The Order of Engineers and its Accreditation System

Sebastião Feyo de Azevedo
National Vice-President
sfeyo@cdn.ordeng.pt
http://www.ordemengenheiros.pt

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To say what I am going to say...

Professional Recognition and Qualifications

① Engineering Education and the Engineering Profession

② The Order of Engineers -
Legal framework; Organisation; Co-operation; Membership…

③ The Accreditation Process Today
Formal objectives and practical implications; Conceptual model; Procedures; Figures…

④ The Accreditation Process - Preparing the future
New model

⑤ The Accreditation Process - What comes next?

Engineering Education and the Engineering Profession
Academic Titles and Professional Titles

Professional Recognition and Qualifications

- Academic titles at present (March 2006) still awarded by Portuguese Institutions of Higher Education :

✓ *Bacharel*	a 3 years course
✓ *Licenciado*	a 5 years course
✓ *Mestre*	2 further years of study, after *Licenciado*, including a course and research
✓ *Doutor*	3 to 4 further years of research, after Licenciado or *Mestre*

- Professional Titles are legally protected in Portugal:
  - ✓ The professional title of *Engenheiro* (Engineer) is awarded by the Order of Engineers. All *Licenciados* may apply for the professional title of Engineer.
  - ✓ The professional title of "Engenheiro Técnico" (Technical Engineer) is awarded by ANET (Associação Nacional dos Engenheiros Técnicos - National Association of Technical Engineers). All holders of a *Bacharel degree* may apply for the professional title of Engenheiro Técnico

Order of Engineers
I - Legal Framework and Mission Statement (I)

Professional Recognition and Qualifications

- **Order of Engineers** is the public association that represents the holders of a *Licenciado* diploma that work as *Engenheiros* (Engineers).
- Order of Engineers (OE) was created in November 24, 1936 and is ruled by the Portuguese law, decree n. 119/92 of the 30th June, which contains all its legal competencies.
- Order of Engineers is independent from the State and has administrative, financial, scientific, disciplinary and regulatory autonomy.
- Order of Engineers is the single largest Portuguese professional association with about 32000 members

Order of Engineers
I - Legal Framework and Mission Statement (II)

Professional Recognition and Qualifications

☞ **Among other competencies:**

…….

- ✓ **To support and cooperate on the development of Engineering education in order to guarantee a high standard of the Engineering profession**
- ✓ **To promote exchanges with the national and foreign comparable organizations in order to develop any cultural and professional links involving the Engineers in the world.**

……

Order of Engineers
III - Institutional Co-operation and Agreements (I)

Professional Recognition and Qualifications

OE is worldwide associated (and actively co-operates) with a very significant number of organizations representing engineering:

Just to mention some -

- ☞ **CLAIU - Comité de Liaison des Associations d'Ingénieurs de l'Union Européenne;**
- ☞ **FEANI - Fédération Européenne des Associations Nationales d'Ingénieurs;**
- ☞ **All partners of EUR-ACE (EC-UK, ASIIN, CTI, CoPi, SEFI, IEI, RAEE, EUROCADRES,UNIFI…**
- ☞ **Partners from Portuguese spoken Countries**

Order of Engineers
IV – Membership - Conditions of admission (I)

Professional Recognition and Qualifications

- For holders of a Diploma of *Licenciado in Engineering* by a Portuguese Institution:

  To obtain the professional title of *Engenheiro*, the Order of Engineers requires the fulfillment of the following further conditions:

- ✓ To have been approved in an admission exam organized and run by Order of Engineer
- ✓ To have gone through an approved period of training and to have attended an Ethics and Professional Conduct course also run by OE

The Accreditation Process Today
I - Formal Objectives, Practical Consequences

Professional Recognition and Qualifications

- Formal
  - ✓ The accreditation process aims at exempting candidates from the admission exam
  - ✓ A Candidate holding a diploma from an accredited course IS EXEMPTED from the admission exam
- Practical consequences
  - ✓ Far wider consequences
  - ✓ Accreditation is an exercise that leads to significant organisational improvements
  - ✓ Accreditation is perceived by the Society as a stamp of quality of a course offered by an institution

