

Engineering

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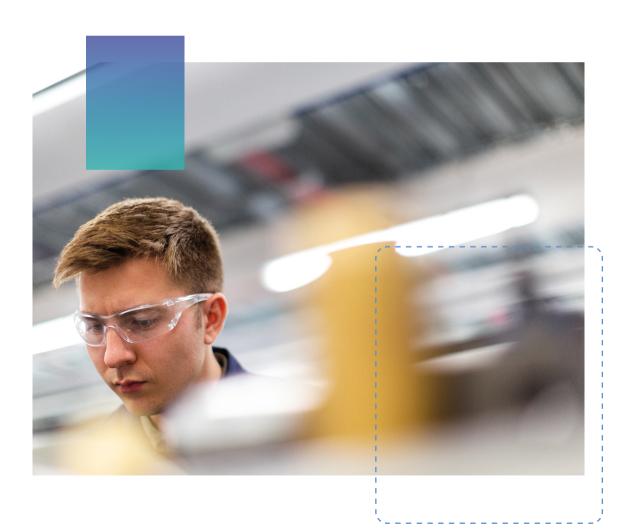






Your career in engineering

Engineers are consistently in demand across a wide range of employment sectors, with their unique skill sets being attractive to many employers operating in different sectors.



gradireland's most recent *Graduate Salary and Graduate Recruitment Trends Survey* shows that employers in this sector recruit an average of 13 graduates each year. Engineering roles themselves command an average starting salary of €36,666, so there are plenty of opportunities out there for graduates to make a solid start to an exciting and lucrative engineering career. According to Engineers Ireland, in a survey of more than 3,000 engineers, employers and sector stakeholders, salaries have increased in all engineering disciplines, and 84% of engineers agree there are plenty of job opportunities in Ireland.

For employers, skills such as problem-solving, communication and leadership are amongst those most commonly lacking in graduate recruits. These are skills common to engineering graduates. There are an enormous amount of opportunities out there for engineering graduates, but you'll need to develop the skill sets that employers need.

Gain experience

Depending on what type of engineering degree you have, whether it be electronic, electrical, mechanical, civil or a general engineering degree, there are a range of different roles available once you graduate. Your degree type will give you an idea of what area you want to work in, but you'll also have to think about the skills and qualities you possess. Activities like work placement, internships and your progression through your course will help with this, as it will give you a sense of where your skills fit in in the working world. It's important to explore all your options and to research the different areas that are available to you. Once you have done that, you'll be better able to tailor skills and experience to the area of interest. Talk to your careers service and network with others already working in the engineering sector; they will be able to help.

The industry in Ireland

The engineering sector in Ireland has in the region of 40,000 engineers, and at the time of the most recent census, 95% of them were in employment. In last year's Engineers Ireland survey, up to 25% of Junior Engineers said that their career had stalled due to Covid-19, with a similar percentage in receipt of the wage subsidy at some point. This concern has almost completely dissipated, with only 11% indicating concern.

The report also finds that engineers are critical to combating climate change, with 72% of the public citing engineers as a critical element in protecting the environment. Engineers Ireland declared a Climate and Biodiversity Emergency in 2020, and a subsequent plan for sustainability was published in March 2022, focusing on the four pillars of sustainability, national recovery, standards and a digital future.

Think international

2022 gradireland research reveals that 16% of Irish engineering graduates planned to look for their first job abroad. A degree in engineering travels well because technical skills have a universal language. Engineers Ireland is a signatory to both the Washington Accord and the Sydney Accord, which means accredited engineering programmes are recognised internationally by other signatories. These include Australia, Canada, Hong Kong, Japan, New Zealand, Singapore, South Africa, the USA and the UK. Even if you choose to stay in Ireland, a second language is always an advantage as there are many opportunities for travel as an engineer.

Career progression

According to 2022 gradireland research, 34% of engineering graduates plan to pursue postgraduate study in order to enhance their employment prospects. Gaining postgraduate and professional qualifications after your undergrad degree is often something employers will expect and require from their graduate employees in this sector. Having a postgraduate degree can mean more pay, increased responsibility and better promotion and career development opportunities. Almost half of the employers surveyed by Engineers Ireland believe that there was an inadequate supply of engineers entering the sector in the medium term. When asked what kinds of skills they considered important, employers responded that the 'soft skills', such as communication, are just as important as - if not more important than - the core technical competences.

Do your research and give yourself the edge!

Prior to graduation and the job application process, do your research and acquire as much knowledge as possible about engineering employers and what they are looking for from graduate recruits. Before applying for a position, research the company in question extensively and tailor your application for the specific job. Employers can easily identify a generic CV, so make sure yours stands out from the crowd. Along with researching the company, make sure you fully understand the specific role you're applying for and what it entails so you can highlight the required attributes and qualifications on your application and CV.

Knowledge of the company and role you're applying for will help prepare you for interview. Ensure that the employer can see that not only do you have the right skills, but that you are also interested in and enthusiastic about the company, and that you have a willingness to develop within your role. Research will help you to figure out which companies are best suited for you. Decide what you want from your career so you don't waste time applying to companies that don't suit your requirements. Ask yourself what skills you wish to use throughout your career and what type of projects you're interested in, and apply to the companies that can satisfy your goals and make best use of your skills.

How to research

Knowing where to begin with the research process can be daunting and confusing, but the more you can learn about a company, the more of an advantage you'll have over other applicants. At the interview, employers won't want you to simply tell them about their company, but they will want to know how your skills align with their requirements. Investigate the following aspects of a company before application:

- The size of the company
- Its structure (are its offices in Ireland or spread across the globe?)
- The company culture (try to talk to current or past employees, or find information on LinkedIn and blog posts)



- · Current projects and past achievements
- · The technology employed
- · Recent news announcements
- Visit gradireland.com/employers to research all the leading graduate employers.

Research questions

Interviewers will inevitably ask if you have any questions of your own and, having conducted research, will ensure you can satisfy such an enquiry. Assemble a list of questions you might be asked and use your research to find the answers. Such questions might include:

- What are the services and products provided by the company?
- · Where is the company located?
- · Who are its main competitors?
- · Who are its clients?
- What markets does it operate in?
- What graduate roles are available, and what do such roles offer?
- What qualifications/degrees are required for entry?
- What are the hard and soft skills required?
- What is involved in the recruitment process?
- · What are the company's aims and values?
- Why do you want to work for this company?

How to get hired in engineering

Make sure you know what engineering recruiters are looking for in your application.

