

Tomorrow's Engineers

What is engineering?



Exciting jobs... ...that make a difference

Engineering uses maths, science - especially physics - and subjects such as D&T, computing, electronics and construction, to improve the world around us.



The work that engineers do affects billions of people. It is creative and hands-on. It is about solving problems, designing things and improving things.



As an engineer, you could tackle some of the world's most pressing problems - from dealing with cyber security and maintaining clean water and energy supplies to finding sustainable ways to grow food, build houses and travel.

You could be working with new materials, chemicals and technology to design sports clothing, preserve food and make the latest skincare products. You could even be part of a team that designs driverless vehicles, surgical robots or earthquake detection systems.

Whatever you're into - whether it's music or wildlife, space or computer games, there's a world of exciting possibilities on offer as there are loads of different types of engineering to choose from. You could travel the world, meet interesting people and help save and improve people's lives.

Engineering is behind everything - from your smartphone and hair styling products to the lights you switch on and the shoes on your feet. So, if you enjoy science, maths, D&T or computing at school, you too could be designing cutting-edge technology or providing water for drought plagued countries.

Getting into engineering...



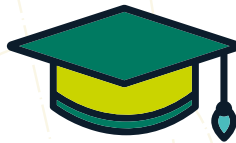
School

Science (Physics), Maths, D&T, Computing, Chemistry



Sixth Form/FE

A-levels / T-levels /
Highers / IB / BTEC /
TechBacc /HNC /HND /
Foundation Degree



University Degree

Bachelors BEng / BSc
Masters (MEng)



On-the-job
training

Apprenticeships

Intermediate / Advanced / Higher /
Degree Apprenticeship
Earn while you learn
e.g. NVQ / SVQ / BTEC



Work

Routes into engineering...

11 to 16

At School

Studying science – especially physics – and maths at school will get you off to a great start. Design & technology, computing and chemistry can also be useful for certain types of engineering. These subjects give you some of the skills engineers use and are a great basis for apprenticeships in engineering, construction, manufacturing and IT; college courses; university degrees or jobs.

Work Experience

If you're interested in becoming an engineer, why not try and get work experience during the school/college holidays? Some universities are now requesting work experience as part of the application process for their engineering courses. So be one step ahead!

Work experience placements can be difficult to find, so start searching as soon as you can to ensure you're not disappointed. Visit the 'work experience' section on the Tomorrow's Engineers website for tips on where to start looking.



16+

There are several different routes into engineering; choose the path that's best for you.

- ➔ Apprenticeships
- ➔ A-Levels / T-levels /
Highers / IB / TechBacc

- ➔ Vocational qualifications
- ➔ University

Apprenticeships

Apprenticeships allow you to earn money, combining on-the-job training with study. Apprenticeships are available at different levels – the higher and degree level apprenticeships tend to incorporate university degrees within the learning element of their programmes and can lead on to professional registration. The combination of qualifications and workplace experience makes apprentices an attractive option for employers looking to recruit people with proven practical skills.

You'll generally need a minimum of five GCSEs (or equivalent), including English, mathematics and science or technology

subjects, often at grades 9 to 4 (A* to C) due to competition for places.

Many different types of apprenticeships exist in engineering, construction, manufacturing and ICT leading to jobs in a variety of industries, including transport, health, food, digital technology, construction, design and power.

1.2 million jobs requiring engineering skills are expected to arise in the engineering sector between now and 2024 - and a further 860,000 outside of the sector. Many of these will be accessible via an apprenticeship.

Data is taken from EngineeringUK 2018: The State of Engineering

You can find out more about apprenticeships here:

- If you live in England
www.getingofar.gov.uk
- If you live in Scotland
www.apprenticeships.scot
- If you live in Wales
www.careerswales.com
- If you live in Northern Ireland
www.nidirect.gov.uk/apprenticeships

A-Levels / T-levels Highers / IB

By continuing with relevant subjects after your GCSEs (or equivalent), you could progress onto an engineering degree course at university or a Higher Apprenticeship in engineering, manufacturing or IT.

Important subjects include maths and physics. Chemistry may be required for certain engineering degrees, such as chemical or biomedical engineering. Other useful subjects for engineering degrees include: design & technology, computing and further maths.

Vocational qualifications

Known as Tech levels - or T-levels - these include qualifications such as BTECs and NVQs in engineering, construction & the built environment and ICT.

Vocational courses prepare you for a particular job, industry or sector. They are often very practical and may include coursework assignments related to real-work scenarios, as well as links with employers. They can lead on to advanced and higher apprenticeships and university.

