Engineering Council

Accreditation criteria as an enabler

Katy Turff, Head of International

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Agenda

- Overview of the Engineering Council

- Context of UK accreditation
  - QAA
  - Devolved

- International benchmarking

- Engaging the profession in setting the standards

- Enabling innovation

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The Engineering Council

- UK regulatory body for the engineering profession

- Sets and maintains internationally recognised standards of professional competence and commitment required for registration: the *UK Standard for Professional Engineering Competence* (UK-SPEC)

- Over 233,000 registrants worldwide
  - 18.4% of registrants outside UK
  - 21% of new registrants in 2013

- Licenses 36 Professional Engineering Institutions to register professional engineers and technicians

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Professional Registration

Competence is the ability to carry out a task to an effective standard. To achieve competence requires the right level of knowledge, understanding and skill, and a professional attitude. Competence is developed by a combination of formal and informal learning, and training and experience.

UK-SPEC 3rd edition 2013

- Professional competence requires demonstrated ability to carry out tasks independently in a professional context
- Learning, training and experience are not necessarily separate, sequential or formally structured
- Accredited engineering programmes contribute knowledge and understanding

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Accreditation in context

- Universities are subject to rigorous external review at *institutional* level by the national Quality Assurance Agency (QAA)

- QAA level descriptors

- Engineering benchmark statement

- *Programme* level accreditation is voluntary

- Criteria for accreditation of degrees are derived from UK-SPEC and set out in the *Accreditation of HE Programmes* (AHEP)

- 22 individual engineering institutions are licensed to carry out the process of accreditation to this standard in their discipline

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Principle of separation of functions: legislative and executive

EngC *legislates*:

- sets standards in consultation with stakeholders

- assures consistency through rigorous licensing process

- facilitates a forum for sharing good practice

- maintains a central database of accredited programmes

- undertakes international benchmarking

Professional engineering institutions *execute*:

- interpret generic standard for their discipline

- establish detailed accreditation procedures

- undertake accreditation activities

- ensure discipline experts are making the assessment

- maintain relationship with education providers

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International benchmarking

Engaging the profession in setting standards

- UK-SPEC and AHEP are reviewed on a five-year cycle

- 3rd editions published in 2013/2014

- Wide engagement:
  - education providers
  - employers
  - student and graduate engineers
  - professional, statutory and regulatory bodies

- Iterative consultation:
  - what needs to change?
  - proposed changes – have we got it right?

- Draw on international good practice: maintain compatibility

Key revisions

- Employability skills embedded not standalone

- Use of 'critically evaluate' to distinguish higher cognitive skills

- Use of 'complex', defined as
  - *Complex implies engineering problems, artefacts or systems that involve dealing simultaneously with a sizeable number of factors that interact and require deep understanding, including knowledge at the forefront of the discipline*

- Topics - risk issues, health and safety, ethics, sustainability, the legal context and intellectual property

- Integrated/systems approach to problem solving, statistical methods, business and customer needs, public perception (design)'

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AHEP: Collated learning outcomes

Science and mathematics			
Programmes accredited for IEng	**Programmes accredited for CEng**		
Bachelors Degrees and Bachelors (Honours)	Bachelors (Honours) Degrees accredited as partly meeting the educational requirement for CEng *(Further learning to Masters level will be required)*	Integrated Masters (MEng) Degrees	Masters Degrees[1] other than the Integrated Masters (MEng) (Accredited as further learning to Masters level, partly meeting the educational requirement for CEng)
Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). Graduates will need:	Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). Graduates will need the following knowledge, understanding and abilities:	Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). Graduates will need the following knowledge, understanding and abilities:	Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). The main science and mathematical abilities will have been developed in an accredited engineering undergraduate programme. Masters graduates will therefore need additionally:
· Knowledge and understanding of the scientific principles underpinning relevant current technologies, and their evolution	· Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies	· A comprehensive knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, and an understanding and know-how of the scientific principles of related disciplines, to enable appreciation of the scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies	· A comprehensive understanding of the relevant scientific principles of the specialisation

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Enabling innovation

- Outcomes-based system can accommodate new forms of provision eg
    - work-based learning
    - longer completion periods
    - study abroad
    - online delivery

- Learning outcomes do not prescribe the curriculum

- Generic outcomes allow interpretation by discipline

- Non-prescriptive about mode of delivery

- Accreditation as a developmental process: ongoing dialogue between provider and accrediting body

Looking to the future…….

- Processes may need to adapt to fit new forms of delivery

- Increasing multi- and inter-disciplinarity – can be accommodated

- Internationalisation of education

- Diversity: appealing to under-represented groups

- Focus on the value of accreditation to the various stakeholders

- Need to be aware of changing employers' demands and their requirements of graduates

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Further information

www.engc.org.uk/ahep

dseddon@engc.org.uk

THE ACCREDITATION OF
HIGHER EDUCATION PROGRAMMES

UK Standard for Professional Engineering Competence

Third edition

www.engc.org.uk

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