The Accreditation Process Today
II - Conceptual Model

Professional Recognition and Qualifications

- Main reference terms
  - School Administration
  - Teaching staff
  - Curricular content
  - School enrolment and assessment of students
  - Course structure
  - R&D quality
  - Facilities and resources
  - Administrative procedures
  - Institutional culture
- Inspired on ABET and EC-UK criteria of the nineties…
- It is clear that it is Engineering Degree Programs and not Institutions that are accredited

The Accreditation Process Today
III - Procedure

Professional Recognition and Qualifications

- National Admission and Qualification Council runs the accreditation process
  - 24 members (2 per College) chaired by a Vice-President

✓ Accreditation Committee of 4-5 members
✓ Analysis of dossier previously submitted
✓ 1-Day Visit
✓ Reporting
✓ Proposal of decision

- All steps are regulated in the general procedure approved by the OE's National Board

The Accreditation Process Today
IV - Decision

Professional Recognition and Qualifications

☞ The decision may take the following forms:

a) Full 6-year accreditation, subject to revaluation at the end of this period, expecting that recommendations listed in the report will be addressed

b) Limited 3-year accreditation, the report stating the aspects to be corrected within the indicated period and to be assessed in a new accreditation process

c) Non-accreditation decision, the report stating the aspects that led to this decision

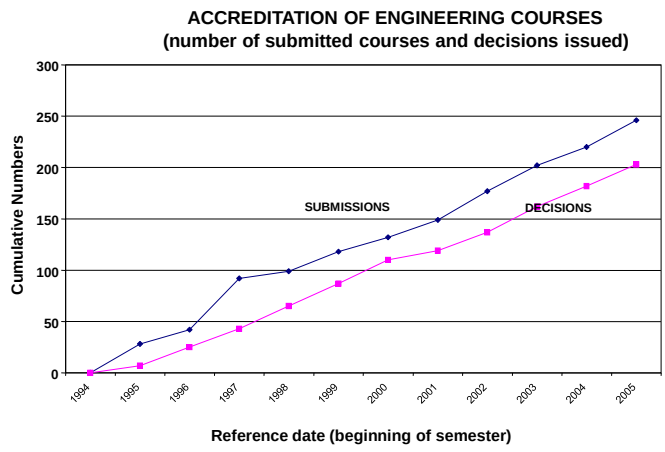
The Accreditation Process Today
V - Accreditations carried out since 1994 (I)

Professional Recognition and Qualifications

Applications -	246
Accredited -	170
Non-Accredited -	33
In progress -	43

Professional Recognition and Qualifications

The Accreditation Process Today
V - Accreditations carried out since 1994 (II)



Professional Recognition and Qualifications

The Accreditation process - preparing the future
I - National Activity and International Co-operation

- New Accreditation System in testing phase
  - ✓ 3 pilot projects running
  - ✓ In agreement with EUR-ACE Guidelines
- Active participation in EUR-ACE project
- Founder member of ENAEE - European Network for Accreditation of Engineering Education

Professional Recognition and Qualifications

The Accreditation process - preparing the future
II - New Approach and Methodological Guidelines (I)

☞ **New fresh approach**

- ✓ By requisites (16 criteria)
- ✓ Focused to the professional practice
- ✓ Evaluation on the basis of evidence
- ✓ Emphasis on quality improvement
- ✓ Follow-up of the quality plan of programmes
- ✓ Obeying EUR-ACE standards and procedures
- ✓ Seeking accreditation of OE by ENAEE

Professional Recognition and Qualifications

The Accreditation process - preparing the future
II - New Approach and Methodological Guidelines (II)

☞ **The 16 Requisites**

REQUISITE 1 - LEGITIMACY OF THE COURSE OPERATION	REQUISITE 9 - STANDARD OF TEACHING
REQUISITE 2 - ORGANISATION OF THE APPLICATION PROCESS	REQUISITE 10 - INVOLVEMENT OF THE TEACHERS IN THE RUNNING OF THE COURSE
REQUISITE 3 - STRATEGY OF THE HIGHER EDUCATIONAL INSTITUTION WITH REGARD TO THE COURSE UNDER CONSIDERATION	REQUISITE 11 - ADMISSION, MONITORING AND EVALUATION OF THE STUDENTS
REQUISITE 4 - COURSE DEVELOPMENT	REQUISITE 12 - EVALUATION OF THE COURSE BY STUDENTS, RECENT GRADUATES AND EMPLOYERS
REQUISITE 5 - COOPERATION WITH OTHER INSTITUTIONS	REQUISITE 13 - SUITABILITY OF PREMISES
REQUISITE 6 - RANGE OF THE COURSE AND SPECIFIC SKILLS	REQUISITE 14 - PEDAGOGIC FACILITIES
REQUISITE 7 - CURRICULUM STRUCTURE AND PEDAGOGIC PROGRAMME	REQUISITE 15 - COURSE MONITORING
REQUISITE 8 - DESCRIPTION OF THE THEMES TAUGHT AND ACADEMIC ACTIVITIES	REQUISITE 16 - EFFECTS OF OTHER EVALUATIONS AND THE QUALITY ASSURANCE PLAN

