# Industry Spotlight: Engineering

*This article is part of our **Industry Spotlight** series - based on our popular emails - where we focus on a different Career Zone in each article. To help students learning from home during the coronavirus lockdown, each article comes with a worksheet which you can download here.*

You may be surprised to hear that there opportunities for budding engineers whether you plan to go to university or straight into the world of work.

**This article introduces you to careers in Engineering - read on for the whistle-stop tour, and click the links to read more.**

## What's Engineering all about?

Engineers are professional miracle workers, designing the amazing things we use in our everyday lives. Smartphones and computers, robots and racing cars, railways and wind turbines, even foods - these are all designed by engineers.

Engineers use a logic, maths and scientific principles to design and improve technology, buildings and all sorts of other things.

Check out this article to learn what makes a great engineer.

## What jobs are out there?

Here are some of the main types of engineers:

- **Civil engineers** work on the built environment around us - that means houses, office blocks, bridges, roads, railways and tunnels.

- **Mechanical engineers** design machinery, from dishwashers to wind turbines to the machines that build our products.
- **Chemical engineers** figure out how to mix raw chemical materials to make them perform useful functions - working in the manufacture of food, medicines, materials and nuclear science.
- **Environmental engineers** create systems that protect the environment such as structures that stop the coast from eroding.
- **Biomedical engineers** design technology that provides medical solutions, such as artificial body parts or devices that aid medical specialists in their work.
- **Electronic engineers** develop circuitry to make our gadgets smaller, more powerful and more efficient.
- **Software engineers** design computer applications like the mobile app or internet browser you're reading this email in, as well as programs that run behind the scenes or inside products.

Read more about these and other types of engineers in our in-depth article.

## Am I cut out for it?

Whatever engineering pathway you go down, you'll tend to need the same bunch of skills:

- Problem-solving skills: This is a must, it's an engineer's bread and butter.
- Creativity: Engineers make something from nothing, they are like artists in this respect.
- Curiosity: Not so much a skill as a way of thinking. Engineers constantly ask questions and aren't happy till they've answered them.
- Teamwork: Each engineer tends to work on a bit of a project, which means you have to work closely with other people working on the other bits.
- Time management: Most engineering work is project based, which means you have to be able to deliver on time - your colleagues and clients are relying on you to do that.

## Is a career in engineering future proof?

The more advanced our technologies get, the greater the need for specialist engineers to design them. The development of machine learning means that a new generation of **robotics engineers** will make robots behave less like computers and more like people.
In the future, **civil engineers** will need to evolve too as they increasingly link smart devices - from fridges and toasters to road signs and even rubbish bins - to the built environment.

## How do I get there?

### Apprenticeships/school leaver programmes

A bunch of new engineering apprenticeships means you no longer have to go to university to become an engineer. With an apprenticeship, you will train alongside experienced colleagues within a paid job, while working towards relevant qualifications which give you the knowledge and understanding to do your job better.

Apprenticeships offer a way into the following fields of engineering:

- Electrical
- Mechanical
- Manufacturing
- Civil
- Environmental

Some are available at advanced level, which means you could train after your GCSEs as an alternative to A-levels. Others are higher apprenticeships, which means you'll work towards a qualification equivalent to a foundation degree or higher.

Click below to learn more:

- Engineering apprenticeships
- What is an apprenticeship?
- Should I apply for an apprenticeship or university?

## University

### What can I study?

You can study many forms of engineering at university - as well as the generic engineering course which allows you to specialise as you progress, you can choose from chemical engineering, mechanical engineering, electronic engineering, aerospace or aeronautical engineering, and others.

### What are the entry requirements?

To study engineering at university, you'll need to have an A-level/equivalent in maths, and at least one other STEM subject, with some unis specifying physics. You should of course find out what subjects are required for your specific branch of engineering - for example, chemical engineers will be expected to have a chemistry A-level/equivalent.

# Spotlight on: Engineering

## Worksheet

Resource link: https://mailchi.mp/successatschool/careers-in-engineering-your-complete-guide-1277051

### Task #1: My 3 favourite jobs

Look at the section **What jobs are out there?** in the email newsletter (see link above). Pick three job roles that appeal to you from the examples given and carry out research to fill in the table. You can use the Success at School website (https://successatschool.org) and the internet to carry out your research.

| **Job role** | **1 thing I think I would enjoy about the role is…** | **1 skill used in this role which I already have is…** | **1 skill used in the role which I do not yet have is…** |
|---|---|---|---|
| 1. | | …and this is how I can demonstrate that I have this skill: | …and I will develop this skill by… |
| 2. | | …and this is how I can demonstrate that I have this skill: | …and I will develop this skill by… |
| 3. | | …and this is how I can demonstrate that I have this skill: | …and I will develop this skill by… |

## Task #2: Employers

Pick your favourite role from the 3 you selected above. Use the internet to research:

- 1 employer in your local area (e.g. your town, city, county)
- 1 employer somewhere else in the country

The employers must offer this job role.

| | |
|---|---|
| **My chosen job role** | |
| **Local employer** | |
| **National employer** | |

## Task #3: Pathways into work

Using the job you chose to research in Task #2, carry out research to find out how you could enter this career path by (1) an apprenticeship and (2) a university course.

| **Apprenticeships** | | **University** | |
|---|---|---|---|
| Apprenticeship title | | Course title | |
| Apprenticeship level (e.g. advanced, higher, degree) | | University name | |
| What subjects do you need? | | What subjects do you need? | |
| What grades do you need? | | What grades do you need? | |
| Qualifications you will gain | | What do you need to do after you graduate? | |