

## **Your degree in Biomedical Engineering... what next?**

Bioengineers work on designing products and processes that improve the quality of people's lives. A biomedical engineer applies scientific and engineering principles to assist medical staff in the development of advanced health care technology. Ireland is now a global centre for the medical devices industry so this is a perfect time to consider a career as a biomedical engineer. Graduates can choose to pursue a career in health, manufacturing or sustainable industries. Bioengineers harness their own creativity to shape the future.

### **What can I do with my degree?**

Graduating with a Biomedical engineering degree gives you a range of career opportunities to consider. Ideally you will spend a lot of your final year carefully researching and considering your options in this growing sector. With this degree there's a high degree of job flexibility and often rapid progress on to creative, responsible and financially rewarding careers. As a Biomedical Engineer, you will research, design and develop medical products, such as joint replacements or robotic surgical instruments, design or modify equipment for clients with special needs in a rehabilitation setting, or manage the use of clinical equipment in hospitals and the community.

You'll be employed by health services, medical equipment manufacturers and research departments or institutes.

Job titles vary depending on the exact nature of the work. As well as biomedical engineer, other terms include:

- Clinical engineer
- Neuroscientist
- Orthopaedic engineer
- Rehabilitation engineer
- Biomechanical engineer
- Biomaterials engineer

### **Skills**

You will need to have:

- a strong interest in the integration of engineering and medicine;
- excellent communication skills in order to liaise with a variety of people;
- good attention to detail;
- spatial awareness, three-dimensional conceptual ability and computer literacy (particularly for design engineers);
- the capacity to combine a high degree of technical knowledge with creativity;
- the ability to design products that are effective and practical as well as cost effective and aesthetic;

## CAREERS SERVICE

- commercial awareness, in order to appreciate a product's marketability;
- excellent problem-solving skills and the ability to work under pressure.

### Responsibilities

The tasks you carry out will vary depending on your employer and the seniority of the post held, but may include:

- using computer software and mathematical models to design, develop and test new materials, devices and equipment. This can involve programming electronics, building and evaluating prototypes, troubleshooting problems, and rethinking the design until it works correctly;
- liaising with technicians and manufacturers to ensure the feasibility of a product in terms of design and economic viability;
- conducting research to solve clinical problems using a variety of means to collate the necessary information, including questionnaires, interviews and group conferences;
- working closely with other medical professionals, such as doctors and therapists as well as with end-users (patients and their carers);
- discussing and solving problems with manufacturing, quality, purchasing and marketing departments;
- assessing the potential wider market for products or modifications suggested by health professionals or others;
- arranging clinical trials of medical products;
- approaching marketing and other industry companies to sell the product;
- writing reports and attending conferences and exhibitions to present your work and latest designs to a range of technical and non-technical audiences;
- meeting with senior health service staff or other managers to exchange findings;
- dealing with technical queries from hospitals and GPs and giving advice on new equipment;
- testing and maintaining clinical equipment;
- training technical or clinical staff;
- investigating safety-related incidents;
- keeping up to date with new developments in the field, nationally and internationally.

(<https://www.prospects.ac.uk/job-profiles/biomedical-engineer>)

### EMPLOYMENT

Ireland is now a centre of excellence for medical devices. Of the world's top 25 medical-technologies companies, 18 operate here, with a large cluster in the Galway area.

The sector employs over 24,000 people in 160 companies and generates sales in excess of €6 billion annually. Over half of the medical technologies companies based in Ireland have dedicated Research & Development facilities.

Global companies with substantial operations in Ireland include:

- Abbott
- Abbot Diagnostic
- Bayer
- BD (Becton, Dickinson & Company)
- Beckman Coulter
- Boston Scientific
- DePuy
- Guidant
- Johnson & Johnson
- Medtronic
- Stryker
- Zimmer.

In addition, over 100 innovation-led Irish companies have also emerged in the Med-tech sector, specialising in Research & Development in intensive technologies, proprietary products, contract design and manufacturing, packaging and sterilisation.

#### Typical salary

- Graduate/Starting €30,000
- Senior/Potential €53,500+  
[\(https://gradireland.com/careers-advice/job-descriptions/biomedical-engineer/\)](https://gradireland.com/careers-advice/job-descriptions/biomedical-engineer/)

#### What are the 2015 Graduates doing?

| Company           | Role                   |
|-------------------|------------------------|
| Intel             | Technician             |
| Apple             | Manufacturing Engineer |
| Abbott Vascular   | Manufacturing Engineer |
| Boston Scientific | Manufacturing Engineer |

If you would like to know more about the First Destinations Survey please contact the Careers Office.

#### FURTHER STUDY/RESEARCH

Graduates with good honours degrees from cognate areas may apply to undertake a research programme leading to the award of Master of Engineering or Master of Science. Financial support may be available to suitably qualified candidates from Enterprise Ireland, Industry or the CIT Postgraduate Award Scheme.

Current research programmes, supported by both Enterprise Ireland and Industry, include

- Bone Cutting Tool and Materials Analysis
- Inspection of Miniature Platinum Coils using Diffraction of Laser Light
- Development of orthopaedic and rehabilitation devices for medical use
- Investigation of contamination of Surgical Bone Cement

- Investigation of Dynamic Bone Properties.

Suitably qualified graduates with good honours degrees may proceed to a research programme leading to a PhD Degree.

**EURAXESS** – is a web portal for finding opportunities to work in research in Europe, including Ireland, and provides access to information and support services for European and non-European researchers. It offers access to the job market; assists researchers in advancing their careers in another European country and supports research organisations in their search for outstanding research talent. EURAXESS is supported by 40 participating countries across Europe. [Search for jobs here.](#)

### PROFESSIONAL ACCREDITATION

Your BEng (Honours) degree from CIT is fully accredited by [Engineers Ireland \(EI\)](#) for Chartered Engineer eligibility, which means graduates can apply for membership. EI is the professional body in Ireland for engineers from all disciplines.

EI also runs a graduate transition programme called the Future Professionals Programme with employers for graduates in their first engineering job.

### USEFUL LINKS

- [Enterprise Ireland Medical Devices Companies](#)
- [Med In Ireland: www.medinireland.ie](#)
- [Biotechnology Ireland: www.biotechnologyireland.com](#)
- [Institute of Physics and Engineering in Medicine](#)
- [Biomedical/chemical Engineering Association](#)
- [Northern Ireland Biomedical Engineering Society](#)
- [Biomedical Engineering Association of Ireland](#)
- [Irish Med Tech Association: www.irishmedtechassoc.ie](#)