A CV shouldn't run any longer than two pages, so you need to tailor it in a manner that prioritises the skills, attributes and qualifications relevant to the position you're applying for. For more help with this, see our article on page 4 on researching employers.

Make sure your CV is readable by using a clear font and sensible text size. Your personal, academic and career qualifications should be listed in reverse chronological order, and employers will take note of any unexplained gaps in your timeline. When listing your academic achievements, ensure all the details are correct and verifiable. While they may not be relevant at this stage, listing impressive Leaving Cert results will help demonstrate your academic record. More CV writing tips can be found at gradireland.

If you include a personal statement, make sure it's of relevance to the position in question. Avoid vague statements like 'Ambitious, highly-qualified student seeks challenging role.' Instead, be more specific about your qualifications and preferred role, for example, 'Civil engineering student in final year, with a particular interest in hydraulic engineering, seeks a graduate position in the construction industry'.

Today, many applications for roles in the engineering industry still take the form of CV and cover letters, but employers are increasingly adopting online application forms. For online application forms, much of the information you need is already in your CV. Take your time when filling out these forms. Be concise and accurate, and take great care in terms of spelling and grammar.

Skills employers are looking for

Your application will be judged primarily on your technical qualifications, so make sure to explain the skills you possess and how they can be applied to the position. If you completed an internship or

have any relevant work placement experience, be sure to highlight this. If you have experience in a different sector, highlight any transferable skills (communication, report writing, technical documentation, etc) you may have acquired. The most in-demand skill for engineering applicants is a knowledge of and proficiency in IT. You will be expected to have a competency with standard office applications. Due to the specialised nature of engineering, knowledge of different systems and packages is often required, especially computer aided design (CAD) packages. Other common applications are digital verification packages, project management software and text editing systems.

Be sure to list any second languages you may be

Be sure to list any second languages you may be fluent in, as employers find this attractive. Mentioning that you possess a driver's licence can also make you stand out.



Soft skills and transferable skills

The engineering industry relies heavily on collaboration and teamwork, so employers are seeking applicants who possess a mix of technical and soft skills. Emotional intelligence, good interpersonal behaviour and the ability to form professional relationships are sought after attributes.

The soft skills demanded by recruiters include:

- · Adaptability and resourcefulness
- · Initiative and perseverance
- Communication skills: writing, speaking and listening
- The ability to identify and solve problems
- · The ability to motivate yourself and others
- Project management and time management skills.

You will likely have developed most of these skills while at university, and the others can be obtained. Joining a college society, volunteering with a charity, travelling and joining a sports team are all ways of honing your soft skills.

Work experience

Practical, on the job experience is valued by engineering employers. While your experience doesn't have to be directly related to the role you are applying for, any knowledge of the sector you can demonstrate will be appreciated. Your university course may offer industry experience; if not, seek out a work placement with a suitable firm. Your college's careers advisory service should be able to help you with this, and you can visit gradireland.com/careers-advice/internships for more information.

At gradireland.com/careers-advice/engineering you can see what day-to-day work in the engineering sector and its related areas involves.

Interviews and assessment centres

Just as with other areas like finance and IT, engineering recruiters use assessment centres in their process of selecting applicants for graduate schemes. These centres are designed to test the core competencies of candidates, both technical skills and soft skills. The process usually includes interviews and group activities, and applicants may be required to make a presentation.

Visit gradireland.com/careers-advice/interviewsand-assessment-centres for advice on negotiating assessment centres, and read the relevant section of the gradireland Directory.

Prior to the formal interview process, engineering firms are increasingly screening candidates through phone and video interviews. Depending on the size of the firm, you may be required to complete up to three interviews. The recruiter will use these interviews to assess the level of your technical and soft skills. You will be guestioned on what you studied for your degree, so be sure to revise the subjects and areas you studied. When it comes to technical questions, there aren't always 'right' or 'wrong' answers, and the interviewer will often just wish to see if you possess an understanding of basic engineering concepts and technical principles and how confident you are in applying them. Remember, that due to the collaborative nature of engineering, an interviewer will also be assessing your soft skills, particularly your ability to relate to people and communicate effectively.



Get experience in engineering with an

internship



An internship will help you decide on the specific role you wish to seek in the engineering sector, and which area suits you best. It provides opportunities to network with industry professionals who can give you insights into the topics covered in your college course.

Many engineering degrees will offer work placement, sometimes as an additional year. If yours doesn't provide a placement, seek one out yourself.

Opportunities for internships can be found through your college's careers service, on company websites, and on gradireland.com's company profiles and work experience sections. If you display genuine enthusiasm, friendliness and pleasant persistence, opportunities will present themselves.

Why take an internship?

An internship allows you to get a feel for your future career before committing to a permanent position. It offers a chance to decide on the specific role you wish to pursue and the type of company you want to work for.

Performing well on your placement can catch the attention of potential employers. Many graduate employers hire students who impress during placements, and they may even sponsor you for



further study. Your employer may offer you a position on completion of your internship. If you haven't completed your degree, you may be fast-tracked through the selection process for a graduate programme.

Even if your internship doesn't lead directly to employment, you will have acquired valuable skills.

Think ahead

Summer and year-long internships can set deadlines as early as December, with most ending in February. Throughout the year you can find internships on gradireland.com.

Some employers may advertise 'open deadlines' or extend their deadlines due to a lack of applications, but it's wise to get your application in as early as possible.

Start on the front foot

At the beginning of your internship, you may feel nervous in an unfamiliar environment. Here are some tips to help you get the most from your placement:

- · Be polite and punctual
- Show enthusiasm and a willingness to learn by asking questions
- Take notes so you don't have to ask for a second explanation
- Be aware of any dress code and dress appropriately
- Accept any criticism you may receive and use it as an opportunity to learn and improve
- Don't be afraid to ask colleagues for feedback
- At the end of your internship, ask for a reference from your employer and keep in touch; maintaining a positive relationship could lead to further opportunities.

Manufacturing and industry

Industrial manufacturing and industry is the biggest employment area for engineering graduates. In a manufacturing environment, engineers are responsible for the safe and efficient planning, management and maintenance of production methods and processes, often working as part of a multidisciplinary team.

The most common backgrounds are mechanical and electrical/ electronic engineering, but there is a huge overlap and mobility between disciplines. There are also some primary degrees that specialise in manufacturing engineering.

Where could I work?

Within manufacturing in Ireland, there are two distinctive categories of activity: direct engineering-related products and services; and all other industrial manufacturing enterprises. The engineering sector itself is made up of a wide range of companies providing a diverse range of products and services. The three main categories are aerospace/aviation; agricultural machinery; and process engineering and instrumentation.

