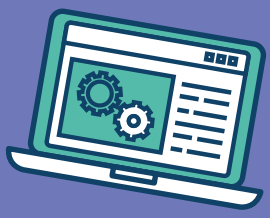
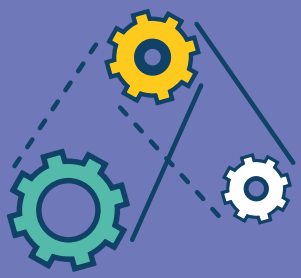
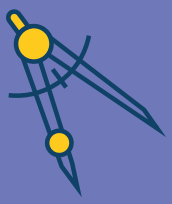
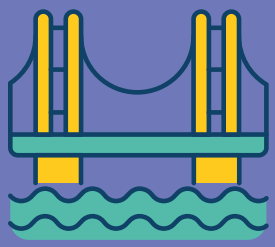
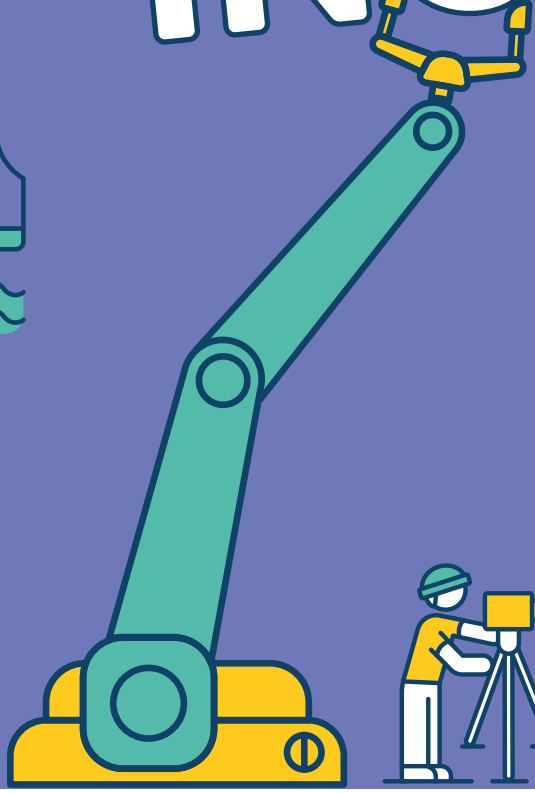
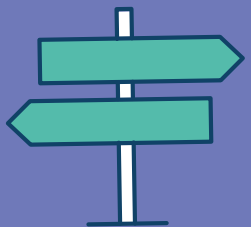
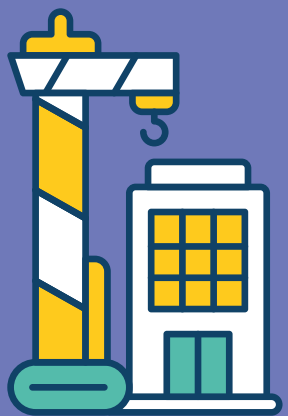


Career Prospects in ENGINEERING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The engineering sector includes a wide range of organisations, work-fields and industries.

It is difficult to paint a picture of a typical engineer, as the industry encompasses such a diverse choice of roles. To put it in simple terms, most engineers apply scientific and mathematical knowledge to solve technical problems. As technical problems exist all around us, you can find engineers in many different industries, ranging from the aviation sector through to transportation services.

DID YOU KNOW?

There are at least

45 Engineering sectors

The top engineering companies include:

Airbus
Mercedes
Siemens

Due to our ever changing world and increased globalisation,

an engineer would have plenty of opportunities to work across the globe.

Most jobs require you to have a

degree in engineering

Average salary for a graduate is around £30,000

JOB TYPES IN ENGINEERING

Let's breakdown 5 common engineering sectors:

Mechanical Engineering

Mechanical engineers are true experts in the field of solids, liquids and gasses. They understand how they can be manipulated in order to create energy. Hence the reason mechanical engineers are highly sought after in the energy sector. Engineers within this sector can apply their knowledge to develop new machinery to crate efficient energy. This can range from creating better car engines to making nuclear power plants safer.

