

A. Engineering education

Engineering Education programmes are provided by universities through the degree levels of Foundation, Bachelor, Bachelor with honours, Master and PhD.

Engineering and engineering technology certificate, diploma and ordinary degree education programmes are provided in Colleges of Further or Higher Education.

See: [The UK Standard for Professional Engineering Competence: Accreditation of Higher Education Programmes](#)

B. Academic titles

B.1. For Chartered Engineer (CEng):

- An accredited Bachelors degree with honours in engineering or technology, plus either an appropriate Masters degree accredited by a professional engineering institution, or appropriate further learning to Masters level
- **or** an accredited integrated MEng degree.

(ref Engineering Council 's Guidance Note on Academic Accreditation).
[www.engc.org.uk/documents/Guidance Note on Academic Accreditation.pdf](http://www.engc.org.uk/documents/Guidance%20Note%20on%20Academic%20Accreditation.pdf)

B.2. For Incorporated Engineer (IEng):

- an accredited **Bachelors or Bachelors honours degree in engineering or technology**
- or a **Higher National Certificate/Diploma or Foundation Degree** in engineering or technology, plus appropriate further learning to Bachelors degree level
- or an **NVQ4 or SVQ4** which has been approved for the purpose by a licensed engineering institution.

The accreditation of engineering degrees, whether at first or second cycle, is undertaken by the Professional Engineering Institutions (PEI's) in accordance with regulations set out by the Engineering Council.

Since 2004 the accreditation system has been outcome-based, and the sole criterion for accrediting a programme is that it delivers the required outcomes at the appropriate level (first or second degree).

The Engineering Council has developed a framework of required learning outcomes which covers all accredited Bachelors and Masters degrees. The outcomes-based

approach has been incorporated into various international agreements, including the EURACE-framework maintained by ENAEE – European network for the Accreditation of Engineering Education. A small proportion of Bachelors is accredited only to deliver the knowledge and understanding dimension of Incorporated Engineer competence.

Around 60% of the professionals gaining registration with the Engineering Council have held the education qualifications for their category of registration. For other professionals there is a set of other methods for assessing knowledge and understanding: these include as degrees in related subjects and work-based learning such as that presented in a technical report.

C. Academic title protection

Use of UK academic titles is protected in civil law. Awarding bodies issue degree certificates to graduating students which can be verified with the awarding body concerned.

D. Educational institutions

Educational institutions:

See list attached MEng degrees.

Applications to Higher Education Institutions in the UK are made through UCAS. A complete list of educational institutions can be found on the UCAS website at:

<http://www.ucas.com/students/choosingcourses/choosinguni/map/>

Specialisations:

UK Higher Education Institutions offer a very wide range of programmes in engineering and technology and related subjects. UCAS lists over 170 engineering subjects, which are supplemented by subjects with options and other related programmes. Typically, engineering disciplines include :

Aeronautical Engineering
Aerospace Engineering
Agricultural Engineering

Biomedical Engineering
Bio-systems Engineering
Building Services Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Electronic Engineering
Environmental Engineering
Engineering Design
Industrial Engineering
Manufacturing Engineering
Marine Engineering
Materials Technology
Mechanical Engineering
Mechatronic Engineering
Micro-electronic Engineering
Nuclear Engineering
Production Engineering
Process Engineering
Software Engineering
Structural Engineering
Telecommunications Engineering
Transportation Engineering

Accredited engineering programmes are listed on the Engineering Council's Academic Course Search Database – see <http://www.engc.org.uk/education--skills/accreditation/accredited-course-search>

E. Minimum entry requirements to accredited engineering programmes

General entrance requirements for engineering programmes are prescribed by the Higher Education Institution or College concerned. For degrees these are typically to have passed in a recognised General Certificate of Education examination either in three or more subjects at A level.

A levels are studied typically between the ages of 16-18 in England, Wales and Northern Ireland, although mature students are also encouraged. They remain the most popular route into UK higher education institutions.

Each A Level consists of 6 units which are studied in two stages:

Stage 1 – Advanced Subsidiary (AS) level: study of 3 modules and upon completion be awarded an AS Level.

Stage 2 – A2 level: study the second set of 3 units which will take the AS level to a full A Level.

Subjects (modules): there is a broad range of A levels to choose from, including Business, Science, Arts and Humanities subjects.

For studies in preparation for degree areas such as Science, Medicine and Engineering subjects as Maths, Further Maths, Physics, Chemistry and Biology are recommended.

The UK's UCAS university entrance service has established a system of Tariff Points that is used for allocating points to the full range of academic and vocational qualifications that may be used for entry to higher education. Universities and colleges use this system to make comparisons between applicants with different qualifications and Tariff Points are often stated in the entry requirements.

F. CURRICULA AND DURATION OF PROGRAMMES

MEng degrees are integrated Masters degrees, normally of 4 years duration. These differ from Bachelors degrees in having a greater range of project work, usually including a group project. They also provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general educational base, to provide both a foundation for leadership, and a wider appreciation of the economic, social and environmental context of engineering.

IEng Bachelors degrees, Foundation degrees and Higher National qualifications will have an emphasis on the application of developed technology and the attainment of know-how, sometimes within a multidisciplinary engineering environment. The breadth and depth of underpinning scientific and mathematical knowledge, understanding and skills is provided in the most appropriate manner to enable the application of engineering principles within existing technology to future engineering problems and processes.

