomously [GE10]. In general, there is no tenure process (although some universities offer *Juniorprofessor* positions including a tenure-track plan [GE10-GE11]), therefore at the end of his or her term a

Juniorprofessor must apply for a new open position and go through the usual German recruitment process to reach a tenured professorship. *Außerordentlicher* and *Ordentlicher Professor* are permanent tenured positions. *Außerordentlicher Professor* has teaching duties, his/her own research group and a smaller budget when compared to *Ordentlicher Professors* who have bigger research groups and budgets and in general have a Chair (*Lehrstuhl*) [GE12].

7.5 Italy

PhD positions in Italy are funded either by national scholarships, through research grants of professors, or through industry funding programs. The contract is normally for three years and salary is fixed, not progressing along the years. Funding for more than three years can in some cases be provided through research grants. PhD Candidates can have teaching and supervision duties additionally to the thesis work, in this cases they earn a slightly higher salary, which depends on the local University rules [IT3,¹⁴].

Postdoctoral Researchers (*Assegnista di Ricerca*) are employed in temporary, fixed-term, working contracts for a minimum of one year, usually two years, which can be renewed for a maximum of two additional years¹⁴. Their duties include research as well teaching and students' supervision [¹⁴].

Professor positions are organized in three categories: *Ricercatore*, *Professore di Seconda Fascia* (*Professore Associato*) and *Professore di Prima Fascia* (*Professore Ordinario*).

Up to 2010, an Assistant Professor (*Ricercatore*) after three years could be confirmed to a tenured position (*Ricercatore Confermato*), without being promoted to a higher level professorship. This situation changed in 2011 [IT4] when Assistant Professor positions started to have a limited duration (*tempo determinato*). They are of two kinds: *Tipo A* and *Tipo B*. *Ricercatore a Tempo Determinato Tipo A* are initially appointed for three years, the contract can be extended at most once for maximum of two years. *Ricercatore a Tempo Determinato Tipo B* are tenure track positions, the contract lasts at most three years, without further extensions, and can be assigned to candidates who previously had type A contracts (or similar experience nationally or abroad). After three years, type B personnel who received a national habilitation, and had positive evaluation at the end of the three years, are promoted to a tenured Associate Professor (*Professore di 2^a Fascia*) position [IT4,¹⁴].

Professore Associati and *Professore Ordinari* are since 2011 tenured positions from the initial appointment, until 2010 both types of positions were non-tenured in the first three years [IT4,¹⁴].

7.6 The Netherlands

PhD Candidates in the Netherlands are typically employed by the university in the rank of *Promovendus* (Beginning Researcher), on a fixed-term contract for three or four years (four years is standard) [NE5-NE7]. PhD positions are funded almost exclusively by projects from external sources like the Netherlands Organization for Scientific Research (NWO), the EU, foreign grants, or industry. PhD Candidates carry out their research under supervision of at least one professor and/or senior member in a research group. Progress is monitored. In addition to their research, PhD Candidates normally have a small task in teaching, supervision, or other project-related activities.

Postdoctoral Researchers at entry level are generally appointed to *Onderzoeker 4* (Researcher 4) in a temporary, fixed-term contract for up to two years. Postdoctoral Researchers are almost exclusively funded by projects. Depending on the funding, contracts may be renewable, but the total term of the employment, including any subsequent contracts in the same university, should never surpass six years [NE5-NE7].

¹⁴ Carlo Ghezzi, personal communication

The other dedicated or special positions for research or teaching in the Dutch system include those of *Docent* (Lecturer) and of *Onderzoeker* (Researcher) and range from *Docent* 4 (Junior Lecturer) up to *Docent* 1 (Coordinating Senior Lecturer) and from *Onderzoeker* 4 (Junior Research Fellow) up to *Onderzoeker* 1 (Coordinating Senior Researcher). The positions are often temporary but can be tenured. The researcher-positions usually require a PhD, and the lecturer-positions usually require (or lead to) a basic certificate as lecturer [NE5-NE7].

The regular (structural) positions in the Dutch system have a mix of research and teaching duties, and senior positions may include various responsibilities for projects, programs and/or groups as well. The regular positions include, in increasing level of seniority: *Universitair Docent* 2 and 1 (UD2/UD1, roughly corresponding to Assistant Professor), *Universitair Hoofddocent* 2 and 1 (UHD2/UHD1, roughly corresponding to Associate Professor), and *Hoogleraar* 2 and 1 (H2/H1, corresponding to full professor). Only full professors hold chairs. All positions are usually tenured or tenure-track.

7.7 Switzerland

PhD Candidates in Switzerland are typically employed by the universities as *Wissenschaftlicher Assistenz I* (Research Assistant I). Beyond performing research work leading to their doctorate and attending a number of courses, PhD Candidates assist their supervisors in teaching and supervising undergraduate students and frequently perform internal tasks in their research groups. Contracts are temporary, renewed annually and with variable duration (in agreement with the group leader), on average three to four years, but never extending more than six years [SW7].

Postdoctoral Researchers are employed by the universities as *Wissenschaftlicher Assistenz II* (Research Assistant II) or *Wissenschaftliche Mitarbeitende I* and *II* (Senior Researchers and Teaching Assistants), depending on their previous experience. Duties include performing own research, teaching and supervision of students and PhD Candidates as well as internal tasks in the research group. The positions are funded by the university institutes themselves or by third parties such as the Swiss National Science Foundation or international funding organizations. Contracts are fixed-term, renewed annually, and with variable duration, on average two and a maximum of six years, in agreement with the group leader [SW8].

Professor positions are organized in three categories: *Assistenzprofessor*, *Außerordentliche Professor* and *Ordentlicher Professor*¹³. Among the three categories only *Assistenzprofessor* are non-tenured positions. Many appointments include a tenure-track plan, in this case an *Assistenzprofessor* is appointed for four years, with the possibility of contract renewal for a period of maximum two years. After this period, candidates with outstanding qualifications are considered for a permanent professorship (in general *Außerordentliche Professor*) through a direct, multi-stage tenure procedure [SW8]. Procedures for granting tenure-track positions are determined by the individual faculties. *Assistenzprofessor* positions can also be funded by a Swiss National Science Foundation (SNF) grant, but in this case the contract does not include a tenure-track plan [SW8].

7.8 UK

PhD Candidates in the UK usually have a stipend. Optionally part-time contracts to help with teaching are also available. In general these contracts do not surpass fifteen hours per week and most students supplement their stipend with a few hours of teaching a week. Most stipends are awarded for three or three and a half years, depending on the funding scheme. The maximum allowed time varies depending on the University, but in general it is four years. A compelling factor to enforce the maximum four years of PhD is the fact that getting government funded scholarships depends on the majority of the PhD Candidates from the institution completing their PhD in four years or less during the past five years. Funding for PhD positions in the UK are almost always provided by

the national government or funding organizations. Grants fund the PhD Candidate's living expenses and whatever fees the university demands. Some grants are more generous than others regarding expenses for experimental work and the stipend paid to the student. Each funding body has its own restrictions on who is eligible to receive funding, and funds are limited, so PhD positions are competitive in almost all institutions. Funding for PhD Candidates is nearly always awarded to the department or the research supervisor, not the student. Most funding is specific to UK-citizens living in the UK. The UK research council also funds students from EU countries, but the stipend covers only university fees and not living expenses.^[11]

Postdoctoral Researchers in the UK have temporary fixed-term contracts with the universities with the contract duration depending on the funding source. Duties include performing own research, teaching and supervision of Bachelor and Master students. In case Postdoctoral Researchers are employed by the university for more than three years (even if having more than one single contract) they notionally become "permanent" members of staff. They might still become unemployed when the funding paying their salaries finishes, but in this case the university needs to provide some redundancy compensation. Since 2009 researchers funded by the national government have their employment governed by a scheme called "The Concordat", which essentially gives them various rights like the one to be treated as permanent staff, maternity leave, sickness leave, etc. ^[11].

University professor positions in the UK are organized in three ranks: Lecturer, Senior Lecturer/Reader and Professor. All positions are permanent and don't include tenure track schemes. Lecturer positions usually start with a probationary period. The length of a probationary period can vary a lot according to the institution and the length of the contract of employment. Reader/Senior Lecturer or Professor positions do not include a probation period. Promotion to a higher rank can happen at any time in the career, whenever the candidate satisfies the promotion criteria defined by the institution. Each year there is a promotion round and the criteria for promotion for each level is published and candidates can be selected or self-nominate for a promotion. The Department first decides whether they want to support the candidate or not. Then at the faculty level a judgement is made about quality, partially in comparison with other candidates from across the departments in the faculty that year, creating therefore a ranked list with a quality cut off. For Reader and Professor this stage involves the faculty consulting independent referees about the work of the candidate. Then at the university level the ranked lists are combined into a single ranked list and as many candidates are promoted as can be afforded. Professors in the UK are said to hold a chair in a subject or subject area, so are often referred to as "The Chair in/of X" where X is their subject. Chairs may be established or personal. An established chair is one that is not tied to the individual who currently holds it. A personal chair on the other hand, is tied to the individual who has it. If they leave or retire, the chair is not guaranteed to be available for another person to take up. ^[11].

8 Salaries

8.1 Salaries: Overview

We now present the results for the salaries of PhD Candidates and Postdoctoral Researchers (Section 8.2, table 10) and Professors at various ranks (Section 8.3, table 11).

Considerable variations exist between different countries. Possibly even more than elsewhere in this report, any comparison across countries requires care in light of the differences in career systems, position definitions (see Section 7) and salary systems. In addition, in Germany and Switzerland, since the figures apply at the national level, there may be significant variation between regions, institutions and seniority levels; such factors as individual contracts and bonuses can also play a role.

All salary figures presented are **earned yearly gross salaries in Euros**, rounded to the nearest integer. Important comments on the specifics of every country and how the figures were determined follow each of the two tables. We chose to report here only earned gross values, without taking into consideration the different tax systems, and therefore without reference to final net values earned by academics and the total gross costs borne by employers.

8.2 Salaries: PhD Candidates and Postdoctoral Researchers

Table 10 presents the yearly gross salaries paid to PhD Candidates and Postdoctoral Researchers in the selected countries.

<i>Table 10. PhD Candidate and Postdoctoral Researcher salaries (yearly gross in Euros)</i>				
	PhD		Postdoc	
	<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>
Austria	36,621	43,505	48,766	56,864
France	20,220	24,300	30,000	31,452
Germany	40,411	47,247	43,829	51,416
Italy	13,632		19,368	30,000
Netherlands	24,996	31,968	29,124	45,972
Switzerland	59,164	69,276	70,797	76,966
UK	17,329		39,178	51,059

Austria

The indicated salaries are based on an employment contract with a working time of 40 hours per week. In Austria there are 14 monthly salaries per year. Often PhD Candidates are employed for less working hours per week. However, in specific cases also higher salaries can be paid. Since 2011 all university employees in Austria are paid according to the Austrian Collective Agreement for University Staff (*Kollektivvertrag*) [AT4]. According to this agreement, only initial minimum salaries are defined. Usually the salaries increase with the number of years being employed. According to the indicated figures the yearly minimum salary for PhD Candidates is € 36,621 at the beginning. This amount is independent of the funding source. The minimum yearly salary for Postdoctoral Researchers is € 48,766. Salaries for Postdoctoral Researchers increase on a yearly basis. The indicated maximum salaries for both categories assume specific numbers of consecutive years (e.g., PhD 4 years and Postdoc 8 years)

of employment at the Vienna University of Technology [AT5]. Note that the maximum salaries paid will vary depending on the institution.

France

Salaries of PhD Candidates in France are in general fixed and do not progress from the beginning to the end of the doctoral contract. The minimum value in the table corresponds to the amount paid to PhD Candidates developing their thesis in a University and who are fully dedicated to their research and thesis work (i.e. no teaching or additional duties). Maximum value correspond to contracts which involve not only research and thesis work but also complementary activities like teaching, scientific and technical information, development of research, consultancies or expertise to companies or public authorities [FR2]. Another variation found are PhD Candidates who have contracts, and develop their research work, in industrial organization on the frame of the system called “*Conventions industrielles de formation par la recherche*” (CIFRE). CIFRE PhDs are paid a minimum salary of € 1,957 per month [FR2]. Research institutes which employ PhD Candidates also present slightly variations on the remuneration system, e.g., INRIA pays a gross salary of € 1,957 per month for the two first years, and € 2,058 per month for the third year [FR8]; CNRS pays € 1,757 per month (only research and thesis work) and € 2,095 per month (with complementary activities) [FR9].

Salaries of Postdoctoral Researchers slightly vary according to the institution and research project. Table 10 shows values paid to a post-doc with a contract with CNRS (€ 2,500 per month) [FR9] and with INRIA (€ 2,620 per month) [FR8]. Initial salaries usually remain the same until the end of the contract, but might increase in a case of contract extension¹⁵.

Working hours for both PhD Candidates and Postdoctoral Researchers, in full time positions, are 35 hours /week.

Germany

PhD and Postdoctoral positions remuneration is defined by the *Tarifvertrag im Öffentlichen Dienst* (TV-L) [GE7, GE13-GE15 Appendix B]. In general PhD Candidates have a salary within (or corresponding to a percentage of) the pay scale (*Tarif*) TV-L 13. The exact grade or level (*Stufe*) is defined based on previous experience, family situation, working hours and tasks defined by the working contract (teaching load, supervision and other duties). Students in Engineering, Computer Science and Applied Mathematics, high-demand occupations in Germany, in general earn the full rate of the respective TV-L 13 salary grade appointed, for a full time (39.83 hours/week) working contract involving teaching and supervision responsibilities [GE16].

Min and *Max* values shown in the table correspond respectively to the starting level (*Stufe 1*) and the level 3 (*Stufe 3*) of the full scale TV-L 13, considering a first and a third year PhD Candidate, respectively. Please note that the initial salary might change considering the level of experience and family situation of the candidate (for all grades within the TV-L 13 scale, see Appendix B and reference GE15).

Postdoctoral Researchers are often paid on the same pay scale as PhD Candidates, i.e., TV-L 13, with the entry salary starting on a higher grade according to the experience and family situation. Postdoctoral Researchers with special responsibilities, such as junior research group leaders, may be paid in a higher salary scale, e.g., TV-L 14, TV-L 15, TV-L 15Ü [GE16]. Working hours for a full time working contract is also 39.83 hours per week.

Min and *Max* values shown in the table correspond to a Postdoctoral Researcher starting at *Stufe 1* within the full *tariff* TV-L 14 and *Stufe 3* (for all levels within the TV-L 14, please see Appendix B and reference GE15). Note that this was an arbitrary choice since the initial salary varies according to previous experience.

Salary values presented in table 10 are from 2014 [GE15].

¹⁵ Antoine Petit, personal communication

Italy

Salaries of PhD Candidates in Italy are nationally fixed and do not progress from the beginning to the end of the doctoral contract. Since 2008 PhD salary is fixed on € 1,136 per month (on a 12 month basis), gross value for a full time contract, corresponding to 38 hours/week [IT5, ¹⁴].

Salaries of Postdoctoral Researchers are defined by the professor/group leader opening the position. Initial salary cannot be lower than € 19,367 per year, usually maximum salary does not surpass € 30,000 per year. Values shown on table 10 correspond to gross yearly salaries for a full time (38 hours/week) position. The salary is fixed and remains the same until the end of the contract, the exact value of the initial salary depends on the researcher previous experience^[14].

The Netherlands

Academic career regulations and salaries in the Netherlands are defined by the collective agreement (CAO) of Dutch Universities, set by the Association of Universities in the Netherlands (VSNU) [NE7].

PhD Candidates are employed as research/teaching assistants and paid according to the Scale P of the CAO table of salaries [NE7, Appendix B]. The initial salary corresponds to the salary grade P0 for a period of one year, at the end of this first year salary progresses automatically (with no performance assessment) to the grade P1. Each subsequent salary increase shall take place only after annual assessments [NE5-NE7]. Min and Max values shown in the above table correspond to the grades 0 and 3 within the scale P.

Postdoctoral Researchers are employed as research/teaching assistants and paid according to the Scale 10 of the CAO table of salaries [NE7, Appendix B]. The exact initial salary, which will correspond to a grade within Scale 10, depends on previous relevant experience and family situation. Min and Max values shown in the table 10 correspond to the grades 0 and 12 within the Scale 10 [NE7, Appendix B].

Working hours for both PhD Candidates and Postdoctoral Researchers, in full time positions, are 38 hours /week. Salary values presented in table 10 are valid from September 2013 [NE7].

Switzerland

Salaries of PhD Candidates and Postdoctoral Researchers are not uniform across the country; each University defines its own base values and increasing steps. *Min* and *Max* values shown in table 10 are calculated averages of annual gross salaries paid to a first and a third year PhD and Postdoctoral Researcher in a full time position (42 hours per week) and 100% employment rate at four Cantonal Universities (Bern, Geneva, Neuchatel, Zurich) and the two Federal Institutes of Technology (EPFL and ETHZ) [SW9]. Note that in general not all PhD positions correspond to a 100% employment rate, depending on the area, department, teaching and supervision duties involved, this can correspond to 75% or 50% of a full rate salary, although working hours remain at 42 hours/week. In Informatics and Engineering, considered fields of high demand in Switzerland, generally PhDs contracts correspond to a 100% position.

For reference the exchange rate used was 1EUR = 1.2CHF. Salary values presented in table 10 are valid from January 2014 [SW9].

UK

PhD students in the UK receive a stipend, which is tax-free and covers the Universities fees and living expenses, the exact value can be defined at the University level, but most institutions pay the basic values recommended by the national government, value shown in the table. The salary is fixed and do not progress from the beginning to the end of the doctoral studies ^[11].

Postdoctoral Researchers can have positions of Research Assistants, Research Associates and Research Fellows which have different levels of responsibility and autonomy. In almost all cases in the UK, Postdoctoral Researchers will not be part of the faculty of the University but are instead paid by money that comes from research grants from national or international funding bodies ^[11]. However, their pay is based on the national pay spine negotiated by JNCHES (Joint Negotiating Committee for Higher Education Staff)[UK7], see details in Section 8.3.

The initial salary will depend on previous experience and the level of responsibility and autonomy expected in the current position. Min and Max values shown in table 10 correspond to the grade point UE7 (spinal point 30 to 39 in the national single pay spine) in the salary tables from the University of Edinburgh [UK8, Appendix B]. Please note that it is also possible to find Postdoctoral Researchers paid within the same scale points of Lecturers, Readers or even Professors, depending if they are operating more as independent researchers (rather than just following a research program designed by a member of academic staff) ^[11]. Note that there might be slight differences in the way the universities internal scales define their correspondence to the national spinal scale. For reference the exchange rate used was 1GBP = 1.25EUR.