Civil Engineering

Civil engineers work with the manufactured parts of our environment. These include our main infrastructure. That means roads, bridges, airports, buildings and railways. If you want to become a civil engineer, you will learn how natural forces, such as the weather and geology, impact our infrastructure.

Electrical Engineering

Electrical engineers focus on the functions and uses of electricity. Such engineers can work within the field of renewable energy. It is up to them to create ways to harness natural forces to create energy. However, jobs within nuclear and coal power plants are available too. As electricity is vital to our way of living, electrical engineers are always in high demand.

Electronic Engineering

Electronic engineers, not to be confused with electrical engineers, understand the workings of electronic components, such a circuit boards and microchips. Such engineers work within the IT, communication and medical technology industry, in addition to many others.

Chemical Engineering

Chemical engineers work to understand the ways of how chemicals react to create new substances. These engineers often work to create these substances on an industrial scale. A chemical engineer might work for a company specialising in creating food products, cosmetics, pharmaceuticals and fuel.

MYTH BUSTING

MYTH All engineers work outside, on big infrastructure projects

FACT Engineers work on many types of projects, in many different places

Most engineers work together with a design team who will help the planning. This usually takes place within an office. Therefore an engineer is likely to split their time between the office and a site.

Though we often envisage engineers with safety boots and hard-hats, many engineers spend most of their time behind screens, laboratories, meetings and conferences.
The work environment of engineers can be extremely diverse.

MYTH Engineers only focus on one specific thing

FACT Due to our digital world, engineering has changed drastically

You might think that civil engineers only work on bridges and roads and that mechanical engineers solely concentrate on creating engines. These days it is not as black and white anymore, as many engineers work on diverse projects. Mechanical engineers might work together with civil engineers to make sure that lifts in high-rise buildings are safe and up to adequate standards. Some chemical engineers might start their career within the pharmaceutical field but move on to creating makeup for renowned cosmetic brands.

As society becomes more and more digitised, engineering roles will continue to develop and grow into new and exciting directions.

MYTH Engineering doesn't require creativity

FACT Engineers focus on solving problems, creativity is crucial to find solutions

It is a common misconception that engineers are not very creative or that creative people don't tend to work within engineering. However, difficult problems often ask for creative solutions. Quite literally speaking, engineering is of utmost importance when it comes to creating touring shows for world stars. **Technology such as LED lighting, fog machines and pyrotechnics have all be invented and refined by engineers.**

MYTH You need to be really good at maths to become an engineer

FACT It depends on what career you are after

Of course, studying to become and engineer will require you to understand a certain level of maths. However, when it comes to landing a job, it is more about how you apply the skills you have gained. Most engineers have to use a mixture of geometry, algebra and trigonometry, however, the most complicated calculations are now performed by computers. You still need to understand how to input and analyse the data correctly though!
Alternatively, some engineering roles are more project management based, which means **you will have to do your research to find the best engineering route for you**.

MYTH Engineers don't have social or communication skills

FACT Communication is vital in engineering

It would be surprising to find a single job that does not include some level of communication. You will be working with numbers and technology but you will still need to communicate with your colleagues and clients. Just as it is in most jobs, **communication is a key skill set that enables you to do your job well,** helping you communicate clearly and effectively to others.

YEAR 9

What GCSE's are important for a career in ENGINEERING

For most engineering courses, whether you are planning on studying it at University or through an apprenticeship, you will require at least four GCSEs grade 4-9.

If you can, it would be good to choose GCSE options that include **analytical, communication, numeracy** and **IT skills**.

You might want to consider some of the following options:

- Biology
- Chemistry
- Physics
- IT
- Design and Technology
- Economics

If you are unsure about what options to choose, it might be a good idea to **look at what Level 3 qualifications you require to study engineering**. Then you can work backwards to work out **what GCSE subjects you should choose to get onto the Level 3 course** you need.

