10.1 Science & Engineering Occupations

Overall employment	156,500
Share of total workforce	6.0%
Main sectors of employment	56% - Industry 19% - Professional activities
Employment growth	**+57,700** between 2019 and 2025 **+8.0%** on average annually (2019-2025) (+3.4% for total workforce) **+5.4%** growth annually since 2024 (+2.2% for total workforce) Projected annual average growth (2025-2030): **2.7%**
Key skills identified in OJAs	teamwork, digital skills (data analysis, MS Office), adaptability, quality standards, provide information, problem solving, assume responsibility

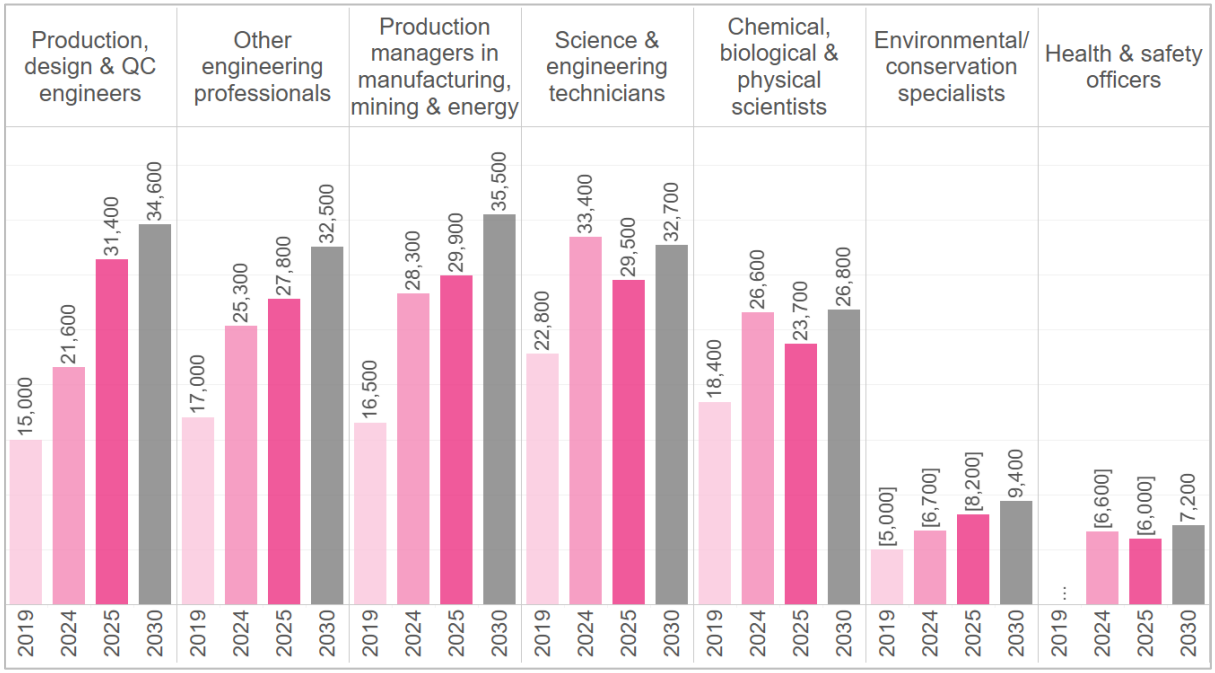
Overview: Science and engineering occupations comprise highly skilled (predominantly professional and associate professional) roles that have experienced strong employment growth in recent years, with further expansion projected to 2030. Those working in this occupational group are characterised by high levels of educational attainment and predominantly full-time employment. Recruitment demand for this occupation remains strong, with shortages and difficult-to-fill vacancies evident across several sources. Employers seek a combination of specialised technical expertise and transversal skills, particularly adaptability, problem-solving, teamwork, communication, project management, and knowledge of quality standards.