University

After completing your A-levels, T-levels, IB, Highers, BTEC Level 3 or equivalent, you may decide to go on to study engineering at university. Degree courses (BEng) normally last for 3 or 4 years whilst Masters courses (MEng) last for 4 or 5 years. Some courses involve a year working in industry, or a year abroad. The additional experience this provides can be highly beneficial when seeking employment.

Students can take a 'general engineering' degree or they might decide on a particular type of engineering, for example civil engineering, electronic engineering, design engineering, mechanical engineering or one of the many other types of engineering!

You normally need to have studied maths and physics (or chemistry for chemical and biomedical engineering), or a related vocational course to Level 3, in order to apply for engineering degrees at university.

Beyond study

Whichever route you take into engineering, once you have the necessary qualifications and skills developed in the workplace you can apply to become professionally registered with a professional engineering institution. Like doctors and lawyers, professionally registered engineers are well respected. Your registration options are: Engineering Technician (EngTech), ICT Technician (ICT *Tech*), Incorporated Engineer (IEng) or Chartered Engineer (CEng). Once registered, you can use these letters after your name so employers and customers

Financial support

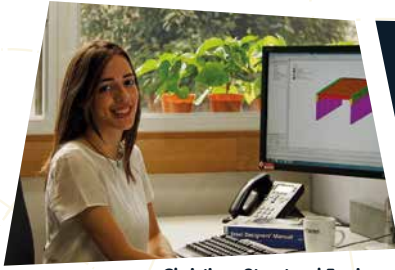
Universities offer bursaries and scholarships to help with the cost of studying. Some professional engineering institutions and employers offer scholarships which are open to candidates with the right qualifications for particular courses. Many scholarships come with additional benefits such as guaranteed internships with the sponsoring organisation. More information can be found on the funding section of the Tomorrow's Engineers website.



Joshua, Research Engineer

can see that you've achieved a high standard of engineering professionalism.

There are some vocational qualifications, apprenticeships and degree courses that will give you a head start on the road to professional registration. Check out the accredited course search tool and the database of Technician qualifications on the Engineering Council's website: www.engc.org.uk



Christina, Structural Engineer

What's in it for you?

Engineers at all levels have the potential to earn a great wage and have a fantastic career.

People who graduate from university with engineering and technology degrees start out earning almost 20% more per year than the average salary for all graduates and can expect to earn significantly more over their lifetime than graduates from most other subjects.

Engineering employers tend to pay a great deal more than the national minimum apprentice wage.

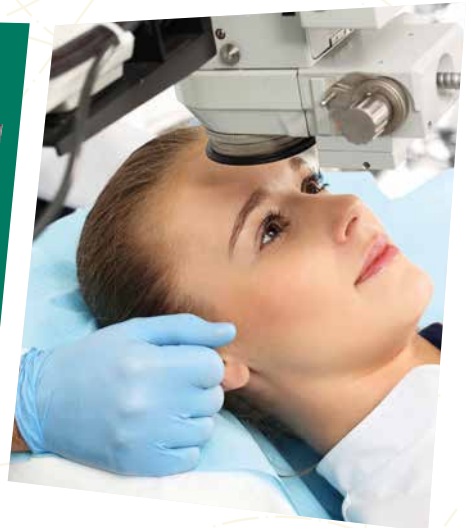
What's more, the chances of finding and staying in employment are really good. Emerging fields like space and satellite technology, medical engineering, advanced manufacturing and design consultancy along with 'green' jobs in renewable energy, alternative fuels, low carbon economy and new nuclear energy mean that the future is very bright for engineers.

The ability to think creatively and solve practical problems – along with other skills such as team-work, leading projects, managing budgets and communicating – makes engineers highly employable across lots of industries.

Real job:

Roma, Structural Engineer, CEng

“If you're a good problem solver then you can be an engineer.”



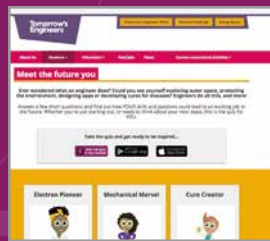
Tomorrow's Engineers

Get Involved

There are plenty of opportunities to get involved in engineering, whatever stage you're at! From science and engineering clubs, fairs and attractions around the UK, to residential courses and competitions, take a look at the student section on our website for further inspiration. You can also find 'real jobs' case studies, blogs, activities, careers resources, quizzes and more information about careers in engineering.

Take the Meet the future you quiz to find out how your strengths and passions could lead to a career in engineering

tomorrowsengineers.org.uk/quiz



“The thing I like most about engineering is the variety of challenges you face on a daily basis.”

Craig, Manufacturing Engineer

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