Routes Into Engineering

Engineering is a great career choice...

Engineers help save lives, save the planet, help shape our environment and make a real difference. Whether working in a team or individually, at home or abroad there are many opportunities in this well paid profession.

There are lots of different engineering professions, covering many topics.


Split your group into small teams and give each one an engineering topic to present.

Ask them to explain a career route that they could take to become an engineer in the field they have been given. They can look at apprenticeships, non-graduate and graduate routes.

ROYAL ACADEMY OF ENGINEERING in partnership with STEM clubs

Nationally coordinated by STEMNET
Some Alternative Ideas

Perhaps you can invite STEM Ambassadors from local businesses to do a ‘Lunchtime Press Conference’ for a larger group? Your club could record the conference and upload it onto your school’s website. Students could conduct interviews with the Ambassadors to get information about their careers.

A successful activity used by STEMNET is ‘Speed Dating’. Invite some Ambassadors into school and split your group into twos and threes. Give each small group 5 minutes to talk to each Ambassador before blowing a whistle and moving them around!

STEM Ambassadors

A good way to show your students the variety of careers available in engineering and to highlight the different routes into the profession is to invite STEM Ambassadors to speak to them.

You can use the STEMNetworking website to request an Ambassador and to learn more about the programme: networking.stemnet.org.uk or speak to your local STEM Ambassador contract holder who can help find STEM Ambassadors for you: www.stemnet.org.uk/regions

When you invite STEM Ambassadors into school, it is important to have a clear aim for the event and to communicate this to them. Here are some ideas you might want them to include:

- The subjects they did at school, perhaps highlighting any they found difficult
- Did they go to university or follow an occupational or vocational route?
- Why did they make this choice and did they enjoy it?
- What is their job and what do they do?
- What is their favourite/worst part of their job?
- What do they want to do in the future?

Are your students going to have questions for the Ambassadors?

New graduate engineers can expect to earn £22,000 (with room for improvement) while the average wage of a Chartered Engineer (visit www.engc.org.uk for more details on Chartered, Incorporated and Technician status) is in excess of £50,000 and becoming a managing director or chief executive can earn you even more (sometimes over £100,000).

The national average salary is £25,000.

An employed apprentice will earn almost £5,000 a year while training, with some companies paying up to £9,000 a year depending upon skills.

Engineering technicians earn, on average over £30,000 per year.

But we need more engineers.

There are 26.7 million people in the UK who could work. Less than 1% of these people are registered as engineers (in 2010 there were just 235,000, and only 8,430 of these were women).

Engineering is essential to our health, happiness and safety – we need more engineers! If you are creative, have good people skills and enjoy a challenge, why not try engineering?

More Information

To see what other STEM Clubs are doing and to find the full Engineering Engagement Project resource pack visit www.stemclubs.net

There are more useful ideas at STEMNetworking: http://networking.stemnet.org.uk

For more information on the Engineering Engagement project visit The Royal Academy of Engineering website at www.raeng.org.uk
Routes to Engineering

Engineering covers the whole life cycle of products, structures and processes from their initial conception and production, to maintenance and if necessary destruction or decommissioning.

There are careers that reflect all of these stages at a variety of levels. Use the information below as a starting point for research into engineering careers.

The Graduate Route

There are many different general and specialist engineering degree courses available (over 2,500 due to start in the academic year 2011–2012).

Entry grades will vary depending on the course and university, as well as the final qualification. In general, for most engineering courses you will need maths and physics A levels (or equivalent) – or for chemical engineering, chemistry A level (or equivalent).

“When doing my A Levels, I won a scholarship and completed two summer placements during sixth form. It was by doing these placements that I decided I wanted to be an electronic engineer and so I went onto Bradford University to study Electronic and Telecommunication Engineering.”

Saida Khan, Graduate Engineer

The Non-Graduate Route

If your students are not sure which route to take, a non graduate (vocational) option may be suitable. They will study at their local college and qualify for further study or employment.

Popular engineering qualifications include BTECs at levels 2 and 3 or HNC and HND. Foundation degrees www.fdf.ac.uk are also available.

