Engineering Education in the UK

Ian Mercer - IET Head of International Operations

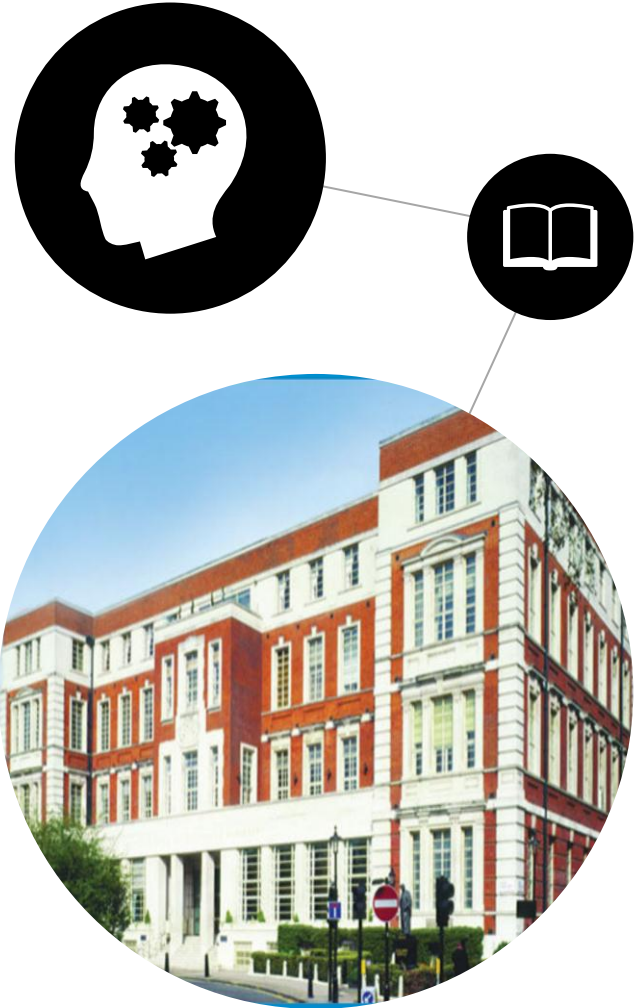**Working to engineer a better world**

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- An introduction to the IET
- Routes to Engineering
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- Conclusions

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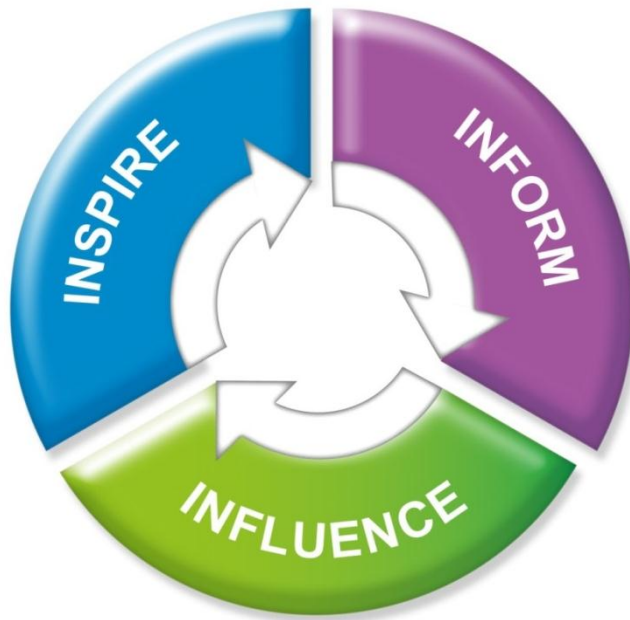**Working to engineer a better world**

The IET
The Institution of Engineering & Technology

- A non-profit organization founded in 1871

- Over 168,000 members in 150 countries

- One of the largest professional engineering societies in the world

- A professional home for life for members, supporting them throughout their careers

- A source of essential engineering intelligence

- Donates £1 million each year in awards, scholarships and grants

- Headquartered in UK and established offices in mainland China, HK, India, USA

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IET VISION

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IET MISSION

To **inspire**, **inform** and **influence**
the global engineering community,
supporting technology **innovation** to
meet the needs of society.