Aerospace/aviation

Aerospace is a high-tech industry with opportunities to work in multidisciplinary teams. Engineers will deal with structural design, software engineering and aerodynamics. Systems and electronic engineering are also key disciplines.

Other engineering activities include: specialist restoration of engines; manufacture of products; specialist aviation software and telecommunications.

Agricultural machinery

Ireland has a small but strong agricultural machinery sector. Several Irish manufacturers are world leaders in specialised niche areas such as manufacturing mixer and feeder wagons for cattle or producing baling and wrapping systems. The market is almost entirely agricultural but also caters for amenity areas such as golfing. Products include grass balers, feed systems, cattle grids and dairy equipment.

Process engineering and instrumentation

Ireland has a highly developed process engineering sector with an excellent international reputation. This area is engineering at its most precise, refined and technologically advanced level. Activities include the design, testing, installation and maintenance of automated systems, gas analysis/detection systems and test instrumentation. An important specialism is stainless steel fabrication: storage and process vessels with large capacities are custom designed, as well as heating, cooling, mixing and pressure vessels. Another highly specialised area is the production of pipes, valves and fittings. Major clients include the fine chemicals/ pharmaceuticals and food and drink sectors, among them

top global companies. Other clients include the computer, electronics and automobile sectors. The presence of these international companies has been helped because the Irish process engineering sector has state-of-the-art manufacturing technology and stringent quality control practices.

Industrial manufacturing and production

Industrial manufacturing falls into three main categories: food and drink; chemicals, pharmaceuticals and plastics; and electrical/electronic/microelectronic and precision instruments. The strongest growth areas continue to be in the chemicals/ pharmaceuticals sector (see page 9).

Opportunities for engineers range from the design of automated systems, rooted in electronics and software disciplines, to traditional chemical engineering roles. The jobs are continuing to develop and evolve, with growth areas including biomedical product manufacture and plastics/polymers. The current focus on research and development is set to boost the manufacturing industry, and new careers are becoming available, particularly for electronic, mechanical and production engineering disciplines.

Industrial and manufacturing engineering offers many areas to specialise in. These include:

- · Tool design
- · Robotics
- Industry management
- Material process.

Pharmaceutical, chemical and medical device technologies

The pharmaceutical, chemical and medical device technologies sectors are a vital part of our economy. The Republic of Ireland remains a location of choice for international companies, and most of the top pharmaceutical organisations worldwide have operations here.

Every day, engineers play a vital part in the business of saving lives. They help to shape the health services through the products and processes they develop. Engineers work in many roles ranging from the research and development of new processes and products to the design, construction and management of industrial plants. Essentially, they are engaged in the process of changing raw materials into finished products, often with life-saving and healthenhancing consequences.

Where could I work?

Chemical and pharmaceutical

The chemicals industry develops and manufactures the chemicals we need in everyday life in a safe, environmentally friendly and economical way. It's a diverse industry ranging from pharmaceuticals to biotechnology. Other companies in this sector produce finished products such as adhesives, sealants, paints, fertilisers and resins. The pharmaceutical industry is about the discovery and manufacture of effective medicines and is a significant employment sector in ROI due to the large number of multinational companies based in the country. Many of the world's top-selling drugs are

produced in Ireland. Along with research and development, there are opportunities in process development and production management.

Engineers working in pharmaceuticals and chemicals can find themselves engaged in a wide range of activities, including:

- Developing and implementing processes to produce drugs and medicines, food and drinks.
- Producing new, cleaner fuels from natural resources.
- Designing pollution prevention technologies to protect the environment and human health.
- Research and development: collaborating with scientists and other disciplines in the design and implementation of new products and production techniques.
- Design and construction of chemical and pharmaceutical plants from start to finish.
- Consultancy: providing engineering services to manufacturing companies.
- Manufacturing: working in production, troubleshooting and adapting and optimising production processes.

Medical devices and medical technologies

The Republic of Ireland is a globally established medical technology manufacturing location. The medical devices and healthcare sectors are fundamental to Ireland's future as a leading producer and seller of high value exports. Ireland has the highest number of people in

Europe, per capita, working in the medical technology sector, which is worth €30 billion in exports and €6 billion in imports to the Irish economy. The core work of an engineer in this field is the design and development of medical instruments and equipment. Products cover a broad range, including cardiac surgical implants, dialysis equipment, radiotherapy technologies, and many more. Engineers working in the medical devices and technologies sector can be employed in many possible areas, including:

- Biomaterials: researching appropriate materials for implantations in the human body, such as coronary stents, pacemakers and hip and knee replacements.
- Biomechanics: applying mechanics to biological or medical problems to develop artificial human functions, such as artificial hearts and joint replacements.
- Rehabilitation engineering: designing and developing prosthetics and assistive technologies to improve the quality of life of people with disabilities.
- Clinical engineering: the determination and assessment of life cycles and capabilities of medical equipment technologies, through to their decommissioning and disposal.

As well as working with medical device manufacturers, engineers can also find career opportunities in other areas, such as:

- Government
- Hospitals
- Research centres.

Electronics, computing and telecommunications

These sectors have a wellestablished presence in the Irish economy. They are responsible for the provision of a huge range of high-demand products worldwide: software, hardware and telecommunications.

Where could I work?

The electronics, ICT and telecommunications areas are rapidly developing, with new innovations impacting every aspect of daily life, from healthcare to computers to transport. Each innovation brings the possibility of entirely new product developments. These are robust and exciting sectors to work in, with new specialisms constantly emerging.

ICT and telecoms

Engineers working in the computer and software field, design and develop state-of-the-art computer hardware, software and information systems. As well as industry, other potential employment areas include the Civil Service, product design and development, and consultancy.

Areas of activity divide into distinctive but linked areas:

- Hardware (network engineering): designing networks, linking computers together, designing new types of chips, processors and computers.
- Software: designing, writing and testing software.
- · Information systems:

- designing, configuring, implementing and installing complete computer systems.
- Telecommunications: designing and developing technologies for broadcast, mobile and optical communications, such as mobile phones and podcasting.

Telecommunications is one of the fastest–moving sectors in the world: telecoms providers need to innovate continually in order to remain competitive. There is a wide variety of jobs for graduates, ranging from research and project management to software development. This is a fast–paced environment which will appeal to people who thrive on challenge and change.

The work of software engineers depends on their age and experience: a junior might write basic code, while more senior people are involved in designing and developing large-scale systems and applications. You will usually work at one end of the process, either creating the software or helping to test it.