Visit www.direct.gov.uk/en/EducationAndLearning/QualificationsExplained/DG_10039029 for more information

The Apprenticeship Route

To get onto an apprenticeship your students will generally need a minimum of five GCSEs (or equivalent), including English, mathematics and science or technology subjects. There is competition for places so they may need GCSE grades of A* to C.

Apprenticeships provide an opportunity to earn and learn. Advanced Apprenticeships (England and Northern Ireland) or Modern Apprenticeships (Scotland and Wales) combine study with employment. Apprenticeships will often follow a standard format:

- National Vocational Qualification (Level 2 for Apprenticeships, Level 3 for Advanced Apprenticeships)
- Key Transferable Skills.
- A Technical Certificate.

www.apprenticeships.org.uk
In Scotland visit www.apprenticeshipsinscotland.com
and in Wales wales.gov.uk/apprenticeships

“I get the biggest kick from inventing new devices to solve problems. I also get to travel to our customers around the UK three or four times a year and abroad once or twice a year; USA and Europe usually, but also to the Middle East and India.”

Geoff Bootle, Principal Development Engineer

Geoff qualified with a HND in Mechanical Engineering at Plymouth with Naval Architecture as his specialisation. He spent his Industrial experience periods working in the Royal Dockyards and in shipbuilding yards.

“I hope by the age of 40 I will be at Director level and I am confident that given my experiences and my commitment I can achieve this but believe that without starting off my career as an apprentice this may not have been possible.”

Simon Lark, Electrical, Control and Instrumentation Engineering Team Leader, Kingsnorth Power Station

“When doing my A Levels, I won a scholarship and completed two summer placements during sixth form. It was by doing these placements that I decided I wanted to be an electronic engineer and so I went onto Bradford University to study Electronic and Telecommunication Engineering.”

Saida Khan, Graduate Engineer
Role Models – STEM Ambassadors in Action

Engineers and those in engineering related roles can push the boundaries of what is possible and make the world a better and more exciting place to live.

Here are just two profiles to challenge your club’s impressions of engineering. There are more profiles throughout these resources.

Diane Brown
Academy Development Coach, BT Apprentice Academy

I train my apprentices to be engineers. I also assess and mark their NVQ as an A1 NVQ assessor.

I give them support and guidance in any area where it is needed.

I was an engineer for BT for six years. I was then called upon to help recruit new engineers.

I was a nurse for 12 years before even thinking of becoming an engineer.

Nothing is or stays the same. New technology is the future of the world.

Abdul Basit
Medical Engineer

My first degree is in Electronic Engineering but I had a passion to improve the quality of human health so I studied for a master’s degree in Medical Electronics and Physics. I liked this course because it had a very nice combination of human physiology and electronic engineering courses.

I often travel to attend seminars and workshops. The medical equipment industry is so vast that I need to meet engineers from different manufacturers to get training on new pieces of equipment. These activities increase my social and professional network and career growth.

I play squash and visit historical as well as entertaining places. As my job working hours are 9am to 5pm, Monday to Friday, I get plenty of time for myself and my family.

Careers Websites

You should visit Tomorrow’s Engineers (www.tomorrowsengineers.org.uk) for more engineering careers information.

However, there are lots of other websites with good information about engineering and technology (and STEM related) careers:

- www.futuremorph.org
- www.mathscareers.org.uk
- www.tomorrowsengineers.org.uk/whatisengineeringpresentation
- www.wisecampaign.org.uk/girls/fun_stuff/mind_maps.cfm
- www.whynotchemeng.com
- www.whystudymaterials.ac.uk

Don’t forget, you can also visit:

- www.ucas.ac.uk (Graduate route)
- www.apprenticeships.org.uk (Apprenticeship route)
- www.direct.gov.uk/en/EducationAndLearning/QualificationsExplained/DG_10039020 (Non-graduate route)

Diane mentions NVQs (National Vocational Qualifications). They are a great way into engineering. See: www.direct.gov.uk/en/EducationAndLearning/QualificationsExplained/DG_10039029

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