INSPIRE

INFORM

INFLUENCE

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The IET in China

- Head office in Beijing since 2005

- 10,000 members in greater China

- On Line and Local Communities

- Academic Accreditation

- Academic & Corporate Partners

- On Line Learning Platforms

- International Conferences

- Engineering Qualifications

- Paper publishing

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Routes to Engineering in UK

A Levels	Apprenticeships	T levels (from 2021)
HND / Foundation Degrees	Higher Apprenticeships	Other Vocational / Work Based Quals
Bachelors Degrees	Degree Apprenticeships	
Masters Degrees (MEng, MSc)	Post-Graduate Apprenticeships	

Professional Development in Work

Professional Engineer (IEng, CEng)

Technician Engineer (EngTech, ICTTech)

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Typical UK Academic Route to Engineering

A Levels	Apprenticeships	T levels (from 2021)
HND / Foundation Degrees	Higher Apprenticeships	Other Vocational / Work Based Quals
Bachelors Degrees	Degree Apprenticeships	
Masters Degrees (MEng, MSc)	Post-Graduate Apprenticeships	

Professional Development in Work

Professional Engineer (IEng, CEng)

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Typical UK Vocational Route to Engineering

A Levels	Apprenticeships	T levels (from 2021)
HND / Foundation Degrees	Higher Apprenticeships	Other Vocational / Work Based Quals
Bachelors Degrees	Degree Apprenticeships	**Vocational Education**
Masters Degrees	Post-Graduate Apprenticeships	

Professional Development in Work

Professional Engineer (IEng, CEng)

Technician Engineer (EngTech, ICTTech)

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INSTITUTE FOR APPRENTICESHIPS

- The Institute for Apprenticeships (IfA) was established in April 2017 to:

    - Authorise and publish new apprenticeship standards

    - Define assessment and quality assurance

    - Decide funding for each apprenticeship

    - Soon to be renamed the 'Institute for Apprenticeships and Technical Education'

https://www.instituteforapprenticeships.org/

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Evolving UK Routes to Engineering

A Levels	Apprenticeships	T levels (from 2021)
HND / Foundation Degrees	Higher Apprenticeships	Other Vocational / Work Based Quals
Bachelors Degrees	Degree Apprenticeships	**Higher Education**
Masters Degrees	Post-Graduate Apprenticeships	

Professional Development in Work

Professional Engineer (IEng, CEng)

Technician Engineer (EngTech, ICTTech)

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- Regulates English Higher Education providers on behalf of all students and works in four main areas:
  - Supporting students of all backgrounds to access Higher Education and succeed
  - Information for students about Higher Education programmes
  - Measuring Quality
  - Teaching Excellence

https://www.officeforstudents.org.uk/

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- QAA publish information about Standards
  https://www.qaa.ac.uk/quality-code/the-existing-uk-quality-code/part-a-setting-and-maintaining-academic-standards

- The QAA and QAA Scotland carry out Quality Assessments and their reports are made public:
  https://www.qaa.ac.uk/reviewing-higher-education/quality-assurance-reports

- The reviews are at institutional level not degree programme level

http://www.qaa.ac.uk/   https://www.qaa.ac.uk/scotland

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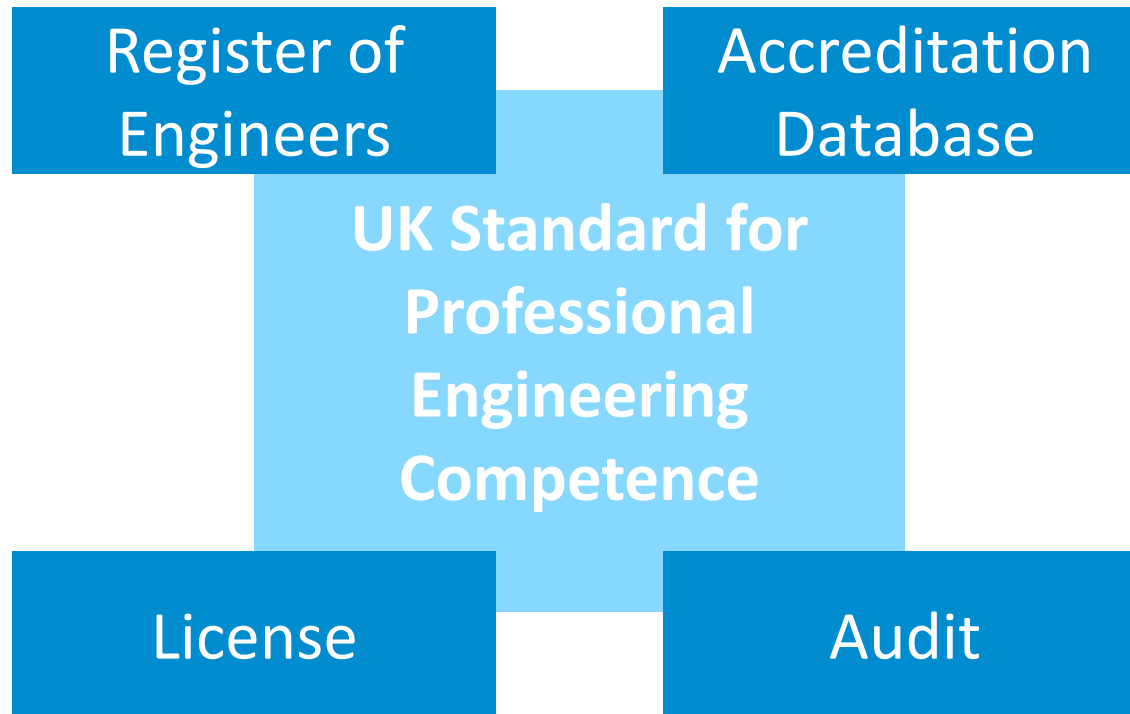
External Academic Audit