8.3 Salaries: Professors

Table 11 presents the yearly gross salaries in Euros paid to professors in the surveyed countries. They are only meaningful in connection with the country-specific notes that follow the table. When comparing salary across countries please bear in mind that:

- Taxation and social welfare systems are different (in some countries people contribute from their gross salary while in others contributions are paid by the state).
- Career progressions are different (some are time based, others are determined by individual and/or local negotiations, others are a mix).
- Overall salary in some countries may be higher due to optional bonuses/incentives depending on role/function,

Table 11. Professor salaries (yearly gross in Euros)

	Assistant Professor		Associate Professor		Full Professor	
	Min	Max	Min	Max	Min	Max
Austria		57,672	62,531	88,441	65,769	91,679
Germany	44,656	50,060	50,281	62,139	61,055	73,552
Italy		34,898	50,831	82,987	72,431	106,104
Netherlands	38,340	59,640	53,136	71,040	58,848	85,704
Switzerland	111,861	155,998	127,077	174,431	143,259	195,689
UK	48,139	64,628	60,929	72,715	70,603	118,445
France	Maître de Conférences		Professeur des Universités			
	25,224	45,612		36,564		64,680

Austria

As for the other groups of university employees, only initial minimum salaries for professors are defined by the Austrian Collective Agreement for University Staff [AT4]. These salaries increase with the number of years employed. Minimum salaries for Associate Professors and Full Professors increase every six years provided that there was at least one positive evaluation (those rules do not apply for the group of Assistant Professors). The salaries which are indicated in the table refer to a full-time employment (40 hours/week). The minimum initial salary for Associate Professors is € 62,531 at the beginning, and € 88,441 if they have been employed for 24 years. The initial minimum salary for Full Professors is € 65,769 at the beginning of the appointment, and € 91,679 after 24 years. Maximum salaries shown are from the Vienna University of Technology [AT6]. Note that some differences might exist depending on the employer university.

The pension contributions for all university employees are paid half by the university and half by the employees (the employee's share is part of the gross salary). Additional contributions to pension fund are paid by the universities for all university employees who are employed for more than 2 years.

France

Professor (*Maîtres de Conférences* and *Professeur des Universités*) salaries and career progression in France are regulated by the Ministère de l'enseignement Supérieur et de la Recherche (Ministry of Higher Education and Research). The system is strongly centralized; salaries for a given category are exactly the same across the country and in all universities and other public higher education institutions [FR10]. Working hours for a full time position are 35 hours/week.

Maîtres de Conférences positions are divided in two levels: a *classe normale* comprising eight pay grades and a *hors-classe* comprising eight pay grades [FR6, FR11]. *Professeur des Universités* positions are divided in three levels: a *deuxième classe* comprising eight pay grades; a *première classe* comprising seven pay grades and a *classe exceptionnelle* comprising five pay grades [FR7, FR11].

Min values shown in table 11 correspond to the salary paid at the beginning of the career in both categories (i.e. first pay grade at *classe normale* and *deuxième classe*, respectively) [FR11]. Max values correspond to the highest pay grade in the *classe normale* for *Maîtres de Conférences* and in the *première classe* for *Professeur des Universités* [FR11].

For *Maîtres de Conférences* the salary in the highest pay grade of the level *hors-classe* is € 53,507, while for *Professeur des Universités* the highest pay grade of the level *classe exceptionnelle* is € 73,343 [FR11].

In a given level, salary progression (moving to a higher pay grade) is awarded automatically after given periods of time, which are defined by the statutory regulations of the group. Promotion to a higher level, in the same category, on the contrary is not granted automatically for seniority, but involves a performance review process. To move between categories, from a *Maîtres de Conférences* to a *Professeur des Universités* position, requires the application to a new available position through a specific process called *concours*.

Germany

Professor salaries in Germany are since 2005 regulated by the new federal system of remuneration W (*Bundesbesoldungsordnung W*), which replaced the old C salary scheme (*Bundesbesoldungsordnung C*) [GE14, GE17-GE18]. The pay regulation W applies to professors, as well lecturers and scientific assistants, and contains the pay grades W1, W2 und W3 which apply to *Juniorprofessor*, *Außerordentlicher Professor* and *Ordentlicher Professor*, respectively [Appendix B, GE14, GE17-GE18].

In the remuneration system W the financial rewarding for seniority is replaced by a system with a base salary added by family allowances and, in case of grades W2 and W3, performance bonuses for outstanding

achievements in research, teaching, promotion of young scientists and undertaking of special administrative and management functions in the university (rector, dean, chair, etc). The criteria for the payment of performance bonuses are defined independently by each state (*Bundesländer*) and University regulations, but can vary significantly among different areas and depend on contractual negotiations [GE19].

Table 11 shows the base gross salaries in the pay grades W1, W2 and W3 (as of April 2014) without any addition of bonuses or allowances. Min and Max values shown correspond to the base salaries paid in regions Berlin and Bayern, respectively. The national averages of the base salaries in the different grades are: € 49,852 (W1), € 61,934 (W2) and € 69,220 (W3) [Appendix B, GE20]. Working hours for a full time position are 40 hours/week.

Some further peculiarities affect the salary data for Germany. Professors have a special status ("*Beamte*") in which they do not pay for their pensions; the employer also pays for health insurance, and there is a premium for families, initially small but growing with the number of children. In addition a percentage of W2 professors, and a higher percentage of W3 professors, get a performance bonus. As a consequence, some German professors consulted for the present report consider that table 11 underestimates the actual professor salaries by 25% to 30%.

Italy

Professor salaries and career progression in Italy are regulated by the national government. The system is strongly centralized and the salaries and progression steps for the different categories are the same across the country, and in all universities or other public higher education institutions. Payment grades and progression steps are defined by the salary tables published by the government. The last revision of the salary tables dates from December 2011, after the reform of the academic career system (see Section 7.4). Values shown in table are for the gross yearly salaries in Euros (*annuo lordo*) [Appendix B], note that professors in Italy receive a thirteenth salary.

Salaries shown in table 11 for Assistant Professors (*Ricercatori*) consider academics taking employment after the reform, i.e. the salary is constant throughout the three-years fixed-term appointment (see Section 7.4). For Assistant Professors employed before the 2011 reform, salary grades can range from € 37,172 and € 65,078 per year corresponding to 35 years of seniority [IT6, Appendix B]. In the old system Assistant Professor positions were not fixed-term, after the first three years, tenure could be reached and a career as Assistant Professor established, without necessarily promotion to a higher level professorship.

Min and Max values shown in table 11 for Associate Professors (*Professori Associati*) correspond to the salary at the beginning of the career, after the 2011 reform, therefore considering a position which is tenured from the beginning of the appointment (see Section 7.4), and after 27 years of seniority in the same position [IT6, Appendix B].

Min and Max values shown in table 11 for Full Professors (*Professori Ordinari*) correspond to the salary at the beginning of the career, after the reform, and therefore considering a position which is tenured from the beginning of the appointment (see details in Section 7.4), and after 20 years of seniority in the same position [IT6, Appendix B].

For all three categories the old salary system was based on automatic salary increase every two years, in the new system instead, every three years a professor has to apply for a salary increase and will be evaluated according to rules defined by each University [IT4]. Working hours for a full time position are 38 hours/week.

Please note that the retirement ages, 35, 27 and 20 years of seniority for Assistant, Associate and Full Professor, respectively, were chosen as a reasonable reference, not necessarily all professors will retire exactly after this number of years in the respective positions [¹⁶].

The Netherlands

Professor career regulations and salaries in Netherlands are defined by the collective agreement (CAO) of Dutch Universities set by the Association of Universities in the Netherlands (VSNU) [NE7]. Salaries scales and grades are defined by the CAO table of salaries [Appendix B, NE7]. The full-time working hours amount to 38 hours/week.

The two positions of *Universitair Docent* (UD2 and UD1) allow a career from salary scale 10 to salary scale 11 (UD2), or from salary scale 11 to salary scale 12 (UD1). The two positions of *Universitair Hoofddocent* (UHD2 and UHD1) allow a career within salary scale 13 (UHD2) and salary scale 14 (UHD1). The two positions of *Hoogleraar* (H2 and H1) allow a career from salary scale 15 to scale 16 in position H2 and scale 17 to scale 18 in position H1, respectively [NE5-NE7]. *Hoogleraar 2* are in general the regular full professor positions in Dutch Universities, positions of *Hoogleraar 1* are only appointed in cases of special higher responsibilities [¹⁷].

Within a given scale the initially salary grade is determined by age and experience. As a rule, salary progression within the same pay scale is granted every year after an annual performance review. Promotion to a higher pay scale in the same category (e.g. from a UHD2 (scale13) to a UHD1 (scale 14) position) is not automatically granted on the sole basis of seniority. In this case a more thorough promotion process is established, to be promoted the candidate needs to perform conceptual and coordinating tasks in teaching and research that match the job profile of the higher position. Promotion to a different category (e.g. from a UHD1 to H2 position) is only possible via a new recruitment and selection procedure to fill a new vacant position [NE5-NE7]. This salary progression scheme is generally applied in the whole country, although there might be occasionally variations in different universities where professorships and different career tracks can be mapped slightly differently to the salary scales [¹⁷].

Salary values presented in table 11 are valid from September 2013 [NE7, Appendix B].

Switzerland

Professor salaries vary across Switzerland. Each canton defines its own base values and increasing steps; the salaries at the two Federal institutes of Technology (EPFL and ETHZ, the only two federal Universities) are defined by the federal government. In the cantonal Universities, salaries are defined by grades (*Lohnstufe*) in specific pay scales (*Lohnklasse*) [SW9]. At EPFL and ETH a minimum and a maximum salary is defined but there are no predefined grades and progression steps in between [SW9].

In table 11, Min and Max values are averages of minimum and maximum annual gross salaries paid to professors at four Cantonal Universities (Bern, Geneva, Neuchatel, Zürich) and EPFL/ETHZ in a full-time position (42 hours/week) and 100% employment rate [SW9].

For reference the exchange rate used was 1 EUR = 1.2 CHF. Salary values presented are valid from January 2014 [SW9].

UK

The vast majority of professors (Lecturer, Reader, Professor) in the UK are paid according to a national pay spine negotiated by JNCHES (Joint Negotiating Committee for Higher Education Staff). JNCHES is the central committee for multi-employer negotiations and dialogue on pay and pay-related issues formed by representatives from the

¹⁶ Enrico Nardelli, personal communication

¹⁷ Jan van Leeuwen, personal communication

Universities and Colleges employers' association and higher education staff's unions [UK7]. Each University has its own salary grade structure but in general the correspondence to the national pay spine is uniform. Nevertheless, some slight differences may occur in the way the universities internal scales map to the national pay spine. We have used for this report the salary tables, and corresponding map to the national pay spine, from the University of Edinburgh [UK8, Appendix B]. A Lecturer position allows a career from salary defined by the grade point UE8 (spinal point 37 to 47 in the national single pay spine). A Reader position allows a career from salary defined by the grade point UE9 (spinal point 45 to spinal point 51 in the national single pay spine). A Professor position allows a career from salary defined by the grade point UE10 (spinal point 50 to 66 in the national single pay spine). It is important to keep in mind that for Full Professor positions the difference in the salaries across the country, and universities, will be more accentuated. While there is broad agreement on the implementation of the scale for Lecturer and Reader positions, the scale for Full Professors is more discretionary, with each university selecting how to implement the top portion of the scale and how far up to take it [¹¹].

For reference the exchange rate used was 1GBP=1.25EUR. Salaries presented are valid from August 2014 [UK8, Appendix B].

9 Conclusion and outlook

The facts and figures presented in this report provide a wealth of information on European Informatics Education, until now not available at a comparable European basis. They show the wide diversity across countries, in particular regarding salaries, but also for degrees and student enrollments.

The intent of the present work, in line with the charter of Informatics Europe, is to obtain and publish such data for Europe as a whole, not just for specific countries. The work reported here is the result of a clear and explicit strategy: favor accuracy over generality. That decision was made at the time of the first report and continues as a fundamental condition of the present one. One of its consequences is that the document covers the countries for which precise and reliable data was available, including now a number of countries which could not be included in the first edition. The extrapolation to the rest of Europe, in the case of student numbers, is just a rough calculation that can give no more than an order of magnitude. It is the goal of Informatics Europe to continue updating this report, refining the analysis and extending it to new countries while respecting the same rules of accuracy that have been applied to this first version.

In this effort we will be highly dependent on contributions from members of the Informatics community who have access to reliable sources in their respective countries. We urge them to contact the authors and provide them with the relevant sources of information.

Such input is also welcome in the case of countries already covered; the authors will be grateful for any comments on the data and sources, and any correction to errors, omissions and misunderstandings that may exist in the 2008-2013 edition. More generally, we welcome reader feedback on all aspects of this report.

Any serious policy must be based on the knowledge of facts. The European Informatics community crucially needs solid data. With the help of that community, Informatics Europe is committed to turning the collection, verification and publication of data into an ongoing activity, of which the present report is just the first iteration.

Appendix A: Institutions

The list of institutions in the countries selected — Denmark, Germany, Ireland, Italy, Netherlands, Switzerland, Turkey, and UK — appears below. It includes traditional Universities and University of Applied Sciences, in separate tables, for the countries where these institutions also offer undergraduate studies in Informatics.

This list is intended to evolve into a comprehensive record of all institutions offering undergraduate and graduate studies in Informatics in all of Europe, a goal that we feel has been achieved for the listed countries, although it is of course possible that some information was missed. Institutions' names are given in the local language.

Diversity is also evident in the internal structure of Universities: one finds Faculties, Schools, Sections, Institutes, Departments etc.; some of these units cover Informatics only, others combines it with Mathematics, Electronics, or Electrical Engineering.

Table A1a. Informatics institutions in Austria – Universities

<i>University</i>	<i>Department/Faculty/School/Institute</i>	<i>Website</i>
1. Alpen-Adria Universität Klagenfurt	Fakultät für Technische Wissenschaften	http://www.uni-klu.ac.at/tewi
2. Johannes Kepler Universität Linz	Fachbereich Informatik	http://informatik.jku.at
3. Medizinische Universität Wien	Zentrum für Medizinische Statistik, Informatik und Intelligente Systeme	https://campus.meduniwien.ac.at/med.campus/wborg.display?pOrgNr=14533
4. Paris Lodron Universität Salzburg	Fachbereich Computerwissenschaften	http://www.uni-salzburg.at/index.php?id=39957&L=1%2F
5. Technische Universität Graz	Fakultät für Elektrotechnik und Informationstechnik	http://portal.tugraz.at/portal/page/portal/TU_Graz/Einrichtungen/Fakultaeten/FakElektrotechnik
6. Technische Universität Graz	Fakultät für Informatik und Biomedizinische Technik	http://portal.tugraz.at/portal/page/portal/TU_Graz/Einrichtungen/Fakultaeten/FakInformatik
7. Technische Universität Wien	Fakultät für Informatik	http://www.informatik.tuwien.ac.at
8. Technische Universität Wien	Fakultät für Elektrotechnik und Informationstechnik	http://etit.tuwien.ac.at
9. Universität Innsbruck	Fakultät für Mathematik, Informatik und Physik	http://www.uibk.ac.at/fakultaeten/mip
10. Universität Wien	Fakultät für Informatik	http://informatik.univie.ac.at
11. Wirtschaftsuniversität Wien	Department für Informationsverarbeitung und Prozessmanagement	http://www.wu.ac.at/ipm

Table A1b. Informatics institutions in Austria – Universities of Applied Sciences

<i>University of Applied Sciences</i>	<i>Website</i>
1. CAMPUS 02 Fachhochschule der Wirtschaft	http://www.campus02.at
2. Fachhochschule Burgenland	http://www.fh-burgenland.at
3. Fachhochschule Kärnten	http://www.fh-kaernten.at
4. Fachhochschule St. Pölten	http://www.fhstp.ac.at
5. Fachhochschule Technikum Wien	http://www.technikum-wien.at
6. Fachhochschule Wiener Neustadt	http://www.fhwn.ac.at
7. Ferdinand Porsche Fern-Fachhochschule	http://www.fernfh.ac.at
8. FH Campus Wien	http://www.fh-campuswien.ac.at
9. FH JOANNEUM	http://www.fh-joanneum.at
10. FH Oberösterreich	http://www.fh-ooe.at
11. FH Vorarlberg	http://www.fhv.at

Table A2a. Informatics institutions in Denmark – Universities

	University	Department/Faculty/School/Institute	Website
1.	Aalborg Universitet	Institut for Datalogi	http://www.cs.aau.dk
2.	Aarhus Universitet	Institut for Datalogi	http://cs.au.dk
3.	Danmarks Tekniske Universitet	DTU Informatik	http://www.imm.dtu.dk
4.	IT-Universitetet i København		http://www.itu.dk
5.	Københavns Universitet	Datalogisk Institut	http://diku.dk
6.	Roskilde Universitet	Institut for Kommunikation, Virksomhed og Informationsteknologier	http://www.ruc.dk/en/departments/department-of-communication-business-and-information-technologies
7.	Syddansk Universitet	Institut for Matematik og Datalogi	http://sdu.dk/en/Om_SDU/Institutter_centre/Imada_matematik_og_datalogi

Table A2b. Informatics institutions in Denmark – University Colleges

	University College	Website
1.	Aarhus University, School of Engineering	http://ase.au.dk/en/om-ingenioerhoejskolen
2.	University College of Northern Denmark (UCN)	http://www.ucn.dk
3.	VIA University College	http://www.viauc.com