Network engineers have one of the most technically demanding jobs in IT: setting up, administering, maintaining and upgrading networks. The work will vary depending on the type of company you work for and what its network requirements are.

Electronics

This is a fast-paced, forward-looking industry, offering the

opportunity to work on the latest technology.

Electronics are everywhere in the modern world, so this industry encompasses many areas, including consumer goods, medical and communications equipment. There are two types of organisation: component manufacturers, who make integrated circuits and semiconductors; and original equipment manufacturers, who produce equipment such as televisions, mobile devices and other personal electronics.

Control systems and automation is another area within the electronics sector. Engineers develop equipment to aid transport and the control of automated systems in industry, including robots, navigational control systems and radars.

You are likely to be working on projects in a multidisciplinary team, developing new products using the latest technological advances. Project lengths vary depending on your role: a designer may spend a year creating a final product, but an applications engineer supports that product for its entire life, which may be ten or more years. Applications engineering tends to involve more travel, while designers are usually officebased. In a product development role, you are likely to work on one project at a time, while in a support role you could work on several projects a day.

Construction and civil engineering

Civil engineers and building services engineers work for large construction companies, engineering contractors, consulting engineers and, in the public sector, for local authorities. They are involved in the design and supervision of a wide range of infrastructure projects.

There are also opportunities for graduates with companies providing engineering services to the construction industry, for example, in the production of plants, tools and equipment or in servicing specialist areas such as quarrying or waste management.

Where could I work?

Civil engineering

Civil engineers design and supervise the construction of a huge range of projects including buildings, roads, railways, tunnels, bridges, power stations, dams, water supply and sewerage systems. Civil engineering offers graduates a high-tech career with the chance to travel and work outdoors, and to work on projects that involve multidisciplinary teams including architects, quantity surveyors and building services engineers.

Civil engineers can work for a wide variety of companies including firms of consulting engineers, engineering contractors, construction companies and local authorities. They are also employed by property developers, transport infrastructure companies and government departments.

Generally speaking, the work of civil and structural engineers will combine site and design, work. However, consulting engineers tend to focus more on design, while contracting engineers will spend more time on-site.

Consulting engineers are responsible for working with clients to design, plan, manage and supervise the construction of projects. Their work involves carrying out site investigations and feasibility studies; developing detailed designs; liaising with other professionals such as architects, building services engineers and quantity surveyors; and ensuring the smooth running of projects and completion within budget and on time.

Contracting civil engineers turn the plans of designers into reality. They liaise with the design team and oversee the actual construction on site. Their work involves organising manpower and materials; observing safety standards; negotiating modifications with the designers; scheduling work; and supervising construction, including the work of subcontractors. They use specialist equipment to survey sites to ensure that the construction work is being carried out in the right place and that the structure is safe.

This career area is open to any engineering graduate, although a civil or structural background is advantageous. Numeracy is essential, as are communication skills.

Building services engineering

Building services engineers ensure that the buildings we live and work in are comfortable, safe and energy efficient. They do this by designing building services systems and supervising their installation and operation. Typically, 30–40 per cent of the total construction costs in commercial and industrial buildings are associated with the provision of services such as lighting, heating, air conditioning, power, data communications, public health systems and lifts.

The work involves advising clients and architects; designing suitable systems (using computer-aided design) and supervising their installation; and liaising with structural engineers, construction managers, builders and surveyors.

Building services engineers are employed by consultancies, contractors, local authorities, the public health and healthcare sector, universities and the manufacturing industry. You will need to demonstrate strong technical competence, design skills and commercial awareness. Communication skills are essential for liaising with other professionals, as is the ability to work in a team. A good level of numeracy is needed to make complex calculations and estimates for clients.



Environmental issues are the drivers for change in this sector, particularly in the area of renewable energy.

Utilities, energy and renewables

Engineering is primarily about problem-solving, and these skills can be used in many different areas, particularly as new areas of work develop. New degree subjects such as energy engineering reflect the growing interest in fields including environmental engineering and renewable energy.

Environmental engineering

Climate change and the urgent need for sustainable living and development at all levels have underpinned the rapid need for skilled and specialist environmental engineers. Environmental engineering currently remains within the category of civil engineering, but focuses on projects related to natural resources rather than man-made projects. It prioritises environmental protection and conservation in design and development projects. Environmental engineers can work on a wide range of projects. These could include:

- designing and developing water purification, waste-water treatment, waste management and air-control systems
- environmental impact assessment of current and future development projects
- · recycling
- · sustainability
- renewable energy resources.

Employers include engineering and environmental

consultancies; local authorities; state and semi-state bodies, such as the Environmental Protection Agencies; and research organisations.

Utilities

This sector operates, maintains and manages the facilities and networks that supply and distribute utilities: electricity, gas, water and telecommunications. Companies in this sector aim to minimise losses and to offer customers a low-cost, high-quality service. Areas of activity include energy generation, wholesale trading, transmission and distribution, and water treatment.

The industry offers opportunities for graduates from a wide range of disciplines. You could work in operational or project management roles, or become a specialist engineer.

Power

Power generation and energy supply are about converting a wide variety of energy sources (for example, oil, nuclear, wind) into energy products used by consumers (predominantly electricity).

Environmental issues are the drivers for change in this sector, particularly in the area of renewable energy. Energy engineers are involved in the research, design and implementation of new energy systems, such as wave energy, tidal energy and wind power. Much of the work is at research stage: as technological breakthroughs develop, more defined roles will emerge.

Employers include third-level and commercial research institutes and companies involved in power generation.

Clean technology

Ireland is a location of choice for this rapidly evolving sector, both nationally and internationally. Government bodies, including Enterprise Ireland, are promotina and investing in Ireland's indigenous clean-tech industry with the goal of establishing the island of Ireland as a global centre for green technology in niche areas, encompassing engineering, electronics, environment, construction and ICT. In fact, many Irish companies are already considered market leaders in specialist areas such as renewable energy.

Cork Institute of Technology operates a Clean Technology Centre (CTC), which has been providing innovative and effective resource efficiency solutions since 1992. The CTC is widely accepted as the leading waste prevention-focused organisation in Ireland as well as being the longest-established. It works with local authorities, researchers, businesses and healthcare professionals for innovative solutions in this area.

BILL SHEEHAN

is an R&D Engineer at PepsiCo. He talks about how he got into his job and gives advice to college students looking to work in the same field.



What does a typical week look like for you?

My week involves a lot of different tasks. As R&D engineers, we assess any new technologies that we may be looking to implement in the processes in PepsiCo.

