

# Careers in Science

## What types of job are there in science?

As a scientist, here are some of the types of work you could find yourself doing:

**Research and development.** Your observations may be used by you or others to devise new products such as drugs, foods, building materials or cleaning agents.

**Monitoring industrial processes.** You may analyse the products coming off a production line to ensure that they continue to be made to the correct standard in a safe and reliable way.

**Monitoring the environment of the earth and beyond.** You may be measuring things ranging from the quality of air and water to ensure necessary standards are met, to the output of the sun to help predict the effects of solar storms on communication satellites.

Scientists do more than research, test and measure. If you decide to work as a scientist, you will find yourself spending some of your time presenting your findings to other scientists and possibly to non-technical staff too.

Source: <https://targetcareers.co.uk/career-sectors/science>

## Where would you work as a scientist?

Scientists are needed in the public and private sectors and are hired by lots of employers including chemical and pharmaceutical companies, research institutes, universities, food and drink manufacturers, hospitals, environmental agencies,

the government and charities such as Cancer Research.

Source: <https://targetcareers.co.uk/career-sectors/science>

## How to get into a science career

If you're interested in a career in science you could

look for higher apprenticeship programmes, which are offered by a few large employers. However, there are also many smaller employers in science and since these tend to take on only graduates - and larger employers also run graduate schemes - you may decide that going to university would suit you better.

The more traditional way into the science sector is by taking a degree in a relevant subject. The degree course you should choose depends on the area of science you want to build a career in. If you are interested in a

career in life sciences or food technology then degrees in chemistry, biochemistry, biology, microbiology,

pharmacology, physiology or food science would be a good bet. If you are interested in working in chemical research and manufacturing then degrees in chemistry, physics, chemical engineering, engineering, metallurgy or material science would be ideal!

Source: <https://targetcareers.co.uk/career-sectors/science>

## Who are the main graduate employers?

Hundreds of science and pharmaceutical companies have global headquarters or research sites in the UK. These include:

- AkzoNobel
- Amec Foster Wheeler
- Associated British Foods
- AstraZeneca
- BASF
- Bayer
- BP
- Fugro
- GSK(GlaxoSmithKline)
- Met Office
- Novartis
- Procter & Gamble (P&G)
- QinetiQ

- Reckitt Benckiser (RB)
- Roche
- Sanofi
- Science and Technology Facilities Council (STFC)
- Syngenta
- The Technology Partnership (TTP)
- Unilever.

Jobs within science and pharmaceuticals also exist in public sector bodies such as the Department for Environment, Food & Rural Affairs (DEFRA), the Ministry of Defence (MOD), local government and the National Health Service (NHS). You could also work in a university, research organisation or an environmental consultancy.

Source : <https://www.prospects.ac.uk/jobs-and-work-experience/job-sectors/science-and-pharmaceuticals/overview-of-the-science-and-pharmaceuticals-sector>

## Different science industries you could work in

**Life-science industries (includes pharmaceuticals, biotech and crop research)**

These industries employ scientists who specialise in life sciences, chemical sciences or a cross between the two. Businesses in this sector are involved with the research, development and supply of drugs to combat medical conditions and diseases; the study of biological systems to come up with novel technologies; and the development of new crop varieties to increase yields and make agriculture more efficient.

As a scientist working in this area, you could do a range of different jobs including:

- devising medically active new compounds
- testing drugs to ensure their safety and effectiveness
- developing safe and effective methods for the bulk manufacture of drugs
- monitoring production to ensure drugs are made to the right strength without contamination
- adapting biological systems to novel uses, such as generating energy
- breeding new varieties of plants that improve yields and decrease the need to use pesticides.

## Chemical development and manufacturing

Chemical industries mainly employ scientists who specialise in chemical sciences, although they sometimes employ those specialising in life sciences too. These industries produce a whole range of products including paints, plastics, food additives, disinfectants, cleaning products, fuels and lubricants.

As a scientist working in this sector, you could find yourself doing a number of different jobs including:

- researching and developing new products

- analysing waste to ensure nothing dangerous enters the environment
- monitoring the manufacturing process to ensure that products are produced correctly

## Food production and development

These industries employ scientists who specialise in both food and life sciences and occasionally those who specialise in chemistry too. Scientists working in these industries are employed to do a whole range of jobs including:

- product development, including testing for taste and texture (known as mouthfeel)
- ensuring that products are not contaminated with germs or unwanted chemicals
- checking and devising processes that ensure ingredients are mixed and cooked thoroughly
- devising safe and effective packaging for foods.

## Other jobs done by scientists

There are other types of work done by scientists. If you decide on a career in science, you could find yourself:

- collecting data on weather and climate and making both short and long-term predictions
- monitoring pollution in the environment and reporting your data to industry or government
- ensuring the health of animals kept in zoos, on farms and in people's homes
- investigating the action of water in the environment and its effects on flood defences
- using scientific methods to date objects found on archaeological digs

Source: <https://targetcareers.co.uk/career-sectors/science>



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# Careers in Engineering

## What types of engineering exists?

These are some of the most common disciplines.