Table A3a. Informatics institutions in Germany – Universities

University	Department/Faculty/School/Institute	Website
1. Bergische Universität Wuppertal	Fachbereich Elektrotechnik, Informationstechnik, Medientechnik	http://www.fbe.uni-wuppertal.de/en.html
2. Brandenburgische Technische Universität Cottbus	Institut für Informatik	http://www.informatik.tu-cottbus.de
3. Carl von Ossietzky Universität Oldenburg	Department für Informatik	http://www.informatik.uni-oldenburg.de
4. Christian-Albrechts-Universität zu Kiel	Institut für Informatik	http://www.informatik.uni-kiel.de/en/ifi
5. Eberhard-Karls-Universität Tübingen	Fachbereich Informatik	http://www.informatik.uni-tuebingen.de
6. Ernst-Moritz-Arndt-Universität Greifswald	Institut für Mathematik und Informatik	http://www.math-inf.uni-greifswald.de/mathe
7. FernUniversität in Hagen	Fakultät für Mathematik und Informatik	http://www.fernuni-hagen.de/mathinf
8. Freie Universität Berlin	Mathematik und Informatik	http://www.inf.fu-berlin.de
9. Friedrich-Alexander-Universität Erlangen-Nürnberg	Department Informatik	http://www.informatik.uni-erlangen.de
10. Friedrich-Schiller-Universität Jena	Fakultät für Mathematik und Informatik	http://www.minet.uni-jena.de
11. Georg-August-Universität Göttingen	Institut für Informatik	http://www.uni-goettingen.de/de/138524.html
12. Hasso-Plattner (Universität Potsdam)	Institut für Softwaresystemtechnik	http://www.hpi.uni-potsdam.de
13. Heinrich-Heine-Universität Düsseldorf	Institut für Informatik	http://www.cs.uni-duesseldorf.de
14. Helmut-Schmidt-Universität/Universität der Bundeswehr Hamburg	Fakultät für Elektrotechnik	http://www.hsu-hh.de/et
15. Humboldt-Universität zu Berlin	Institut für Informatik	http://www.informatik.hu-berlin.de
16. Jacobs University Bremen	Electrical Engineering & Computer Science	http://ses.jacobs-university.de/eecs-research
17. Johann Wolfgang Goethe-Universität, Frankfurt am Main	Institut für Informatik	http://www-extern.informatik.uni-frankfurt.de
18. Johannes Gutenberg-Universität Mainz	Institut für Informatik	http://www.phmi.uni-mainz.de/1847.php
19. Julius-Maximilians-Universität Würzburg	Fakultät für Mathematik und Informatik	http://www.mathematik-informatik.uni-wuerzburg.de
20. Justus-Liebig-Universität Gießen	Institut für Informatik	http://www.uni-giessen.de/cms/fbz/fb07/fachgebiete/mathematik/informatik
21. Karlsruher Institut für Technologie	Fakultät für Informatik	http://www.informatik.kit.edu
22. Leibniz Universität Hannover	Fakultät für Elektrotechnik und Informatik	http://www.inf.uni-hannover.de

23.	Ludwig-Maximilians-Universität München	Institut für Informatik	http://www.ifi.lmu.de
24.	Martin-Luther-Universität Halle-Wittenberg	Institut für Informatik	http://www.informatik.uni-halle.de
25.	Otto-Friedrich-Universität Bamberg	Fakultät Wirtschaftsinformatik und Angewandte Informatik	http://www.uni-bamberg.de/wiai
26.	Otto-von-Guericke-Universität Magdeburg	Fakultät für Informatik	http://www.cs.uni-magdeburg.de
27.	Philipps-Universität Marburg	Fachbereich Mathematik und Informatik	http://www.uni-marburg.de/fb12
28.	Rheinische Friedrich-Wilhelms-Universität Bonn	Institut für Informatik	http://www.informatik.uni-bonn.de
29.	Rheinisch-Westfälische Technische Hochschule Aachen	Fakultät 1, Fachgruppe Informatik	http://www.informatik.rwth-aachen.de
30.	Ruhr-Universität Bochum	Fakultät für Elektrotechnik und Informationstechnik	http://www.ei.ruhr-uni-bochum.de
31.	Ruprecht-Karls-Universität Heidelberg	Informatik	http://www.informatik.uni-heidelberg.de
32.	Technische Universität Braunschweig	Carl-Friedrich-Gauß-Fakultät	http://www.cs.tu-bs.de
33.	Technische Universität Bergakademie Freiberg	Fakultät für Mathematik und Informatik	http://www.mathe.tu-freiberg.de
34.	Technische Universität Berlin	Elektrotechnik und Informatik	http://www.eecs.tu-berlin.de
35.	Technische Universität Chemnitz	Fakultät für Informatik	http://www.tu-chemnitz.de/informatik
36.	Technische Universität Clausthal	Fakultät für Mathematik/Informatik und Maschinenbau	http://www.in.tu-clausthal.de
37.	Technische Universität Darmstadt	Informatik	http://www.informatik.tu-darmstadt.de
38.	Technische Universität Dortmund	Fakultät für Informatik	http://www.cs.tu-dortmund.de
39.	Technische Universität Dresden	Fakultät Informatik	http://www.inf.tu-dresden.de
40.	Technische Universität Hamburg-Harburg	Fachbereich Elektrotechnik, Informatik und Mathematik	http://www.tu-harburg.de/tuhh/studium/studiendekanate/elektrotechnik-informatik-und-mathematik.html
41.	Technische Universität Ilmenau	Fakultät für Informatik und Automatisierung	http://www.tu-ilmenau.de/fakia
42.	Technische Universität Kaiserslautern	Institut für Informatik	http://www.informatik.uni-kl.de
43.	Technische Universität München	Fakultät für Informatik	http://www.in.tum.de
44.	Universität Augsburg	Fakultät für Angewandte Informatik	http://www.uni-augsburg.de/fakultaeten/fai
45.	Universität Bayreuth	Institut für Informatik	http://www.ai.uni-bayreuth.de/de/index.html
46.	Universität Bielefeld	Technische Fakultät	http://www.techfak.uni-bielefeld.de

47. Universität Bremen	Mathematik und Informatik	http://www.informatik.uni-bremen.de
48. Universität der Bundeswehr München	Fakultät für Informatik	http://www.unibw.de/inf/fakultaet
49. Universität des Saarlandes	Informatik	http://frweb.cs.uni-sb.de
50. Universität Duisburg-Essen	Ingenieurwissenschaften	http://www.uni-due.de/iw/de
51. Universität Duisburg-Essen	Institut für Informatik und Wirtschaftsinformatik	http://www.icb.uni-due.de
52. Universität Freiburg	Institut für Informatik	http://www.informatik.uni-freiburg.de
53. Universität Hamburg	Fachbereich Informatik	http://www.informatik.uni-hamburg.de
54. Universität Hildesheim	Institut für Informatik	http://www.uni-hildesheim.de/index.php?id=1320
55. Universität Kassel	Fachbereich Elektrotechnik/Informatik	http://www.uni-kassel.de/eecs
56. Universität Koblenz-Landau	Fachbereich Informatik	http://www.uni-koblenz-landau.de/koblenz/fb4
57. Universität Konstanz	Fachbereich Informatik und Informationswissenschaft	http://www.inf.uni-konstanz.de
58. Universität Leipzig	Fakultät für Mathematik und Informatik	http://www.fmi.uni-leipzig.de/cms
59. Universität Mannheim	Fakultät für Mathematik und Informatik	http://www.fmi.uni-mannheim.de
60. Universität Osnabrück	Institut für Informatik	http://www.informatik.uni-osnabrueck.de/index.php.de
61. Universität Paderborn	Institut für Informatik	http://www.wcs.upb.de/cs
62. Universität Passau	Fakultät für Informatik und Mathematik	http://www.fim.uni-passau.de
63. Universität Potsdam	Institut für Informatik	http://www.cs.uni-potsdam.de
64. Universität Rostock	Institut für Informatik	http://www.informatik.uni-rostock.de
65. Universität Siegen	Elektrotechnik und Informatik	http://www.fb12.uni-siegen.de
66. Universität Stuttgart	Informatik	http://www.informatik.uni-stuttgart.de
67. Universität Trier	Fachbereich Informatik/Wirtschaftsinformatik	http://www.uni-trier.de/index.php?id=2031
68. Universität Ulm	Fakultät für Ingenieurwissenschaften und Informatik	http://www.uni-ulm.de/ecs
69. Universität zu Köln	Institut für Informatik	http://www.informatik.uni-koeln.de
70. Universität zu Lübeck	Informatik, Technisch-Naturwissenschaftliche Fakultät	http://www.informatik.uni-luebeck.de
71. Westfälische Wilhelms-Universität Münster	Institut für Informatik	http://cs.uni-muenster.de:8010

Table A3b. Informatics institutions in Germany – Universities of Applied Sciences

<i>University of Applied Sciences</i>	<i>Website</i>
1. Fachhochschule Aachen	http://www.fh-aachen.de
2. Hochschule Aalen	http://www.htw-aalen.de
3. Hochschule Albstadt-Sigmaringen	http://www.hs-albsig.de
4. Ostbayerische Technische Hochschule Amberg-Weiden	http://www.oth-aw.de
5. Hochschule Anhalt	http://www.hs-anhalt.de
6. Hochschule Ansbach	http://www.hs-ansbach.de
7. Hochschule Aschaffenburg	http://www.h-ab.de
8. Hochschule für Angewandte Wissenschaften Augsburg	http://www.hs-augsburg.de
9. IUBH School of Business and Management	http://www.iubh.de/de/
10. bbw Hochschule	http://www.bbw-hochschule.de
11. Beuth Hochschule für Technik Berlin	http://www.beuth-hochschule.de
12. Design akademie berlin - SRH Hochschule für Kommunikation und Design	http://www.design-akademie-berlin.de
13. Hochschule für Technik und Wirtschaft Berlin	http://www.htw-berlin.de
14. Hochschule für Wirtschaft und Recht Berlin	http://www.hwr-berlin.de
15. Hochschule für Wirtschaft, Technik und Kultur (HWTk)	http://www.hwtk.de
16. Mediadesign Hochschule für Design und Informatik	http://www.mediadesign.de
17. Fachhochschule Bielefeld	http://www.fh-bielefeld.de
18. Fachhochschule des Mittelstandes (FHM)	http://www.fhm-mittelstand.de
19. Fachhochschule Bingen	http://www.fh-bingen.de
20. Hochschule Bochum	http://www.hochschule-bochum.de
21. Technische Fachhochschule Georg Agricola zu Bochum	http://www.tfh-bochum.de
22. Hochschule Bonn-Rhein-Sieg	www.h-brs.de
23. Fachhochschule Brandenburg	http://www.fh-brandenburg.de
24. Hochschule Bremen	http://www.hs-bremen.de
25. Hochschule Bremerhaven	http://www.hs-bremerhaven.de
26. Europäische Fachhochschule Rhein/Erft	http://www.eufh.de
27. Hochschule für angewandte Wissenschaften Coburg	http://www.hs-coburg.de
28. Wilhelm Büchner Hochschule - Private Fernhochschule Darmstadt	http://www.wb-fernstudium.de
29. Hochschule Darmstadt	http://www.h-da.de
30. Technische Hochschule Deggendorf	http://www.th-deg.de
31. Fachhochschule Dortmund	http://www.fh-dortmund.de
32. Hochschule für Technik und Wirtschaft Dresden	http://www.htw-dresden.de
33. Fachhochschule Dresden	http://www.fh-dresden.eu
34. Fachhochschule Düsseldorf	http://www.fh-duesseldorf.de
35. Nordakademie	http://www.nordakademie.de
36. Hochschule Emden/Leer	http://www.hs-emden-leer.de
37. Fachhochschule Erfurt	http://www.fh-erfurt.de
38. FOM Hochschule für Oekonomie & Management	http://www.fom.de
39. Hochschule Esslingen	http://www.hs-esslingen.de
40. Fachhochschule Flensburg	http://www.fh-flensburg.de
41. Fachhochschule Frankfurt am Main	http://www.fh-frankfurt.de
42. Provadis School of International Management and Technology	http://www.provadis-hochschule.de
43. Hochschule für Kunst, Design und Populäre Musik	http://www.hkdm.de
44. Hochschule Fulda	http://www.hs-fulda.de
45. Hochschule Furtwangen - Informatik, Technik, Wirtschaft, Medien, Gesundheit	http://www.hs-furtwangen.de
46. Europäische Fernhochschule Hamburg	http://www.euro-fh.de

47. Hochschule für Angewandte Wissenschaften Hamburg	http://www.haw-hamburg.de
48. HSBA Hamburg School of Business Administration	http://www.hsba.de
49. NBS Northern Business School - Hochschule für Management und Sicherheit	http://www.nbs.de
50. Hochschule Hamm-Lippstadt	http://www.hshl.de
51. Fachhochschule für die Wirtschaft Hannover	http://www.fhdw-hannover.de
52. Hochschule Hannover	http://www.hs-hannover.de
53. Leibniz-Fachhochschule	http://www.leibniz-fh.de
54. Hochschule Harz, Hochschule für angewandte Wissenschaften	http://www.hs-harz.de
55. SRH Hochschule Heidelberg	http://www.hochschule-heidelberg.de
56. Hochschule Heilbronn, Technik, Wirtschaft, Informatik	http://www.hs-heilbronn.de
57. Hochschule für angewandte Wissenschaft und Kunst, Fachhochschule Hildesheim/Holzminde/Göttingen	http://www.HAWK-hhg.de
58. Hochschule Hof	http://www.hof-university.de
59. Hochschule Fresenius	http://www.hs-fresenius.de
60. Technische Hochschule Ingolstadt	http://www.thi.de
61. nta Naturwissenschaftlich-Technische Akademie Prof. Dr. Gröbler GmbH	http://www.nta-isny.de
62. Ernst-Abbe-Fachhochschule Jena – Hochschule für angewandte Wissenschaften	http://www.fh-jena.de
63. Fachhochschule Kaiserslautern	www.fh-kl.de
64. Hochschule Karlsruhe - Technik und Wirtschaft	http://www.hs-karlsruhe.de
65. Hochschule für angewandte Wissenschaften Kempten	http://www.hochschule-kempten.de
66. Fachhochschule Kiel	http://www.fh-kiel.de
67. Hochschule Koblenz	http://www.hs-koblenz.de
68. Fachhochschule Köln	http://www.fh-koeln.de
69. Rheinische Fachhochschule Köln	http://www.rfh-koeln.de
70. Hochschule Konstanz Technik, Wirtschaft und Gestaltung	http://www.htwg-konstanz.de
71. Akad University	www.akad.de
72. Hochschule Landshut - Hochschule für angewandte Wissenschaften	http://www.haw-landshut.de
73. Hochschule für Telekommunikation Leipzig	http://www.hft-leipzig.de
74. Hochschule für Technik, Wirtschaft und Kultur Leipzig	http://www.htwk-leipzig.de
75. Fachhochschule Lünebeck	http://www.fh-luebeck.de
76. Hochschule Ludwigshafen am Rhein	http://www.hs-lu.de
77. Hochschule Magdeburg-Stendal	http://www.hs-magdeburg.de
78. Fachhochschule Mainz	http://www.fh-mainz.de
79. Hochschule Mannheim	http://www.hs-mannheim.de
80. Hochschule der Wirtschaft für Management	http://www.hdw-m.eu
81. Hochschule Merseburg	http://www.hs-merseburg.de
82. Technische Hochschule Mittelhessen - THM	http://www.thm.de
83. Hochschule Mittweida	http://www.hs-mittweida.de
84. Hochschule für angewandte Wissenschaften München	http://www.hm.edu
85. Fachhochschule Münster	http://www.fh-muenster.de/index.php
86. Hochschule Neuss für Internationale Wirtschaft	http://www.hs-neuss.de
87. Hochschule für angewandte Wissenschaften Neu-Ulm (HNU)	http://www.hs-neu-ulm.de
88. Hochschule Niederrhein	http://www.hs-niederrhein.de
89. Fachhochschule Nordhausen	http://www.fh-nordhausen.de
90. DIPLOMA Private Staatlich anerkannte Hochschule	http://www.diploma.de
91. Technische Hochschule Nürnberg Georg Simon Ohm	http://www.th-nuernberg.de
92. Hochschule für Technik, Wirtschaft und Medien Offenburg	http://www.hs-offenburg.de

93. Hochschule Osnabrück	http://www.hs-osnabrueck.de
94. Hochschule Braunschweig/Wolfenbüttel, Ostfalia Hochschule für angewandte Wissenschaften	http://www.ostfalia.de
95. Hochschule Ostwestfalen-Lippe	http://www.hs-owl.de
96. Fachhochschule der Wirtschaft	http://www.fhdw.de
97. Hochschule Pforzheim - Gestaltung, Technik, Wirtschaft und Recht	http://www.hs-pforzheim.de
98. Hochschule Ravensburg-Weingarten	http://www.hs-weingarten.de
99. Ostbayerische Technische Hochschule Regensburg	http://www.hs-regensburg.de
100. Hochschule Reutlingen, Hochschule für Technik- Wirtschaft-Informatik- Design	http://www.reutlingen-university.de
101. Hochschule RheinMain	http://www.hs-rm.de
102. Hochschule Rhein-Waal	http://www.hochschule-rhein-waal.de
103. Hochschule Rosenheim	http://www.fh-rosenheim.de
104. Hochschule Ruhr West	http://www.hochschule-ruhr-west.de
105. Hochschule für Technik und Wirtschaft des Saarlandes	http://www.htwsaar.de
106. Fachhochschule Schmalkalden	http://www.fh-schmalkalden.de
107. Fachhochschule Stralsund	http://www.fh-stralsund.de
108. Duale Hochschule Baden-Württemberg	http://www.dhbw.de
109. Hochschule für Technik Stuttgart	http://www.hft-stuttgart.de
110. Hochschule der Medien Stuttgart	http://www.hdm-stuttgart.de
111. Fachhochschule Südwestfalen	http://www.fh-swf.de
112. Hochschule Trier	http://www.hochschule-trier.de
113. Hochschule Ulm Technik, Informatik und Medien	http://www.hs-ulm.de
114. Private Fachhochschule für Wirtschaft und Technik Vechta/Diepholz/Oldenburg	www.fhwt.de
115. Fachhochschule Wedel	http://www.fh-wedel.de
116. Hochschule Weihenstephan-Triesdorf	http://www.hswt.de
117. Hochschule Weserbergland	http://www.hsw-hamel.de
118. Westfälische Hochschule Gelsenkirchen, Bocholt, Recklinghausen	http://www.w-hs.de
119. Fachhochschule Westküste, Hochschule für Wirtschaft und Technik	http://www.fh-westkueste.de
120. Technische Hochschule Wildau	http://www.th-wildau.de
121. Jade Hochschule - Wilhelmshaven/Oldenburg/Elsfleth	http://www.jade-hs.de
122. Hochschule Wismar - University of Applied Sciences: Technology, Business and Design	http://www.hs-wismar.de
123. Fachhochschule Worms	http://www.fh-worms.de
124. Hochschule für angewandte Wissenschaften Würzburg-Schweinfurt	http://www.fhws.de
125. Hochschule Zittau/Görlitz	http://www.hszg.de
126. Westsächsische Hochschule Zwickau	http://www.fh-zwickau.de

