

**A l'épreuve du monde:
l'éducation pour unir les peuples**

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**OUTLINE
EDUCATION – WHY?, WHAT FOR?, HOW?**

Life Today – A Changing World
Quelques vérités de La Palisse, quand même important

Education – answering the needs of Society
Keywords for development - Quality, Transparency, TRUST

EHEA - European Higher Education Area
Cooperation and mobility – always under construction...

'Education/Learning without boundaries and without walls'

Porto and its University

Difficile? Oui,
mais nous avons besoin de 'Éducation pour Unir les Peuple'



LIFE TODAY - GLOBALISATION HOW DID WE GET HERE?

European political vision of the future in the seventies and eighties of the XX Century

- ☞ Major political changes foreseen for the World
 - The Fall of the Berlin Wall, on 9 November 1989
- ☞ Disruptive Advances in Science and Technology, by the end of the XX Century
 - The Computer and Communications era - dramatic changes of the concepts of time and space
 - Advances in Life Sciences - The increase of Expectation of Life

LIFE TODAY - GLOBALISATION (UNEXPECTED?) CONSEQUENCES - I

Changes in Education to meet social changes and expectations, to promote Peace and Development

- ☞ **Expectation of Life vs. Social sustainability – live longer, work longer years**
- ☞ **The decrease of knowledge half-time – Study longer years**
- ☞ **Very significant changes in the concept of individual career management, mainly for Young People**
- ☞ **An evolution that we have to understand and support, mainly by adapting the STRUCTURE AND THE SUBSTANCE OF THE OFFER OF EDUCATION**

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LIFE TODAY - GLOBALISATION (UNEXPECTED?) CONSEQUENCES - II

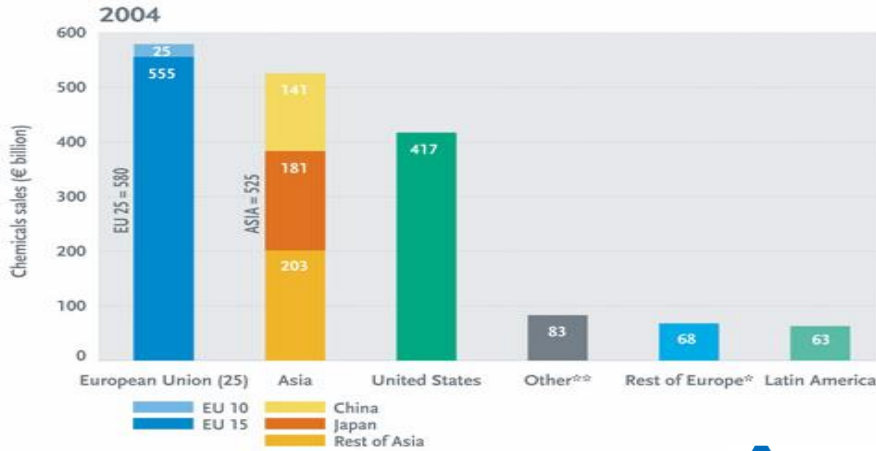
- ☞ **The global market economy - driving today's Societies**
 - **The domain of Economics over Politics**
 - **Sharp increase in standards and competition Worldwide**
 - **Job offer, wider but too volatile: excessive pressure for mobility**
 - **Distorted social development**
 - **Collapse (or lack of) Regulatory Bodies**
- ☞ **Violent disputes - (unexpected?) political and religious disputes, with sharp increase of regional wars and generalized international threats**

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LIFE TODAY - PRODUCTION MOVES EAST

GEOGRAPHIC BREAKDOWN OF WORLD CHEMICALS SALES - 2004



World chemicals sales in 2004 is estimated at € 1736 billion
The EU accounts for 33% of the total



Source: Cefic

Definition: Rest of Europe* = Switzerland, Norway, and other Central & Eastern Europe (excluding the new EU 10 countries)

