Engineering Education in the UK

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- Routes to Engineering
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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

Working to engineer a better world
IET VISION

Working to engineer a better world

IET MISSION

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

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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
Routes to Engineering in UK

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

Professional Development in Work

- Professional Engineer (IEng, CEng)
- Technician Engineer (EngTech, ICTTech)

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Typical UK Academic Route to Engineering

A Levels

HND / Foundation Degrees

Bachelors Degrees

Masters Degrees (MEng, MSc)

Apprenticeships

Higher Apprenticeships

Degree Apprenticeships

Post-Graduate Apprenticeships

T levels (from 2021)

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Typical UK Vocational Route to Engineering

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Masters Degrees

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Other Vocational / Work Based Quals

Vocational Education

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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/
Evolving UK Routes to Engineering

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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/
- QAA publish information about 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](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
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
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
Standards for Engineering Qualifications

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


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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
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]
International Agreements

- The International Engineering Alliance (IEA)
  - Washington Accord: Professional (Chartered) Engineer Education
  - Sydney Accord: Technologist (Incorporated) Engineer Education
  - Dublin Accord: Technician Engineer Education

- EURACE
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
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.
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

Engineering: IET Accreditation
www.theiet.org/accreditation

Washington Accord
http://www.ieagreements.org/

EURACE
http://www.enaee.eu/