Table A4a. Informatics institutions in Ireland - Universities

	University	Department/Faculty/School/Institute	Website
1.	University College Dublin	School of Computer Science and Informatics	http://www.csi.ucd.ie
2.	University College Cork	Department of Computer Science	http://www.ucc.ie/en/compsci
3.	National University of Ireland, Galway	College of Engineering and Informatics	http://www.nuigalway.ie/engineering-informatics
4.	National University of Ireland, Maynooth	Department of Computer Science	http://www.nuim.ie/computer-science
5.	University of Limerick	Department of Computer Science & Information Systems	http://www.csis.ul.ie
6.	Trinity College, Dublin	School of Computer Science & Statistics (SCSS)	https://www.cs.tcd.ie
7.	Dublin City University	School of Computing	http://www.dcu.ie/computing/index.shtml

Table A4b. Informatics institutions in Ireland – Institutes of Technology

	Institute of Technology	Department/Faculty/School/Institute	Website
1.	Dublin Institute of Technology	School of Computing	http://www.dit.ie/computing
2.	Athlone Institute of Technology	Department Electronics, Computer and Software Engineering	http://www.ait.ie/engineering/deptofelectronicscomputersoftwareeng
3.	Cork Institute of Technology	Department of Computing	http://computing.cit.ie
4.	Dundalk Institute of Technology	Department of Computing and Mathematics	https://www.dkit.ie/informatics-creative-arts/computing-mathematics
5.	Dun Laoghaire Institute of Art, Design and Technology	Faculty of Film, Art & Creative Technologies	http://www.iadt.ie/en/ProspectiveStudents/FacultiesCourses/FacultyofFilmArtCreativeTechnologies
6.	Galway-Mayo Institute of Technology	Department of Mathematics and Computing	http://www.gmit.ie/computing/departments-mathematics-and-computing
7.	Institute of Technology, Blanchardstown	Computing	http://www.itb.ie/StudyatITB/computing.html
8.	Institute of Technology, Carlow	Computing & Networking	http://www.itcarlow.ie/study-at-itc/science/computing-networking.htm
9.	Institute of Technology, Sligo	Computing	http://courses.itsligo.ie/engineering-and-design/computing
10.	Institute of Technology, Tallaght	Department of Computing	http://www.it-tallaght.ie/departments/computing
11.	Institute of Technology, Tralee	Department of Computing	http://www.ittralee.ie/en/InformationAbout/Courses/SchoolofBusinessComputingandHumanities/Computing
12.	Letterkenny Institute of Technology	Department of Computing	http://www.lyit.ie/full-timecourses/computing
13.	Limerick Institute of Technology	Department of Information Technology	http://www.lit.ie/ASET/IT/default.aspx
14.	Limerick Institute of Technology Tipperary	Department of Technology	http://www.lit.ie/Tipperary/Technology/default.aspx
15.	Waterford Institute of Technology	Department of Computing, Maths & Physics	http://www.wit.ie/schools/science/departments_of_computing_maths_physics

Table 5. Informatics institutions in Italy

University	Department/Faculty/School/Institute	Website
1. Politecnico di Bari	Dipartimento di Ingegneria Elettrica e dell'Informazione	http://www-dee.poliba.it/DEE/DEE.html
2. Università degli Studi di Bari "Aldo Moro"	Dipartimento di Informatica	http://www.di.uniba.it
3. Università degli Studi della Basilicata	Dipartimento di Matematica, Informatica ed Economia	http://dimie.unibas.it/site/home.html
4. Alma Mater Studiorum – Università di Bologna	Dipartimento di Informatica – Scienza e Ingegneria	http://www.cse.unibo.it
5. Libera Università di Bolzano	Facoltà di Scienze e Tecnologie Informatiche	http://www.unibz.it/it/inf
6. Università degli Studi di Brescia	Dipartimento di Ingegneria dell'Informazione	http://www.unibs.it/dipartimenti/ingegneria-dell'informazione
7. Università degli Studi di Cagliari	Dipartimento di Matematica e Informatica	http://dipartimenti.unica.it/matematicaeinformatica/
8. Università degli Studi di Cagliari	Dipartimento di Ingegneria Elettrica e Elettronica	http://dipartimenti.unica.it/ingegneriaeletticaedelettronica
9. Università della Calabria	Dipartimento di Ingegneria Informatica, Modellistica, Elettronica e Sistemistica	http://www.dimes.unical.it
10. Università della Calabria	Dipartimento di Matematica e Informatica	http://www.mat.unical.it
11. Università degli Studi di Cassino e del Lazio Meridionale	Dipartimento di Ingegneria Elettrica e dell'Informazione "Maurizio Scarano"	http://www.dipartimenti.unicas.it/Dipartimento-di-Ingegneria-elettrica-e-dell-informazione-Maurizio-Scarano
12. Università degli Studi di Catania	Dipartimento di Ingegneria Elettrica Elettronica e Informatica	http://www.dieei.unict.it
13. Università degli Studi di Catania	Dipartimento di Matematica e Informatica	http://web.dmi.unict.it
14. Università degli Studi di Ferrara	Dipartimento di Ingegneria	http://ing.unife.it
15. Università degli Studi di Ferrara	Dipartimento di Matematica e informatica	http://dmi.unife.it
16. Università degli Studi di Firenze	Dipartimento di Ingegneria dell'Informazione	http://www.dinfo.unifi.it
17. Università degli Studi di Firenze	Dipartimento di Matematica e Informatica	http://www.dimai.unifi.it
18. Università degli Studi di Firenze	Dipartimento di Statistica, Informatica, Applicazioni	http://www.disia.unifi.it
19. Università degli Studi di Genova	Dipartimento di Informatica, bioingegneria,robotica e ingegneria dei sistemi	http://www.dibris.unige.it
20. Università degli Studi dell'Insubria	Dipartimento di Scienze Teoriche e Applicate	http://informatica.dista.uninsubria.it
21. Università degli Studi de L'aquila	Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica	http://www.disim.univaq.it
22. Università degli Studi de L'aquila	Dipartimento di Ingegneria Industriale e dell'Informazione e di Economia	http://www.diiie.univaq.it
23. IMT Institute for Advanced Studies di	Computer Science and Applications	http://www.imtlucca.it

Lucca		
24. Università degli Studi di Messina	Dipartimento di Ingegneria Civile, Informatica, Edile, Ambientale e Matematica Applicata	http://www.dmi.unime.it
25. Politecnico di Milano	Dipartimento di Elettronica, Informazione e Bioingegneria	http://www.deib.polimi.it
26. Università degli Studi di Milano	Dipartimento di Informatica	http://www.di.unimi.it
27. Università degli Studi di Milano-Bicocca	Dipartimento di Informatica, Sistemistica e Comunicazione	http://www.disco.unimib.it
28. Università Politecnica delle Marche	Dipartimento di Ingegneria dell'Informazione	http://www.dii.univpm.it
29. Università degli Studi di Modena e Reggio Emilia	Dipartimento di Ingegneria "Enzo Ferrari"	http://www.ingmo.unimore.it
30. Università degli Studi di Modena e Reggio Emilia	Dipartimento di Scienze fisiche, informatiche e matematiche	http://www.fim.unimore.it
31. Università degli Studi di Napoli "Federico II"	Dipartimento di Ingegneria Elettrica e delle Tecnologie dell'Informazione	http://www.dieti.unina.it
32. Seconda Università degli Studi di Napoli	Dipartimento di Ingegneria Industriale e dell'Informazione	http://www.diii.unina2.it
33. Università degli Studi di Napoli "Parthenope"	Dipartimento di Scienze e Tecnologie	http://informatica.uniparthenope.it
34. Università degli Studi di Padova	Dipartimento di Ingegneria dell'Informazione	http://www.dei.unipd.it
35. Università degli Studi di Padova	Dipartimento di Matematica	http://informatica.math.unipd.it/
36. Università degli Studi di Palermo	Dipartimento di Ingegneria Chimica, Gestionale, Informatica, Meccanica	http://www.dicgim.unipa.it
37. Università degli Studi di Palermo	Dipartimento di Matematica e Informatica	http://portale.unipa.it/dipartimenti/dimatematicaeinformatica
38. Università degli Studi di Parma	Dipartimento di Ingegneria dell'Informazione	http://www.dii.unipr.it
39. Università degli Studi di Parma	Dipartimento di Matematica e Informatica	http://www.dmi.unipr.it
40. Università degli Studi di Pavia	Dipartimento di Ingegneria Industriale e dell'Informazione	http://iii.unipv.it
41. Università degli Studi di PERUGIA	Dipartimento di Ingegneria Elettronica e dell'informazione	http://www.diei.unipg.it
42. Università degli Studi di Perugia	Dipartimento di Matematica e Informatica	http://dmi.unipg.it
43. Università degli Studi del Piemonte Orientale "Amedeo Avogadro"	Dipartimento di Scienze e Innovazione Tecnologica – Istituto di Informatica	http://www.di.unipmn.it
44. Università di Pisa	Dipartimento di Informatica	http://www.di.unipi.it
45. Università di Pisa	Dipartimento di Ingegneria dell'Informazione	http://ce.iet.unipi.it
46. Università degli Studi "Mediterranea" di Reggio Calabria	Dipartimento di Ingegneria dell'Informazione, delle Infrastrutture e dell'Energia Sostenibile	http://www.diies.unirc.it
47. Sapienza – Università di Roma	Dipartimento di Informatica	http://w3.di.uniroma1.it

48. Sapienza – Università di Roma	Dipartimento di Ingegneria Informatica, Automatica e Gestionale "Antonio Ruberti"	http://www.diag.uniroma1.it
49. Università degli Studi di Roma "Tor Vergata"	Dipartimento di Ingegneria Civile e Ingegneria Informatica	http://www.dicii.uniroma2.it
50. Università degli Studi di Roma "Tor Vergata"	Dipartimento di Ingegneria dell'Impresa	http://www.uniroma2.it
51. Università degli Studi di Roma "Roma Tre"	Dipartimento di Ingegneria	http://ingegneria.uniroma3.it
52. Università degli Studi del Salento	Dipartimento di Ingegneria dell'Innovazione	http://www.dii.unisalento.it
53. Università degli Studi di Salerno	Dipartimento di Informatica	http://www.di.unisa.it
54. Università degli Studi di Salerno	Dipartimento di Ingegneria dell'Informazione, Ingegneria Elettrica e Matematica Applicata	http://www.diem.unisa.it
55. Università degli Studi di Salerno	Dipartimento di Studi e Ricerche Aziendali (Management & Information Technology)	http://www.distra.unisa.it
56. Università degli Studi di Siena	Dipartimento di Ingegneria dell'Informazione e Scienze Matematiche	http://www.unisi.it/dipartimenti/dipartimento-ingegneria-dell%E2%80%99informazione-e-scienze-matematiche
57. Politecnico di Torino	Dipartimento di Automatica e Informatica	http://www.dauin.polito.it
58. Università degli Studi di Torino	Dipartimento di Informatica	http://www.educ.di.unito.it
59. Università degli Studi di Trento	Dipartimento di Ingegneria e Scienza dell'Informazione	http://disi.unitn.it
60. Università degli Studi di Trieste	Dipartimento di Ingegneria e Architettura	http://www.dicar.units.it/dia
61. Università degli Studi di Udine	Dipartimento di Matematica e Informatica	http://www.dimi.uniud.it
62. Università degli Studi di Urbino	Dipartimento di Scienze di Base e Fondamenti – Sezione di Scienze e Tecnologie dell'Informazione	http://informatica.uniurb.it
63. Università "Cà Foscari" Venezia	Dipartimento di Scienze Ambientali, Informatica e Statistica	http://www.unive.it/dais
64. Università degli Studi di Verona	Dipartimento di Informatica	http://www.di.univr.it

Table A6a. Informatics institutions in the Netherlands – Universities

University	Department/Faculty/School/Institute	Website
1. Radboud Universiteit Nijmegen	Onderwijsinstituut voor Informatica en Informatiekunde	http://www.ru.nl/oii/
2. Rijksuniversiteit Groningen	Johann Bernoulli instituut	http://www.rug.nl/fmns-research/bernoulli/index
3. Technische Universiteit Delft	Faculteit Elektrotechniek, Wiskunde en Informatica	http://www.ewi.tudelft.nl/en
4. Technische Universiteit Eindhoven (TU/e)	Faculteit Wiskunde & Informatica	http://w3.win.tue.nl/en
5. Universiteit Leiden	Leiden Institute of Advanced Computer Science	http://www.liacs.nl
6. Universiteit Maastricht	Department of Knowledge Engineering	http://www.maastrichtuniversity.nl/web/Schools/DKE.htm
7. Universiteit Twente	Faculteit Elektrotechniek, Wiskunde en Informatica	http://www.utwente.nl/en/education/ee_mcs
8. Universiteit Utrecht	Departement Informatica	http://www.cs.uu.nl
9. Universiteit van Amsterdam	Instituut voor Informatica	http://www.science.uva.nl/ii/home.cfm
10. VU Vrije Universiteit Amsterdam	Faculteit Elektrotechniek, Wiskunde en Informatica	http://www.cs.vu.nl/en/index.asp

Table A6b. Informatics institutions in the Netherlands – Universities of Applied Sciences

University of Applied Science	Website
1. Avans Hogeschool	http://www.avans.nl
2. De Haagse Hogeschool	www.hhs.nl
3. Fontys Hogescholen	www.fontys.nl
4. Hanzehogeschool Groningen	www.hanze.nl
5. Hogeschool Inholland	www.inholland.nl
6. Hogeschool Leiden	www.hsleiden.nl
7. Hogeschool Rotterdam	www.hr.nl
8. Hogeschool Utrecht	www.hu.nl
9. Hogeschool van Amsterdam	www.hva.nl
10. Hogeschool van Arnhem en Nijmegen	www.han.nl
11. Hogeschool Windesheim	www.windesheim.nl
12. Hogeschool Windesheim Flevoland	www.windesheimflevoland.nl
13. Hogeschool Zeeland	www.hz.nl
14. Hogeschool Zuyd	www.zuyd.nl
15. Noordelijke Hogeschool Leeuwarden	www.nhl.nl
16. Saxion Hogescholen	www.saxion.nl
17. Stenden Hogeschool	www.stenden.com

Table A7a. Informatics institutions in Switzerland – Universities

<i>University</i>	<i>Department/Faculty/School/Institute</i>	<i>Website</i>
1. EPF Lausanne	Faculté Informatique et Communications	http://ic.epfl.ch/page-5735-fr.html
2. ETH Zürich	Département Informatik	http://www.inf.ethz.ch
3. Universität Basel	Département Mathematik und Informatik	http://dmi.unibas.ch
4. Universität Bern	Institut für Informatik und Angewandte Mathematik	http://www.iam.unibe.ch
5. Université de Fribourg / Universität Freiburg	Département d'Informatique / Departement für Informatik	http://diuf.unifr.ch
6. Université de Genève	Département d'informatique	http://cui.unige.ch/DI/index.html
7. Université de Neuchâtel	Institut d'informatique (IIUN)	http://www2.unine.ch/iiun/page-5100.html
8. Università della Svizzera italiana	Facoltà di scienze informatiche	http://www.inf.usi.ch/it/index.htm
9. Universität Zürich	Institut für Informatik	http://www.ifi.uzh.ch

Table A7b. Informatics institutions in Switzerland – Universities of Applied Sciences

<i>University of Applied Sciences</i>	<i>Website</i>
1. Berner Fachhochschule (BFH)	www.bfh.ch
2. Fachhochschule Kalaidos (FH KAL)	www.kalaidos-fh.ch
3. Fachhochschule Nordwestschweiz (FHNW)	www.fhnw.ch
4. Fachhochschule Ostschweiz (FHO)	www.fho.ch
5. Haute Ecole Spécialisée de Suisse occidentale (HES-SO)	www.hes-so.ch
6. Hochschule Luzern (HSLU)	www.hslu.ch
7. Scuola universitaria professionale della Svizzera italiana (SUPSI)	www.supsi.ch
8. Zürcher Fachhochschule (ZFH)	www.zfh.ch

Table A8. Informatics institutions in Turkey

University	Department/Faculty/School/Institute	Website
1. Abant İzzet Baysal Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://bote.ibu.edu.tr/index.php/en/department/about
2. Adana Bilim ve Teknoloji Üniversitesi	Faculty of Business, Management Information Systems	http://mis.adanabtu.edu.tr/eng/default.aspx
3. Adnan Menderes Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.akademik.adu.edu.tr/fakulte/egitim/default.asp?idx=323436
4. Adnan Menderes Üniversitesi	Soke Faculty of Business, Management Information Systems	http://akademik.adu.edu.tr/fakulte/sokeisletme/index.php
5. Afyon Kocatepe Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.aku.edu.tr
6. Ağrı İbrahim Çeçen Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.agri.edu.tr
7. Ahi Evran Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://ef.ahievran.edu.tr
8. Amasya Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://amasya.edu.tr/akademik/fakulteler/egitim-fakultesi/egitim-bolum/egitim-fakultesi/bilgisayar-ve-ogretim-teknolojileri-ogretmenligi.aspx
9. Anadolu Üniversitesi	Faculty of Engineering, Computer Education & Instructional Technologies	http://www.anadolu.edu.tr/en/akademik/bolum/genelBilgi/180/53/2
10. Anadolu Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.anadolu.edu.tr/en/akademik/program/programProfili/243/8/2
11. Ankara Üniversitesi	Faculty of Engineering, Computer Engineering	http://comp-eng.en.ankara.edu.tr
12. Atatürk Üniversitesi	Kazım Karabekir Faculty of Education, Computer Education and Instructional Technology	http://eobs.atauni.edu.tr/Program/Learn.aspx?Learn=TV94DCz1cFw=
13. Atatürk Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.atauni.edu.tr/#birim=bilgisayar-muhendisligi
14. Atılım Üniversitesi	Faculty of Engineering, Computer Engineering	http://compe.atilim.edu.tr/?lang=en
15. Atılım Üniversitesi	Faculty of Engineering, Software Engineering	http://se.atilim.edu.tr/?lang=en
16. Avrasya Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://www.avrasya.edu.tr/bilgisayar_m%C3%BChendisli%C4%9Fi_b%C3%B6l%C3%BCm%C3%BC-4-avrasya_bb-avrasya.html
17. Bahçeşehir Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.bahcesehir.edu.tr/academic/compinstrtech
18. Bahçeşehir Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.bahcesehir.edu.tr/academic/computerengineering
19. Bahçeşehir Üniversitesi	Faculty of Engineering, Software Engineering	http://www.bahcesehir.edu.tr/academic/softwareengineering
20. Balıkesir Üniversitesi	Necatibey Faculty of Education, Computer Education and Instructional Technology	http://www.balikesir.edu.tr/bau_eng/fakulte/nectatibey_egitim_fakultesi/icerik_bolum/genel_bilgiler/1
21. Başkent Üniversitesi	Faculty of Economics and Administrative Sciences, Technology and Knowledge Management	http://angora.baskent.edu.tr/bilgipaketi/?dil=EN&menu=akademik&inner=genelBilgi&birim=342
22. Başkent Üniversitesi	Faculty of Engineering, Computer Engineering	http://muh.baskent.edu.tr/index.php?cid=5
23. Beykent Üniversitesi	Faculty of Economics and	http://aday.beykent.edu.tr/bolumler.php#sectio