Anything that could contribute to the sustainability agenda by reducing water usage or energy usage would be looked upon favourably. We also provide validation support for any PGCS validation batches, and we develop new technologies for our processing equipment. So, I'm currently involved in trials for looking into spray drying and separation techniques for converting liquid caramel into powder.

What skills do you need to be successful in your role?

I think communication skills are important in the role. On a day-to-day basis, I work with different suppliers and contractors and things like that so definitely need to be able to listen and communicate effectively with them to ensure any project is a success, and that any issues are resolved as quickly as possible.

How did you get into your job?

I was always really interested in science and math subjects, and then went on to do chemical and process engineering at UCC. I did The variety in the job is what I love most about working with PepsiCo. Since I joined in September 2021, I've gained exposure and experience in loads of different roles.

a five-year program there, so I graduated in 2021 with a master's degree in chemical engineering, and that September I went on to start the graduate program at PepsiCo. I haven't looked back since.

What skill should students interested in this sector develop?

For someone who's in their first year of an engineering course, I say focus on having a good foundation in the core engineering subjects such as maths, applied maths, physics and chemistry.

Also, work on developing good teamwork skills. Being able to work effectively in a group environment is very important. At work, you'll need to collaborate with other functions on projects, so you need to be comfortable with teamwork.

How have you adjusted to working from home?

When I started in PepsiCo it was nearly all working from home, and it was quite difficult integrating into a new world straight from college when there's not that face-to-face communication and you're not meeting people in your team face-to-face. But since then, we've moved to a hybrid model, and it's been great coming on-site and then having the opportunity to work from home one or two days a week. It makes the job more flexible.

What do you love about your job?

The variety in the job is what I love most about working with PepsiCo. Since I joined in September 2021, I've gained exposure and experience in loads of different roles such as process engineering, commercialisation engineering and project management. I've been given the opportunity to work alongside other global functions and suppliers. There's the opportunity to travel as well!

You can watch
Bill's full interview
on gradireland
YouTube channel.



EMELIA COLE

is a Graduate Process Engineer at Jacobs Engineering and graduated with a degree in chemical engineering. She talks about her experience working as an engineer in the pharmaceutical industry.



What are your main tasks in a typical week?

A typical day at work for me at Jacobs would be working with a multidisciplinary team on a project for a client where we're trying to produce a drug. I tend to work with the process team, and I work on technical drawings, and I will ask questions about what needs changing on them, and I will change that. It will then go for a check-in procedure and we'll issue that out. I also assist with the safety side of things and keep track of equipment in the process.

What skills do you need to be successful in this role?

I would say the main skills needed in this kind of job would be critical thinking and good time management because you've got a lot of tasks, and it's important to learn to prioritise.

You should be able to critically think about a problem and be able to take on criticism.

How did you get into your job?

I studied chemical engineering at the University of Nottingham back in the UK, and I did a placement year in water treatment. During that time, we were encouraged to watch a lot of webinars, and I watched a webinar presented by someone working in pharmaceuticals at Jacobs. I'd always wanted to do pharmaceuticals. So, I added that person on LinkedIn, and, in my final year of university, they said they were hiring for graduates, and so I got in contact with them, had an interview, and then got the job at Jacobs.

What advice would you give to a new graduate?

If you are studying chemical engineering, there are a lot of generic skills like drawings and calculations and safety that you can apply to any process, and you can develop the pharmaceutical knowledge as you're working. I would also say a really important thing to do at university is to ask questions.

How have you adjusted to working from home?

Jacobs encourage graduates to be in work around three days a week. I personally prefer going in just because it's quite nice, and I'm quite a social person. Hybrid working is advantageous in terms of the fact that if you have got something you need to quickly do after work, if you're starting from home, it's a lot more flexible.

The opportunities I've been offered at Jacobs and everyone that I work with have been great.

You can watch Emelia's full interview on the gradireland YouTube channel.



What do you love about your job?

The opportunities I've been offered at Jacobs and everyone that I work with have been great. I've had the opportunity to travel to Denmark and meet people there. You learn so much about how other teams work, different work cultures in different countries and things like that. I'm also part of the Safety Committee, and we get to do a lot of well-being events, so things like that just makes you feel very valued as an employee.

HOLLY LOUGHMAN

is an R&D engineer at Kingspan. She talks about her various work activities and how her studies helped kickstart her career.



What does a typical day look like in your job?

Kingspan is a global building materials company with offices all over Europe, the US, Australia and New Zealand. My job changes day-to-day. I usually work from a desk during the week, and I do a lot of project management activities. I also do design and testing in the workshop or in the lab.

What skills do you need to be successful in your role?

The most important skill for my role is to have interpersonal skills. You need to be able to develop relationships with other people, such as clients and other engineers.

Working in engineering, you learn a lot on the job. Your course really prepares you to tackle what comes at you through problemsolving skills. The rest is learned on the job.

What do you love about your job?

I enjoy the variety. I get to change what I do on a day-to-day basis. A lot of the work is project-based, so my work changes according to what I'm doing at the time. All the projects you work on in college are a huge learning curve. They help you because you get to work with other people, and you learn the technical skills.

How did you get into your job?

I studied an undergraduate degree in mechanical engineering at UCD, and then I did a masters in mechanical engineering. After that, I applied online to Kingspan, and there was an online assessment and an assessment centre.

What is the one skill first-year students should develop if they are interested in this career?

All the projects you work on in college are a huge learning curve. They help you because you get to work with other people, and you learn the technical skills. Getting involved in any extracurricular projects that come up in areas of interest would be my number one recommendation.

You can watch Holly's full interview on the gradireland YouTube channel.



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Graduate salaries

in engineering

Engineering is an industry with well-defined progression routes in terms of roles and salaries, so let's see what the average remuneration is, and what salaries are on offer in the sector.

gradireland research shows that graduate recruits in engineering can, on average, earn up to €36,666 in their first graduate job. This is up significantly on last year's figure of €31,954. No matter what sector of engineering you hope to focus on in your career, salaries increase as you gather experience.

Like most other professions, graduate jobs start out with plenty of scope for development, improvement and subsequent salary increases as you develop your career and gain more specialised expertise in engineering.

For certain roles in the engineering industry, a postgraduate qualification is a specific requirement. When it comes to these roles, having completed a PhD or Masters will have an impact on your earning potential.



Below is a selection of engineering salary data from a survey by industry specialists Engineers Ireland.

