

## Clinical or Biomedical Engineer

Clinical or biomedical engineers design and develop a wide range of medical equipment and devices such as x-ray machines, scanners and miniature cameras or mobility aids such as artificial limbs and wheelchairs. They can also work in the fields of nuclear medicine, and vascular measurement. They may work in research and manufacture or in healthcare delivery, combining their knowledge of technology, materials and human anatomy.

### The Work

You could be:

- using computer software and mathematical modelling to design and develop medical equipment, devices and materials
- working with a wide range of equipment and devices including pacemakers, scanners, lasers, kidney dialysis machines, artificial joints, miniature cameras for medical use, speech synthesisers, ultrasound and x-ray machines
- calibrating, maintaining and repairing a wide range of complex equipment to the required standard
- developing complex devices such as heart valves or equipment for keyhole or robotic surgery
- researching new materials for making artificial limbs (prosthetics) or developing new microprocessors to control them
- working with patients on individual items such as sophisticated wheelchairs for those with complex needs
- advising on and arranging clinical trials for new products, to make sure they are suitable for their purpose
- liaising with other medical staff, medical sales representatives and equipment manufacturers
- keeping records of safety checks and repairs on equipment, and writing reports.

### Pay

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

- where you work
- whether you work for the NHS or a private company.

Salaries for a postgraduate trainee clinical or biomedical engineers in the NHS start on Band 6, £37,831 to £46,100 a year. After successful HCPC registration, you would go on to Band 7, £46,244 to £53,789 a year. The current pay scales are from April 2023. Salaries in the private sector may be higher.

There are some opportunities to progress to Band 9, £111,595 to £116,428 a year.

### Conditions

- Depending on your job, you would work in a laboratory or workshop.
- You might sometimes work in a clinic or ward in a hospital.
- You might have to travel, possibly overseas.
- Working hours are regular if you work in research or development, but in hospital you might sometimes have to be on call.

- You might have to work with radiation or high voltage equipment.
- Some lifting and carrying of heavy medical equipment may be involved.
- You might wear protective clothing.

## Getting In

- You need a 2:1 Honours degree, or 2:2 and a Masters degree (SCQF Level 11), in an appropriate subject such as physics or engineering. Degrees in Biotechnology, Biochemistry or Microbiology are also acceptable.
- The Universities of Dundee, Glasgow and Strathclyde offer degrees in Biomedical Engineering.
- For entry to a degree (SCQF Level 9-10) you need 4-5 Highers, usually including Maths and Physics plus National 5 English.
- If you want to gain chartered engineer status, your degree should be accredited by an engineering institute, such as the Institution of Engineering and Technology (IET) or the Engineering Council.
- If you have a degree in a suitable engineering, healthcare or life sciences subject, you could take a specialist postgraduate course (SCQF Level 11) in biomedical engineering.
- If you work as a clinical or biomedical scientist you must register with the Health and Care Professions Council (HCPC).

Entry is competitive. Most career opportunities are in the National Health Service (NHS). There are also jobs in private sector healthcare, in the healthcare industries, universities, manufacturing companies and in teaching and research.

## What Does It Take

You need to have:

- an interest in science and technology and its application to healthcare
- an analytical, methodical and logical approach
- excellent IT skills
- excellent manual dexterity in using fine tools and materials
- a willingness to keep up to date with new developments.

You need to be able to:

- find creative solutions to practical problems
- work alone and as part of a team, with doctors technicians, paramedics and patients
- be patient and concentrate for long periods of time
- work under pressure
- communicate well with colleagues and patients from all backgrounds.

## Training

- Most entrants work in the NHS.
- To become fully qualified and able to register with the Health and Care Professions Council (HCPC), you complete three years of training.

- For your training, you would apply to the Scottish Medical Physics and Clinical Engineering Training Scheme. In Year 1, you complete a relevant MSc degree from a Scottish university, and in Year 2, you rotate around specialisms in either medical physics or clinical engineering. In Year 3, you will choose your specialism to focus on.
- Completion of the 3-year training scheme leads to registration with the HCPC.
- Vacancies are usually advertised on the [NHS Scotland Recruitment](#) and [NHS Education for Scotland](#) websites.
- After gaining your degree and some work experience, you can register with the Engineering Council as a professional engineer – either the Incorporated Engineer (IEng) or Chartered Engineer (CEng).
- For IEng you need to have either a recognised Bachelor’s degree or recognised HNC (SCQF Level 7) or HND (SCQF Level 8) 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 (SCQF Level 11).
- You can also register with the Institute of Physics and Engineering in Medicine (IPEM).

