

Tomorrow's Engineers



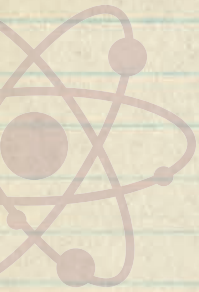
Parents' guide to engineering careers

What is engineering?

Engineering is the practical and creative application of science and maths. Engineers use the knowledge they have in a specific field to make things work and to solve problems.

Engineering is behind everything. From mobile phones and trainers to the car you travel in, the lights you switch on and the food you eat. Engineers could be designing colour-matching technology to determine the best makeup for different skin tones, finding innovative solutions for remote villages to access clean drinking water or working as part of a team to improve the performance of bionic limbs.

Engineers are currently tackling some of the world's most pressing problems. From dealing with cyber security and maintaining clean energy supplies to finding sustainable ways to grow food, build houses and travel.





Why engineering?

Are there any engineering jobs in the UK?

Yes there are. Engineering businesses and the products of engineering make up a significant part of the UK economy.

- Engineering enterprises employ 5.4 million people, representing almost 20% of the UK work force
- The engineering sector turns over three times more than the retail sector and employs almost twice as many people
- There will be an expected 2.74 million job openings in engineering companies this decade

Engineers are needed at all levels, in a wide range of sectors – from apprentices to technicians; graduates to postgraduates – there is a high demand for engineers in the UK.

Alongside the well-known success stories of aerospace and pharmaceuticals, strong growth can also be seen in advanced manufacturing, renewable energy, low carbon technologies and recycling.

In the built environment, engineers are at the forefront of finding solutions to problems such as water shortage, flood protection, waste management and energy. They are also at the heart of outstanding transport and design achievements such as London's Crossrail, the Shard and The Queensferry Crossing linking Edinburgh to Fife. These are essential skills that are required not only in the UK but are transferable across the world.

What are the employment prospects like for engineers?

After graduation, approximately 70% of engineers are immediately employed in engineering, science and technology based roles; the remainder pursue careers in other sectors, take up gap years or continue with their studies. A very low number are unemployed after graduation.

There is currently a shortage of engineers, especially engineering technicians. We need to double the number of engineering related apprentices and those taking engineering related college and university courses in order to plug the skills gap.

Where do engineers work?

There are many different engineering industries, including: advanced manufacturing, aerospace, automotive & transport, the built environment, computing, design & consultancy, digital & creative, energy, food & drink, health & life sciences and infrastructure.

The engineers of today will generally be found in design offices, research and development laboratories and out in the field (for example stadiums, airports, underground or at sea). Much of the manufacturing that happens in the UK today is advanced manufacturing; it is closely linked with technology, and engineers play a major role in many technological devices and advances. Engineers working in manufacturing are therefore far more likely to be working in highly modern, clean working environments such as offices and laboratories than in factories.

What else can you do with engineering qualifications?

Scientific, analytical, numeracy, project management, teamwork and problem solving skills are very highly valued by employers from all sectors, making engineering and technology based qualifications extremely sought after. Engineering graduates can also be found working in finance, IT, teaching, project management and senior management roles in a wide variety of public and private organisations.

How much do engineers get paid?

Engineering graduates' starting salaries are around 20% higher than the starting salaries for all graduates.

Engineering technicians also earn significantly more than the average mean salary for all employees of £26,600.

Across the board professional engineers can expect to earn **£25,000 - £40,000 more than the national average salary.**

The average salary for Chartered Engineers is £68,500 and for Incorporated Engineers it is £51,000.

How do you get into engineering?

Are there any scholarships or awards to help with funding?

Several organisations offer scholarships / bursaries for young people wanting to pursue an engineering career. There are also awards / grants for those already working in engineering and science – many of which involve a monetary prize.

More information can be found at www.tomorrowsengineers.org.uk/16-19/Funding/

Which subjects are needed?

Engineering requires you to apply maths and science principles; therefore maths and science subjects, particularly physics, are essential for engineering careers.

For engineering at university you will need good grades in both maths and physics A level or equivalent, or BTEC Level 3 or equivalent. For chemical or biomedical engineering at university you will need chemistry A level (or equivalent). Computer science and design and technology subjects are an advantage but generally not essential.

For apprenticeships and college courses, C grades or above in both maths and science are usually required.

Do you need to go to university to be an engineer?

No. Other routes to engineering jobs include apprenticeships or college courses.

Students considering university should find out whether their degree has been accredited by the Engineering Council. This means that they will be able to pursue professional registration by becoming a member of an institution.

More information about accredited courses can be found at www.engc.org.uk

Are there professional engineering qualifications?

Yes. By joining one of the 36 **professional engineering institutions**, engineers have the opportunity to gain professional registration as **Engineering** or **ICT Technician (EngTech or ICT Tech)**, **Incorporated Engineer (IEng)** or **Chartered Engineer (CEng)**. Professional registration is recognised around the world. The letters after the name demonstrate academic ability, expertise and competence developed by work place experience. Contact details for the **engineering institutions** can be found at the end of this leaflet.

How can you find work experience in engineering?

Providing evidence of relevant work experience on a CV can be a useful boost when applying for both courses and jobs. Students should speak to their careers or work experience contact at school, college or university, to find out more. If they are unable to find a suitable placement there are several organisations that may be able to help.

More information and useful tips on how to find work experience can be found at

www.tomorrowsengineers.org.uk



More info

Encouraging young engineers

Visit science and technology fairs, events and museums that explore the innovative use of science, technology, engineering and maths:

- The Big Bang Fair (National and Near Me)
www.thebigbangfair.co.uk
- The Science Museum
www.sciencemuseum.org.uk
- Science festivals
www.britishcouncil.org
- Museums and heritage sites across the UK
www.culture24.org.uk
- Days out in your area
www.dayoutwiththekids.co.uk

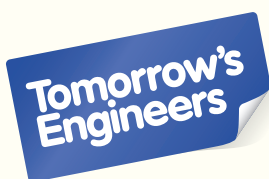
Look out for science and maths related TV programmes:

- Science on the BBC
www.bbc.co.uk/science
- Channel 4 Science programmes
www.channel4.com

Take advantage of residential and other in-school opportunities for young people:

- Visiting speakers STEM Ambassadors www.stemnet.org.uk
- After school clubs www.stemclubs.net and www.youngeng.org
- Residential and extra-curricular activities www.stemdirectories.org.uk

These careers information resources have been developed by:



Find everything you need @ 
www.tomorrowsengineers.org.uk

