

Workshop on Innovation in the Engineering Curriculum



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EPC Annual Congress – 17th April 2013

- **Professor Helen Atkinson**,
Head of Department of Engineering, University of Leicester
- **Neil Atkinson**
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HEA STEM Conference – 18th April 2013

- **Professor Matthew Harrison**, Director, Engineering and Education, The Royal Academy of Engineering
- **Dan Canty**, Accreditation & Awards Manager, Institution of Engineering and Technology
- **Dr Kate Sugden**, School of Engineering and Applied Science, Aston University

We must do that
because of
accreditation.

Accreditation
won't let us do
that!

If you change
that we won't get
accredited.

- Staff have a perception that accreditation places strict requirements on the shape of a course.

This workshop aims to consider two questions

- Does accreditation stifle innovation?
- What can we (Academics, Professional Institutions etc.) do to promote innovation?



Accreditation of Innovative Provision

Dr Caroline Sudworth

Senior Executive: Education and Skills

April 2013

Background

- Standard of professional competence is set and maintained by the Engineering Council
- 'UK Standard for Professional Engineering Competence' ([UK-SPEC](#))
- Criteria for accreditation of degrees are derived from this and set out in the Accreditation of HE Programmes ([AHEP](#)) manual (2011)
- 22 individual engineering institutions are licensed to carry out the process of accreditation to this standard in their discipline
- Accreditation is not a requirement in the UK
- Most engineering degrees are accredited

Engineering Council Requirements



- **Academic** accreditation is granted on the basis of the demonstration of learning outcomes
- Essentially a system of peer review
- Process requires a site visit, appropriate visiting panel including industrialists, trained members, published learning outcomes
- Judgements are made based on the evidence presented
- PEIs publish their own process for accreditation

Accreditation of Innovative Provision

- Innovative accredited provision may include a range of providers, involvement of several departments, or a specific approach to industrial engagement or curriculum delivery
- A selection of accredited innovative programmes can be found on the [Engineering Council](#) website. Exemplars and case studies include:
 - Multidisciplinary programmes
 - Multi-site/consortia/international programmes
 - Embedded professional development/registration and industry recognised qualifications
 - Integrated work experience and embedded industrial projects
 - Distance/online/intensive delivery mechanisms
 - Impact measures for both societal and commercial gains
- **Accreditation provides an opportunity for universities to share innovative practice**

Some reflections.....

- Make use of the [examples of accredited provision](#) on the Engineering Council website
- Develop relationships with PEIs to ensure course development and delivery maps against UK-SPEC
- Ensure compliance with specific PEI requirements (depends on the nature of the subject)
- Be clear about the type and format of evidence that is required for accreditation visits with the PEIs
- Seek advice and share practice from wider stakeholders, including other HEIs
- **Champion your accredited and innovative provision!**

Neil Atkinson

Director of Qualifications and International
Development, IChemE

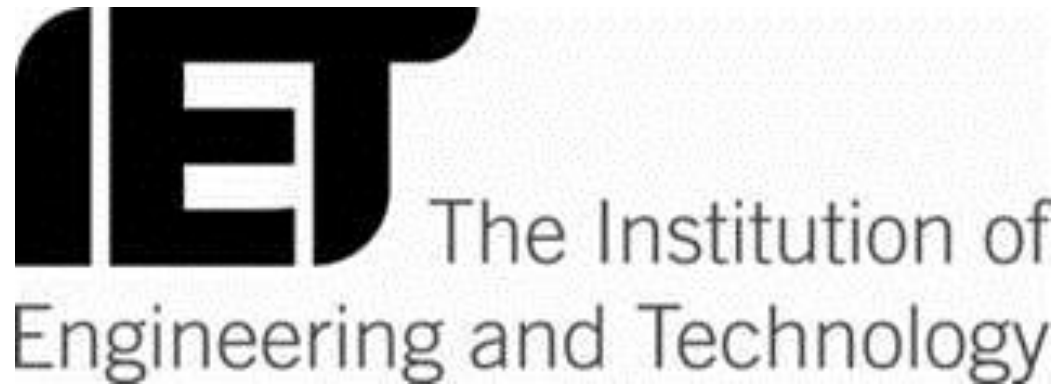


PEI's - Role in Innovation

- by setting standards in way that permits innovation: IChemE learning outcomes are non-prescriptive regarding domain of application (*eg petrochem, food, water*) and mode of delivery (*e.g. Industrial route*);
- by providing academics, as members of accreditation reviews, opportunity to look in-depth at how other universities do things, both in the UK and overseas, and hence bring the great ideas back to their home institution;
- by systematically collecting examples of good, innovative and exemplary practice and promulgating these (*e.g. seminars – Education Special Interest Group, webinars and newsletters*);
- by progressively raising expectations and making these the new accreditation standard (*e.g. SHE, ethics, sustainability*);
- by demonstrating, through accreditation of innovative programmes, that accreditation is not the straitjacket some may believe it to be;
- by acting on the inputs of students.