	Administrative Sciences, Management Information Systems	n-ktisadi-ve-dari-bilimler
24. Beykent Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://www.beykent.edu.tr/WebProjects/Eng/Mimarlik.php?CategoryId=281
25. Beykent Üniversitesi	Faculty of Engineering and Architecture, Software Engineering	http://www.beykent.edu.tr/WebProjects/Eng/Mimarlik.php?CategoryId=291
26. Bilecik Şeyh Edebali Üniversitesi	Faculty of Engineering, Computer Engineering	http://bm.bilecik.edu.tr/en
27. Boğaziçi Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.fed.boun.edu.tr/default.asp?MainId=3&SubMainId=4
28. Boğaziçi Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.cmpe.boun.edu.tr/index.php
29. Boğaziçi Üniversitesi	School of Applied Sciences, Management Information Systems	http://www.mis.boun.edu.tr/misweb_eng/default.asp
30. Celâl Bayar Üniversitesi	Faculty of Engineering, Computer Engineering	http://cse.cbu.edu.tr/index.php/en
31. Celâl Bayar Üniversitesi	Hasan Ferdi Turgutlu Faculty of Technology, Software Engineering	http://turgutlumyo.cbu.edu.tr/eng/bilgisayar_tanitim.php
32. Cumhuriyet Üniversitesi	Faculty of Economics and Administrative Sciences, Management Information Systems	http://www.cumhuriyet.edu.tr/?/&Dil=EN
33. Cumhuriyet Üniversitesi	Faculty of Engineering, Computer Engineering	http://ceng1.cumhuriyet.edu.tr
34. Çag Üniversitesi	Faculty of Arts and Sciences, Mathematics and Computer Science	http://www.cag.edu.tr/fakulte/fen-edebiyat-fakultesi/matematik-bilgisayar-bolumu-2.html
35. Çanakkale Onsekiz Mart Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://bote.comu.edu.tr/index
36. Çanakkale Onsekiz Mart Üniversitesi	Faculty of Engineering, Computer Engineering	http://ce.comu.edu.tr/index
37. Çankaya Üniversitesi	Faculty of Engineering, Computer Engineering	http://ceng.cankaya.edu.tr/en
38. Çukurova Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.cu.edu.tr/bolum.asp?bolum=bot
39. Çukurova Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://ceng.cu.edu.tr/Eng/Default.aspx
40. Doğu Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.ce.dogus.edu.tr
41. Doğu Üniversitesi	Faculty of Engineering, Information Systems Engineering	http://www.dogus.edu.tr/tr/ders/ders.asp?id=20
42. Dokuz Eylül Üniversitesi	Buca Faculty of Education, Computer Education and Instructional Technology	http://web.deu.edu.tr/bote/homepage
43. Dokuz Eylül Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.cs.deu.edu.tr/index.php/en
44. Dumlupınar Üniversitesi	Faculty of Engineering, Computer Engineering	http://muhfak.dpu.edu.tr/f13/17/indexen.php
45. Düzce Üniversitesi	Faculty of Engineering, Computer Engineering	http://bm.mf.duzce.edu.tr/en/faculty-home
46. Düzce Üniversitesi	Faculty of Technology, Computer Engineering	http://bm.tf.duzce.edu.tr/en
47. Ege Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.ege.edu.tr/subpage.php?id=301
48. Ege Üniversitesi	Faculty of Engineering, Computer Engineering	http://bilmuh.ege.edu.tr
49. Erciyes Üniversitesi	Faculty of Engineering, Computer Engineering	http://bm.erciyes.edu.tr/en/index.html

50. Erzincan Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.erzincan.edu.tr/birim/english/?git=9
51. Eskişehir Osmangazi Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://bote.ogu.edu.tr
52. Eskişehir Osmangazi Üniversitesi	Faculty of Arts and Sciences, Mathematics and Computer Science	http://fef.ogu.edu.tr/matbil
53. Eskişehir Osmangazi Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://193.140.122.175/portal
54. Fatih Sultan Mehmet Vakıf Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://mmf.fsm.edu.tr/Computer-Engineering
55. Fatih Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://bote.fatih.edu.tr/?&language=EN
56. Fatih Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.ceng.fatih.edu.tr/?&language=EN
57. Fırat Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://portal.firat.edu.tr/WebPortal/?BirimID=59&Dil=ENG
58. Fırat Üniversitesi	Faculty of Engineering, Computer Engineering	http://portal.firat.edu.tr/WebPortal/?BirimID=59&Dil=ENG
59. Fırat Üniversitesi	Faculty of Technology, Software Engineering	http://portal.firat.edu.tr/WebPortal/?BirimID=286&Dil=ENG
60. Galatasaray Üniversitesi	Faculty of Engineering and Technology, Computer Engineering	http://bm.gsu.edu.tr/en
61. Gazi Üniversitesi	Gazi Faculty of Education, Computer Education and Instructional Technology	http://gef-bote.gazi.edu.tr
62. Gazi Üniversitesi	Faculty of Engineering, Computer Engineering	http://mf-bm.gazi.edu.tr/?language=en_US
63. Gazi Üniversitesi	Faculty of Technology, Computer Engineering	http://tf-bm.gazi.edu.tr/?language=en_US
64. Gaziosmanpaşa Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.gop.edu.tr/bolumDefault.aspx?dilld=2&birimlerId=7&bolumlerId=408&menuKod=uniteTanitimi
65. Gebze Yüksek Teknoloji Enstitüsü	Faculty of Engineering, Computer Engineering	http://www.gyte.edu.tr/kategori/91/3/computer-engineering.aspx
66. Gediz Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://mmf.gediz.edu.tr/detail/2272013203015680/557/635/EN
67. Hacettepe Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.ebit.hacettepe.edu.tr/eng/index.html
68. Hacettepe Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.cs.hacettepe.edu.tr/eng
69. Haliç Üniversitesi	Faculty of Engineering, Computer Engineering	http://halic.edu.tr/fakulteler/muhendislik-fakultesi/bilgisayar-muhendisligi
70. Harran Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.harran.edu.tr/en
71. Hasan Kalyoncu Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.hku.edu.tr/ENG/Academic-Units/Faculty-of-Engineering/13/57/0
72. Işık Üniversitesi	Faculty of Science and Humanities, Information Technologies	http://www.isikun.edu.tr/en/academic/faculty-of-arts-and-sciences/departments-and-programs/information-technologies/programs/undergraduate/information-technologies
73. Işık Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.isikun.edu.tr/en/akademik/muhendislik-fakultesi/bolumler-ve-programlar/bilgisayar-muhendisligi

74. Işık Üniversitesi	Faculty of Engineering, Software Engineering	http://www.isikun.edu.tr/en/akademik/muhendislik-fakultesi/bolumler-ve-programlar/bilgisayar-muhendisligi/programlar/lisans-programi/yazilim-muhendisligi
75. Ihsan Doğramacı Bilkent Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.cs.bilkent.edu.tr/index.php?p=index&l=en
76. Ihsan Doğramacı Bilkent Üniversitesi	School of Applied Sciences, Computer Technology and Information Systems	http://www.ctis.bilkent.edu.tr
77. Ihsan Doğramacı Bilkent Üniversitesi	School of Applied Sciences, Management Information Systems	http://www.bim.bilkent.edu.tr
78. İnönü Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://cms.inonu.edu.tr/en/bote
79. İnönü Üniversitesi	Faculty of Engineering, Computer Engineering	http://cms.inonu.edu.tr/en/bilmuh
80. İstanbul Arel Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	https://www.arel.edu.tr/eng/akademikbolum/164/ae7be26cdaa742ca148068d5ac90eaca/aaf2f89992379705dac844c0a2a1d45f/9678f7a7939f457fa0d9353761e189c7/2cecaa7df4c5c05dc11b2434c0a62006/71860c77c6745379b0d44304d66b6a13/c0966e48def2fc917d7afdf6d8c86e81/faculty-of-engineering-and-architecture-department-of-computer-engineering%22
81. İstanbul Aydın Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.ebs.aydin.edu.tr/index.iau?Page=BolumGenelBilgiler&BK=16
82. İstanbul Aydın Üniversitesi	Faculty of Arts and Sciences, Mathematics and Computer Science	http://www.ebs.aydin.edu.tr/index.iau?Page=BolumGenelBilgiler&BK=21
83. İstanbul Aydın Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.ebs.aydin.edu.tr/index.iau?Page=BolumGenelBilgiler&BK=29
84. İstanbul Aydın Üniversitesi	Faculty of Engineering, Software Engineering	http://www.ebs.aydin.edu.tr/index.iau?Page=BolumGenelBilgiler&BK=37
85. İstanbul Bilgi Üniversitesi	Faculty of Economics and Administrative Sciences, Business Informatics	http://www.bilgi.edu.tr/en/programs-and-schools/undergraduate/faculty-economics-and-administrative-sciences/business-informatics
86. İstanbul Bilgi Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.bilgi.edu.tr/en/education/faculty-and-schools/faculty-engineering/departments-computer-engineering
87. İstanbul Gelişim Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://mmf.gelisim.edu.tr/Bolumdetey-35-2-bilgisayarmuhendisligi-.html
88. İstanbul Kemerburgaz Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://en.kemerburgaz.edu.tr/academic-units/engineering-arc-detail.aspx?SectionID=gS%2fPg%2fvHhJNLRMR%2bqh%2fJgA%3d%3d&ContentID=dNPI1fv2cMmEHfhoMz6KQw%3d%3d
89. İstanbul Kültür Üniversitesi	Faculty of Arts and Sciences, Mathematics and Computer Science	http://www.iku.edu.tr/EN/1467/49/0-2-2-598-1/Mathematics-And-Computer-Science
90. İstanbul Kültür Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.iku.edu.tr/EN/ects_bolum.php?m=1&f=4&p=11&r=0&ects=main
91. İstanbul Sabahattin Zaim Üniversitesi	Faculty of Engineering and Natural Sciences, Computer Engineering	http://www.izu.edu.tr/en-US/mdbf/AmacHedef/51/55/EbsFile.aspx
92. İstanbul Şehir Üniversitesi	Faculty of Engineering and Natural Sciences, Computer Engineering	http://www.sehir.edu.tr/en/Pages/Academic/Bolum.aspx?BID=12
93. İstanbul Teknik	Faculty of Computer and Informatics,	http://www.bb.itu.edu.tr/en/education/compute

Üniversitesi	Computer Engineering	r-engineering-undergraduate
94. İstanbul Teknik Üniversitesi	Faculty of Computer and Informatics, Information Systems	http://www.bb.itu.edu.tr/en/education/information-systems-engineering-suny
95. İstanbul Ticaret Üniversitesi	Faculty of Engineering and Design, Computer Engineering	http://www.ticaret.edu.tr/en/Page/Academic/Faculties/FacultyofEngineeringandDesign/AllDepartments/ComputerEngineering
96. İstanbul Üniversitesi	Hasan Ali Yucel Faculty of Education, Computer Education and Instructional Technology	https://egitimdeyapilanma.istanbul.edu.tr/akademik/index.php?page=mufredat&&birim_id=38&&dil=eng
97. İstanbul Üniversitesi	Faculty of Engineering, Computer Engineering	https://egitimdeyapilanma.istanbul.edu.tr/akademik/index.php?page=mufredat&&birim_id=37&&dil=eng
98. İzmir Ekonomi Üniversitesi	Faculty of Engineering and Computer Science, Computer Engineering	http://ce.ieu.edu.tr/en
99. İzmir Ekonomi Üniversitesi	Faculty of Engineering and Computer Science, Software Engineering	http://se.ieu.edu.tr/en
100. İzmir Üniversitesi	Faculty of Arts and Sciences, Mathematics and Computer Science	http://english.izmir.edu.tr/academics/arts-and-sciences/mathematics-and-computer-science.html
101. İzmir Üniversitesi	Faculty of Engineering, Computer Engineering	http://english.izmir.edu.tr/computer-engineering.html
102. İzmir Üniversitesi	Faculty of Engineering, Software Engineering	http://english.izmir.edu.tr/software-engineering.html
103. İzmir Yüksek Teknoloji Enstitüsü	Faculty of Engineering, Computer Engineering	http://www.iyte.edu.tr/AltSayfa.aspx?m=203
104. Kadir Has Üniversitesi	Faculty of Engineering and Natural Sciences, Computer Engineering	http://www.khas.edu.tr/en/index.php?page=230
105. Kadir Has Üniversitesi	Faculty of Engineering and Natural Sciences, Management Information Systems	http://fas.khas.edu.tr/en/general-information-3/index.php?page=758
106. Karabük Üniversitesi	Faculty of Engineering, Computer Engineering	http://muh.karabuk.edu.tr/bilgisayar/?lang=english
107. Karadeniz Teknik Üniversitesi	Fatih Faculty of Education, Computer Education and Instructional Technology	http://www.ktu.edu.tr/bote
108. Karadeniz Teknik Üniversitesi	Faculty of Science, Statistics and Computer Science	http://www.ktu.edu.tr/isbb
109. Karadeniz Teknik Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.ktu.edu.tr/computer
110. Kastamonu Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.kastamonu.edu.tr/index.php/en
111. Kastamonu Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://www.kastamonu.edu.tr/index.php/en
112. Kırıkkale Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://bote.kku.edu.tr/english
113. Kırıkkale Üniversitesi	Faculty of Engineering, Computer Engineering	http://bm.kku.edu.tr/engindex.php
114. Kocaeli Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://bote.kocaeli.edu.tr/eng/index.php
115. Kocaeli Üniversitesi	Faculty of Engineering, Computer Engineering	http://bilgisayar.kocaeli.edu.tr/int/index.php
116. Koç Üniversitesi	Faculty of Engineering, Computer Engineering	http://eng.ku.edu.tr/comp/home
117. KTO Karatay	Faculty of Engineering, Computer	http://ce.karatay.edu.tr/index.php?lang=en?

Üniversitesi	Engineering	
118.Maltepe Üniversitesi	Faculty of Engineering and Natural Sciences, Computer Engineering	http://mf.maltepe.edu.tr/en/ComputeringEng
119.Maltepe Üniversitesi	Faculty of Engineering and Natural Sciences, Software Engineering	http://mf.maltepe.edu.tr/en/SoftwareingEng
120.Marmara Üniversitesi	Ataturk Faculty of Education, Computer Education and Instructional Technology	http://bote.aef.marmara.edu.tr/en
121.Marmara Üniversitesi	Faculty of Business Administration, Business Informatics	http://wi.isletme.marmara.edu.tr/en
122.Marmara Üniversitesi	Faculty of Engineering, Computer Engineering	http://cse.eng.marmara.edu.tr/en
123.Mehmet Akif Ersoy Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.mehmetakif.edu.tr/en/?page=bolumlerBote
124.Mehmet Akif Ersoy Üniversitesi	School of Applied Sciences, Management Information Systems	http://ztyo.mehmetakif.edu.tr/en/?page=bolumlerYbs
125.Melikşah Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://bm.meliksah.edu.tr/?&language=EN
126.Mersin Üniversitesi	Erdemli School of Applied Sciences, Computer Technology and Information Systems	http://www.mersin.edu.tr/academicp/erdemli-vocational-school/computer-technology-and-programming
127.Mersin Üniversitesi	Erdemli School of Applied Sciences, Business Information Systems	http://www.mersin.edu.tr/academicp/erdemli-vocational-school/business-management
128.Mersin Üniversitesi	Silifke School of Applied Sciences, Business Information Systems	http://www.mersin.edu.tr/academicp/silifke-vocational-school/business-management
129.Mevlana Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.mevlana.edu.tr/genel.asp?Seo=bolum-hakkinda&UID=f9GQEEPodhKHBEEKj05Q6zRiFtunDdKIJOMliGkmTI3gmIYRVj
130.Mevlana Üniversitesi	Faculty of Engineering, Computer Engineering	http://ce.mevlana.edu.tr
131.Muğla Sitki Koçman Üniversitesi	Faculty of Engineering, Computer Engineering	http://bilmuh.mu.edu.tr/en
132.Muğla Sitki Koçman Üniversitesi	Faculty of Technology, Information Systems Engineering	http://bilisimsistemleri.mu.edu.tr/en
133.Mustafa Kemal Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.mku.edu.tr/main.php?location=bote
134.Mustafa Kemal Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.mku.edu.tr/main.php?lang=en&location=bm
135.Muş Alparslan Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://ogrenciotomasyonu.alparslan.edu.tr/oibs/bologna/program_hakkinda.aspx
136.Namik Kemal Üniversitesi	Corlu Faculty of Engineering, Computer Engineering	http://cmf-bm-en.web.nku.edu.tr
137.Necmettin Erbakan Üniversitesi	Ahmet Kelesoglu Faculty of Education, Computer Education and Instructional Technology	http://www.konya.edu.tr/bolumler/bilgisayarogretimteknolojileri
138.Necmettin Erbakan Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://www.konya.edu.tr/bolumler/bilgisayarmuhendisligi
139.Nişantaşı Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://www.nisantasi.edu.tr/kategori/109-muhendislik-mimarlik-fakultesi.aspx#
140.Okan Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://mm.okan.edu.tr/en/sayfa/departman-of-computer-engineering-about-the-department