Opportunities & challenges: Strong demand is partly driven by the continued growth of high-value sub-sectors such as pharmaceuticals, medical devices, and research and development (R&D), which have performed well in recent years. However, employers face persistent recruitment difficulties, alongside a need to upskill the existing workforce in response to technological, regulatory, and industry change. Advances in artificial intelligence are likely to reshape how work is carried out, with productivity gains expected to outweigh displacement effects, but increasing the need for workers to adapt to new tools and work processes. Additional opportunities continue to emerge from the green transition, while evolving regulatory, compliance, and quality requirements will continue to raise the demand for specialised technical expertise.

Skills supply from the education and training system remains robust. In 2024, there were almost 6,200 science awards and 4,500 engineering/manufacturing graduates at NFQ levels 8-10, broadly in line with 2023 levels. However, demand for these skills is economy wide: these graduates possess transferable skills (e.g. problem solving, critical thinking) that are in demand across a wide range of sectors, including education, health, and public administration and defence (PAD), meaning that employers must compete with a range of sectors for these skills. A further challenge is broadening participation, particularly among females, whose representation remains relatively low in these occupations; greater female participation and/or retention in the science and engineering fields could unlock a further supply of skills for this occupation.

Outlook: Employment growth is expected to continue to 2030, with above average growth for these occupations. This growth is projected to be driven primarily by the foreign-owned manufacturing sector. Within the occupations in this group, the strongest growth is projected for production managers.

Figure 10.1 Annual Average Employment (2019, 2024 & 2025) & Employment Projections (2030)



Source: SLMRU (SOLAS) analysis of CSO (LFS) data, Numbers in square brackets should be treated with caution; an ellipsis (…) denotes numbers too small to report

Table 10.1 Labour Market Profile of Science and Engineering Occupations

	Annual average growth		Quarter 4 2025					2025	
	2019-2025	2025-2030f	% Female	% Full-time	% Age 55 yrs +	% Irish citizens	% Third level grads	No. of new emp. permits	RAS
Chemical, biological & physical scientists	4.3%	2.5%	54%	91%	…	79%	98%	269	✓
Production, design & quality control engineers	13.1%	2.0%	37%	96%	…	76%	91%	1,146	✓
Other engineering professionals	8.5%	3.2%	…	94%	[16%]	76%	92%	876	✓
Science & engineering technicians	4.4%	2.1%	46%	97%	…	85%	71%	241	✓
Production managers	10.4%	3.5%	[25%]	94%	[27%]	82%	66%	75	
Environmental/ conservation specialists	[8.6%]	2.8%	…	[86%]	…	[79%]	[75%]	50	
Health & safety officers	…	3.7%	…	…	…	…	…	13	✓
Overall total	**8.0%**	**2.7%**	**34%**	**94%**	**17%**	**79%**	**83%**	**2,670**	

Source: SLMRU (SOLAS) analysis of CSO (LFS) data, DETE, and SLMRU Recruitment Agency Survey (RAS)
Numbers in square brackets should be treated with caution; … denotes numbers too small to report

Chemical, biological & physical scientists

Despite an above average annual average employment growth between 2019 and 2025, employment levels for this occupation declined by 2,900 since 2024, returning to 2023 levels. This was the only occupation in this group where females accounted for the higher share (excluding health and safety officers where the numbers were too small to determine sex). Industry and professional activities sectors accounted for the larger share of employment, at 70% combined.

Scientists were one of the most frequently mentioned occupations in online job adverts (WIH/CEDEFOP), making up 4% of the total in 2025. Difficult-to-fill mentions in the Recruitment Agency Survey and Skills for Growth data related **to laboratory managers, clinical research associates, chemical scientists, R&D scientists, physical scientists (e.g. GIS).** Employment permits were issued for sectors including the manufacture of chemicals/pharmaceuticals and medical devices (e.g. **various scientists (including bioprocessing, chemical**)), as well as healthcare (e.g. **medical/clinical scientists**) and **R&D**.