Other** including Canada, Mexico, Africa & Oceania

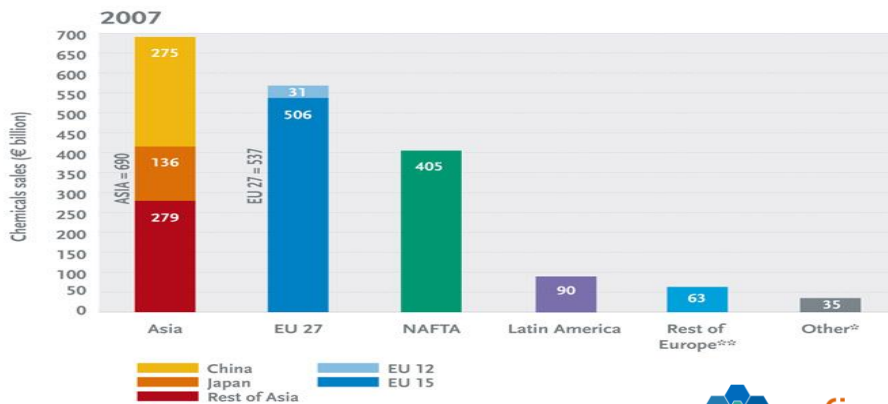
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LIFE TODAY - PRODUCTION MOVES EAST

GEOGRAPHIC BREAKDOWN OF WORLD CHEMICALS SALES - 2007

Chart 1.1: Geographic breakdown of world chemicals sales



World chemicals sales in 2007 are valued at € 1820 billion
The EU accounts for 29,5% of the total



Source: Cefic Chemdata International

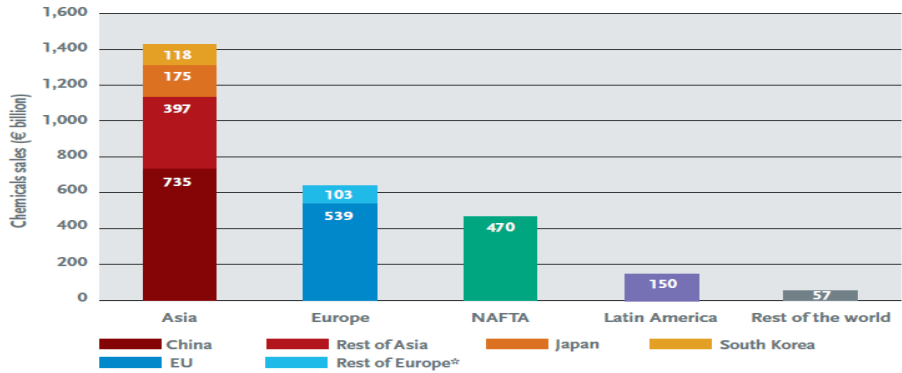
Other* = Oceania and Africa

Rest of Europe** = Switzerland, Norway and other Central & Eastern Europe (excluding the new EU 12 countries)

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LIFE TODAY - PRODUCTION MOVES EAST GEOGRAPHIC BREAKDOWN OF WORLD CHEMICALS SALES - 2011



World chemicals sales in 2011 are valued at €2744 billion. The European Union accounts for 19.6% of the total.

Source: Cefic Chemdata International

* Rest of Europe – Switzerland, Norway and other Central & Eastern Europe (excluding the new EU-12 countries)

Unless specified, chemicals industry excludes pharmaceuticals

Unless specified, EU refers to EU-27



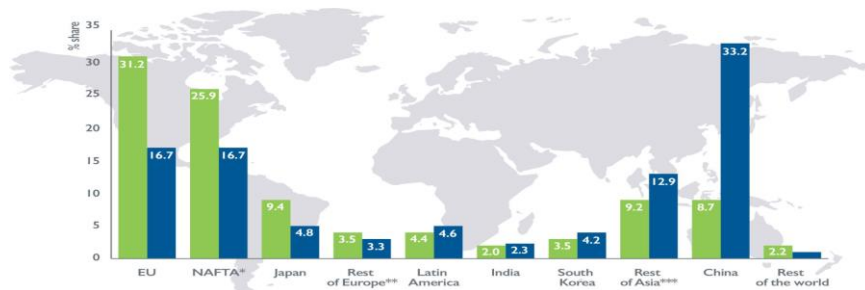
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LIFE TODAY - PRODUCTION MOVES EAST GEOGRAPHIC BREAKDOWN OF WORLD CHEMICALS SALES - 2003-2013

World chemicals output swells due to emerging markets

■ World sales 2003: €1,326 billion
■ World sales 2013: €3,156 billion



Source: Cefic Chemdata International (2014)

* Rest of Europe includes Switzerland, Norway, Turkey, Russia and Ukraine

** North American Free Trade Agreement

*** Asia excluding China, India, Japan and South Korea

Unless specified, chemical industry excludes pharmaceuticals
Unless specified, EU refers to EU-28



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LIFE TODAY CHANGING PARADIGMS