141. Okan Üniversitesi	School of Applied Sciences, Computer Technology and Information Systems	http://ubyo.okan.edu.tr/en/page/department-information-systems-and-technology-about
142. Ondokuz Mayıs Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://ebs.omu.edu.tr/ebs/program.php?dil=en&mod=1&Program=2648
143. Ondokuz Mayıs Üniversitesi	Faculty of Engineering, Computer Engineering	http://ce.omu.edu.tr/a/en
144. Orta Doğu Teknik Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.ceit.metu.edu.tr
145. Orta Doğu Teknik Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.ceng.metu.edu.tr
146. Orta Doğu Teknik Üniversitesi	METU Northern Cyprus Campus, Faculty of Engineering, Computer and Instructional Technology	http://cte.ncc.metu.edu.tr
147. Orta Doğu Teknik Üniversitesi	METU Northern Cyprus Campus, Faculty of Engineering, Computer Engineering	http://www.cng.ncc.metu.edu.tr
148. Osmaniye Korkut Ata Üniversitesi	Faculty of Economics and Administrative Sciences, Management Information Systems	http://iibf.osmaniye.edu.tr/index.php?sub=81
149. Özyeğin Üniversitesi	Faculty of Economics and Administrative Sciences, Management Information Systems	http://www.ozyegin.edu.tr/AKADEMIK-PROGRAMLAR/Iktisadi-ve-Idari-Bilimler-Fakultesi/mis
150. Özyeğin Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.ozyegin.edu.tr/AKADEMIK-PROGRAMLAR/Muhendislik-Fakultesi/Computer-Science
151. Pamukkale Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.pau.edu.tr/bote/en
152. Pamukkale Üniversitesi	Faculty of Engineering, Computer Engineering	http://pau.edu.tr/bilgisayar/default.aspx
153. Sabancı Üniversitesi	Faculty of Engineering and Natural Sciences, Engineering and Natural Sciences Programs	http://fens.sabanciuniv.edu/cs/eng
154. Sakarya Üniversitesi	Faculty of Computer and Information Sciences, Computer Engineering	http://www.cs.sakarya.edu.tr/en
155. Sakarya Üniversitesi	Faculty of Computer and Information Sciences, Information Systems	http://www.bsm.sakarya.edu.tr/en
156. Sakarya Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.bote.sakarya.edu.tr/en
157. Sakarya Üniversitesi	Faculty of Business Administration, Management Information Systems	http://www.ybs.sakarya.edu.tr/en
158. Sakarya Üniversitesi	Faculty of Technology, Computer Engineering	http://www.bm.sakarya.edu.tr/en
159. Selçuk Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.selcuk.edu.tr/Sayfa.aspx?birim=046013&dt=2
160. Selçuk Üniversitesi	Faculty of Technology, Computer Engineering	http://www.selcuk.edu.tr/Sayfa.aspx?birim=033001&dt=2
161. Siirt Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.siirt.edu.tr/bolumhakkinda.aspx?bolum=MP2H922SB74V&birim=K3I87
162. Siirt Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://www.siirt.edu.tr/bolumhakkinda.aspx?bolum=7N956QK84881&birim=Sn4Fr
163. Süleyman Demirel Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.sdu.edu.tr/Katalog.aspx?tip=bolum&id=17

	Technology	
164.Süleyman Demirel Üniversitesi	Faculty of Engineering, Computer Engineering	http://muhendislik.sdu.edu.tr/bilmuh/en
165.TED Üniversitesi	Faculty of Engineering and Architecture, Engineering Programs	http://www.tedu.edu.tr/en-US/Content/Academics/Faculty_of_Engineering_and_Architecture/Department_of_Computer_Engineering/Department_Homepage.aspx
166.TOBB Ekonomi ve Teknoloji Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.etu.edu.tr/?q=en/computer-engineering
167.Toros Üniversitesi	Faculty of Engineering, Computer and Software Engineering	http://www.toros.edu.tr/go.to/EN/akademikbirmiller,11,13,computer_engineering_department
168.Trakya Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitimbak-en.trakya.edu.tr
169.Trakya Üniversitesi	Faculty of Engineering, Computer Engineering	http://muhendislik-en.trakya.edu.tr/pages/computer-engineering
170.Trakya Üniversitesi	Kesan Yusuf Capraz School of Applied Sciences, Computer Technology and Information Systems	http://kycubyo.trakya.edu.tr/pages/bilgisayar-teknolojisi-ve-bilisim-sistemleri-ders-icerigi#.U3TEdfiRvT0
171.Tunceli Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.tunceli.edu.tr/akademik/fakulteler/muhendislik/bilgisayar/eng/index.html
172.Turgut Özal Üniversitesi	Faculty of Engineering, Computer Engineering	http://eng.turgutozal.edu.tr/cs
173.Türk Hava Kurumu Üniversitesi	Faculty of Engineering, Computer Engineering	http://ceng.thk.edu.tr/?lang=en
174.Uludağ Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://egitim.uludag.edu.tr/index.php/EN/Department+of+Computer+Education+and+Instructional+Technology/menu/About+Us
175.Uluslararası Antalya Üniversitesi	Faculty of Engineering, Computer Engineering	http://eng.antalya.edu.tr/?bolumler,22/bilgisayar-muhendisligi.html&changelang=EN
176.Üsküdar Üniversitesi	Faculty of Engineering and Natural Sciences, Computer Engineering	http://mdbf.uskudar.edu.tr/en/bilgisayar-muhendisligi
177.Yalova Üniversitesi	Faculty of Engineering, Computer Engineering	http://www.yalova.edu.tr/kategori/364/2/computer-engineering.aspx
178.Yaşar Üniversitesi	Faculty of Engineering, Computer Engineering	http://bilmuh.yasar.edu.tr/en
179.Yaşar Üniversitesi	Faculty of Engineering, Software Engineering	http://ym.yasar.edu.tr/en
180.Yeditepe Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.yeditepe.edu.tr/undergraduate/computer-education-technology
181.Yeditepe Üniversitesi	Faculty of Engineering and Architecture, Computer Engineering	http://cse.yeditepe.edu.tr/en
182.Yeditepe Üniversitesi	Faculty of Commerce, Information Systems and Technologies	http://www.yeditepe.edu.tr/undergraduate/information-sytems-technologies
183.Yeditepe Üniversitesi	Faculty of Commerce, Management Information Systems	http://www.yeditepe.edu.tr/undergraduate/management-information-systems
184.Yıldırım Beyazıt Üniversitesi	Faculty of Management, Management Information Systems	http://ybusm.org/Department_of_Management_Information_Systems
185.Yıldırım Beyazıt Üniversitesi	Faculty of Engineering and Natural Sciences, Computer Engineering	http://www.ybu.edu.tr/muhendislik/bilgisayar
186.Yıldız Teknik Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.bote.yildiz.edu.tr/en

187.Yıldız Teknik Üniversitesi	Faculty of Electrical and Electronics, Computer Engineering	http://www.bm.yildiz.edu.tr/en
188.Yüzüncü Yıl Üniversitesi	Faculty of Education, Computer Education and Instructional Technology	http://www.yyu.edu.tr
189.Zirve Üniversitesi	Faculty of Engineering, Computer Engineering	http://eng.zirve.edu.tr/cs/homepage.php

Table A9. Informatics institutions in the UK

<i>University</i>	<i>Department/Faculty/School/Institute</i>	<i>Website</i>
England		
1. Anglia Ruskin University	Department of Computing and Technology	http://www.anglia.ac.uk/ruskin/en/home/faculties/fst/departments/comptech.html
2. Aston University	Computer Science	http://www.cs.aston.ac.uk
3. Birmingham City University	School of Computing, Telecommunications and Networks	http://www.bcu.ac.uk/about-us/faculties/faculty-of-technology-engineering-and-the-environment
4. Bournemouth University	School of Design, Engineering and Computing	http://dec.bournemouth.ac.uk
5. Brunel University	School of IS, Computing and Mathematics	http://www.brunel.ac.uk/about/acad/siscm
6. Canterbury Christ Church University	Department of Computing	http://www.canterbury.ac.uk/social-applied-sciences/computing/Home.aspx
7. The City University	School of Informatics	http://www.city.ac.uk/informatics
8. Coventry University	Faculty of Engineering and Computing	http://www.mis.coventry.ac.uk
9. Cranfield University	Department of Informatics and Systems Engineering	http://www.cranfield.ac.uk/cds/departments/dise/index.html
10. De Montfort University	School of Computer Science and Informatics	http://www.dmu.ac.uk/about-dmu/schools-and-departments/school-of-computer-science-and-informatics
11. De Montfort University	The Institute of Creative Technologies	http://www.ioct.dmu.ac.uk
12. Keele University	School of Computing and Mathematics	http://www.scm.keele.ac.uk
13. Kingston University	Faculty of Science, Engineering and Computing.	http://cism.kingston.ac.uk
14. Leeds Metropolitan University	School of Computing & Creative Technologies	http://www.leedsmet.ac.uk/aet/-computing-creative-technologies
15. The University of Leeds	School of Computing	http://www.engineering.leeds.ac.uk/comp
16. Liverpool Hope University	Department of Mathematics and Computer Science	http://www.hope.ac.uk/mathematicsandcomputer-science
17. Liverpool John Moores University	School of Computing & Mathematical Sciences	http://www.cms.livjm.ac.uk
18. London Metropolitan University	School of Computing	http://www.londonmet.ac.uk/depts/cctm
19. London South Bank University	Computing and Informatics	http://bus.lsbu.ac.uk/courses/undergraduate/computing
20. Birkbeck College	Department of Computer Science and Information Systems	http://www.dcs.bbk.ac.uk
21. Goldsmiths College	Department of Computing	http://www.goldsmiths.ac.uk/computing
22. Imperial College	Department of Computing	http://www3.imperial.ac.uk/computing
23. King's College London	Department of Informatics	http://www.kcl.ac.uk/nms/depts/informatics/index.aspx
24. Queen Mary and Westfield College	School of Electronic Engineering and Computer Science	http://www.dcs.qmul.ac.uk

25. University College London	Department of Computer Science	http://www.cs.ucl.ac.uk
26. Loughborough University	Department of Computer Science	http://www.lboro.ac.uk/departments/compsci
27. The Manchester Metropolitan University	School of Computing, Mathematics and Digital Technology	http://www.docm.mmu.ac.uk
28. Middlesex University	School of Engineering and Information Sciences	http://www.mdx.ac.uk/aboutus/Schools/EIS/index.aspx
29. The University of Newcastle-upon-Tyne	Computing Science	http://www.cs.ncl.ac.uk
30. The University of Northumbria at Newcastle	School of Computing, Engineering & Information Sciences	http://northumbria.ac.uk/sd/academic/ceis
31. The Nottingham Trent University	Computing and Technology	http://www.ntu.ac.uk/sat/about/academic_teams/comp_tech.html
32. The Open University	Faculty of Mathematics, Computing and Technology	http://www.mcs.open.ac.uk
33. Oxford Brookes University	Department of Computing and Communication Technologies	http://cct.brookes.ac.uk
34. Royal Holloway University of London	Department of Computer Science	http://www.rhul.ac.uk/computerscience/home.aspx
35. Sheffield Hallam University	Computing	http://www.shu.ac.uk/computing
36. Southampton Solent University	Technology School	http://www.solent.ac.uk/about-us/faculties/martec/technology-school.aspx
37. Staffordshire University	Faculty of Computing, Engineering and Technology	http://www.staffs.ac.uk/academic/comp_eng_tech_h
38. Teesside University	School of Computing	http://www-scm.tees.ac.uk
39. University of Bedfordshire	Department of Computer Science and Technology	http://www.beds.ac.uk/departments/computing
40. The University of Bath	Department of Computer Science	http://www.cs.bath.ac.uk/department
41. The University of Birmingham	School of Computer Science	http://www.cs.bham.ac.uk
42. The University of Bolton	Department of Computing and Electronic Technology	http://data.bolton.ac.uk/cet/research
43. The University of Bradford	School of Computing Informatics and Media	http://scim.brad.ac.uk
44. The University of Brighton	School of Computing, Engineering and Mathematics	http://www.brighton.ac.uk/cmisi
45. The University of Bristol	Department of Computer Science	http://www.cs.bris.ac.uk
46. The University of Buckingham	Department of Applied Computing	http://www.buckingham.ac.uk/appliedcomputing
47. The University of Cambridge	Computer Laboratory	http://www.cl.cam.ac.uk
48. The University of Central Lancashire	Computing, Engineering and Physical Sciences	http://www.uclan.ac.uk/scitech/computing_engineering_physical/index.php
49. University of Chester	School of Computer Science, Mathematics and Business Computing	http://www.chester.ac.uk/csis
50. University of Derby	School of Computing and Mathematics	http://www.derby.ac.uk/computing
51. University of Durham	School of Computing Science	http://www.dur.ac.uk/computer.science

52. The University of East Anglia	School of Computing and Technology	http://www1.uea.ac.uk/cm/home/schools/sci/computing
53. The University of East London	School of Architecture, Computing and Engineering	http://www.uel.ac.uk/ace
54. The University of Essex	Department of Computing, Engineering and Mathematics	http://www.essex.ac.uk/dces
55. The University of Exeter	Faculty of Advanced Technology	http://www.secam.ex.ac.uk
56. University of Gloucestershire	School of Computing and Mathematical Sciences	http://www.glos.ac.uk/faculties/bs/Pages/default.aspx
57. The University of Greenwich	School of Computer Sciences	http://www.cms.gre.ac.uk
58. University of Hertfordshire	School of Computing and Engineering	http://www.herts.ac.uk/cs
59. The University of Huddersfield	School of Computing and Engineering	http://www.hud.ac.uk/ce
60. The University of Hull	Computing Laboratory	http://www.net.dcs.hull.ac.uk/index.htm
61. The University of Kent	Computing Department	http://www.cs.kent.ac.uk
62. The University of Lancaster	School of Computing	http://www.comp.lancs.ac.uk
63. The University of Leicester	Department of Computing and Informatics	http://www.cs.le.ac.uk
64. The University of Lincoln	The Lincoln School of Computer Science	http://www.lincoln.ac.uk/dci
65. The University of Liverpool	School of Computer Science	http://www.csc.liv.ac.uk
66. The University of Manchester	School of Computing Science	http://www.cs.manchester.ac.uk
67. The University of Northampton	School of Computing, Engineering and Information Sciences	http://www2.northampton.ac.uk/appliedsciences/appliedscience/computing
68. The University of Nottingham	Computing Laboratory	http://www.nottingham.ac.uk/cs
69. The University of Oxford	School of Computing	http://web.comlab.ox.ac.uk/oucl
70. The University of Plymouth	School of Computing and Mathematics	http://www.plymouth.ac.uk/pages/view.asp?page=7491
71. The University of Portsmouth	Department of Creative Technologies	http://www.ceetee.net
72. The University of Portsmouth	School of Computing	http://www.port.ac.uk/departments/academic/comp
73. The University of Reading	School of Computing Science and Engineering	http://www.sse.reading.ac.uk
74. The University of Salford	School of Computing Science and Engineering	http://www.cse.salford.ac.uk
75. The University of Sheffield	Electronics and Computer Science	http://www.shef.ac.uk/dcs
76. The University of Southampton	School of Computer Science	http://www.ecs.soton.ac.uk
77. The University of Sunderland	Department of Computing	http://www.cat.sunderland.ac.uk
78. The University of Surrey	Department of Computing	http://www.cs.surrey.ac.uk
79. The University of Sussex	School of Informatics	http://www.sussex.ac.uk/informatics

80. The University of Warwick	Department of Computer Science	http://www.dcs.warwick.ac.uk
81. University of the West of England, Bristol	Faculty of Computing and Engineering	http://www.uwe.ac.uk/cems
82. The University of West London	School of Computing and Technology	http://www.uwl.ac.uk/computing/School_of_Computing_and_Technology.jsp
83. The University of Westminster	School of Electronics and Computer Science	http://www.westminster.ac.uk/schools/computing
84. The University of Wolverhampton	Department of Computer Science	http://www.scit.wlv.ac.uk
85. The University of York	Department of Computer Science	http://www.cs.york.ac.uk/public.php
Wales		
86. Aberystwyth University	Department of Computer Science	http://www.aber.ac.uk/compsci/public
87. Bangor University	School of Computer Science	http://www.cs.bangor.ac.uk
88. Cardiff University	School of Computer Science & Informatics	http://www.cs.cardiff.ac.uk
89. University of Glamorgan	Computing	http://fat.glam.ac.uk/subjects/computing
90. Glyndŵr University	Computing	http://www.glyndwr.ac.uk/en/UniversityInstitutes/ArtsScienceandTechnology/Computing
91. Swansea Metropolitan University	School of Applied Computing	http://www.smu.ac.uk/index.php/potential-students/faculty-of-applied-design-and-engineering/ac
92. Swansea University	Department of Computer Science	http://www.swan.ac.uk/compsci
Scotland		
93. The University of Aberdeen	Department of Computing Science	http://www.csd.abdn.ac.uk/index.php
94. University of Abertay	School of Computing and Engineering Systems	http://www.abertay.ac.uk/studying/schools/ces
95. The University of Dundee	School of Computing	http://www.computing.dundee.ac.uk
96. Edinburgh Napier University	School of Computing Institute for Informatics and Digital Innovation	http://www.soc.napier.ac.uk http://www.iidi.napier.ac.uk
97. The University of Edinburgh	School of Informatics	http://www.inf.ed.ac.uk
98. Glasgow Caledonian University	School of Engineering and Built Environment	http://www.caledonian.ac.uk/sec
99. The University of Glasgow	School of Computing Science	http://www.dcs.gla.ac.uk
100. Heriot-Watt University	Department of Computer Science	http://www.macs.hw.ac.uk/cs
101. The Robert Gordon University	School of Computing Science and Digital Media	http://www.rgu.ac.uk/computing
102. The University of St Andrews	School of Computer Science	http://www.cs.st-andrews.ac.uk
103. The University of Stirling	Computing Science and Mathematics	http://www.cs.stir.ac.uk
104. The University of Strathclyde	Department of Computer and Information Sciences	http://www.strath.ac.uk/cis

105.The University of the West of Scotland	School of Computing	http://www.uws.ac.uk/schools/school-of-computing
Northern Ireland		
106.The Queen's University of Belfast	School of Electronics, Electrical Engineering and Computer Science	http://www.qub.ac.uk/schools/eeecs
107.University of Ulster	Faculty of Computing and Engineering	http://www.compeng.ulster.ac.uk

Appendix B: Salary Tables

Germany

Fig.B1.1: Tarifvertrag im Öffentlichen Dienst (TV-L). PhD Candidates and Postdoctoral Researchers initial salaries fall within the “Entgeltgruppe” 13.

Anlage B zum TV-L

Entgelttabelle für die Entgeltgruppen 1 bis 15

- Gültig ab 1. Januar 2014 -

Entgelt- gruppe	Grundentgelt		Entwicklungsstufen			
	Stufe 1	Stufe 2	Stufe 3	Stufe 4	Stufe 5	Stufe 6
15	4.034,04	4.472,68	4.637,88	5.224,63	5.668,97	
14	3.652,39	4.051,13	4.284,69	4.637,88	5.179,05	
13	3.367,56	3.737,83	3.937,21	4.324,57	4.860,04	
12	3.020,06	3.350,46	3.817,57	4.227,73	4.757,50	
11	2.917,52	3.230,84	3.464,39	3.817,57	4.330,27	
10	2.809,29	3.116,90	3.350,46	3.584,02	4.028,36	
9	2.484,57	2.752,31	2.889,04	3.265,01	3.561,24	
8	2.325,07	2.575,73	2.689,65	2.797,89	2.917,52	2.991,58
7	2.176,96	2.410,52	2.564,33	2.678,26	2.769,42	2.849,15
6	2.137,09	2.364,95	2.478,88	2.592,82	2.666,87	2.746,61
5	2.045,94	2.262,41	2.376,35	2.484,57	2.570,03	2.626,99
4	1.943,40	2.154,19	2.296,59	2.376,35	2.456,10	2.507,36
3	1.914,92	2.120,00	2.176,96	2.268,11	2.342,16	2.404,82
2	1.766,81	1.954,79	2.011,77	2.068,73	2.199,75	2.336,47
1	Je 4 Jahre	1.573,13	1.601,60	1.635,78	1.669,97	1.755,42

Fig.B1.2: Base salaries of the federal remuneration system W (*Bundesbesoldungsordnung W*). Pay grades W1, W2 und W3 apply to *Juniorprofessor*, *Außerordentlicher Professor* and *Ordentlicher Professor*, respectively. Table provided by *Der Deutsche Hochschulverband [GE20]*.