The Accreditation process
What comes next?

Professional Recognition and Qualifications

- OE is fully committed to Quality Assurance
- Articulation with the
  National Accreditation System…
- Aiming at fulfilling our Statutory Obligation within this new paradigm of international and in particular European co-operation, of

  Supporting and co-operating on the development of Engineering education in order to guarantee the highest standard for the Engineering profession

Order of Engineers and its Accreditation Process

Professional Recognition and Qualifications

Full Presentation

Engineering Education and the Engineering Profession
I - Academic Titles

Professional Recognition and Qualifications

- Academic titles at present (March 2006) still awarded by Portuguese Institutions of Higher Education :
  - ✓ *Bacharel* — a 3 years course
  - ✓ *Licenciado* — a 5 years course
  - ✓ *Mestre* — 2 further years of study, after *Licenciado*, including a course and research
  - ✓ *Doutor* — 3 to 4 further years of research, after Licenciado or *Mestre*

- Academic Titles after the reform, 2006/2007:
  - ✓ *Licenciado* — 6 to 8 semesters of work (full-time equivalent)
  - ✓ *Mestre* — after further 3 to 4 semesters or through an integrated programme
  - ✓ *Doutor* — after a minimum of 3 years of course and research work

Engineering Education and the Engineering Profession
II - The Offer of Engineering Education in Portugal

Professional Recognition and Qualifications

- 297 Engineering Courses under 126 Designations

- 64 Schools of Engineering in 44 Institutions of Higher Education
  - ✓ 30 institutions of the public subsystem
    - 13 Universities with their 18 University Schools
    - 17 Polythecnic Institutes with their 29 Polytechnic Schools
  - ✓ 14 Institutions of the Private and Concordatary subsystem
    - 7 Universities with their 7 University Schools
    - 7 Higher Education Institutions with 10 Polytechnic Schools

- Out of the 297 courses
  - ✓ 97 courses are currently accredited by the Order of Engineers, corresponding to 56 different designations

Engineering Education and the Engineering Profession
III - Professional Titles and Professional Regulation

Professional Recognition and Qualifications

- **Professional Titles are legally protected in Portugal:**
  - ✓ **The professional title of *Engenheiro* (Engineer) is awarded by the Order of Engineers. All *licenciados* may apply for the professional title of Engineer.**
  - ✓ **The professional title of "Engenheiro Técnico" (Technical Engineer) is awarded to any *bacharel* by ANET (Associação Nacional dos Engenheiros Técnicos - National Association of Technical Engineers)**
- **The Engineering Profession is partially regulated in Portugal**
  - ✓ **Some acts, namely in Civil Engineering, but also in areas of Electrical and Mechanical Engineering, can only be performed by members of Order of Engineers**

Order of Engineers
I - Legal Framework and Mission Statement (I)

Professional Recognition and Qualifications

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- **Order of Engineers is independent from the State and has administrative, financial, scientific, disciplinary and regulatory autonomy.**
- **Order of Engineers is the single largest Portuguese professional association - approx. 32000 members**

Order of Engineers
I - Legal Framework and Mission Statement (II)

Professional Recognition and Qualifications

- The main purpose of the Order of Engineers is to contribute to the development of the Portuguese Engineering by working with other partners for the improvement of legal frameworks and of the scientific, professional and social level of its members, and by accomplishing codes of professional ethics.

- Some competencies:
  - ✓ To award the professional title of Engineer and to protect it against abuse
  - ✓ To regulate the professional practice and also to protect the professional practice by legal means
  - ✓ To improve Engineers' professional qualification and to ensure the accomplishment of the professional code of ethics
  - ✓ To support and cooperate on the development of Engineering education in order to guarantee a high standard of the Engineering profession
  - ✓ To promote exchanges with the national and foreign comparable organizations in order to develop any cultural and professional links involving the Engineers in the world.