**Mechanical engineering.** Mechanical engineers understand how forces act on solid objects, how liquids and gasses behave, and how energy is converted from one form to another. Mechanical engineers use this knowledge to design machines that can cope with the forces they are placed under and to develop systems such as pumps, fans, turbines and power plants.

**Civil engineering.** Civil engineers understands how to design, construct and maintain the man-made parts of our environment. These include buildings, bridges, roads, railways, dams, tunnels and airports. Civil engineers need to understand how forces act on objects and how fluids behave, including how this relates to geology.

**Electrical engineering.** Electrical engineers understand

how electricity works and how to generate and use it. They might be involved in generating electricity from

renewable resources, working in a traditional power station, helping to electrify a railway line or providing a building with heating and power, among other job options.

**Electronic engineering.** Electronic engineers understand how electronic components can be used in electrical circuits to affect their behavior. Sophisticated circuits are useful in areas such as communication, navigation, medical technology and manufacturing technology.

**Chemical engineering.** Chemical engineers understand both how chemicals react to form new substances and how the facilities work that perform these reactions on an industrial scale. These facilities produce a vast array of everyday products, including food, fertiliser, pharmaceuticals, cosmetics, plastics and petrol.

Source: <https://targetcareers.co.uk/career-sectors/engineering>

## Different engineering job roles

Within each engineering discipline there are various job roles to choose from. In practice some jobs will involve doing more than one of these, and some graduate schemes or apprenticeships may give you the chance to try out different options to see what suits you.

Here are some of the main roles.

- **Research and development:** carrying out original research into areas that haven't been investigated before.
- **Design engineering:** working on an engineering project before construction/manufacturing begins, to make that there is a detailed, practical

design to work from.

- **Project engineering/construction management:** managing engineering or construction projects to make sure that they are completed on time, on budget, to the client's requirements and inline with safety legislation.
- **Process engineering:** analysing manufacturing processes and finding ways to make them safer and more efficient.

Source: <https://targetcareers.co.uk/careers-sectors/engineering>

## Who are the main graduate employers?

Graduates are employed by large companies, including:

- Airbus, BAE Systems and Thales Group (aerospace industry);
- Ford, Jaguar Land Rover and Rolls-Royce (automotive industry);
- Heinz, Mondeléz International and Nestlé (food and drink industry);
- BP, ExxonMobil and Schlumberger (oil and gas industry).

Other large companies that recruit engineers include P&G, Siemens and GlaxoSmithKline (GSK). Despite this, the engineering and manufacturing sector is dominated by small and medium-sized enterprises (SMEs). Most engineers, therefore, work in smaller organisations.

There are an increasing number of jobs available in engineering, especially in particular areas:

- **Aerospace.** Estimates suggest that there'll be global demand for 27,000 new passenger planes and 40,000 new commercial helicopters by 2030
- **Chemicals.** This directly employs more than 110,000 people in companies dealing with household products, food, medicine and process technologies.
- **Petroleum, oil and gas.** The Institute of Directors (IoD) claims that shale gas production could create 74,000 jobs by 2030.
- **Space.** This industry has an average annual growth rate of 7.5%.

Other expanding areas of work include: renewable energy, finding sustainable ways to grow food, build houses and travel; advances in medical technology for an ageing population; and research and development into the use of automation and robotics.

Source: <https://www.prospects.ac.uk/jobs-and-work-experience/job-sectors/engineering-and-manufacturing/overview-of-the-engineering-and-manufacturing-sector-in-the-uk>



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## How to get into a career in engineering

The main route into engineering is to do an engineering degree. If you want to take a degree in engineering you need an A level (or equivalent) in maths. In many cases you also need physics. Some chemical engineering degrees ask for maths and chemistry instead; some ask for maths and physics; and some ask for all three. Make sure you check!

**After your degree:** Many engineering employers run graduate schemes for those who have completed an engineering degree. As well as a job to do, you are likely to receive formal training and might have the chance to try out different roles to see which suits you best. There are also many jobs for graduate engineers with companies who don't run formal graduate schemes. Often these are with smaller organisations that need someone to come in and do a particular job straight away.

Source: <https://targetcareers.co.uk/career-sectors/engineerings>

## What's it like working as an engineers?

- Engineers use their creativity and problem-solving skills to design innovative products or tackle some of the world's most pressing challenges
- They work differing hours depending on the role, with some projects and assignments — such as disaster relief work — requiring greater flexibility
- They work in differing environments depending on the industry, with work locations including laboratories, hospitals, offices and factories
- They work in multidisciplinary teams with colleagues from different job sectors and backgrounds.

Source: <https://www.prospects.ac.uk/jobs-and-work-experience/job-sectors/engineering-and-manufacturing/overview-of-the-engineering-and-manufacturing-sector-in-the-uk>