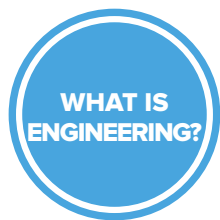


6 week STEM clubs

ENGINEERING



Put simply, Engineering is a branch of both Science and Mathematics and takes the knowledge of these subjects and applies it to solve real-world problems. Engineers are the people who are trained to do this



BUT WHAT DOES THAT MEAN?

Science and mathematics explore demonstrable truths through experiments and calculations without necessarily regarding their practical applications. Engineers take these truths and look at how they could apply in the real world and how they could be used to benefit us. For example, a scientist may discover that treating a piece of cloth with wax makes it waterproof. An engineer might then explore how the discovery could be used for our benefit, perhaps by developing a clothing range to be used for a mountaineering expedition.

The primary branches of engineering are considered to be: Chemical, Civil, Electrical and Mechanical. However, as new discoveries are made, the branches become more specialised and many subbranches now exist.

BECOME AN ENGINEER

ACTIVITY 1



To understand Engineering, explore online the different types of engineering roles available. A good place to start might be https://en.wikipedia.org/wiki/List_of_engineering_branches

Did you know that Engineering was so vast and that it could be so specialised?

Engineering is relevant to a wide range of people with lots of different interests, from fashion designers and interior designers to miners and technology companies. Engineering affects the way we all live, from the way we use cars, smart phones, bridges, sofas, clothes, buildings, medicines, or any number of built items.



ACTIVITY 2

The scientists are very excited! They mixed egg and flour and stretched it into thin strands. They let it dry and discovered an amazing new material, which they named 'spaghetti'! However, they have no idea what they could do with it. As an engineer, you think it might be possible to build something out of it! Time to test your theory!

EQUIPMENT:

- 20 strands of spaghetti
- 20 mini marshmallows
- 1 metre of masking tape
- 1 metre of string
- Measuring tape

INSTRUCTIONS

Use the spaghetti, marshmallows, masking tape and string to make the highest, free-standing, tower you can. Measure its height.

ACTIVITY 3

In activity 2, you may have been able to build a tower of a decent height, but it was probably very weak and brittle. Your next task is to build a bridge, to prove that spaghetti can be strong when used correctly.

Your supply of spaghetti will now be increased, and you will be given a stronger joining material. Can you use these new materials to bridge a gap, making it strong enough to support some weight?

EQUIPMENT:

- Spaghetti (80 or more strands)
- Sellotape, masking tape, duct tape, or glue gun
- 2 small stacks of books set 35cm apart
- Scales / weights

INSTRUCTIONS

Using spaghetti strands and tape/glue, build a bridge to span a 35cm gap that you can either place weights on, or suspend weights from.

Put some weight onto your bridge and record how much weight it can take before breaking.

SO WHAT?

We have explored only one aspect of engineering today but there are many industries that use engineering.

Find out more about how you could become an engineer via the link below.

tomorrowsengineers.org.uk/media/95265/leaflet-what-is-engineering.pdf

FIND OUT MORE

There are many ways of becoming an engineer and various routes into Higher Education in

the engineering fields. Why not take a look at the courses offered at Liverpool John Moores University to see the range of course on offer in the School of Engineering.

www.ljmu.ac.uk/about-us/faculties/faculty-of-engineering-and-technology/school-of-engineering

NEED HELP?

Why not chat live to the team at Shaping Futures to find out more about what is on offer, or to get further advice and guidance

www.shaping-futures.org.uk/activities