Order of Engineers
II - Internal organisation (I)

Professional Recognition and Qualifications

- Territorial, covering all the Country with
  - ✓ 3 Regions with Delegations
  - ✓ and 2 Sections (Madeira and Azores)
- Colleges - 12 Specialties, covering all the engineering areas
- Governance by a National Board of Directors
  - ✓ President (Bastonário) and 2 Vice-Presidents nationally elected
  - ✓ 6 other members, representing the Regions, elected in each Region
- Governance supported by two major Councils
  - ✓ Admissions and Qualification Council that regulates the admission and qualification of members
  - ✓ Colleges Co-ordinating Council

Order of Engineers
II - Internal organisation (II)

Professional Recognition and Qualifications

- Internal organisation in Colleges - 12 Specialties
  - ✓ Civil Engineering
  - ✓ Electrical Engineering
  - ✓ Mechanical Engineering
  - ✓ Mining Engineering
  - ✓ Chemical Engineering
  - ✓ Naval Engineering
  - ✓ Geographic Engineering
  - ✓ Forest Engineering
  - ✓ Metallurgical Engineering
  - ✓ Agricultural Engineering
  - ✓ Informatics Engineering
- Each College has its own National Board and Regional Co-ordenation Board

Order of Engineers
II - Internal organisation (III)

Professional Recognition and Qualifications

- Specializations (different from Specialties) - more horizontal, or sub-areas within major areas

Energy	Textile Engineering
Food Engineering	Construction Management
IndustrialEngineering	Territorial Planning
Geotechnics	Structures
Acoustic Engineering	Transportations
Air Conditioning Engineering	Hydraulics
Sanitary Engineering	Industrial Maintenance
Geographic Information Systems	Automation and Control
Aeronautics	
Safety Engineering	
Telecommunications	

Professional Recognition and Qualifications

Order of Engineers
II – Internal organisation (IV)

- Staff
  - ✓ Headquarters
    - 16 strong, of which 8 with University Degree
      - Department of Admissions and Qualification
        - 4 members of staff – with University degree
  - ✓ North Region
    - 16
  - ✓ Center Region
    - 7
  - ✓ South Region
    - 18
  - ✓ Sections (Madeira and Azores)
    - 4

Professional Recognition and Qualifications

Order of Engineers
III – Institutional Co-operation and Agreements (I)

OE is associated with a significant number of organizations representing engineering:

CLAIU - Comité de Liaison des Associations d'Ingénieurs de l'Union Européenne; FEANI - Fédération Européenne des Associations Nationales d'Ingénieurs; EUCEET - European Civil Engineering Education and Training; ECCE - European Council of Civil Engineers; EUREL - Convention of National Societies of Electrical Engineers of Europe; FEIBEM - Federação Ibero-Americana de Engenheiros Mecânicos;	CEDIA - Confederation Européenne d'Ingénieurs Agronómes; EFCE - European Federation of Chemical Engineers; CEMT - Confederation of European Maritime Technologies; ECG - European Commission of Glass; FIG - Federation of Surveyors; REHVA - Federation of European Heating and Air Conditioning Associations; CFPA - Confederation of Fire Protection Associations; CEAS - Confederation European Aerospace Societies.

Order of Engineers
III – Institutional Co-operation and Agreements (II)

Professional Recognition and Qualifications

- OE has (or has had) also several partnerships or memorandums of understanding with other European and American Engineering Association (EC-UK, ASIIN, CTI, CoPi, SEFI, IEI, RAEE, EUROCADRES,UNIFI, ABET…).

- OE further has a close relationship with similar Associations of the CPLP (Portuguese Speaking Community):
  - ✓ CONFEA - Brazil
  - ✓ Order of Engineers of Angola
  - ✓ Order of Engineers of Mozambique
  - ✓ Order of Engineers of Cabo Verde

Order of Engineers
IV – Membership - Conditions of admission (I)

Professional Recognition and Qualifications

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Order of Engineers
IV – Membership - Conditions of admission (II)

Professional Recognition and Qualifications

☞ **For candidates holding a diploma from other countries:**

- ✓ Candidates holding a diploma from a country of the European Union will have their request analyzed according to legislation approved in the Directives for Professional Recognition and its related translation to Portuguese legislation.
- ✓ Candidates holding a diploma from third countries will have to seek equivalence from a Portuguese University.

