

Chemical Engineer

Chemical engineers design, plan, construct and operate large-scale manufacturing processes, producing a wide range of goods from fuel oils to food, pharmaceuticals and cosmetics. They also help manage world resources and protect the environment. Chemical engineers work in either research and development or manufacturing.

They are sometimes known as process engineers.

The Work

You could be:

- researching the possibilities of changing raw materials such as oil, into new and useful products, or adapting and improving existing products
- using computer-aided design (CAD) packages to create process models and simulations
- designing and developing the machinery used in manufacturing processes
- developing small-scale test processes and adapting successful tests to full-scale processes (scaling-up and scaling-down processes)
- running trials on new systems and making adjustments
- developing effective pollution control systems and making sure energy is used efficiently in the manufacturing process
- designing and constructing production plants, including reducing or disposing of by-products
- running a chemical process plant and making sure processes are cost efficient, safe and comply with environmental laws.

Pay

The figures below are only a guide. Actual pay rates may vary, depending on:

- where you work
- the size of the company or organisation you work for
- the demand for the job.

The average starting salary for chemical engineers is around £28,500 a year (www.whynotchemeng.com, IChemE Salary Survey, 2016), but it could be anything from £25,000. With experience this can rise to between £35,000 and £55,000. Chartered engineers can earn up to £70,000 a year or more.

Conditions

- Chemical engineers work in a laboratory, an office or a factory, depending on the type of work.
- You normally work with a team of engineers and technicians.
- In some cases, factory conditions may be noisy or dirty, and you may need to wear protective clothing, a facemask or a hard hat.
- Many engineers work regular hours, but in factory work you may work shifts and may need to be on call outside normal hours.

- There will be strict health and safety procedures to follow.
- If you work in the oil and gas industry you may spend time working offshore, on a rig or platform.

Getting In

- You normally need a degree in chemical engineering. Other relevant qualifications with a suitable chemistry or engineering content may be accepted.
- The entry requirements for most degree courses are 4-5 Highers usually including Maths, Chemistry and Physics. Sometimes Physics and English at National 5 may also be required.
- It is recommended to take a degree accredited by the Institution of Chemical Engineers (IChemE). These are shown on the IChemE website.
- Relevant work experience, paid or voluntary, is helpful.
- You may be able to qualify by other training routes.
- Certain colour vision conditions may affect entry to careers in this branch of engineering.

Chemical engineers work in the chemicals, food and drink, pharmaceuticals, cosmetics, plastics, paper, textiles, oil, gas, coal, artificial fibres and water industries. There are also jobs in engineering contracting companies to design and build production plants. Work is available in the UK and abroad and there is a steady demand for qualified staff throughout the world.

What Does It Take

You need to have:

- an aptitude for chemistry and maths
- analytical and problem solving skills
- excellent IT and CAD skills
- a logical and accurate approach
- time management skills and the ability to meet deadlines
- the ability to manage and motivate others
- good communication skills to share ideas with others who may not have a scientific or engineering background
- project management skills
- an understanding of health and safety regulations.

You need to be able to:

- work alone or as part of a team
- motivate and lead a team
- make decisions.

Training

- After gaining your degree and some further training with an employer, you can register with the Engineering Council as a professional engineer – either as Incorporated Engineer (IEng) or Chartered Engineer (CEng).

- For IEng you need to have either a recognised Bachelor's degree or a recognised Higher National Certificate (HNC) or Higher National Diploma (HND) plus further study to Bachelor's degree level.
- For CEng you need to have a recognised Bachelor's degree with Honours plus a recognised Masters degree (or equivalent), or a recognised integrated Master of Engineering (MEng) degree.
- If you do not have the above qualifications, you may still be able to achieve IEng or CEng by other approved routes. You can check these alternative routes with the Engineering Council or with the appropriate professional engineering institution.
- The Institution of Chemical Engineers (IChemE) accredits a number of company graduate training schemes. The IChemE website has more details.
- You must be willing to keep up to date with changes in a fast moving industry.