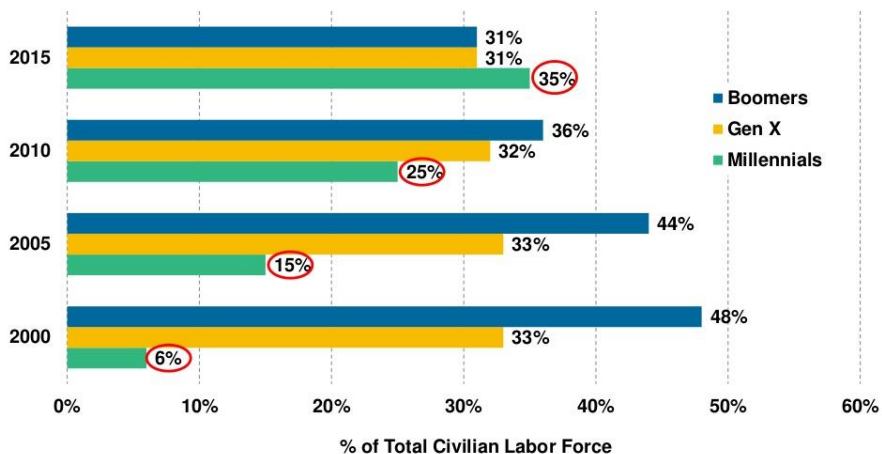
- ☞ **A global World living in and with a new paradigm of coexistence**
 - ✓ **COOPETITION = COOPERATION + COMPETITION**
- ☞ **THE NEED to understand other cultures and backgrounds**
- ☞ **THE NEED to think global, namely in large global companies, – 24/7 – when Asia goes to sleep we start our work, when we go to sleep America start their work**
- ☞ **THE NEED to promote mobility and cooperation, by promoting TRUST**
 - **Requiring qualifications frameworks and quality criteria recognised and accepted by all stakeholders**

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LIFE TODAY - PEOPLE THE MILLENIAL GENERATION, MAJORITY IN 2015

Civilian Labor Force by Generation, USA, 2000 – 2015

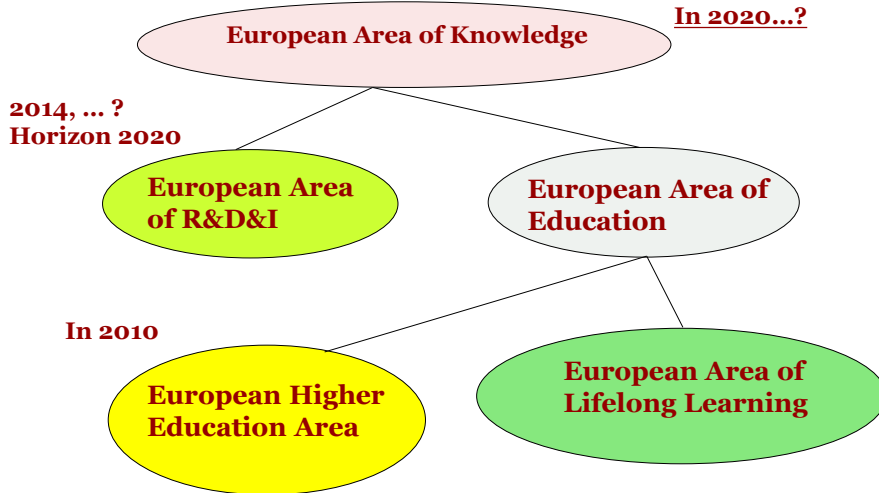


Source - Mary Meeker (KPCB), *Internet Trends 2015*
(Code conference: <http://goo.gl/gjWrTG>)

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AND, HOW DID EUROPE REACT TO THIS CHALLENGE?
THE EUROPEAN AREA OF... KNOWLEDGE...
LAUNCHED ON 11-12 MARCH 2010, IN BUDAPEST-VIENNA –
STILL UNDER CONSTRUCTION... TILL 2020...



