



Tomorrow's Engineers

What is engineering?



4:20 PM

Engineer

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 maths and science at school, you too could be designing cutting-edge technology or providing water for drought plagued countries.



**Exciting
jobs...**

...that make a difference



Engineering uses maths and science – especially physics – to improve the world around us and it all starts with what you learn in school. It can be creative, hands-on practical work, or problem solving.

You could work with materials and chemicals to design sports clothing, find new ways to preserve food, or make the latest skin care products.

Or why not join a team that designs driverless vehicles or makes transport safer, greener and more efficient? You could plan our road or rail networks to ensure we get around quickly, without stress. Or even design robots that do housework.

Then there are the engineers tackling 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.

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 dozens of different types of engineering to choose from. You could travel the world, meet interesting people and help improve our lives.



What's in it for you?

Roma
Structural Engineer, CEng
(university route)

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

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

People who graduate from university with engineering and technology degrees earn approximately 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 technicians also earn a great deal more (approximately £6,000 more per year) than the national average wage. Registered Engineering Technicians (EngTech) earn, on average, over £25,000 more per year than the national average wage.

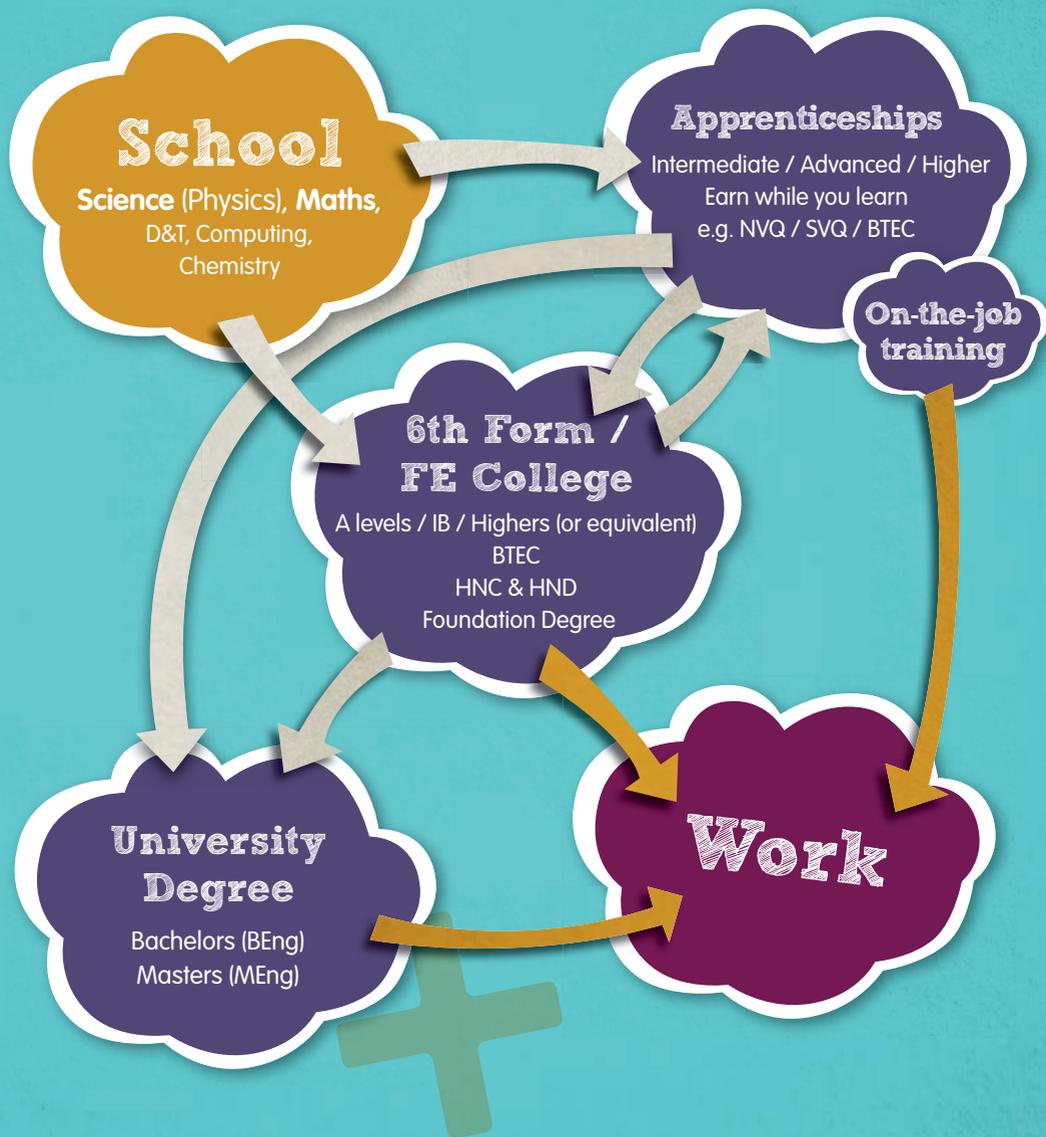
What's more, the chances of finding and staying in employment are really good. Emerging fields like space and satellite technology, medical engineering, advanced manufacturing and design consultancy along with 'green' jobs in renewable energy, alternative fuels, zero carbon homes and new nuclear energy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

The ability to think creatively and solve practical problems in a mathematical and scientific way – along with other skills such as team-work, leading projects and communicating – makes engineers highly employable.



Data is taken from *EngineeringUK 2014: The State of Engineering*.

Getting into engineering...



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 engineering, construction, manufacturing and IT apprenticeships, college courses, university degrees or jobs.



➔ Work Experience

If you're interested in becoming an engineer, why not 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 choose the path that's best for you.

Vocational qualifications

Such as BTECs and NVQs in engineering, construction and the built environment or 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.

Apprenticeships

Apprenticeships allow you to earn money, combining on-the-job training with study. Apprenticeships are available at different levels – the higher level apprenticeships often 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 A* to C due to competition for places.

University

After completing your A-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 electronic engineering, design 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.

➔ Financial support

Universities and the National Scholarship Programme offer bursaries 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.

into engineering:

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

We need to at least double the number of engineering and technology apprentices and technicians in the UK by 2020 in order to meet demand, so it's a good time to be considering this pathway into your future career.



A-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 engineering, manufacturing or IT apprenticeship.

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.

You can find out more about apprenticeships here:

If you live in England – www.apprenticeships.org.uk

If you live in Scotland – www.myworldofwork.co.uk/modernapprenticeships

If you live in Wales – www.careerswales.com/en/

If you live in Northern Ireland – www.delni.gov.uk/apprenticeshipsni

To find out more about Engineering Technicians, visit:
www.engtechnow.com

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. 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 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 to see if your chosen course is one of them. You'll also find a full list of professional institutions and benefits of membership: www.engc.org.uk

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 'get involved' section on our website for further inspiration. You can also find case studies, activities, careers resources, quizzes and more information about careers in engineering.

Craig
Manufacturing Engineer
(apprenticeship route)

"I like to be 'hands on' and to learn stuff on the job."



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