Order of Engineers
IV – Membership - Numbers

Professional Recognition and Qualifications

☞ **About 32000 members in the 12 Specialties**

✓ Civil Engineering (C)	40,8%
✓ Electrical Engineering (E)	21,6%
✓ Mechanical Engineering (M)	13,7%
✓ Mining Engineering (N)	2,0%
✓ Chemical Engineering (H)	8,0%
✓ Naval Engineering (N)	0,3%
✓ Geographic Engineering (G)	0,8%
✓ Forest Engineering (F)	1,3%
✓ Metallurgical Engineering (T)	0,7%
✓ Agricultural Engineering	8,6%
✓ Informatics Engineering	0,7%

☞ **About 6000 registered trainees**

The Accreditation Process Today
I - Formal Objectives, Practical Consequences

Professional Recognition and Qualifications

- Formal
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The Accreditation Process Today
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Professional Recognition and Qualifications

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  - Institutional culture
- Inspired on ABET and EC-UK criteria of the nineties…
- It is clear that it is Engineering Degree Programs and not Institutions that are accredited

The Accreditation Process Today
III - Procedure

Professional Recognition and Qualifications

- ☞ National Admission and Qualification Council runs the accreditation process
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- ✓ Accreditation Committee of 4-5 members
- ✓ Analysis of dossier previously submitted
- ✓ 1-Day Visit
- ✓ Reporting
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Professional Recognition and Qualifications

The Accreditation Process Today
V - Accreditations carried out since 1994 (I)

ORDEM DOS ENGENHEIROS - GABINETE DE QUALIFICAÇÃO

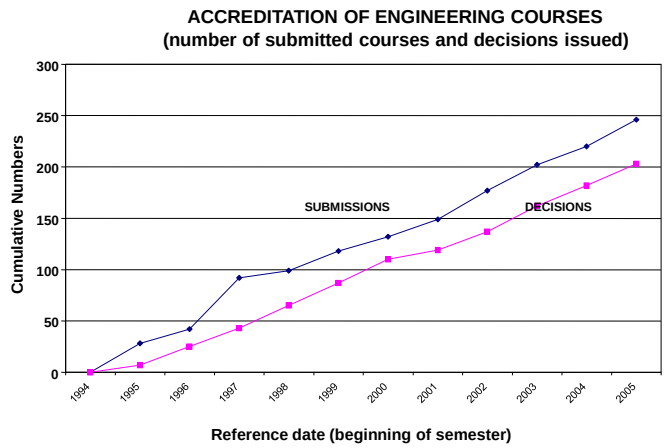
CONCISE SITUATION OF THE ACCREDITATION OF ENGINEERING COURSES

RELATED TO February 2, 2006

Colleges	Applicant courses	Scheduled visits	Completed visits	Completed reports	Accredited courses	n/ accred courses	Decisions
Agricultural	27	24	24	24	22	1	23
Environment	13	12	12	8	6	2	8
Civil	32	30	30	29	20	8	28
Electrical	30	27	27	27	23	3	26
Geographic	6	6	6	6	6	0	6
Informatics	16	13	13	12	9	2	11
Machanical	35	31	31	28	22	6	28
Metal&Mat	15	13	13	10	10	0	10
Mining	16	16	16	15	13	2	15
Naval	2	1	1	1	1	0	1
Chemical	16	14	14	14	13	0	13
Forest	5	5	5	4	4	0	4
Other	33	31	31	30	21	9	30
Total	246	223	223	208	170	33	203

Professional Recognition and Qualifications

The Accreditation Process Today
V - Accreditations carried out since 1994 (II)



Professional Recognition and Qualifications

The Accreditation process - preparing the future
I - National Activity and International Co-operation

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- Active co-operation within EUR-ACE project
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II - New Approach and Methodological Guidelines (I)

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  - ✓ By requisites (16 criteria)
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Professional Recognition and Qualifications

The Accreditation process – preparing the future
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- **The 16 Requisites**

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Professional Recognition and Qualifications

The Accreditation process
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  Supporting and co-operating on the development of Engineering education in order to guarantee the highest standard for the Engineering profession