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FROM BOLOGNA (1999) TO YEREVAN (2015)... AND BEYOND
CHARACTERIZING THE PROCESS TODAY

- ☞ **Policy issues**
 - Including great concern with the challenge of ‘Education without Boundaries’.. . Which is already massively with us!!!
- ☞ **The Structure - organization issues**
- ☞ **The Substance – academic (and societal) issues**

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FROM BOLOGNA TO YEREVAN ... AND BEYOND
THE STRUCTURE - ACTION LINES AND INSTRUMENTS FOR ACTION

- ✓ **Degree Structure –**
 - **Based on recognised QUALIFICATIONS FRAMEWORKS**
- ✓ **A System to measure work and OUTCOMES**
 - **The ECTS credit and accumulation system, reviewed in 2015**
- ✓ **A way of documenting qualifications**
 - **The DIPLOMA SUPPLEMENT**
- ✓ **A System to guarantee transparency, reviewed in 2015**
 - **Building accepted QUALITY ASSURANCE procedures**
- ✓ **A System for recognition of qualifications**
 - **OVERCOMING DIFFICULTIES posed by the diversity of ‘recognition cultures’**

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FROM BOLOGNA TO YEREVAN... AND BEYOND
THE SUBSTANCE - THE LATECOMER IN THE BOLOGNA PROCESS...

- **Changes in slow progress...**
 - **New Contents... closer and leading to better understanding of Societal concerns and needs**
 - **New programme structures, linked to a concept of lifelong Learning**
 - **New Methods – change from**
 - ✓ **Teacher-Centred to Student-Centred methodologies**
 - ✓ **Teaching based on Teacher Inputs to Learning Centred in well defined objectives – Learning Outcomes**
 - **New tools for distance and cooperative learning**
 - ✓ **Digital repository support systems to Digital Collaborative and Cooperative Systems**
- **The third wave – Pedagogical qualification of ‘Faculty’**

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NEW DIRECTIONS FOR HIGHER EDUCATION GENERAL GUIDELINES ON HOW TO PROCEED (I)

- ☞ **Today, as in the past, the issue is to train and widen the scope of thinking of young people and to raise their awareness of the global social and cultural issues of our global society**
- ☞ **Revisit and modernize programmes**
 - **Bring in new topics – raise the awareness of new topics**
 - **Incorporate new Knowledge, Skills and Competences**
- ☞ **Bring in new methods for learning – adapted to the available tools and to the cultural evolution of society**
- ☞ **Develop within the institution an International Dimension (not only European) and Culture of Quality through mobility and academic cooperation and interchange**
 - **Prepare programmes for cooperation – Joint Degrees**

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NEW DIRECTIONS FOR HIGHER EDUCATION GENERAL GUIDELINES ON HOW TO PROCEED (II)

- ☞ **Make recognition of qualifications easy**
 - **Re-design curricula with reference to agreed recommendations or descriptors of learning outcomes at high level, sectoral level and branch level**
 - **Perform internal quality assurance exercises, following agreed guidelines**
 - **Submit the programmes to recognized external quality assurance agencies**

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NEW DIRECTIONS FOR HIGHER EDUCATION INCORPORATE NEW KNOWLEDGE, COMPETENCES AND SKILLS

- ☞ **Programmes are of course directed to raise artistic, cultural, scientific and technical knowledge – fundamentals should represent the core**

BUT

- ☞ **Must bring in the development of attitude, skills and competences valued by Society in general**
 - **Skills and competencies for innovation and entrepreneurship**
 - **Job related skills - Teamwork, Communication, Leadership**
 - **Competencies (How tasks are done)**
 - ✓ **Holistic thinking, self-management, achievement of objectives...**

TOOLS IN THE INFORMATION AGE, IN THE ERA OF COMMUNICATIONS

Education without Boundaries and without Walls

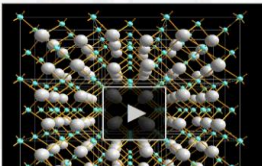
- ☞ **MOOCs – Massive Open Online Courses – Coursera, EdX...**
 - **Tools and means for learning through cooperative learning**
 - **They challenge the educational model... the concept /paradigm of ‘constant time - variable learning’**
 - **Indeed platforms for education without boundaries – a political issue**
- ☞ **Google Apps (or equivalent tools...) for education?**
 - **Google Apps are indeed tools for collaborative study and learning**
 - **A growing number of universities are going ‘Google Apps’...or similar tools**

