



First ENAEE Conference
Universidade do Porto,
Faculdade do Engenharia, Portugal
Monday 12th and Tuesday 13th Nov 2012

EUR-ACE®

The European Quality Label for
Engineering Degree Programmes

Experiences and Perspectives

ACCREDITATION OF STUDY PROGRAMMES IN ENGINEERING IN PORTUGAL

CHALLENGES FOR EUR-ACE LABEL

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José M.P. Vieira

Porto, 12th November 2012

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ACCREDITATION OF STUDY PROGRAMMES IN
ENGINEERING IN PORTUGAL
CHALLENGES FOR EUR-ACE LABEL

José M.P. Vieira | Porto, 12th November 2012

OUTLINE

- ▶ Engineering education in Portugal
- ▶ Accreditation of engineering programmes in Portugal
- ▶ Challenges for EUR-ACE in Portugal
- ▶ Challenges for EUR-ACE

ENGINEERING EDUCATION IN PORTUGAL

▶ Driving forces for Bologna Process:

- ▶ Globalisation and worldwide competition
- ▶ European Union and common European market
- ▶ European strategy for development in the political, social, cultural, and economical dimensions (Lisbon Strategy)
- ▶ Professional mobility and mutual recognition of academic diplomas (creation of the European Higher Education Area)

ENGINEERING EDUCATION IN PORTUGAL

▶ Bologna Process consequences for the Engineering Profession:

- ▶ Articulation of National Qualifications Frameworks with European Qualifications Framework
- ▶ First-cycle programmes—professional recognition: Level 1
- ▶ Second-cycle programmes—professional recognition: Level 2
- ▶ two-cycle programmes with integrated studies—professional recognition: Level 2

ENGINEERING EDUCATION IN PORTUGAL

- ▶ **Bologna Process consequences for the Engineering Profession in Portugal:**
 - ▶ Second Cycle Programmes should meet the requirements for professional recognition of the highest engineering level
 - ▶ Professionally oriented First Cycle Programmes must offer relevant competences in the engineering profession
 - ▶ First Cycle Degrees offered within theoretically oriented profiles **do not meet immediately** the requirements for professional recognition of First Cycles

ENGINEERING EDUCATION IN PORTUGAL

- ▶ **Bologna Process consequences for the Engineering Profession in Portugal:**

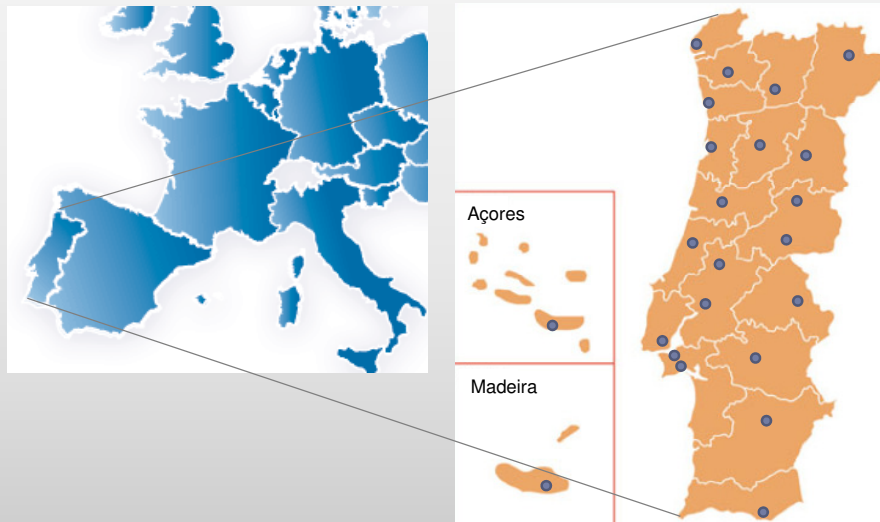
| LEVEL OF PROFESSIONAL QUALIFICATION | ACADEMIC LEVEL | | PROFESSIONAL TITLE |
|-------------------------------------|---|-----------------------------------|--------------------|
| 2nd Cycle LEVEL 7 | Master (Integrated) | Master (2 nd Cycle) | Engineer (E2) |
| 1st Cycle LEVEL 6 | Licenciatura in Engineering Science | Licenciatura in Engineering | Engineer (E1) |