LinkedIn data points to an unmet demand for individuals with strong technical skills (Method Development, Liquid and Gas Chromatography-Mass Spectroscopy (LC-MS and GC-MS), Wet Chemistry, among others. Additional data from Skills for Growth/Spotlight on Skills and online job adverts highlight the demand for IT skills (e.g. data analysis programming languages), time and project management, and leadership skills for these occupations.

Skills supply from the education/training sector remained strong in 2024: science awards made at levels NFQ 8-10 included nearly 1,500 awards in physical sciences, nearly 700 in biochemistry, and over 800 in biology.[1]

The already strong demand for biological, chemical and physical scientists, particularly in the high-tech and life sciences sectors, is expected to persist, and shortages are expected to continue, especially for those with transversal skills and technical experience and/or expertise in niche areas.

Skills shortages: Chemical and R&D scientists

Production, design & quality control engineers

Production, design and quality control engineers recorded the fastest employment growth over the six-year period of any occupation (13.1% on average annually), driven by a sharp increase of 9,800 additional workers between 2024-2025. Growth is projected to moderate in the coming years, but employment in 2030 will remain well above 2024 levels.

Evidence of strong demand was present across difficult-to-fill and job advert data sources. There was a high volume of mentions in the Recruitment Agency Survey (primarily related to difficult-to-fill vacancies in life sciences) and Skills for Growth data: job titles in demand included process engineers, validation engineers, pharmacovigilance specialists, quality engineers, manufacturing engineers, regulatory affairs specialists, design engineers, and R&D engineers. In addition, LinkedIn data highlights a shortage of quality assurance managers/engineers with skills in regulatory and industry compliance and standards (e.g. ISO 13485), product quality, GxP (Good Practice) and Six Sigma, while Skills for Growth evidence underlines the need for a combination of strong interpersonal and technical skills.

Although lower than in recent years (due to declines in the ICT sector), this occupation nonetheless ranked among the top 10 for which new employment permits were issued in 2025, with job titles including quality, design, and process engineers.

In addition to the current difficult-to-fill vacancy mentions and continued reliance on employment permits, future demand for this occupation is expected to remain strong. In 2025, the IDA (Industrial Development Agency) approved projects securing a strong jobs pipeline for quality control and validation engineers mostly in high-tech manufacturing or utilities.

Skills shortages: Quality control/assurance, process, design, and manufacturing engineers

[1] Monitoring Ireland's Skills Supply (SOLAS: 2026)

Other engineering professionals (e.g. mechanical, electrical and electronic engineers)

Employment levels for other engineering professionals have grown since 2023, resulting in an above average employment growth rate over the six-year period since 2019. Employment growth is projected to be strong to 2030, driven primarily by the foreign-owned manufacturing sector (approximately three quarters of those working in this occupation work in industry, one of the highest shares across all science/engineering occupations).

Demand for other engineering professional is evident in the high volume of difficult-to-fill vacancy mentions in the Recruitment Agency Survey, frequent mentions in the Skills for Growth data, EI's critical skill needs data, and in online job adverts data. Demand related to a range of sectors (e.g. life sciences, construction and, to a lesser extent, energy), with the most frequently difficult-to-fill job titles being environmental health and safety (EHS), automation, mechanical, electrical, and injection moulding/polymer engineers. The number of new employment permits issued fell by over 460 between 2024 and 2025 but remained one of the highest occupations in terms of permits issued; job titles included mechanical, electrical, project, automation.

The demand for this occupation often requires a specific skills profile, including those with relevant industry experience; Skills for Growth LinkedIn data point to a need for mechanical engineers with skills in 3D Modelling (CAD, Revit), mechanical systems, HVAC design, building services, MEP (mechanical, electrical & plumbing), and drawing (engineering, mechanical). Other sought-after skills mentioned in Skills for Growth included for environmental impact assessment, environmental science, sustainability (mostly for electrical engineers), and process automation and software/system expertise (especially electronic engineers). In 2025, the IDA (Industrial Development Agency) approved projects securing a strong jobs pipeline for senior mechanical engineers over the next few years.