TECHNOLOGIES & TRANSFORMATIVE LEARNING: VIA CONTENTS (E.G. MOOCs)

edX
FIND COURSES
ABOUT
BLOG
JOBS
LOG IN
SIGN UP

3.091x: Introduction to Solid State Chemistry MITx

REGISTER FOR 3.091X



overview

ABOUT THIS COURSE

3.091x is a first-year course where chemical principles are explained by examination of the properties of materials. The electronic structure and chemical bonding of materials is related to applications and engineering systems throughout the course. The on-campus version of the course has been taught for over thirty five years and is one of the largest classes at MIT. The class will cover the relationship between electronic structure, chemical bonding, and atomic order, and characterization of atomic arrangements in crystalline and amorphous solids: metals, ceramics, semiconductors, and polymers (including proteins). There will be topical coverage of organic chemistry, solution chemistry, acid-base equilibria, electrochemistry, biochemistry, chemical kinetics, diffusion, and phase diagrams. Examples will be drawn from industrial practice (including the environmental impact of chemical processes), from energy generation and storage (e.g. batteries and fuel cells), and from emerging technologies (e.g. photonic and biomedical devices). For the Fall 2012 class, edX registration and course materials are free.

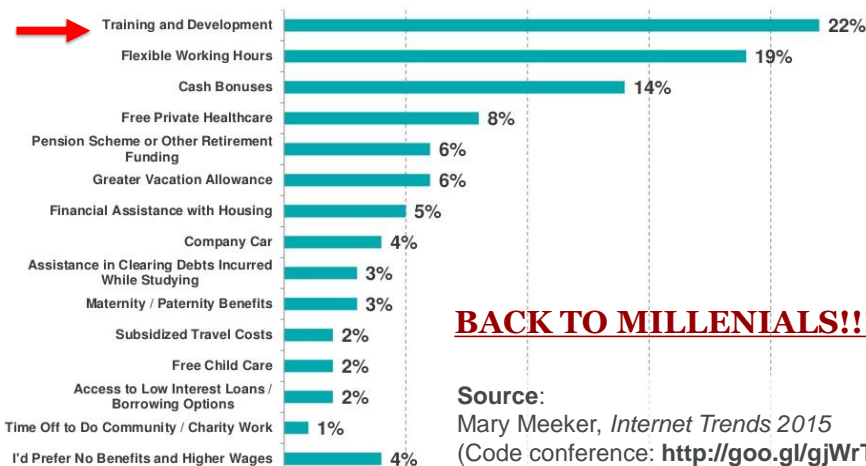
Course Number	3.091x
Classes Start	Oct 09, 2012
Classes End	Jan 11, 2013
Estimated Effort	12 hours/week
Prerequisites	None

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Millennials' Most Valued Work Benefits = 1) Training & Development 2) Flexible Hours 3) Cash Bonuses

**Which Three Benefits Would You Most Value From an Employer?
% Ranking Each 1st Place, Global**



@KPCB Source: "Millennials at Work: Reshaping the Workplace," by PWC, 2011, Global. Survey of 4,394 graduates across 75 countries. All respondents were aged 31 or under and had graduated between 2008 and 2011. Millennials defined as those born between 1980 and 2000. In 2010, they are ages 15-35.

Training & Development People>> Companies>> Technologies



Source:

Dennis Yang & Dan Chou, *Revolutionizing Corporate Workplace Training with MOOCs*, 2014
(<http://goo.gl/Imql9a>)

CESAER Statement on modernisation of Higher Education Systems in Europe, 8th March 2016

- ☞ **CESAER – Leading European Association of Research Universities of Science and Technology and of Engineering Schools of comprehensive Universities**
- ☞ **Commitment to high-level research based education**
- ☞ **Continuing education and training through flexible learning paths**
- ☞ **Commitment to develop all aspects of blended learning**
- ☞ “ We believe in a multi-level and multi-actor approach involving higher education institutions, regional, national and European governments and institutions, business and public sector in order to tackle societal and global changes together, and ensure focus on priorities identified”

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- ☞ **“ We believe in a multi-level and multi-actor approach involving higher education institutions, regional, national and European governments and institutions, business and public sector in order to tackle societal and global changes together, and ensure focus on priorities identified”**

TAKE HOME...

WHERE DO WE HEAD TO IN HIGHER EDUCATION?

- ☞ **1st Paradigm(s) - First quarter of the XX Century - Education close to everyday life work**
- ☞ **2nd Paradigm(s) - Third quarter of the XX Century – Education shift to Science - fundamental mechanisms, aiming at ‘a priori design’**
- ☞ **3rd Paradigm ???**
 - **We are at present on the process of developing a model and of conceptualizing the evolution for a new paradigm... which is not yet quite identified...**
 - **The challenge is to understand and anticipate the evolution of the World and the motivations of the young generations**

It seems that Massified Higher Education is moving in the direction of STAYING IN SCIENCE, BUT LINKING TO SOCIETY, RETURNING CLOSER TO PRACTICE.... proving that Life to a large extent evolves in cycles....