When deciding on your options it is also **important to choose subjects that you will enjoy**. If you enjoy none of the subjects above, you might want to reconsider if a career in engineering is right for you.

POST 16 OPTIONS

(Level 3 qualifications)

After you have completed your GCSEs, it is really important to make an informed decision on your Level 3 qualifications. After your GCSEs, you have the option to go down three different routes:

1 A-Levels,
2 Vocational Qualifications or
3 Apprenticeships

1 A Levels

If you are interested in studying engineering at University, doing A-Levels as your Level 3 qualifications might be a good choice for you. A-Levels are similar to GCSEs and will enable you to study subjects at a more in depth level. You would usually choose at least 3 subjects. If you want to study engineering at University you are usually required to study maths and at least one science subject. **It is important that you focus on doing well in you're A-Levels as some of the top Universities require you to achieve three As in your A-Levels.**

2 Vocational Courses

Vocational courses are designed to provide you with practical experience within a specific field of work. Level 3 vocational courses include BTEC National Certificate/Diploma and T-Levels. So if you are keen on gaining some practical experience within engineering after school, you might want to consider studying a BTEC or T-Level as these are designed to give you some hands-on experience.

More and more T-Levels will be rolled out over the next few years. These might be a good option for you if you want to make some industry connections early on, as T-Levels are operated in partnerships with employers. **From the year 2022, you can expect some of the following subjects to be available:**

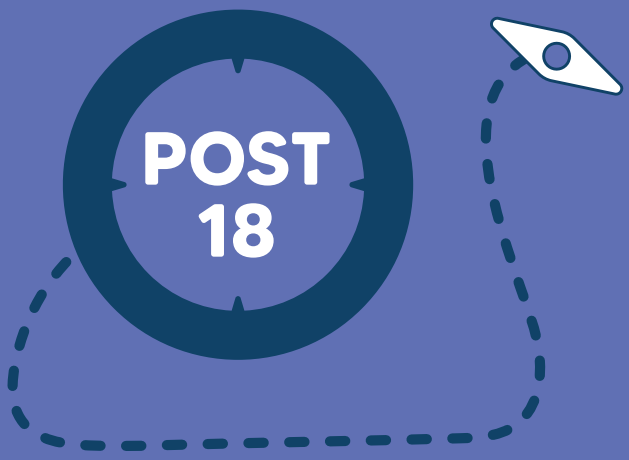
- **Manufacturing, processing and control: Production technologies.**
- **Manufacturing, processing and control: Manufacturing technologies.**
- **Manufacturing, processing and control: Processing technologies.**
- **Manufacturing, processing and control: Materials Technologies.**

As T-Levels will be a new introduction to the education system, it may be more difficult to find a wide range of subjects, as opposed to A-Levels and BTECs.

3 Apprenticeships

Apprenticeships combine paid work with studying, which means you will get paid as you complete a qualification. An apprenticeship will allow you to gain knowledge and skills that are necessary for a career in engineering. You can become a fully qualified engineer through apprenticeships, however, as you get paid throughout, **apprenticeships are very competitive** and it is difficult to land a Level 3 apprenticeship straight out of school. Therefore it is very **important to achieve the best GCSE results** possible as apprenticeship providers will only choose the best of the best.

It is always important to have a back-up plan, such as still applying to college courses as simultaneously applying for apprenticeship places.



OPTIONS

There are many option available to you once you turn 18. By then, you should have completed a level 3 qualification and you could go down several different paths.

1 University

You could study engineering at University. For most engineering courses at University will require you to have at least 3 A-Levels, including maths and a science subject. At University, you will study a strand of engineering in depth. An undergraduate degree usually takes 3 years to complete. However, many engineering courses offer an integrated Master's degree, meaning that you would spend at least 4 years at University. As engineering is such a wide field you can choose from many different University courses. **Some of them include:**

- **Civil engineering**
- **Mechanical engineering**
- **Aerospace**
- **Naval Architecture**
- **Chemical Engineering**
- **Biotechnology**

2 Employment

Most jobs within the engineering industry require you to have some sort of engineering training or qualification. If you have completed a Level 3 qualification you might be able to land an entry level job within a company. However, many companies require their entry level employees to continue with professional development (CPD). Therefore, you might be expected to continue your educational journey.