Despite a fall in the number of new employment permits issued, demand for skilled candidates to fill engineering roles is high, with shortages persisting in the medium term.

Skills shortages: Engineers (mechanical, electrical, automation, and EHS)

Science & engineering technicians

The employment growth for science and engineering technicians was above average for the six-year period, and despite a decline between 2024 and 2025, employment numbers for this occupation remain above those in 2023. Science and engineering technicians are employed across a range of sectors; while industry accounted for the highest share (58%), other sectors of employment included professional activities and health. Although males outnumbered females, the share of males (54%) was one of the smallest across all science/engineering occupations.

There is evidence of strong demand for this occupation across numerous sources, particularly for mechanical, maintenance, and electrical technicians, for which there were numerous difficult-to-fill vacancy mentions (Recruitment Agency Survey and/or Skills for Growth) and new employment permits issued, mainly for the high-tech manufacturing, utilities, and professional services sector. There is also demand for other types of technicians in this group, including production and manufacturing engineers. Nearly 9% of online job adverts for the science/engineering occupational family were for this occupation, with the largest numbers being for laboratory technicians (including chemical), followed by technicians not elsewhere classified, and electrical/electronic technicians.

Skills in demand for these occupations, as evidenced in the Skills for Growth and Enterprise Ireland data, pointed to a need for candidates with technical expertise (e.g. voltage systems (medium and high), quality assurance), digital (CAD/REVIT software; data analysis) and problem solving skills, while those mentioned in online job adverts included an ability to delegate responsibilities, and set production KPIs.

The supply of skills for this occupation is growing, with 4,200 science and engineering awards made in higher education at levels 6 and 7 in 2024, up from 3,800 one year previously.

Overall, the demand for this occupation is likely to be sustained in the medium term, with shortages for some types of technicians persisting.

Skills shortages: maintenance, electrical, mechanical technicians

Production managers in manufacturing, mining and energy

Employment for production managers has grown, albeit slowly, every year since 2020, resulting in an above average employment growth rate over the six-year period. Further growth is projected out to 2030, due to above-average growth for the foreign-owned manufacturing sector. Although there was limited or no evidence of unmet demand for this occupation, new employment permits issued in 2025 (for production, manufacturing and operations managers) and IDA job creation announcements (for management roles in manufacturing) combined with the consistent growth in employment numbers in recent years, all point to a continued demand for this occupation in the medium term.

Environmental/conservation specialists

Employment levels have grown considerably over the six-year period for this occupation, although the numbers employed remain too small for detailed analysis.

Evidence of demand for this occupation was confined to employment permits and Skills for Growth data: in 2025 new employment permits were issued for job titles such as environmental engineers/consultants and sustainability consultants, while difficult-to-fill mentions related primarily to sustainability engineers. The demand spans a range of sectors (professional activities, construction and industry). However, there is evidence, particularly in the Skills for Growth and Enterprise Ireland data, that employers seek environmental expertise for various types of other engineering roles (e.g. electrical, civil engineers), spanning a range of sectors (e.g. industry, construction), suggesting that the skills typically associated with environmental and conservation specialists are cross-occupational and cross-sectoral.

Health and safety officers

Employment numbers for this occupation have remained largely stable in recent years, although overall numbers are too small for detailed analysis. A limited number of new employment permits were issued for construction health & safety officers and EHS advisors, while the Recruitment Agency Survey identified difficulty in filling vacancies for health and safety officers/advisers in construction. Although this occupation was not specifically mentioned in either the Skills for Growth or job advert data, evidence of skills mentioned in relation to other occupations (ranging from professional, to skilled trade to operative roles) highlights the important role health and safety and compliance procedures play in the job specification of other roles.