

Inspiring future engineers: notes for teachers



What is engineering?

Engineering is about making a difference to the world by solving problems, improving things and designing things. The scope and breadth of the engineering sector is huge. Engineering is part of everything we use and is crucial to our ability to adapt and thrive in the future.

For instance, engineers are finding innovative ways to construct and power our buildings more sustainably, protect us from cyber-attacks, enable space exploration, respond to viruses and diseases, bring clean water to remote communities, facilitate greener, easier, safer travel, transform the lives of disabled people, enhance our enjoyment of food, sport, films, music and computer games... and much more.

Why is engineering a good career choice?

Professional engineers are well paid

Engineers are in demand in many different sectors



Engineers can work in all sorts of environments
– at home, in a design studio, underground, at sea, in space, in a hospital, in a theatre, outdoors...



Engineering is a very creative career

Engineering is a varied, interesting career with opportunities to develop new skills, work with teams of other professionals and be a part of exciting projects, at home and overseas



Wherever your interests lie – **fashion, film, architecture, robots, medicine, space, the environment** – there will be engineering involved. Your passion could become your career



Engineers help improve people's lives and solve global challenges

Like doctors and lawyers, professional engineers are well respected and get to use letters after their name (e.g. CEng denotes a Chartered Engineer)

What are the routes into engineering?

- There are many different routes into engineering – students can choose the best route for them
- Have a look at the careers leaflets available to download from the careers resources section on Neon, for more detailed information that can be shared with students neonfutures.org.uk/resource
- A levels, T levels, Scottish Highers and Advanced Highers, apprenticeships, BTECs (and other vocational qualifications), degree apprenticeships, degrees and masters degrees, can all lead into engineering. There are leaflets that describe the different routes into engineering that can be downloaded from Neon neonfutures.org.uk/resource
- Relevant subjects for engineering include maths, physics, design and technology, computing, chemistry, geography, construction and the built environment, art and languages
- Around a third of engineering degree courses require students to have maths and/or physics at A level or equivalent – visit the UCAS website to check specific entry requirements

What are the current challenges?

- Students are currently not very well informed about engineering careers and the difference that they could make as future engineers
- Too few students – especially girls – are taking subjects that would keep their options open for engineering careers, i.e. maths, physics, design & technology, and computing
- There is currently an under-representation of women and people from minority ethnic groups in the UK engineering sector – we are missing out on talent and diversity of thought
- We need more engineers in the UK and globally to work on critical issues such as finding sustainable sources of power, producing enough food and clean water for everyone, reducing the impact of pandemics and natural disasters, cleaning the ocean, tackling poverty and coping with a growing – and ageing – population

How can I inspire my students to consider STEM/engineering careers?

- Use the search function to find an engineering experience for your school, to help your students explore engineering in a hands-on way
neonfutures.org.uk/experiences
- Research has shown that students who have multiple opportunities to engage with a role model in engineering, or find out more about the engineering workplace, stay engaged with engineering as a career. Consider booking multiple experiences over time, to achieve the greatest impact
- Use our editable PowerPoint presentation 'Engineer your future' to inform students about a career in engineering. It explains what engineering is, why it is important, what engineers do and asks questions to get students thinking about what engineering will look like in the future
- Encourage students to take the 'Meet the future you' careers quiz to find out how their skills and interests could lead them to become a Civilisation Saver, Mechanical Marvel, Universe Explorer, or a different type of engineer

www.mtfy.org.uk

- Show students some short films of engineers talking about what they do

www.thisisengineering.org.uk

neonfutures.org.uk/case-study

- Attend or host a Big Bang Fair, which brings STEM to life for young people

www.thebigbang.org.uk

- Help your students enter a project into The Big Bang Competition

www.thebigbang.org.uk/the-big-bang-competition

- Invite an engineer or other STEM professional into your school to speak to students or support a hands-on activity

www.stem.org.uk/stem-ambassadors

- Find STEM-related teaching resources

www.stem.org.uk/resources