2 Apprenticeship

If you have previously completed a Level 3 qualification, you should aim to start a Level 4 Apprenticeship. Any qualification from Level 4 upwards is classed as Higher Education (HE) Many HE apprenticeships require similar entry requirements to University courses. Therefore you can expect to require at least two A-Levels, or equivalent.

Examples of Level 4 apprenticeships include:

- **Provisioning Engineer Apprenticeship**
- **Fibre Engineer Apprentices**
- **Electrical Project Engineer Apprenticeship.**

Important skills needed for ENGINEERING

Problem Solving

Creative problem solving is one of the key skills engineers possess. For a good engineer, no problem is too big. If you are looking at applying for engineering courses, and you are about to write your personal statement or application, try to ensure you put emphasis on things about you, that say you are a excellent problem solver.

Team Work

'A problem shared is a problem halved!' Of course you are not expected to do everything by yourself. Quite on the contrary, engineers have to work in teams which are often compiled of people from various backgrounds. Therefore it is important that you are a fantastic team player.

Communication

As you will encounter many people from many different backgrounds, it is vital that you know how to communicate effectively. Your time is precious and you don't want to go around wasting it! Learning to communicate clearly verbally and non-verbally will help you convey important information efficiently.

Time Management

As an engineer you will often work towards specific deadlines. Meeting these deadlines is very important, as missing one could have a detrimental domino-effect on the whole project. Make sure you learn how to manage your time effectively. Not only will it help you meet those deadlines, but you will also be able to manage your work stress free.

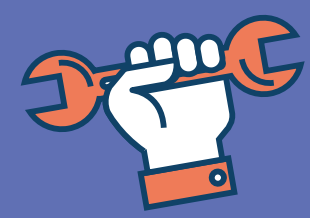
Working Under Pressure

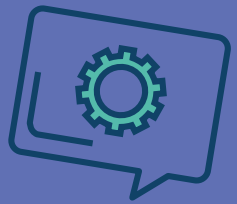
No matter how amazing all of your skills are, working in the engineering sector can become very stressful, therefore it is important to understand the best ways of working under pressure. Some people love working in a fast paced environment and thrive under pressure.
It is important that you ask yourself whether such a workplace would be right for you.

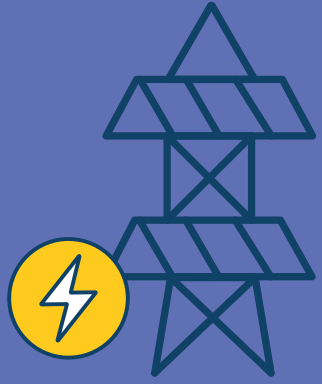
A DAY IN THE LIFE OF an Engineer

As engineering is such a vast sector, it is difficult to provide a whole picture of a day in the life of an engineer. However, if you are considering to become a mechanical engineer, you could expect to be responsible for the following:

- Develop and research new products
- Create production processes
- Design equipment modifications
- Manage people
- Manage budgets
- Train people
- Manage projects from start to finish
- Work with businesses to improve productivity







Signposting

Helpful Links:

www.ucas.com (Information regarding University and apprenticeship applications)

www.instituteforapprenticeships.org (Information regarding T-Levels and apprenticeships)

www.prospects.ac.uk (Information regarding University and apprenticeships entry requirement)

www.lmihumber.co.uk (Information regarding the engineering sector)

Top Employers:

- Airbus
- Arup
- Aston Martin
- Atkins
- Babcock
- BAE Systems
- Balfour Beatty
- BMW Group
- Cadent
- Colas Rail
- Dyson
- Jaguar Land Rover
- Kier Group
- Mercedes
- Network Rail
- Nucleargraduates
- Rolls Royce
- Siemens
- Sellafield
- Thales Group
- Transport for London

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