Dan Canty

Accreditation & Awards Manager,
Institution of Engineering and Technology



Accreditation Aims

- To verify aims and learning outcomes of a degree programme and its constituent components are consistent with the standards expected of a professional engineer
- It is a task of mapping and auditing the declared outcomes for the programme against UK-SPEC ensuring all facets required for IEng and Ceng registrants are developed in the graduate
- Engineering is an enabling discipline that requires diversity of degree programmes and engineers, but with a common set of engineering principles for accurate communication
- Accreditation by the IET has been designed to provide a variety and flexibility in the design and delivery of programmes, encouraging innovation whilst maintaining a core of understanding of engineering principles
- The Academic Accreditation Committee encourages the development of innovative new courses for example, to address new and emergent technologies or meet new market demands

Accreditor Views

- Accreditors are surprised to hear that HEIs feel unsure about submitting unusual programmes to them. They are curious and eager to learn about new ways of doing things and to support HEIs and the engineering profession. They often want to spread good practice (including to their own institutions!)

Some Issues

- Some negative views that the IET have heard
 - Old fashioned view of higher education by retired academics
 - Not aware of industry requirements
 - Not aware of Higher Education drivers e.g. to attract students
 - Reject unfamiliar ideas
 - It's a lot of work for little value

- Some truths that may have led to these views
 - It is a lot of work
 - Some accreditors are retired
 - Some, especially in the past, were combative
 - Some individuals have their own hobby horse
 - Misunderstandings can occur especially if PEIs don't explain and justify their statements in the visit reports
 - A difficult visit can live in the memory of an HEIO for a long time
 - Some HEIs may disagree with perceived/actual criticisms and accreditation policies
 - New programmes cannot be accredited instantly – evidence is necessary
 - Refusal of accreditation can be perceived as a failure

IET Views

- Accreditation has a value but perhaps this is not communicated sufficiently well – we will seek to address this
- Accreditation establishes a baseline requirement that is enshrined in UK-SPEC; UK-SPEC has been refined over many years and is subject to regular review through consultation with the profession; it is flexible and generic in nature.
- The IET regards itself as working in partnership with HEIs. A code of conduct for accreditors exists to help promote this idea. Great care is taken to construct balanced panels. Action plan process promotes a developmental approach. We sometimes support departments when they are arguing for resources. We offer initial reviews and advisory visits to help HEIs with new programmes to ensure they meet the criteria prior to an accreditation visit.
- IET accreditors are a mix of academics (77%) and industrialists (23%) and a mixture of working people (79%) and retired people (21%). There is a defined appointment process for accreditors with criteria and an interview.
- The IET has introduced an “evidence” section in its visit reports that requires panels to explain the reasons for their statements.
- Approximately 6% of programmes don’t get accredited, and include these reasons:
 - Not enough evidence
 - Material/Assessments not challenging enough/at the correct level
 - Misleading title e.g. “Electrical and Electronic Engineering” with no electrical content
 - Not enough engineering - Normally 70% of an accredited degree programme should be engineering content

Next Steps

- Suggestions about what you can do to help:
 - Let us know what you think and what your experiences have been
 - Put new/unusual programmes forward for accreditation
 - Get involved in accreditation or ensure your institution is represented

- What the IET can do:
 - Communicate the value of accreditation
 - Clearly explain ourselves and our judgements
 - Ensure the accreditor community represents the engineering higher education community
 - Operate professionally and in partnership with HEIs

You are on: [Home](#) > [Education & Skills](#) > [Accreditation](#) > [Workshop on Innovation in the Engineering Curriculum](#)

Workshop on Innovation in the Engineering Curriculum

To raise awareness of this topic further, a workshop organised by Dr John Mitchell of UCL, involving the Engineering Council, will be hosted at the HEA STEM conference and EPC Annual Congress, both in April 2013.

These workshops will bring together academics promoting curriculum innovation and change within their own institutions, with the Engineering Council and the professional engineering institutions, with the aim to explore how innovation could be better supported and by whom, the perceived roadblocks to curriculum innovation and what can be done to overcome them.


Universities will also be welcomed to promote their innovative accredited provision more widely.

These workshops will present an opportunity for open discussion and feedback on innovative practice and accreditation. In particular, the workshops will be used to raise the profile of accreditation, share good practice and disprove the perception that "accreditation stifles innovation".


More information regarding the workshop can be found under Useful Links on the right hand side of this webpage.


bit.ly/ec_wiec

Useful documents

 [HEA STEM Conference Abstract](#)

Useful Links

 [HEA STEM conference 2013](#)

 [EPC Annual Congress 2013](#)

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