Getting On

- Chemical engineers who first qualify as IEng can progress to CEng after further study, training and experience. This can open up a wider range of opportunities.
- You can work towards becoming a Chartered Chemical Engineer (MIChemE) through the IChemE. This will also improve your prospects.
- You could move into project management.
- You might move into a senior management job.
- You could move into teaching and academic research in colleges and universities.
- You might become a self-employed consultant offering specialist engineering services.
- There can be good opportunities to work abroad.

More Information

The Engineering Council sets and maintains the standards of the engineering profession in the UK. It does so through 35 professional engineering institutions which are Licensed Members of the Engineering Council.

Employment prospects in this area are very good. Jobs are widely available and process plants are located in industrial areas throughout the UK (particularly Scotland, the Midlands, North West and North East England) and overseas.

The [Tomorrow's Engineers](#) website has more information on careers in engineering.

Contacts

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Engineering Council

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Institution of Chemical Engineers (IChemE)

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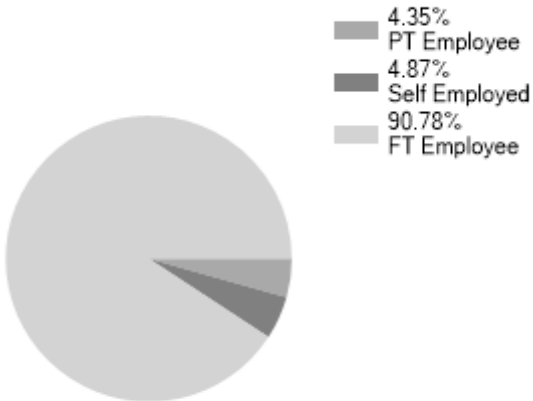
Website: www.semta.org.uk

Twitter: @SemtaSkills

Facebook: www.facebook.com/SemtaSkills?ref=hl

Statistics

Employment Status UK %



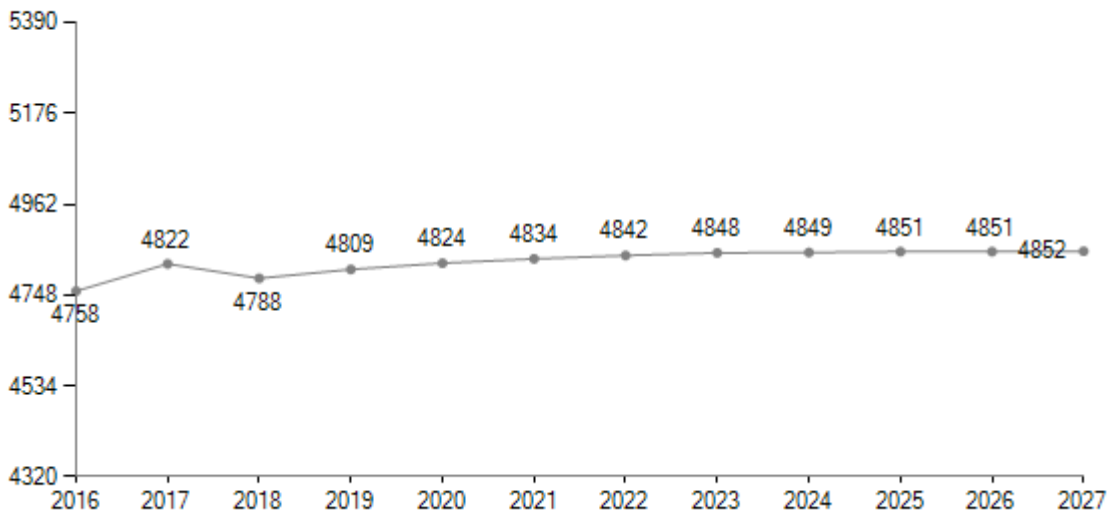
Past Unemployment - Scotland

Date	Unemployed
Dec 2016	0.06%

LMI data powered by [EMSI UK](#)

LMI data powered by [LMI for All](#)

Predicted Employment in Scotland



LMI data powered by [EMSI UK](#)