An ancient Country
An Ancient City
An Old University

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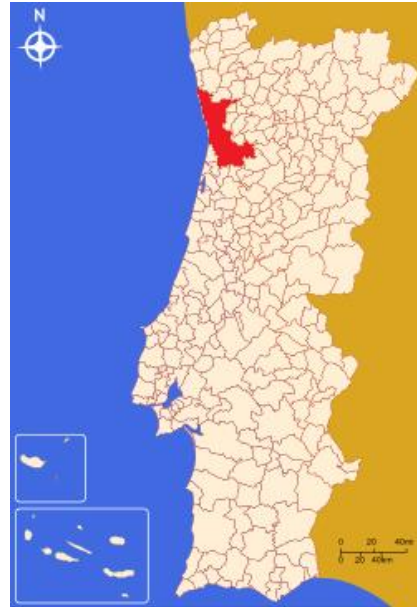
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Portugal : Euro-Atlantic Node



Cantino Planisphere (1502): The oldest known map showing Portuguese Discoveries

- **Figures and Facts**
 - 16 Municipalities
 - ~1.700.000 inhabitants
 - Porto, Capital of the North Region
- **Porto brands - assets and attractions**
 - Industry and trade
 - Port Wine
 - University of Porto
 - Architecture - 2 Pritzker award winners
 - History and Culture
 - World Heritage Site
 - The Bridges of Porto,





1762 - Nautical Class

1769 - Sketching and Drawing Class

1837- The Polytechnic Academy - the teaching of engineering in Portugal started in this building, in 1837

1911 - The University - its Rectorate was installed here

An old Comprehensive University in a historical ancient City



14 **Faculties**

9 **Major Interface Institutes, of which U.Porto is the main partner**

1 **Associated Business School - association between the University and 33 major companies**