- Average salary for an engineer with 1–2 years' experience: €33,000
- 79% of engineers received a salary increase in 2021, with 17% receiving an increase of 10% or more.
- Civil and building engineers had the highest percentage of increases, with 73% reporting a rise in pay. 71% Mechanical and manufacturing engineers reported a pay rise, along with 70% of electrical and electronic engineers and 69% in other engineering disciplines.
- Chartered engineers can expect to earn up to €10,000 more than those without professional titles.
- Graduate engineers with over ten years of experience can expect to earn an average of €65,000.

Your engineering

career planner

NON-**FINALISTS**

AUTUMN

- Start applying for summer internships or placements for 2024. Deadlines can be set before your Christmas break, but employers may not wait until the deadline to start filling their positions, so don't wait to apply.
- · Get involved with clubs or societies in your university or college, and try to take on a leadership role. This will help you develop invaluable transferable skills and will look good on your CV when applying to jobs and internships.



FINAL-YEAR STUDENTS



AUTUMN

- Start applying for graduate jobs as early as you can. Some employers will start assessment centres as early as November. Even if deadlines are as late as Christmas, employers may not wait until the deadline to start filling positions.
- · If you are looking into postgraduate study, starting applications in Autumn is ideal. Popular courses will fill up quickly and often you will need to have applied for a course before you can apply for funding.



WINTER

- Keep an eye out for any remaining internships with later application dates.
- If you haven't found an internship, start thinking of other engineering-focused activities you can do during the summer break. Look into shadowing opportunities at a local engineering firm, or volunteer abroad working on a construction project.
- If you can't find an engineering role during the summer, look for part-time work. Any position will help you develop transferable skills.

SPRING

- Look into what employers might interest you, and what kind of projects they work on. If you have options for modules in your next academic year, consider what modules suit the employers you like.
- Start research for graduate jobs or internships that might interest you ahead of applying in Autumn.

SUMMER

- If you have secured an internship, or have taken on a job or voluntary role, keep a record of what skills and practices you are learning.
 This will help with further interviews and applications.
- If you have an internship, ask for a reference when you are finished to use in future applications. Enquire if the company has a graduate programme and if your time there could help with the application when you get to final year.
- If you haven't secured a placement, work on your own engineering project like developing an app, website or energy-saving household item.

WINTER

- Keep applying for graduate jobs and schemes. Some applications will be accepted into the new year.
- Finish off any remaining applications for postgraduate courses and funding.
- Ensure you make time for interviews and assessment centres alongside your university or college work.



SPRING

- Focus on your studies and preparation for exams. A 2.1 degree will be eligible for a lot more positions than a 2.2 degree.
- Keep an eye out for any schemes or graduate jobs that have not yet closed their applications.



SUMMER

- Look out for vacancies in smaller firms that don't run graduate programmes.
- Find graduate jobs on gradireland.com.
- Keep a look out for openings in graduate jobs from companies who struggled to fill places or who had graduates drop out last minute.



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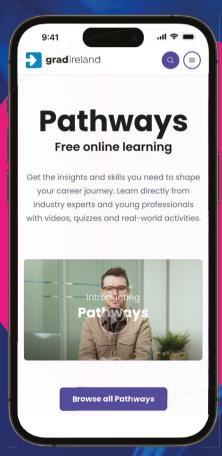
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Training

and career development

A career in engineering offers valuable long-term job prospects along with professional qualifications.

The long-term opportunities provided by an engineering career are excellent. It's not uncommon for graduates to find themselves in managerial roles in their first decade after qualifying, and those who possess initiative and strong communication, teamwork and project-management skills will be rewarded with promotions. A willingness to continue your education and professional development is important.

No matter the specific field of your degree, you can expect flexibility in your career. An engineer's core skill is problem-solving, which enables you to move between engineering sectors. Acquiring managerial experience will equip you with the transferable skills required to pursue a career away from engineering if you so desire.



Professional qualifications

Achieving accredited chartered engineer status (CEng) should be your aim as a graduate engineer, as this will give you a recognised and valued level of competencies, skills and standards. Possessing a chartered engineer status increases your employability and gives you professional recognition. Graduates seeking to develop their careers should seek out employers that run graduate programmes accredited with either Engineers Ireland or the Institution of Engineering and Technology. Such graded graduate programmes allow graduates to achieve chartered engineer status within a few years of qualifying. In the Republic of Ireland, there are three basic requirements for chartered status: graduates must hold a masters degree; have a four year working/training period (Initial Professional Development); and must submit practice reports and written essays. Along with fulfilling the requirements of your employer-run graduate programme, you will be required to take various training courses covering the following topics: financial awareness, legislation, IT skills, managerial leadership and personal development/communication skills. Visit engineersireland.com for more information and also gradireland.com/engineering.

The criteria are very similar in Northern Ireland. The ideal scenario would see you employed by an accredited employer with an Initial Professional Development Scheme that will allow you to attain the skills and competencies required by the Institution of Engineering and Technology. At least two years work must be completed, and, in consultation with your line manager, you will need to produce a development action plan. You will need to keep records of your competencies and learning. When you feel capable, you can consult with your mentor, sponsor and management with regards to applying to register as a chartered engineer. A qualifying report on professional development (QRPD) must be prepared, and you will be required to take part in an hour-long professional review interview.

Continuous professional development for graduates

The Engineers Ireland Future Professionals Series offers structured advancement to graduates through two strands of intense and challenging professional development. Both the CPD Certificate in Professional Engineering and CPD Diploma in Professional Engineering are accredited by Technological University Dublin (TU Dublin) as Level 9 programmes on the National Qualifications Framework.

CPD Certificate in Professional Engineering

Transitioning from University or college to a professional work environment requires serious application and attention from graduates. In collaboration with leading employers, Engineers Ireland have designed their CPD Certificate in Professional Engineering to give recent graduates (up to 12 months since graduating) to become quickly accustomed to the professional standards expected from members of engineering-led teams and organisations. The course will familiarise you with what is expected of you and how you should behave in a professional setting, while speeding up your professional development and increasing your career prospects. The learning objectives of the Certificate include:

- Teaching the expected approaches and behaviours of new recruits to engineering
- · Ensuring participants can deliver their work on time
- Developing recruits' ability to accept and learn from criticism, and to seek constructive feedback
- Providing frameworks for dealing with possible issues, asking the right questions and identifying the appropriate solutions for specific problems
- · Developing teamwork skills, including working

- with clients and on projects managed by your colleagues
- Providing a suitable environment for participants to develop and improve their communication, analytical and technical writing skills
- Optimising Excel as a valuable engineering aid
- Creating an awareness of how engineering recruits are expected to behave, including how to dress appropriately, use acceptable language and show respect for others etc.