- Also known as the 'External Examiner' system

- External Examiners are University appointed advisors who provide Quality Control of the standard of individual awards

- They check the assessment processes are consistent and fair

- They use annual visits, attendance at Examination Boards, student marks and student work samples as evidence

https://www.qaa.ac.uk/quality-code/the-existing-uk-quality-code/part-b-assuring-and-enhancing-academic-quality

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- A new system which aims to:
    - Improve teaching quality
    - Improve the status of teaching staff in Universities (compared to Research)
    - Provide a guide to prospective students about teaching quality
    - include a clear set of criteria and metrics.
- First year results: approximately 25% Gold, 50% Silver and 25% Bronze

http://www.hefce.ac.uk/tefoutcomes

Engineering Council

Register of Engineers	Accreditation Database
UK Standard for Professional Engineering Competence	
License	Audit

Standards for Engineering Qualifications

https://www.engc.org.uk/standards-guidance/standards/accreditation-of-higher-education-programmes-ahep/

https://www.engc.org.uk/standards-guidance/standards/approval-of-qualifications-and-apprenticeships-handbook-aqah/

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Engineering Accreditation Types

- Academic Accreditation: Bachelors and Masters degrees delivered by Universities

- Professional Development Accreditation: Employer based schemes for engineers working towards Professional Registration

- Apprenticeships: In-work education schemes delivered by employers and other learning providers

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Range of IET accreditation activities

Approximately

- 1500 IET accredited programmes in 100 Universities
- 130 Employer Professional Development Schemes
- 100 Apprenticeship Schemes
- Currently accrediting programmes in UK, India, China, Dubai, Europe, Kuwait, Malaysia, Oman, Sri Lanka, Singapore, USA, West Indies

www.theiet.org/accreditation

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International Agreements

- The International Engineering Alliance (IEA)
  http://www.ieagreements.org/

  - Washington Accord: Professional (Chartered) Engineer Education

  - Sydney Accord: Technologist (Incorporated) Engineer Education

  - Dublin Accord: Technician Engineer Education

- EURACE
  http://www.enaee.eu/

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IET Academic Accreditation in China

- Joint Programme at Beijing University of Posts and Telecommunications and Queen Mary College London for the 2004 intake onwards

- Programmes at the University of Nottingham in Ningbo for the 2010 intake onwards

- Programmes at Xi'an Jiaotong and Liverpool University for 2012 intake onwards

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Conclusions

- The UK Education System has various mandatory regulation mechanisms, but these MUST keep evolving

- The Engineering profession supports and regulates the education system through accreditation

- Mutual recognition of Higher Education programmes exists through the Washington Accord

- The IET has accredited Joint Programmes with China and UK Universities which are producing high quality workplace ready graduates.

- However, Greater global collaboration in Engineering Education, Engineering Standards, Qualifications, Professional Development, and Certification is essential to solve global engineering problems through a Globally Mobile Workforce

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Links

Ofsted

https://www.gov.uk/government/organisations/ofsted

Institute for Apprenticeships

https://www.instituteforapprenticeships.org/

Office for Students

https://www.officeforstudents.org.uk/

QAA and QAA Scotland

http://www.qaa.ac.uk/   https://www.qaa.ac.uk/scotland

Guidance on Higher Education Standards

https://www.qaa.ac.uk/quality-code/the-existing-uk-quality-code/part-a-setting-and-maintaining-academic-standards

QAA Reports

https://www.qaa.ac.uk/reviewing-higher-education/quality-assurance-reports

Guidance on External Academic Audit (External Examiners)

https://www.qaa.ac.uk/quality-code/the-existing-uk-quality-code/part-b-assuring-and-enhancing-academic-quality

The Teaching Excellence Framework for Universities

http://www.hefce.ac.uk/tefoutcomes

Engineering: Accreditation of Higher Education Programmes (Learning Outcomes)

https://www.engc.org.uk/standards-guidance/standards/accreditation-of-higher-education-programmes-ahep/

Engineering: Approval of Qualifications and Apprenticeships Handbook

https://www.engc.org.uk/standards-guidance/standards/approval-of-qualifications-and-apprenticeships-handbook-aqah/

Engineering: IET Accreditation

www.theiet.org/accreditation

Washington Accord

http://www.ieagreements.org/

EURACE

http://www.enaee.eu/

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