Faculty of Architecture

Faculty of Fine Arts

Faculty of Sciences

Faculty of Nutrition and Food Sciences

Faculty of Sport

Faculty of Law

Faculty of Economics

Faculty of Engineering

Faculty of Pharmacy

Faculty of Arts

Faculty of Medicine

Faculty of Dental Medicine

Faculty of Psychology and Education Sciences

Institute of Biomedical Sciences Abel Salazar

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EDUCATION

BOLOGNA STRUCTURE



3rd Cycle – PhD

180/240 ECTS

2nd Cycle
Master

120 ECTS

1st Cycle
Bachelor

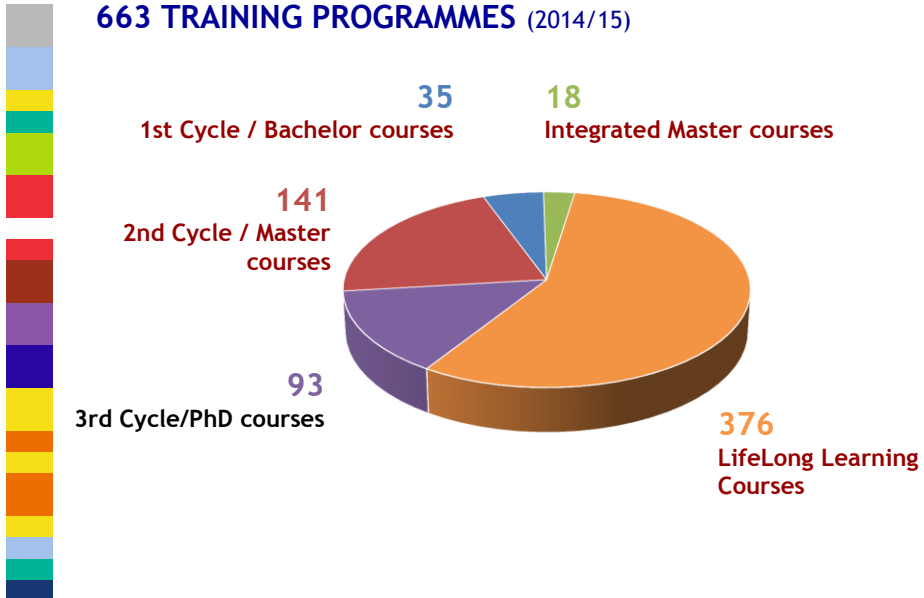
180/240 ECTS

1st + 2nd Cycle

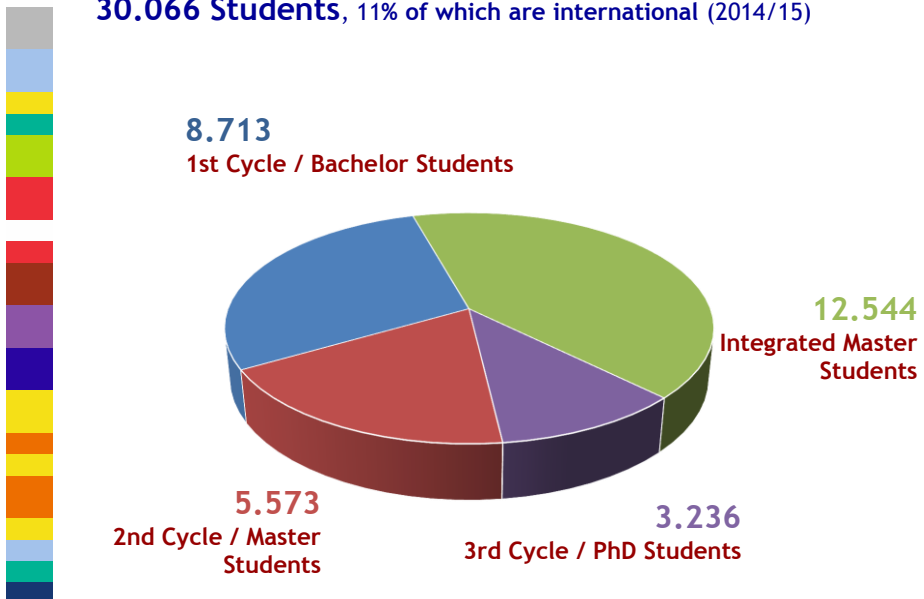
Integrated Master

300/360 ECTS

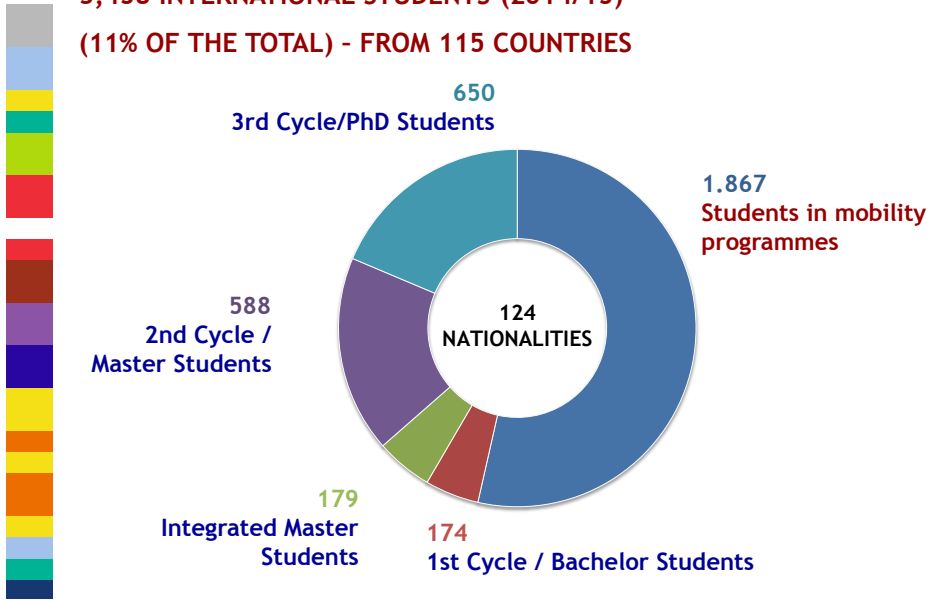
663 TRAINING PROGRAMMES (2014/15)