CPD Diploma In Professional Engineering

The Future Professionals Series' second strand is suitable for engineers who boast between three and six years' experience, and who display a commitment to developing their professional abilities. The CPD Diploma in Professional Engineering is a partnership that works alongside an engineering organisation, its people managers and graduates to aid and accelerate the development of semi-experienced graduates into professional engineers. The aim of the course is for participants to develop their skill sets to a level that allows them to make a valuable contribution to a workplace and become respected engineering professionals. The diploma is designed to meet the requirements of the Irish engineering industry and those businesses seeking engineering professionals with expanded knowledge, skills and proficiency. The diploma's learning objectives aim to provide graduates with:

- A broad and up-to-date awareness of the wider skills an engineering professional requires
- The analytical and theoretical skills needed to anticipate and cope with the requirements of engineering organisations, including project management, risk management and statistical analysis
- An understanding of the importance and nature of engineering's financial side, including handling claims and resolving contract disputes
- The ability to predict possible issues, ask appropriate questions and identify the correct solution for specific problems
- An ability to work as part of a team or alongside clients, and contribute to other colleagues' projects
- The necessary skills and tools for analysing problems, along with leadership, advanced knowledge management and negotiation skills
- An understanding of current developments in Lean Principles and Sustainability in the increasingly global environment of engineering
- An awareness of the competencies required to become a Chartered Engineer.

For more on these programmes visit www.engineersireland.ie.

Postgraduate study

While a postgraduate qualification may not guarantee you an easy entry into an engineering career, statistics show that postgraduates have superior employment prospects.

Recent years have seen a growth in the number of engineering graduates who choose to pursue further study in the field, ranging from year-long postgraduate diplomas and master's programmes to research based MPhils and PhDs. Conversion courses in engineering can also be taken, though they often require a primary degree from a relevant discipline. You can find funded master's and PhDs advertised in the national press and on institution websites. An up-to-date list of courses can be found on our course database at gradireland.com/careers-advice/postgraduate-study.

It's common for engineering graduates to take postgraduate diplomas or master's in business, finance and project management in order to apply for business and engineering related positions upon graduation.

Both the Republic and Northern Ireland have seen heavy investment in Research and Development (R&D) in recent years, with both governments investing in collaborations with academia and industry to boost growth. Institutions are increasingly collaborating with industry to provide courses that combine theory and study with practical experience. For example, NUI Galway's College of Engineering and Informatics' PhD and MEngSc in Power Electronics and Energy Conversion are both facilitated by Galway's Power Electronics Research Centre, which is one of six centres formed by the Programme of Advanced Technology, a partnership between government, industry and academia.

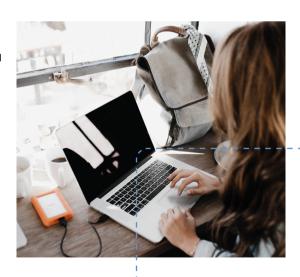
The following is a list of departments and institutions currently offering postgraduate courses in engineering:

- Technological University Dublin, College of Engineering and Built Environment – www.dit.ie/ colleges/collegeofengineeringbuiltenvironment
- Dundalk Institute of Technology, School of Engineering – www.dkit.ie/engineering
- NUI Galway, College of Engineering and Informatics

 www.nuigalway.ie/engineering
- · Queen's University Belfast, School of Planning,

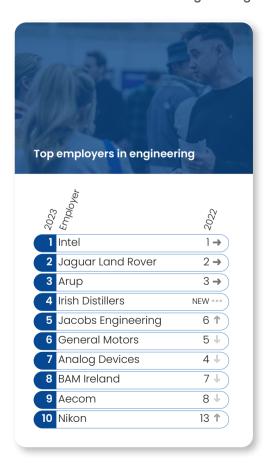
- Architecture and Civil Engineering www.qub.ac.uk/schools/NBE
- Queen's University Belfast, School of Electrical Engineering – www.qub.ac.uk/schools/eeecs
- Trinity College Dublin, School of Engineering www.tcd.ie/engineering
- University College Cork, College of Science, Engineering and Food Science – www.ucc.ie/en/sefs
- University College Dublin,
 School of Engineering and Architecture –
 www.ucd.ie/eacollege/study/graduateschool
- University of Limerick, Faculty of Science and Engineering – www.ul.ie/scieng
- University of Ulster, Faculty of Computing and Engineering – www.compeng.ulster.ac.uk

A comprehensive, searchable course database, supplied by Qualifax.ie, can be found at gradireland. com/careersadvice/postgraduate-study.



Top employers in engineering

Every year, we carry out a survey of students to decide the most popular graduate employers in the country. The Cibyl Ireland Graduate Survey is the largest annual career survey in Ireland and the votes decide the winners of the gradireland Graduate Recruitment Awards and the composition of Ireland's 100 leading graduate employers. Here is the winner and shortlist for engineering.





A-Z of employers

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OBC = outside back cover



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Business relies on technology which is why it plays the most vital role in ours. Deloitte's Technology, Media & Telecommunications (TMT) industry group brings together one of the world's largest pools of deep industry experts – respected for helping shape some of the world's most recognised TMT brands to thrive in a digital world.

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Who we are

ESB is Ireland's foremost energy company. Since 1927, we've been delivering a brighter future for the customers and communities we serve. Today, that means we're driven to make a difference, to achieve net zero by 2040, through delivering clean and sustainable electricity.

To deliver this Brighter Future, we are investing not only in technology but also in people. We're looking for a diverse range of graduate talent to help us deliver innovative solutions for a low-carbon world.

Why ESB

At ESB, your graduate life is about more than just a Graduate Programme. Whichever part of the business you work in, we want you to enjoy being part of our community. Our graduates take part in regular sports and social activities including sponsored runs, tag rugby, summer barbeque, 5-a-side World Cup and Cross Company Power Challenge. We have a strong culture of giving back, and Corporate Social Responsibility is an embedded part of our company and our culture. We allocate over €1m annually to support organisations working in the greas of suicide prevention, homelessness and educational disadvantage. We support local community groups and we encourage staff to take part in initiatives such as Time to Read and Time to Count schemes for local schools.

ESB Graduate Programme

The objective of our Graduate Programmes is to launch you on a fast track to career success. Beginning your professional journey with ESB will allow you to shape your future career through challenging and rewarding work enhanced by continuous learning and development. We have developed our Graduate Development Programme based on the following pillars:

- · Structured rotations
- Challenging assignments
- A supportive graduate network
- · Competitive salary and benefits package
- Robust learning and development
- Experience working on a wide range of major projects
- Exposure to different areas of our business
- · A dedicated mentor who will guide you on your career journey

We have opportunities for graduates to join our Engineering Graduate Development Programme, commencing in September 2024, across the following disciplines:

- Electrical
- Mechanical
- **Quantity Surveying**

MEET AN ESB GRADUATE

Sinead Reidy

Engineering Graduate 2020.