Jahresbesoldung der Hochschullehrer beim Bund und in den Ländern aufgrund der W-Grundgehälter (ohne Berücksichtigung der Sonderzahlung, dem sog. Weihnachtsgeld) – Stand: April 2014

Alle Angaben ohne Gewähr

	W 1	W 2	W 3
Bund *	49.852,44	61.934,40	69.220,80
Baden-Württemberg	45.109,44 **	57.175,44	68.997,48
Bayern *	50.060,28	62.138,76	73.551,96
Berlin	44.015,76	50.280,72	61.055,04
Brandenburg	46.537,92	53.058,36	64.272,48
Bremen ***	45.795,72	59.448,24	70.545,00
Hamburg	48.874,56	55.600,92	67.168,80
Hessen *	48.095,52	60.381,48	66.950,16
Mecklenburg-Vorpommern	47.951,88	54.665,04	66.210,24
Niedersachsen	47.054,64	53.684,28	65.086,32
Nordrhein-Westfalen	45.795,72	60.528,24	66.945,00
Rheinland-Pfalz	48.698,04	59.299,56	66.622,92
Saarland	47.055,72 ****	53.559,24	64.743,48
Sachsen *	48.669,36	59.662,56	67.215,24
Sachsen-Anhalt	47.274,72	62.202,00	69.050,04
Schleswig-Holstein	47.090,40	61.741,32	69.912,12
Thüringen	47.879,64	54.376,80	65.703,24

* Bei der Berechnung der Jahresbeträge in den Besoldungsgruppen W2 und W3 (in Sachsen auch in der Besoldungsgruppe W1) wurde jeweils die Erfahrungsstufe 1 zugrunde gelegt.

** Bei Beamten der Besoldungsgruppe W 1 ist gemäß § 23 Besoldungsgesetz BW für die Dauer von drei Jahren nach Entstehen des Anspruchs das Grundgehalt um 8 Prozent abzusenken. Diese Besoldungsabsenkung gilt nicht für Beamte, denen spätestens am 31. Dezember 2004 Dienstbezüge im Geltungsbereich des Besoldungsgesetzes BW zugestanden haben oder denen bis zur Entstehung des Anspruchs auf Dienstbezüge die Dienstbezüge aus einem anderen Amt im Geltungsbereich des Besoldungsgesetzes BW zugestanden haben.

*** Grundgehälter plus Berücksichtigung der Gewährung eines Grundleistungsbezuges von monatlich 600 Euro.

**** Für nach dem 31.12.2010 neu berufene Juniorprofessorinnen/-professoren vermindert sich das Grundgehalt grundsätzlich um 370 Euro pro Monat für die Dauer von 2 Jahren; Ausnahmen hiervon sind allerdings möglich bei einem Mangel an geeigneten Bewerbern. Die Vergütungsabsenkung gilt ferner nicht für Beamte, denen aus einem vor dem 1.1.2011 übertragenen Eingangsamt der Besoldungsgruppe A 9 – A 13 ein Anspruch auf Dienstbezüge zustand (vgl. § 3 b Abs. 1 Haushaltsbegleitgesetz 2011).

The Netherlands

Fig.B2: CAO table of salaries defined by the Collective Agreement of Dutch Universities (CAO) set by the Association of Universities in the Netherlands (VSNU) [NE6]. Numbers valid from September 2013 and still current in 2014.

Table 4.3 Salary table as from 1-9-2013

trede	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	H2	H1	P	SA	TOIO
0	1.507	1.537	1.570	1.606	1.665	1.786	2.026	2.313	2.542	2.427	3.259	3.950	4.517	4.745	5.144	5.573	6.039	6.633	5.003	5.573	2.083		1715
1	1.570	1.606	1.606	1.636	1.738	1.837	2.083	2.427	2.664	2.542	3.381	4.063	4.634	4.859	5.287	5.724	6.232	6.844	5.144	5.724	2.427		
2	1.636	1.665	1.665	1.702	1.837	1.966	2.198	2.542	2.799	2.664	3.491	4.177	4.745	5.003	5.428	5.879	6.430	7.060	5.287	5.879	2.542	1.837	
3	1.665	1.738	1.738	1.786	1.966	2.083	2.313	2.664	2.919	2.799	3.601	4.293	4.859	5.144	5.573	6.039	6.633	7.285	5.428	6.039	2.664	1.966	
4	1.702	1.786	1.837	1.902	2.026	2.141	2.370	2.736	3.037	2.919	3.709	4.402	5.003	5.287	5.724	6.232	6.844	7.519	5.573	6.232		2.141	
5	1.738	1.837	1.902	1.966	2.083	2.198	2.427	2.799	3.150	3.037	3.831	4.517	5.144	5.428	5.879	6.430	7.060	7.756	5.724	6.430			
6	1.786	1.902	1.966	2.026	2.141	2.255	2.482	2.857	3.259	3.150	3.950	4.634	5.287	5.573	6.039	6.633	7.285	8.003	5.879	6.633			
7		1.966	2.026	2.083	2.198	2.313	2.542	2.919	3.381	3.259	4.063	4.745	5.428	5.724	6.232	6.844	7.519	8.259	6.039	6.844			
8			2.083	2.141	2.255	2.370	2.602	2.982	3.491	3.381	4.177	4.859	5.498	5.879	6.430	7.060	7.756	8.523	6.232	7.060			
9			2.141	2.198	2.313	2.427	2.664	3.037		3.491	4.293	5.003		6.039	6.633	7.285	8.003	8.795	6.430	7.285			
10				2.255	2.370	2.482	2.736	3.089		3.601	4.402	5.070							6.633	7.519			
11										3.709	4.462								6.844	7.756			
12										3.831									7.060	8.003			
13																			7.285	8.259			
14																				8.523			
15																				8.795			

Fig.B3.1: Salaries table for Assistant Professors (*Ricercatore Universitari*). Numbers and system progression valid after the 2011 reform [IT4].

Allegato 3 - art. 3, comma 6

Trattamento economico annuo lordo - Ricercatori a tempo determinato assunti secondo il nuovo regime

Tempo pieno

Stipendio tabellare (13 mensilità)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo
20375,31	3.868,22	10.654,53	34.898,06

Fig.B3.2: Salary table for Assistant Professors (*Ricercatore Universitari*) showing a comparison of the old system for salary progression, based on biennial increase steps and the new system based on triennial increase steps [IT4].

Allegato 1 - art. 2, comma 1

**c) Rimodulazione trattamento economico annuo lordo - Ricercatori Universitari
Tempo Pieno**

Progressione economica per classi e scatti biennali					Rimodulazione progressione economica per classi triennali						Importi differenziali alla transizione	
Progressione economica per classi e scatti biennali	Stipendio tabellare (13 mensilità)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo (B)	Progressione economica per classi triennali	Stipendio tabellare (13 mensilità) alla transizione (C)	Stipendio tabellare (13 mensilità) a regime (D)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo regime triennale (E)	Variazione stipendio alla transizione (A-D)	Variazione lordo alla transizione (E-B)
0	20.375,31	3.868,22	10.654,53	34.898,06	0	20.375,31	20.375,31	3.868,22	10.654,53	34.898,06	0,00	0,00
0	20.375,31	3.868,22	10.654,53	34.898,06	0	20.375,31	20.375,31	3.868,22	10.654,53	34.898,06	0,00	0,00
1	22.005,34	4.512,92	10.654,53	37.172,79	0	22.005,34	20.375,31	4.512,92	10.654,53	37.172,79	1.630,03	0,00
1	22.005,34	4.512,92	10.654,53	37.172,79	1	22.005,34	23.635,35	4.512,92	10.654,53	37.172,79	-1.630,02	0,00
2	23.635,35	4.512,92	10.654,53	38.802,80	1	23.635,35	23.635,35	4.512,92	10.654,53	38.802,80	0,00	0,00
2	23.635,35	4.512,92	10.654,53	38.802,80	2	23.635,35	23.635,35	4.512,92	10.654,53	38.802,80	0,00	0,00
3	25.265,39	5.157,62	10.654,53	41.077,54	2	25.265,39	25.265,39	5.157,62	10.654,53	41.077,54	0,00	0,00
3	25.265,39	5.157,62	10.654,53	41.077,54	2	25.265,39	25.265,39	5.157,62	10.654,53	41.077,54	0,00	0,00
4	26.895,42	5.157,62	10.654,53	42.707,57	2	26.895,42	25.265,39	5.157,62	10.654,53	42.707,57	1.630,03	0,00
4	26.895,42	5.157,62	10.654,53	42.707,57	3	26.895,42	28.525,43	5.157,62	10.654,53	42.707,57	-1.630,02	0,00
5	28.525,43	5.802,32	10.654,53	44.982,28	3	28.525,43	28.525,43	5.802,32	10.654,53	44.982,28	0,00	0,00
5	28.525,43	5.802,32	10.654,53	44.982,28	3	28.525,43	28.525,43	5.802,32	10.654,53	44.982,28	0,00	0,00
6	30.155,45	6.447,03	10.654,53	47.257,01	4	30.155,45	30.155,45	6.447,03	10.654,53	47.257,01	0,00	0,00
6	30.155,45	6.447,03	10.654,53	47.257,01	4	30.155,45	30.155,45	6.447,03	10.654,53	47.257,01	0,00	0,00
7	31.964,79	6.447,03	10.654,53	49.066,35	4	31.964,79	30.155,45	6.447,03	10.654,53	49.066,35	1.809,34	0,00
7	31.964,79	6.447,03	10.654,53	49.066,35	5	31.964,79	33.774,12	6.447,03	10.654,53	49.066,35	-1.809,33	0,00
8	33.774,12	6.447,03	10.654,53	50.875,68	5	33.774,12	33.774,12	6.447,03	10.654,53	50.875,68	0,00	0,00
8	33.774,12	6.447,03	10.654,53	50.875,68	5	33.774,12	33.774,12	6.447,03	10.654,53	50.875,68	0,00	0,00
9	35.583,44	6.447,03	10.654,53	52.685,00	6	35.583,44	35.583,44	6.447,03	10.654,53	52.685,00	0,00	0,00
9	35.583,44	6.447,03	10.654,53	52.685,00	6	35.583,44	35.583,44	6.447,03	10.654,53	52.685,00	0,00	0,00
10	37.392,78	6.447,03	10.654,53	54.494,34	6	37.392,78	35.583,44	6.447,03	10.654,53	54.494,34	1.809,34	0,00
10	37.392,78	6.447,03	10.654,53	54.494,34	7	37.392,78	39.202,09	6.447,03	10.654,53	54.494,34	-1.809,31	0,00
11	39.202,09	6.447,03	10.654,53	56.303,64	7	39.202,09	39.202,09	6.447,03	10.654,53	56.303,64	0,00	0,00
11	39.202,09	6.447,03	10.654,53	56.303,64	7	39.202,09	39.202,09	6.447,03	10.654,53	56.303,64	0,00	0,00
12	41.011,43	6.447,03	10.654,53	58.112,98	8	41.011,43	41.011,43	6.447,03	10.654,53	58.112,98	0,00	0,00
12	41.011,43	6.447,03	10.654,53	58.112,98	8	41.011,43	41.011,43	6.447,03	10.654,53	58.112,98	0,00	0,00
13	42.820,75	6.447,03	10.654,53	59.922,31	8	42.820,75	41.011,43	6.447,03	10.654,53	59.922,31	1.809,33	0,00
13	42.820,75	6.447,03	10.654,53	59.922,31	9	42.820,75	44.630,07	6.447,03	10.654,53	59.922,31	-1.809,32	0,00
14	44.630,07	6.447,03	10.654,53	61.731,63	9	44.630,07	44.630,07	6.447,03	10.654,53	61.731,63	0,00	0,00
14	44.630,07	6.447,03	10.654,53	61.731,63	9	44.630,07	44.630,07	6.447,03	10.654,53	61.731,63	0,00	0,00
14	45.745,83	6.447,03	10.654,53	62.847,39	10	45.745,83	45.745,83	6.447,03	10.654,53	62.847,39	0,00	0,00
14	45.745,83	6.447,03	10.654,53	62.847,39	10	45.745,83	45.745,83	6.447,03	10.654,53	62.847,39	0,00	0,00
14	46.861,59	6.447,03	10.654,53	63.963,15	10	46.861,59	45.745,83	6.447,03	10.654,53	63.963,15	1.115,76	0,00
14	46.861,59	6.447,03	10.654,53	63.963,15	11	46.861,59	47.977,35	6.447,03	10.654,53	63.963,15	-1.115,76	0,00
14	47.977,35	6.447,03	10.654,53	65.078,90	11	47.977,35	47.977,35	6.447,03	10.654,53	65.078,90	0,00	0,00
14	47.977,35	6.447,03	10.654,53	65.078,90	11	47.977,35	47.977,35	6.447,03	10.654,53	65.078,90	0,00	0,00
14	49.093,10	6.447,03	10.654,53	66.194,66	12	49.093,10	49.093,10	6.447,03	10.654,53	66.194,66	0,00	0,00
14	49.093,10	6.447,03	10.654,53	66.194,66	12	49.093,10	49.093,10	6.447,03	10.654,53	66.194,66	0,00	0,00
14	50.208,86	6.447,03	10.654,53	67.310,42	12	50.208,86	49.093,10	6.447,03	10.654,53	67.310,42	1.115,76	0,00
14	50.208,86	6.447,03	10.654,53	67.310,42	13	50.208,86	51.324,62	6.447,03	10.654,53	67.310,42	-1.115,76	0,00
14	51.324,62	6.447,03	10.654,53	68.426,18	13	51.324,62	51.324,62	6.447,03	10.654,53	68.426,18	0,00	0,00
14	51.324,62	6.447,03	10.654,53	68.426,18	13	51.324,62	51.324,62	6.447,03	10.654,53	68.426,18	0,00	0,00

Fig.B3.3: Salary table for Associate Professors (*Professore Associati*). Numbers and system progression valid after the 2011 reform [IT4].

Allegato 2 - art. 3, comma 2

**b) Prospetto Trattamento Economico - Professori Associati (II fascia)
assunti secondo il nuovo regime**

Tempo Pieno

Progressione economica per classi triennali	Stipendio tabellare (13 mensilità)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo
0	33.089,44	6.447,03	11.294,95	50.831,42
0	33.089,44	6.447,03	11.294,95	50.831,42
0	33.089,44	6.447,03	11.294,95	50.831,42
1	35.371,47	7.368,04	11.294,95	54.034,47
1	35.371,47	7.368,04	11.294,95	54.034,47
1	35.371,47	7.368,04	11.294,95	54.034,47
2	39.935,55	7.982,04	11.294,95	59.212,54
2	39.935,55	7.982,04	11.294,95	59.212,54
2	39.935,55	7.982,04	11.294,95	59.212,54
3	42.217,55	9.210,04	11.294,95	62.722,55
3	42.217,55	9.210,04	11.294,95	62.722,55
3	42.217,55	9.210,04	11.294,95	62.722,55
4	47.283,68	9.210,04	11.294,95	67.788,67
4	47.283,68	9.210,04	11.294,95	67.788,67
4	47.283,68	9.210,04	11.294,95	67.788,67
5	49.816,73	9.210,04	11.294,95	70.321,72
5	49.816,73	9.210,04	11.294,95	70.321,72
5	49.816,73	9.210,04	11.294,95	70.321,72
6	54.882,82	9.210,04	11.294,95	75.387,81
6	54.882,82	9.210,04	11.294,95	75.387,81
6	54.882,82	9.210,04	11.294,95	75.387,81
7	57.415,88	9.210,04	11.294,95	77.920,87
7	57.415,88	9.210,04	11.294,95	77.920,87
7	57.415,88	9.210,04	11.294,95	77.920,87
8	62.482,00	9.210,04	11.294,95	82.986,99
8	62.482,00	9.210,04	11.294,95	82.986,99
8	62.482,00	9.210,04	11.294,95	82.986,99
9	64.044,05	9.210,04	11.294,95	84.549,04
9	64.044,05	9.210,04	11.294,95	84.549,04
9	64.044,05	9.210,04	11.294,95	84.549,04
10	67.168,14	9.210,04	11.294,95	87.673,13
10	67.168,14	9.210,04	11.294,95	87.673,13
10	67.168,14	9.210,04	11.294,95	87.673,13
11	68.730,19	9.210,04	11.294,95	89.235,18
11	68.730,19	9.210,04	11.294,95	89.235,18
11	68.730,19	9.210,04	11.294,95	89.235,18
12	71.854,28	9.210,04	11.294,95	92.359,28
12	71.854,28	9.210,04	11.294,95	92.359,28
12	71.854,28	9.210,04	11.294,95	92.359,28

Fig.B3.4: Salary tables for Associate Professors (*Professore Associati*) showing a comparison between the old system for salary progression, based on biennial increase steps and the new system, based on triennial increase steps [IT4].