## Getting On

- With further training you might move to a senior post in management.
- You would be expected to undertake continuing professional development (CPD) to keep up to date with the latest developments and technology and maintain HCPC registration.
- Your degree subject and specialism may affect the progression routes you can follow.
- You might move into teaching and research work.
- You might become self-employed, as a consultant engineer, although this is not easy.
- It can help if you are able to move around the country.
- If you work in research or manufacturing there may be opportunities to work abroad.

## More Information

- NHS Scotland generally advertise training posts early in the New Year and recruit up to the September start. There are usually around 20 posts in various clinical science disciplines available.
- The Engineering Council sets and maintains the standards of the engineering profession in the UK.
- The [Tomorrow’s Engineers](#) website has more information on careers in engineering.

## Contacts

### Health and Care Professions Council (HCPC)

Tel: 0300 500 6184

Email: [education@hcpc-uk.org](mailto:education@hcpc-uk.org)

Website: [www.hcpc-uk.org](http://www.hcpc-uk.org)

Twitter: @The\_HCPC

Facebook: [www.facebook.com/hcpcuk](http://www.facebook.com/hcpcuk)

### Institute of Physics and Engineering in Medicine (IPEM)

Tel: 01904 610821

Email: [office@ipem.org.uk](mailto:office@ipem.org.uk)

Website: [www.ipem.ac.uk](http://www.ipem.ac.uk)

Twitter: @ipemnews

### NHS Scotland Careers

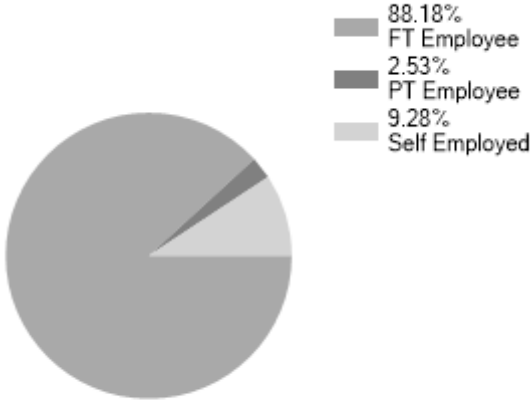
Website: [www.careers.nhs.scot](http://www.careers.nhs.scot)

Website (2): [jobs.scot.nhs.uk](http://jobs.scot.nhs.uk)

Twitter: @NHSScotCareers

Statistics

Employment Status UK %

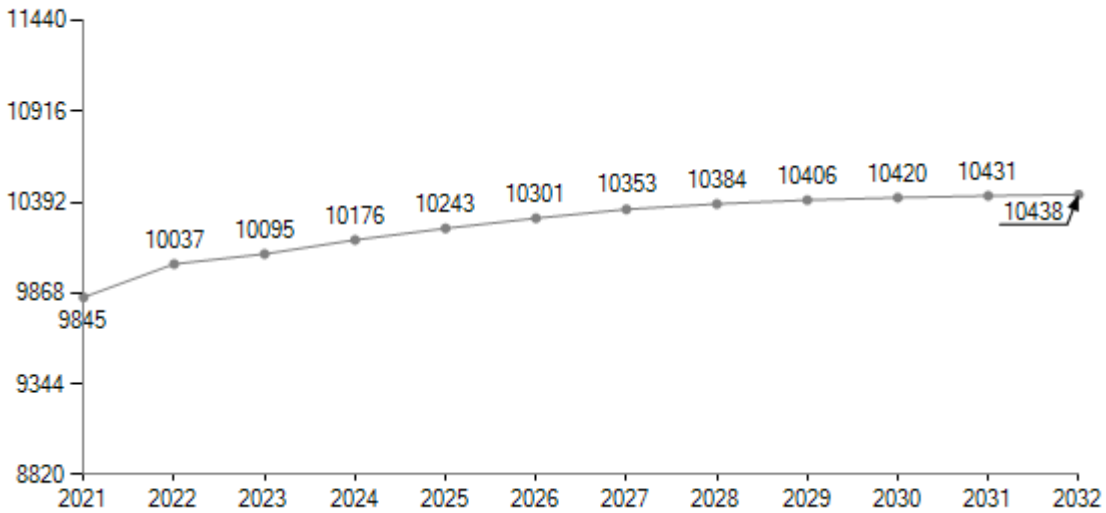


Past Unemployment - Scotland

No Claimant statistics available for Scotland.

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

Predicted Employment in Scotland



LMI data powered by [Lightcast](#)