Tell us about yourself, where you're from and what you studied in college

I'm from Athlone, Co. Westmeath, and started my degree in general engineering at University of Galway. After my first year, I decided to specialise in civil engineering.

What is the graduate programme like?

As part of the graduate programme, there were two rotations of teams for engineering graduates, as well as training in various areas including ESB Networks, Safe Systems of Work (ESB Station permitting rules), Engineers Ireland Technical Training and Commercial and Contract Management training. All graduate engineers completed the TU Dublin accredited certificate in Professional Engineering, which is a Level 9 certificate.

One of the many events organised as part of the programme included a trip to Ardnacrusha Generating station, the birthplace of ESB, during an overhaul. This was a great way to learn about the various mechanical and electrical aspects of a turbine, while also understanding the vast amounts of civil engineering construction and design that were, and still are, involved in the Shannon Scheme.

Explain what the work experience was like

The first team I was placed with was onshore wind in the renewable projects team where I assisted with planning documentation, route planning, site investigations and various other documentation.

I rotated to the civil works team at Ardnacrusha Generating Station and have been based in the station since. My work involves ongoing supervision and maintenance of Ardnacrusha Dam, as well as the associated infrastructure connected with the Shannon and Lee Schemes.

As part of my role, I assist with flood forecasting, which is used to coordinate station operations. Safety on site and dam safety is very important. Therefore, I regularly check instrumentation readings that monitor the concrete dam and embankment. I have carried out bridge and building inspections on land and by boat, as well as penstock and draft tube inspections at Ardnacrusha, and the Lee stations (Inniscarra and Carrigadrohid Dams). To carry out these inspections, I was required to undertake working over water, confined spaces and working from height training.

I create the technical specifications for any repair works required and oversee the works once they commence on site. This role has given me a great understanding of how a power station operates and how the various civil, mechanical and electrical teams coordinate to complete jobs safely. It has also given me great experience in the areas of site and dam safety, hydraulics, hydrology, geotechnical engineering, structures, civil works and project management.

What do you plan to work as after the programme and why?

I plan to move to the Hydro Team in the Civil Engineering division within Engineering and Major Projects at ESB where I will assist with the technical projects that will take place at our various Hydro locations including on the Erne, Liffey, Lee and Shannon Schemes, and Turlough Hill. I am really looking forward to learning more about the civil aspects of the various hydroelectric plants within ESB and transferring the knowledge that I have learned on site into my new design role.



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Closing date for graduate programme 5pm, 18 October 2023





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We believe in lifelong learning with flexible working options, paid study leave, an enjoyable and positive work culture and continuous opportunities as your career progresses.

Why Engineering graduates excel at EY

At EY, we're building a better working world by transforming businesses through the power of people, technology and innovation. We deliver technology-enabled transformation to our clients to help generate long-term value, and team closely across all areas of our business to support our clients through their transformation journey. That's why the opportunities for Engineering students at EY are endless. See where EY could take you by applying to any one of our internship or graduate programmes below.

Start your career journey with EY

- Technology Consulting In Technology Consulting, we're building a better working world by transforming businesses through the power of people, technology and innovation.
- Data Analytics Our Data Analytics team tackles a range of projects ranging from corporate fraud investigation to big data analytics or simply designing and developing intelligent solutions to solve our clients' complex data challenges.
- Consulting Consulting at EY is all about providing expert knowledge to advise on a broad range of issues across a variety of industries for companies looking to grow, change or improve performance.
- Tax Tax at EY is an exciting and ever-changing profession. We work
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 world as well as small, locally run businesses. Join our Tax Technology
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 professional qualifications, ACA and AITI, all while receiving world class
 training, exam support and experience.
- Assurance Assurance at EY is all about understanding the key business and financial risks facing our clients and the markets they operate in. By joining the EY Assurance graduate programme, you will be supported towards becoming a qualified chartered accountant through the ACA exams
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The best of luck to all applicants this year.











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Type of work • computing and telecommunications • energy • environmental • manufacturing and production • pharmaceutical chemical • utilities

Salary • €32,000

Benefits • car/allowance • gym membership • life assurance • overtime • pension scheme with company contributions • days' holiday

Number of vacancies • 10

Degrees sought • all disciplines • chemical/process engineering • design engineering • electrical/electronic engineering • food engineering • manufacturing engineering • mechanical engineering

Placements • 45, 6-8 months, all year

Locations • Republic of Ireland

Type of application for employment

• CV • online

Contact

Paddy Hickey pahickey@tirlan.ie

n Tirlán

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Business facts

Tirlán is a world-class food and nutrition business, with a diverse portfolio of quality ingredients, leading consumer and agri brands. Some of our brands include Avonmore, Kilmeaden, Gain Animal Nutrition, Truly Grass Fed, Wexford Creamery CountryLife, Millac. The farmer-owned co-operative has a first-class track record of success in the global market.

Rooted in our rich heritage of family farming and embedded in our communities, Tirlán has evolved to bring the passion of our farmers and their high-quality ingredients to the international marketplace. Using modern-day technology and applying the best processes to our milk pool of three billion litres and our outstanding grains portfolio, we now export innovative products and tailored ingredients solutions to be enjoyed in more than 80 countries. We nurture a talented team of over 2,100 people to manage our network of 11 processing plants, 52 Farmlife and Countrylife retail branches and online trading platforms, dedicated to serving our communities and customers. Our 'Living Proof' sustainability strategy is a bold commitment to developing better, fairer practices that benefit everyone. At the heart of Tirlán is our people, our years of history and experience, and the love we hold for our community and our land.

At Tirlán, our purpose, vision and values guide all that we do.

- Our purpose is to nourish the world, while safeguarding our environment for future generations. We believe we can only thrive when we work together toward this shared purpose- it's what sets us apart.
- Our vision of the future is one which celebrates the purest nutrition. We are deeply connected to the land we farm, and through our farming families and our employees, we strive to work in harmony with nature.
- Our values guide our daily decision making and help us to bring our purpose to life. They form the unifying principles we wish to see throughout our work in the world, gathering our people around a common goal. Our values are: celebrate individuality, adapt to grow, empower and go and collaborate for success.

The experience of generations of farming families and decades of innovation in food processing helps us deliver to a global community.







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