Allegato 1 - art. 2, comma 1

b) Rimodulazione trattamento economico annuo lordo - Professori Associati (II fascia)

Tempo Pieno

Progressione economica per classi e scatti biennali					Rimodulazione progressione economica per classi triennali					Importi differenziali alla transizione		
Progressione economica per classi e scatti biennali	Stipendio tabellare (13 mensilità)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo (B)	Progressione economica per classi triennali	Stipendio tabellare (13 mensilità) alla transizione (C)	Stipendio tabellare (13 mensilità) a regime (D)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo regime triennale	Variazione stipendio alla transizione (A-D)	Variazione lordo alla transizione (E-B)
0	28.525,38	5.526,04	11.294,95	45.346,37	0	28.525,38	28.525,38	5.526,04	11.294,95	45.346,37	0,00	0,00
0	28.525,38	5.526,04	11.294,95	45.346,37	0	28.525,38	28.525,38	5.526,04	11.294,95	45.346,37	0,00	0,00
1	30.807,41	6.447,03	11.294,95	48.549,39	0	30.807,41	28.525,38	6.447,03	11.294,95	48.549,39	2.282,03	0,00
1	30.807,41	6.447,03	11.294,95	48.549,39	1	30.807,41	33.089,44	6.447,03	11.294,95	48.549,39	-2.282,03	0,00
2	33.089,44	6.447,03	11.294,95	50.831,42	1	33.089,44	33.089,44	6.447,03	11.294,95	50.831,42	0,00	0,00
2	33.089,44	6.447,03	11.294,95	50.831,42	1	33.089,44	33.089,44	6.447,03	11.294,95	50.831,42	0,00	0,00
3	35.371,47	7.368,04	11.294,95	54.034,47	2	35.371,47	35.371,47	7.368,04	11.294,95	54.034,47	0,00	0,00
3	35.371,47	7.368,04	11.294,95	54.034,47	2	35.371,47	35.371,47	7.368,04	11.294,95	54.034,47	0,00	0,00
4	37.653,50	7.368,04	11.294,95	56.316,50	2	37.653,50	35.371,47	7.368,04	11.294,95	56.316,50	2.282,03	0,00
4	37.653,50	7.368,04	11.294,95	56.316,50	3	37.653,50	39.935,55	7.368,04	11.294,95	56.316,50	-2.282,04	0,00
5	39.935,55	8.289,04	11.294,95	59.519,54	3	39.935,55	39.935,55	8.289,04	11.294,95	59.519,54	0,00	0,00
5	39.935,55	8.289,04	11.294,95	59.519,54	3	39.935,55	39.935,55	8.289,04	11.294,95	59.519,54	0,00	0,00
6	42.217,55	9.210,04	11.294,95	62.722,55	4	42.217,55	42.217,55	9.210,04	11.294,95	62.722,55	0,00	0,00
6	42.217,55	9.210,04	11.294,95	62.722,55	4	42.217,55	42.217,55	9.210,04	11.294,95	62.722,55	0,00	0,00
7	44.750,63	9.210,04	11.294,95	65.255,62	4	44.750,63	42.217,55	9.210,04	11.294,95	65.255,62	2.533,07	0,00
7	44.750,63	9.210,04	11.294,95	65.255,62	5	44.750,63	47.283,68	9.210,04	11.294,95	65.255,62	-2.533,05	0,00
8	47.283,68	9.210,04	11.294,95	67.788,67	5	47.283,68	47.283,68	9.210,04	11.294,95	67.788,67	0,00	0,00
8	47.283,68	9.210,04	11.294,95	67.788,67	5	47.283,68	47.283,68	9.210,04	11.294,95	67.788,67	0,00	0,00
9	49.816,73	9.210,04	11.294,95	70.321,72	6	49.816,73	49.816,73	9.210,04	11.294,95	70.321,72	0,00	0,00
9	49.816,73	9.210,04	11.294,95	70.321,72	6	49.816,73	49.816,73	9.210,04	11.294,95	70.321,72	0,00	0,00
10	52.349,79	9.210,04	11.294,95	72.854,78	6	52.349,79	49.816,73	9.210,04	11.294,95	72.854,78	2.533,06	0,00
10	52.349,79	9.210,04	11.294,95	72.854,78	7	52.349,79	54.882,82	9.210,04	11.294,95	72.854,78	-2.533,03	0,00
11	54.882,82	9.210,04	11.294,95	75.387,81	7	54.882,82	54.882,82	9.210,04	11.294,95	75.387,81	0,00	0,00
11	54.882,82	9.210,04	11.294,95	75.387,81	7	54.882,82	54.882,82	9.210,04	11.294,95	75.387,81	0,00	0,00
12	57.415,88	9.210,04	11.294,95	77.920,87	8	57.415,88	57.415,88	9.210,04	11.294,95	77.920,87	0,00	0,00
12	57.415,88	9.210,04	11.294,95	77.920,87	8	57.415,88	57.415,88	9.210,04	11.294,95	77.920,87	0,00	0,00
13	59.948,93	9.210,04	11.294,95	80.453,92	8	59.948,93	57.415,88	9.210,04	11.294,95	80.453,92	2.533,05	0,00
13	59.948,93	9.210,04	11.294,95	80.453,92	9	59.948,93	62.482,00	9.210,04	11.294,95	80.453,92	-2.533,07	0,00
14	62.482,00	9.210,04	11.294,95	82.986,99	9	62.482,00	62.482,00	9.210,04	11.294,95	82.986,99	0,00	0,00
14	62.482,00	9.210,04	11.294,95	82.986,99	9	62.482,00	62.482,00	9.210,04	11.294,95	82.986,99	0,00	0,00
14	64.044,05	9.210,04	11.294,95	84.549,04	10	64.044,05	64.044,05	9.210,04	11.294,95	84.549,04	0,00	0,00
14	64.044,05	9.210,04	11.294,95	84.549,04	10	64.044,05	64.044,05	9.210,04	11.294,95	84.549,04	0,00	0,00
14	65.606,09	9.210,04	11.294,95	86.111,09	10	65.606,09	64.044,05	9.210,04	11.294,95	86.111,09	1.562,05	0,00
14	65.606,09	9.210,04	11.294,95	86.111,09	11	65.606,09	67.168,14	9.210,04	11.294,95	86.111,09	-1.562,05	0,00
14	67.168,14	9.210,04	11.294,95	87.673,13	11	67.168,14	67.168,14	9.210,04	11.294,95	87.673,13	0,00	0,00
14	67.168,14	9.210,04	11.294,95	87.673,13	11	67.168,14	67.168,14	9.210,04	11.294,95	87.673,13	0,00	0,00
14	68.730,19	9.210,04	11.294,95	89.235,18	12	68.730,19	68.730,19	9.210,04	11.294,95	89.235,18	0,00	0,00
14	68.730,19	9.210,04	11.294,95	89.235,18	12	68.730,19	68.730,19	9.210,04	11.294,95	89.235,18	0,00	0,00
14	70.292,24	9.210,04	11.294,95	90.797,23	12	70.292,24	68.730,19	9.210,04	11.294,95	90.797,23	1.562,05	0,00
14	70.292,24	9.210,04	11.294,95	90.797,23	13	70.292,24	71.854,28	9.210,04	11.294,95	90.797,23	-1.562,05	0,00
14	71.854,28	9.210,04	11.294,95	92.359,28	13	71.854,28	71.854,28	9.210,04	11.294,95	92.359,28	0,00	0,00
14	71.854,28	9.210,04	11.294,95	92.359,28	13	71.854,28	71.854,28	9.210,04	11.294,95	92.359,28	0,00	0,00

Fig.B3.5: Salary table for Full Professors (*Professore Ordinari*). Numbers and system progression valid after the 2011 reform
[IT4]

Allegato 2 - art. 3, comma 2

**a) Trattamento Economico annuo lordo - Professori Ordinari (I fascia)
assunti secondo il nuovo regime**

Tempo Pieno

Progressione economica per classi triennali	Stipendio tabellare (13 mensilità)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo
0	49.808,74	10.525,78	12.096,12	72.430,64
0	49.808,74	10.525,78	12.096,12	72.430,64
0	49.808,74	10.525,78	12.096,12	72.430,64
1	56.235,67	11.402,92	12.096,12	79.734,71
1	56.235,67	11.402,92	12.096,12	79.734,71
1	56.235,67	11.402,92	12.096,12	79.734,71
2	59.449,13	13.157,21	12.096,12	84.702,46
2	59.449,13	13.157,21	12.096,12	84.702,46
2	59.449,13	13.157,21	12.096,12	84.702,46
3	66.583,04	13.157,21	12.096,12	91.836,37
3	66.583,04	13.157,21	12.096,12	91.836,37
3	66.583,04	13.157,21	12.096,12	91.836,37
4	70.149,99	13.157,21	12.096,12	95.403,32
4	70.149,99	13.157,21	12.096,12	95.403,32
4	70.149,99	13.157,21	12.096,12	95.403,32
5	77.283,88	13.157,21	12.096,12	102.537,21
5	77.283,88	13.157,21	12.096,12	102.537,21
5	77.283,88	13.157,21	12.096,12	102.537,21
6	80.850,82	13.157,21	12.096,12	106.104,15
6	80.850,82	13.157,21	12.096,12	106.104,15
6	80.850,82	13.157,21	12.096,12	106.104,15
7	87.984,73	13.157,21	12.096,12	113.238,06
7	87.984,73	13.157,21	12.096,12	113.238,06
7	87.984,73	13.157,21	12.096,12	113.238,06
8	90.184,35	13.157,21	12.096,12	115.437,68
8	90.184,35	13.157,21	12.096,12	115.437,68
8	90.184,35	13.157,21	12.096,12	115.437,68
9	94.583,59	13.157,21	12.096,12	119.836,92
9	94.583,59	13.157,21	12.096,12	119.836,92
9	94.583,59	13.157,21	12.096,12	119.836,92
10	96.783,21	13.157,21	12.096,12	122.036,54
10	96.783,21	13.157,21	12.096,12	122.036,54
10	96.783,21	13.157,21	12.096,12	122.036,54
11	101.182,46	13.157,21	12.096,12	126.435,79
11	101.182,46	13.157,21	12.096,12	126.435,79
11	101.182,46	13.157,21	12.096,12	126.435,79

Fig.B3.6: Salary tables for Full Professors (*Professore Ordinari*) showing a comparison between the old system for salary progression, based on biennial increase steps, and the new system, based on triennial increase steps [IT4].

Allegato 1 - art. 2, comma 1

a) Rimodulazione trattamento economico annuo lordo - Professori Ordinari (I fascia)

Tempo Pieno

Progressione economica per classi e scatti biennali					Rimodulazione progressione economica per classi triennali					Importi differenziali alla transizione		
Progressione economica per classi e scatti biennali	Stipendio tabellare (13 mensilità)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo (B)	Progressione economica per classi triennali	Stipendio tabellare (13 mensilità) alla transizione (C)	Stipendio tabellare (13 mensilità) a regime (D)	Assegno aggiuntivo (12 mensilità)	Indennità integrativa speciale (13 mensilità)	Totale annuo lordo regime triennale (E)	Variazione stipendio alla transizione (A-D)	Variazione lordo alla transizione (E-B)
0	40.168,34	7.894,33	12.096,12	60.158,79	0	40.168,34	40.168,34	7.894,33	12.096,12	60.158,79	0,00	0,00
0	40.168,34	7.894,33	12.096,12	60.158,79	0	40.168,34	40.168,34	7.894,33	12.096,12	60.158,79	0,00	0,00
1	43.381,82	9.210,04	12.096,12	64.687,98	0	43.381,82	40.168,34	9.210,04	12.096,12	64.687,98	3.213,48	0,00
1	43.381,82	9.210,04	12.096,12	64.687,98	1	43.381,82	46.595,27	9.210,04	12.096,12	64.687,98	-3.213,45	0,00
2	46.595,27	9.210,04	12.096,12	67.901,43	1	46.595,27	46.595,27	9.210,04	12.096,12	67.901,43	0,00	0,00
2	46.595,27	9.210,04	12.096,12	67.901,43	1	46.595,27	46.595,27	9.210,04	12.096,12	67.901,43	0,00	0,00
3	49.808,74	10.525,78	12.096,12	72.430,64	2	49.808,74	49.808,74	10.525,78	12.096,12	72.430,64	0,00	0,00
3	49.808,74	10.525,78	12.096,12	72.430,64	2	49.808,74	49.808,74	10.525,78	12.096,12	72.430,64	0,00	0,00
4	53.022,20	10.525,78	12.096,12	75.644,10	2	53.022,20	49.808,74	10.525,78	12.096,12	75.644,10	3.213,46	0,00
4	53.022,20	10.525,78	12.096,12	75.644,10	3	53.022,20	56.235,67	10.525,78	12.096,12	75.644,10	-3.213,47	0,00
5	56.235,67	11.841,49	12.096,12	80.173,28	3	56.235,67	56.235,67	11.841,49	12.096,12	80.173,28	0,00	0,00
5	56.235,67	11.841,49	12.096,12	80.173,28	3	56.235,67	56.235,67	11.841,49	12.096,12	80.173,28	0,00	0,00
6	59.449,13	13.157,21	12.096,12	84.702,46	4	59.449,13	59.449,13	13.157,21	12.096,12	84.702,46	0,00	0,00
6	59.449,13	13.157,21	12.096,12	84.702,46	4	59.449,13	59.449,13	13.157,21	12.096,12	84.702,46	0,00	0,00
7	63.016,08	13.157,21	12.096,12	88.269,41	4	63.016,08	59.449,13	13.157,21	12.096,12	88.269,41	3.566,95	0,00
7	63.016,08	13.157,21	12.096,12	88.269,41	5	63.016,08	66.583,04	13.157,21	12.096,12	88.269,41	-3.566,96	0,00
8	66.583,04	13.157,21	12.096,12	91.836,37	5	66.583,04	66.583,04	13.157,21	12.096,12	91.836,37	0,00	0,00
8	66.583,04	13.157,21	12.096,12	91.836,37	5	66.583,04	66.583,04	13.157,21	12.096,12	91.836,37	0,00	0,00
9	70.149,99	13.157,21	12.096,12	95.403,32	6	70.149,99	70.149,99	13.157,21	12.096,12	95.403,32	0,00	0,00
9	70.149,99	13.157,21	12.096,12	95.403,32	6	70.149,99	70.149,99	13.157,21	12.096,12	95.403,32	0,00	0,00
10	73.716,92	13.157,21	12.096,12	98.970,25	6	73.716,92	70.149,99	13.157,21	12.096,12	98.970,25	3.566,93	0,00
10	73.716,92	13.157,21	12.096,12	98.970,25	7	73.716,92	77.283,88	13.157,21	12.096,12	98.970,25	-3.566,96	0,00
11	77.283,88	13.157,21	12.096,12	102.537,21	7	77.283,88	77.283,88	13.157,21	12.096,12	102.537,21	0,00	0,00
11	77.283,88	13.157,21	12.096,12	102.537,21	7	77.283,88	77.283,88	13.157,21	12.096,12	102.537,21	0,00	0,00
12	80.850,82	13.157,21	12.096,12	106.104,15	8	80.850,82	80.850,82	13.157,21	12.096,12	106.104,15	0,00	0,00
12	80.850,82	13.157,21	12.096,12	106.104,15	8	80.850,82	80.850,82	13.157,21	12.096,12	106.104,15	0,00	0,00
13	84.417,79	13.157,21	12.096,12	109.671,12	8	84.417,79	80.850,82	13.157,21	12.096,12	109.671,12	3.566,96	0,00
13	84.417,79	13.157,21	12.096,12	109.671,12	9	84.417,79	87.984,73	13.157,21	12.096,12	109.671,12	-3.566,94	0,00
14	87.984,73	13.157,21	12.096,12	113.238,06	9	87.984,73	87.984,73	13.157,21	12.096,12	113.238,06	0,00	0,00
14	87.984,73	13.157,21	12.096,12	113.238,06	9	87.984,73	87.984,73	13.157,21	12.096,12	113.238,06	0,00	0,00
14	90.184,35	13.157,21	12.096,12	115.437,68	10	90.184,35	90.184,35	13.157,21	12.096,12	115.437,68	0,00	0,00
14	90.184,35	13.157,21	12.096,12	115.437,68	10	90.184,35	90.184,35	13.157,21	12.096,12	115.437,68	0,00	0,00
14	92.383,97	13.157,21	12.096,12	117.637,30	10	92.383,97	90.184,35	13.157,21	12.096,12	117.637,30	2.199,62	0,00
14	92.383,97	13.157,21	12.096,12	117.637,30	11	92.383,97	94.583,59	13.157,21	12.096,12	117.637,30	-2.199,62	0,00
14	94.583,59	13.157,21	12.096,12	119.836,92	11	94.583,59	94.583,59	13.157,21	12.096,12	119.836,92	0,00	0,00
14	94.583,59	13.157,21	12.096,12	119.836,92	11	94.583,59	94.583,59	13.157,21	12.096,12	119.836,92	0,00	0,00
14	96.783,21	13.157,21	12.096,12	122.036,54	12	96.783,21	96.783,21	13.157,21	12.096,12	122.036,54	0,00	0,00
14	96.783,21	13.157,21	12.096,12	122.036,54	12	96.783,21	96.783,21	13.157,21	12.096,12	122.036,54	0,00	0,00
14	98.982,83	13.157,21	12.096,12	124.236,16	12	98.982,83	96.783,21	13.157,21	12.096,12	124.236,16	2.199,62	0,00
14	98.982,83	13.157,21	12.096,12	124.236,16	13	98.982,83	101.182,46	13.157,21	12.096,12	124.236,16	-2.199,62	0,00
14	101.182,46	13.157,21	12.096,12	126.435,79	13	101.182,46	101.182,46	13.157,21	12.096,12	126.435,79	0,00	0,00
14	101.182,46	13.157,21	12.096,12	126.435,79	13	101.182,46	101.182,46	13.157,21	12.096,12	126.435,79	0,00	0,00

Fig.B4 Salary scale and grade structure for academic positions at the University of Edinburgh

National Spinal Point	University of Edinburgh Grade Structure		Full-Time Salary from 1st August 2014
	Normal Grade Point Contribution Point	Normal Grade Point Contribution Point	
1	UE01		£13,953
2			£14,257
3	UE01		£14,631
4		UE02	£14,959
5			£15,356
6		UE02	£15,765
7			£16,131
8			£16,577
9	UE03		£17,039
10			£17,528
11			£18,031
12	UE03		£18,549
13		UE04	£19,083
14			£19,632
15			£20,198
16			£20,781
17		UE04	£21,391
18			£22,029
19	UE05		£22,685
20			£23,386
21			£24,057
22			£24,775
23	UE05		£25,513
24		UE06	£26,274
25			£27,057
26			£27,864
27			£28,695
28			£29,552
29			£30,434
30		UE06	£31,342
31			£32,277
32			£33,242
33	UE07		£34,233
34			£35,256
35			£36,309
36			£37,394
37	UE07		£38,511
38		UE08	£39,685
39			£40,847
40			£42,067
41			£43,325
42			£44,620
43			£45,954
44		UE08	£47,328
45			£48,743
46	UE09		£50,200
47			£51,702
48			£53,248
49			£54,841
50	UE09	UE10	£56,482
51			£58,172
52			£59,900
53			£61,845
54			£63,783
55			£65,852
56			£67,918
57			£70,123
58			£72,325
59			£74,852
60			£77,377
61			£80,079
62			£82,309
63			£86,111
64			£89,435
65			£92,095
66			£94,756

Appendix C: References and sources consulted

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Denmark

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