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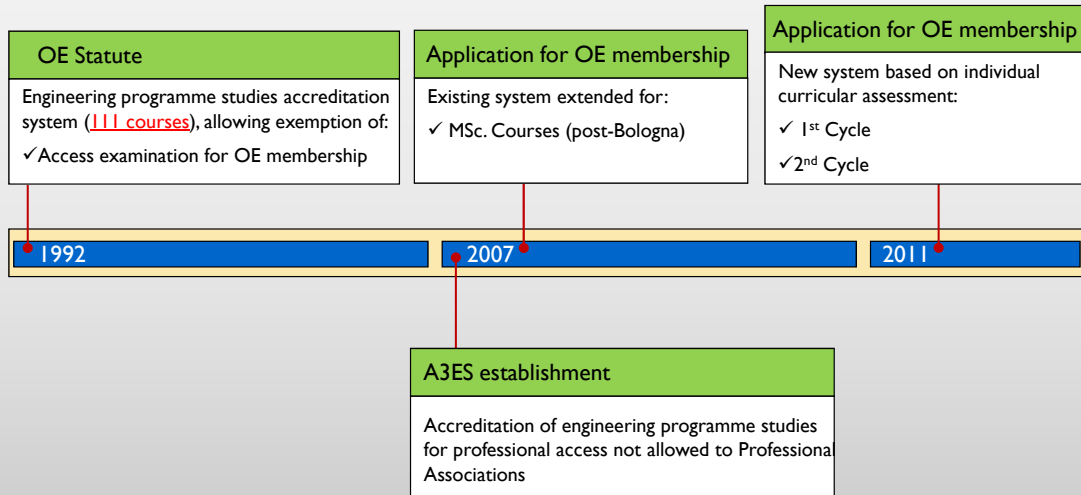
ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

- ▶ Engineering education in Portugal



ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

► Application for OE membership system



ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

► Engineering study programmes accredited by A3ES

Running courses

| Cycle of Studies | Universities | | | Polytechnics | | | TOTAL |
|-----------------------|--------------|-----------|------------|--------------|-----------|------------|------------|
| | Public | Private | Total | Public | Private | Total | |
| 1 st Cycle | 64 | 52 | 116 | 141 | 19 | 160 | 276 |
| 2 nd Cycle | 55 | 25 | 80 | 29 | 0 | 29 | 109 |
| Total | 119 | 77 | 196 | 170 | 19 | 189 | 385 |

Recently approved courses (2012)

| Cycle of Studies | Universities | | | Polytechnics | | | TOTAL |
|-----------------------|--------------|----------|-----------|--------------|----------|-----------|-----------|
| | Public | Private | Total | Public | Private | Total | |
| 1 st Cycle | 1 | 6 | 7 | 10 | 0 | 10 | 17 |
| 2 nd Cycle | 26 | 1 | 27 | 20 | 20 | 20 | 47 |
| Total | 27 | 7 | 34 | 30 | 0 | 30 | 64 |

Σ=449

ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

► EUR-ACE Labels awarded by OE

| Programme | School | Duration | ECTS Credits | Awarded Degree | Accredited | |
|--|-------------------------------------|-------------|--------------|----------------|------------|-------|
| | | | | | From | Until |
| Integrated Master in Electronics & Telecommunications Engineering | University of Aveiro | 10 semester | 300 | Master | 2008 | 2014 |
| Integrated Master in Mechanical Engineering | University of Porto (FEUP) | 10 semester | 300 | Master | 2008 | 2014 |
| Integrated Master in Biological Engineering | Technical University of Lisbon(IST) | 10 semester | 300 | Master | 2008 | 2014 |
| Master (2 nd cycle) in Communication Networks Engineering | Technical University of Lisbon(IST) | 4 semester | 120 | Master | 2009 | 2015 |
| Master (2 nd cycle) in Electronics Engineering | Technical University of Lisbon(IST) | 4 semester | 120 | Master | 2011 | 2017 |
| Integrated Master in Chemical Engineering | University of Aveiro | 10 semester | 300 | Master | 2011 | 2014 |
| Integrated Master in Civil Engineering | University of Aveiro | 10 semester | 300 | Master | 2012 | 2018 |
| Master (2 nd cycle) in Electromechanics Engineering | University of Beira Interior | 4 semester | 120 | Master | 2012 | 2018 |