G. ACCESS TO THE PROFESSION AND REGULATIONS

In general, the engineering profession in the UK is not restricted. However, professional titles are regulated and access to these, and the corresponding professional recognition, is by assessment of professional competence and commitment as defined in the Engineering Council's UK standard for professional engineering competence (UK-SPEC), first published in 2003.

The engineering profession is regulated by the Engineering Council through 36 professional engineering institutions (PEI's). These are licensed by the Engineering Council to assess their members against the UK-SPEC requirements, and to place those who can demonstrate the required competence and commitment on its register of Engineers and Technicians.

PEI's may also be licensed to accredit engineering education programmes. The Register has four sections: ICT Technician (not considered in this document), Engineering Technician, (EngTech), Incorporated Engineer (IEng), and Chartered Engineer (CEng). These titles are protected by the Engineering Council's Royal Charter and may only be used by registrants.

Achievement of registration in each category is to be valued in its own right, but lifelong learning and career development may also enable individuals to progress within the registration structure.

Under UK-SPEC professional registration is open to everyone who can demonstrate competence to perform professional work to the necessary standards. Registrants must also commit to maintain their competence, work within professional codes and participate actively within the profession.

UK-SPEC describes the required competence and commitment in generic terms to cover all sub-disciplines of engineering. Each PEI has developed further documentation explaining how the generic standards apply in the sub-discipline or industry sector with which it is concerned. The PEI's are also responsible for the assessment of applicants for professional recognition. This involves consideration of a portfolio of documented evidence from the applicant's education and employment which will show the range of engineering functions which the applicant has undertaken and the nature and levels of the responsibility which the professional had to take when doing so. The assessment also involves the consideration of an extended essay and further examination called the professional review interview (PRI) conducted by at least two experienced professional engineers. For those seeking to be registered as Engineering Technicians, the assessment may be on the basis of documentary evidence only.

H. REPRESENTATION OF THE PROFESSION

The Engineering Council is the regulatory body according to the terms of the EU Directive 2005/36/CE on recognition of professional qualifications.

Engineering Council
246 High Holborn
London
WC1V 7EX

T: +44 (0)20 3206 0500
F: +44 (0)20 3206 0501
<http://www.engc.org.uk>

There are 36 licensed professional institutions.

See <http://www.engc.org.uk/about-us/our-partners/professional-engineering-institutions>

Professional titles

1. Engineering Technician (Eng Tech)

The Eng Tech is concerned with applying proven techniques and procedures to the solution of practical engineering problems, and carries supervisory or technical responsibility.

The educational standard is a range of awards at level 3 or above in the national qualifications and credit framework, approved by PEI's in accordance with rules set out by the Engineering Council.

2. Incorporated Engineer (IEng)

The IEng maintains and manages applications of current and developing technology and is engaged in technical and commercial management.

The educational standard is an accredited Bachelors (first cycle) degree.

3. Chartered Engineer (CEng)

The CEng develops appropriate solutions to engineering problems, using new and existing technologies, through innovation, creativity and change, and is engaged in technical and commercial leadership.

The educational standard is either an accredited Bachelors (first cycle) degree plus an accredited Masters (second) degree or an integrated Masters (MEng) degree.

While a clear distinction can be made between Engineering Technician and the two other categories of professional engineer, the differences between Incorporated Engineers and Chartered Engineers have been much debated. The standard now presents them as two different points in a continuum, rather than as two completely different types of engineer. This means that Chartered and Incorporated Engineers both may have an involvement with theoretical and applied research, but the Chartered Engineer's role will be a leading one, while the Incorporated Engineer will have a contributory role. Both may be involved with design and development, but the Chartered Engineer's role is likely to be at a more strategic and conceptual level. Chartered Engineers and Incorporated Engineers both may be concerned with existing technologies as well as developing ones.

I. REGISTER STATISTICS

The Engineering Council is the UK regulatory body for the engineering profession. It holds the national registers of 238,000 Engineering Technicians (EngTech), Information and Communications Technology Technicians (ICT Tech), Incorporated Engineers (IEng) and Chartered Engineers (CEng).

J. APPENDICES

APPENDIX I: LIST OF PROFESSIONAL ENGINEERING INSTITUTIONS (PEI'S)

British Computer Society

British Institute of Non-Destructive Testing

Chartered Institute of Plumbing and Heating Engineering

Chartered Institution of Building Services Engineers

Chartered Institute of Highways & Transportation

Chartered Institution of Water and Environmental Management

Energy Institute

Institute of Acoustics
Institute of Cast Metals Engineers
Institute of Healthcare Engineering and Estate Management
Institute of Highways Engineers
Institute of Marine Engineering, Science and Technology
Institute of Materials, Minerals and Mining
Institute of Measurement and Control
Institute of Physics
Institute of Physics and Engineering in Medicine
Institute of Water
Institution of Agricultural Engineers
Institution of Chemical Engineers
Institution of Civil Engineers
Institution of Engineering and Technology
Institution of Engineering Designers
Institution of Fire Engineers
Institution of Gas Engineers and Managers
Institution of Lighting Professionals
Institution of Mechanical Engineers
Institution of Railway Signal Engineers
Institution of Royal Engineers
Institution of Structural Engineers
Nuclear Institute
Royal Aeronautical Society
Royal Institute of Naval Architects
Society of Environmental Engineers
Society of Operations Engineers
The Institute of Diesel and Gas Turbine Engineers
The Welding Institute