30.066 Students, 11% of which are international (2014/15)

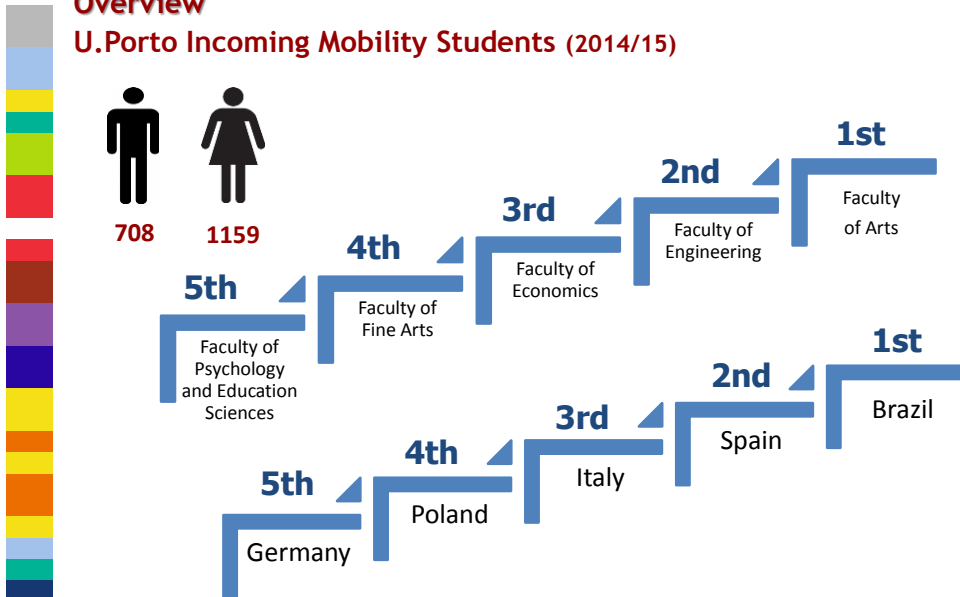


3,458 INTERNATIONAL STUDENTS (2014/15)
(11% OF THE TOTAL) - FROM 115 COUNTRIES



Overview

U.Porto Incoming Mobility Students (2014/15)





U.Porto students in mobility programmes abroad (2014/15)

1144 students in 44 countries

Europe: 985

Americas: 144

Africa: 1

Asia/Pacific: 14

THE U.PORTO IN THE ERASMUS MUNDUS PROGRAMME (ACTION 2) - 2009-2014

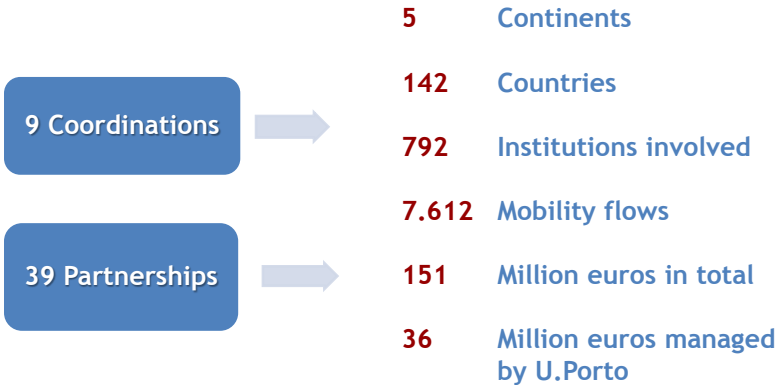
1st Project Coordinated with Brazil, 2008

48 Consortia

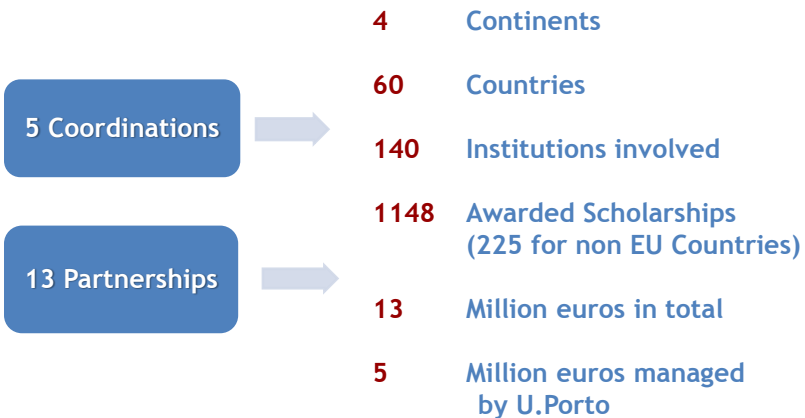
2014 Rankings: U.Porto is a leading Institution in Europe:

- 3rd European University with more coordinated projects (9)
- 5th European University with higher participation in Partnerships (39)

THE U.PORTO IN THE ERASMUS MUNDUS PROGRAMME (ACTION 2) - 2009-2014



THE U.PORTO IN THE ERASMUS+ PROGRAMME 2015-2020



Voilà, a vislumbre de la contribution de l'Université de Porto
l'Éducation pour unir les peuples