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| Programme | School | Duration | ECTS Credits | Awarded Degree | Accredited | |
|--|---|-------------|--------------|----------------|------------|-------|
| | | | | | From | Until |
| Master (2 nd cycle) in Electromechanics Engineering | University of Beira Interior | 4 semester | 120 | Master | 2012 | 2015 |
| Integrated Master in Civil Engineering | University of Porto (FEUP) | 10 semester | 300 | Master | 2012 | 2018 |
| Integrated Master in Chemical Engineering | University of Porto (FEUP) | 10 semester | 300 | Master | 2012 | 2018 |
| Integrated Master in Electrotecnics & Computer Engineering | Technical University of Lisbon(IST) | 10 semester | 300 | Master | 2012 | 2018 |
| Master (2 nd cycle) in Civil Engineering | University of Trás-os-Montes e Alto Douro | 4 semester | 120 | Master | 2012 | 2015 |
| Master (2 nd cycle) in Mechanical Engineering | University of Trás-os-Montes e Alto Douro | 4 semester | 120 | Master | 2012 | 2015 |
| Master (2 nd cycle) in Zootechnical Engineering | University of Trás-os-Montes e Alto Douro | 4 semester | 120 | Master | 2012 | 2015 |
| Master (2 nd cycle) in Informatics Engineering | Polytechnic of Porto (ISEP) | 4 semester | 120 | Master | 2012 | 2018 |

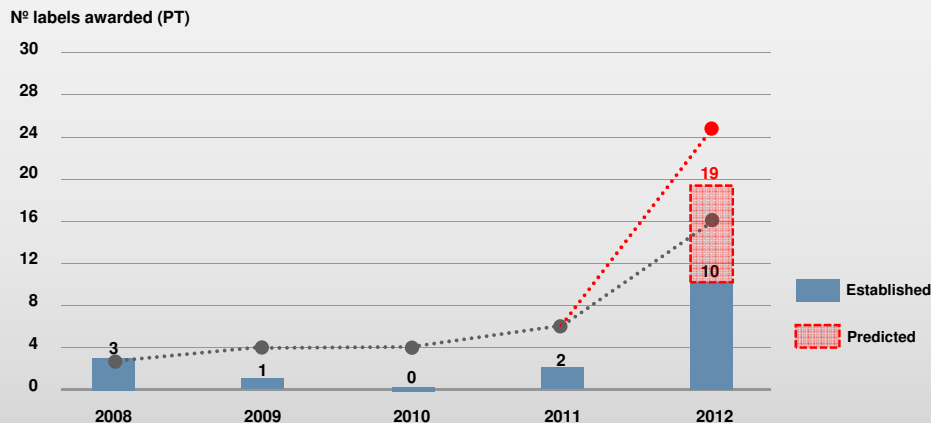
ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

► EUR-ACE Labels in assessment

| Programme | School | Duration | ECTS Credits | Degree |
|--|-----------------------------|-------------|--------------|----------|
| Int. MSc. in Environmental Engineering | University of Porto (FEUP) | 10 semester | 300 | Master |
| Int. MSc. in Elect. & Computer Engineering | University of Porto (FEUP) | 10 semester | 300 | Master |
| Int. MSc. in Informatics & Comp. Engineering | University of Porto (FEUP) | 10 semester | 300 | Master |
| Int. MSc. in Metalurg. & Materials Engineering | University of Porto (FEUP) | 10 semester | 300 | Master |
| Int. MSc. in Industrial & Management Engineering | University of Porto (FEUP) | 10 semester | 300 | Master |
| Master (2 nd cycle) in Mines & GeoEnvironm. Engineering | University of Porto (FEUP) | 10 semester | 300 | Master |
| Master (2 nd cycle) in Environmental Engineering | University of Aveiro | 4 semester | 120 | Master |
| Master (2 nd cycle) in Informatics Engineering | Inst. Univ. Lisbon (ISCTE) | 4 semester | 120 | Master |
| Master (2 nd cycle) in Telecom. & Informatics Engineering | Inst. Univ. Lisbon (ISCTE) | 4 semester | 120 | Master |
| Licenciatura (1 st cycle) in Informatics Engineering | Polytechnic of Porto (ISEP) | 6 semester | 180 | Bachelor |

ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

► EUR-ACE Labels awarded by OE



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- ▶ **Challenges for EUR-ACE in Portugal**
- ▶ Challenges for EUR-ACE

CHALLENGES FOR EUR-ACE IN PORTUGAL

- ▶ **A3ES accreditation approach:**
 - ▶ Institutional accreditation: assesses institutions as a whole
 - ▶ Programme accreditation: assesses quality of a specific programme
 - ▶ Programme accreditation is complimentary to institutional accreditation

CHALLENGES FOR EUR-ACE IN PORTUGAL

▶ EUR-ACE accreditation approach:

- ▶ Result of a process to ensure the entry route to the profession
- ▶ Ensures that a programme has the standards required for its graduates to acquire the necessary educational qualifications to enter the engineering profession
- ▶ Result of a process to ensure the educational quality of a programme

CHALLENGES FOR EUR-ACE IN PORTUGAL

▶ EUR-ACE structural focus on six categories of learning outcomes for accreditation:

- ▶ Knowledge and understanding
- ▶ Engineering analysis
- ▶ Engineering design
- ▶ Investigations
- ▶ Engineering practice
- ▶ Transferable skills
 - ▶ For each category, outcome criteria for First and Second Cycle programmes' graduates have been established

CHALLENGES FOR EUR-ACE IN PORTUGAL

- ▶ **Key-questions for EUR-ACE implementation in Portugal:**
 - ▶ Are the A3ES and EUR-ACE accreditation systems mutually incompatibles? Or complementary?
 - ▶ What can be the role of EUR-ACE in a country with an official agency for accreditation?
 - ▶ Shall EUR-ACE assume a distinguished label in prestige ranking of accredited programmes?
 - ▶ What can be the added-value for EUR-ACE accreditation? International recognition?

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CHALLENGES FOR EUR-ACE

▶ EUR-ACE system:

- ▶ Meta-accreditation European system
- ▶ Promote and co-ordinate national accreditation agencies
- ▶ Pan-european de-centralised system
- ▶ Accreditation at 2 levels: Bachelor & Master
- ▶ Consistent with objectives pursuit by Bologna process:
 - ▶ Quality
 - ▶ Transparency recognition
 - ▶ Mobility

CHALLENGES FOR EUR-ACE

▶ EUR-ACE accreditation agencies:

- ▶ ASIIN (DE)
- ▶ EC (UK)
- ▶ EI-Engineers Ireland (IE)
- ▶ CTI (FR)
- ▶ OE- Ordem dos Engenheiros (PT)
- ▶ RAEE (RU)
- ▶ MÜDEK (TK)

CHALLENGES FOR EUR-ACE

- ▶ **Emerging and recent trends in quality assurance (QA):**
 - ▶ Explicit and formal learning outcomes must include indicators for understanding how far the student assessment procedures can measure the required professional skills
 - ▶ Can a risk-based quality institutional assurance system be compatible with a programme study quality assessment approach?

CHALLENGES FOR EUR-ACE

- ▶ **In a continental perspective, EUR-ACE must consider that:**
 - ▶ Industry looks for different skills and levels of qualifications
 - ▶ The label must be given not only for a good academic programme but also for a perfect preparation of the graduate for the industry
 - ▶ The label scaling up is dependent of a good perception of its relevance by academia, industry and society
 - ▶ Being an European recognition, the label can be understood as a more widely used tool in other continents

Thank you for your attention



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