



2024 Training Industry Skills Outlook - Engineering

Workforce Skills Division

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Addressing the Shortage of Skilled Engineers in a Rapidly Evolving Economy

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The global economy and labor market are evolving rapidly due to new technologies, greener initiatives, and broader economic shifts, impacting the engineering workforce. This has resulted in a [global shortage of skilled engineers](#), exacerbated by deficiencies in many [engineering courses that fail to provide necessary workplace skills](#). Training providers and associations must understand evolving engineering roles and skills to bridge the education gap and prepare a future-ready workforce.



Addressing the Shortage of Skilled Engineers in a Rapidly Evolving Economy

Engineering talent is currently in high demand, but there is a limited supply of qualified individuals. In Japan, the country's largest semiconductor manufacturers are warning that about [35,000 engineers will need to be hired](#) in the next ten years to keep up with the pace of investment. Similarly, the United Kingdom is expected to face [a shortfall of one million engineers](#) by 2030 due to the industry's struggle to attract young talent.

This growing gap between supply and demand in engineering talent puts important industries at risk and could significantly impact the economy. In the United States, for example, the lack of engineering talent is equivalent to [almost 40% of the projected GDP impact of all talent gaps expected through 2030](#).

Central to this demand is the emergence of the [4.0 Industrial Revolution](#) (also called 4IR or Industry 4.0), it is getting increasingly important for engineers to have a fundamental understanding of current automation and data exchange trends in manufacturing and product designing, such as [cyber-physical systems \(CPS\), the Internet of things \(IoT\) and the smart factory](#). Yet, there [are concerns about the quality of engineering education](#), with graduates often lacking essential job skills due to outdated pedagogy and coursework misalignment with industry needs. Experts advocate for a [more interdisciplinary approach](#), integrating leadership, communication, and collaboration skills into engineering education.

Training providers and associations must update their programs and membership to align with emerging skills to stand out in a crowded market. This report will look at some key learning trends in 2024 and reveal the **top ten most in-demand skills in engineering roles**. The findings, supported by exclusive data from Faethm by Pearson, offer credible insights for training providers and associations to tailor their offerings effectively.

Our research extends to examining the emerging, popular, and trending skills in white-collar jobs. This distinction sheds light on the dynamic nature of skills required in the contemporary workforce and emphasizes the critical need for certifications in many highly regulated occupations, including engineering. Additionally, we provide top tips to showcase the crucial role of digital credentials in skills validation in white-collar industries.

Shaping the Future of Training

Explore the latest trends in learning and development that are shaping the engineering landscape in 2024.

“VR has many different applications and engineering students need to know the pros and cons of the technology; how it can influence product design and technological innovation... We get them thinking about the major human factors issues they would need to address in the design process and critique the results of using simulation.”

- Professor Gary Burnett, from the Human Factors Research Group

Soft Skills Training

Pearson’s Skills Outlook shows that [human skills](#) are the most in-demand power skills, and [88% of business leaders](#) agreed with the statement that soft skills are directly related to business growth. Yet, [3 in 4 employers said they have a hard time finding graduates with the soft skills their companies need](#).

AI Learning

Like many other industries, [artificial intelligence \(AI\) and machine learning are changing engineering](#). AI-driven systems are increasingly integral to engineering workflows, from supporting smart production lines to automating complex manufacturing tasks. Additionally, AI tools facilitate collaboration across departments and enable engineers to focus on high-value tasks by automating low-value ones. Engineers should prepare to adapt to the latest tools available to them and learn how to work alongside robots and machines advising them.

Personalized and Inclusive Learning

Various examples have demonstrated that personalized learning [improves student outcomes](#) and [boosts learners’ engagement](#) in various industries. Leveraging technologies such as AI enables tailored content delivery based on individual interests, strengths, and weaknesses, creating unique learning experiences efficiently and cost-effectively.

Immersive learning

Experiential and immersive learning fosters authentic learning experiences, placing learners in the context of real-world challenges. In 2020, [The University of Nottingham](#) launched the UK’s first and only virtual reality and simulation module for engineering students, taught entirely in VR. This innovative approach has effectively engaged learners, providing an interactive and collaborative learning setting with tangible well-being advantages. On top of that, [immersive learning can also be used to practice soft skills](#), like helping employees deal with customers or placing teachers in a simulation that replicates a traditional learning environment.

In-Demand Skills in Engineering



A Closer Look at the Evolving Paradigm of Engineering Skills

The demand for skilled engineering professionals continues to soar in today's rapidly evolving technological landscape. As industries embrace digital transformation, the need for a workforce equipped with the latest skills has become more pronounced.

On average, the range of skills [employers demand is becoming increasingly diverse across the engineering footprint](#). This suggests the engineering profession is becoming broader, with wider application of engineering principles across the economy.

Particularly, the composition of the top software skills demanded has evolved over time, influenced by the emergence of new software designed for specialized tasks or emerging fields.

[The Future of Jobs Report 2020 by the World Economic Forum](#) highlights a growing demand for engineering-related roles, including data analysts and robotics engineers, alongside emerging positions like process automation specialists, information security analysts, and Internet of Things (IoT) specialists.

As businesses embrace these technologies, there is an [increasing need for skills enabling their safe adoption](#). These may encompass the ability to monitor, manage, and mitigate safety risks, as well as green skills for environmental monitoring and impact analysis. Additionally, human skills such as systems thinking, and rational decision-making are essential for designing and managing these technologies ethically and effectively.

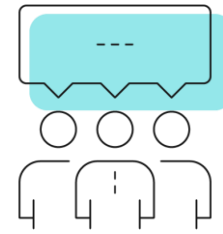
In the meantime, there are [concerns about the quality of engineering education](#) and a mismatch between what was taught in higher education and what is demanded in the industry. This is reflected in the [lack of necessary skills reported by employees](#).

So, what skills should training providers and associations focus on offering to help address these skills gaps effectively?

Our Findings: Top 10 Most Demanded Skills in Engineering Roles

Overall, the engineering field and its various subgroups demonstrate [a greater emphasis on specialized and software skills](#) compared to other occupations.

This underscores the highly specialized nature of many engineering-related roles. However, [soft skills](#) such as communication, management, customer service, and problem-solving remain integral to engineering roles.



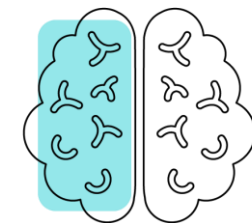
Communication



**Verbal
communication**



**Project
management**



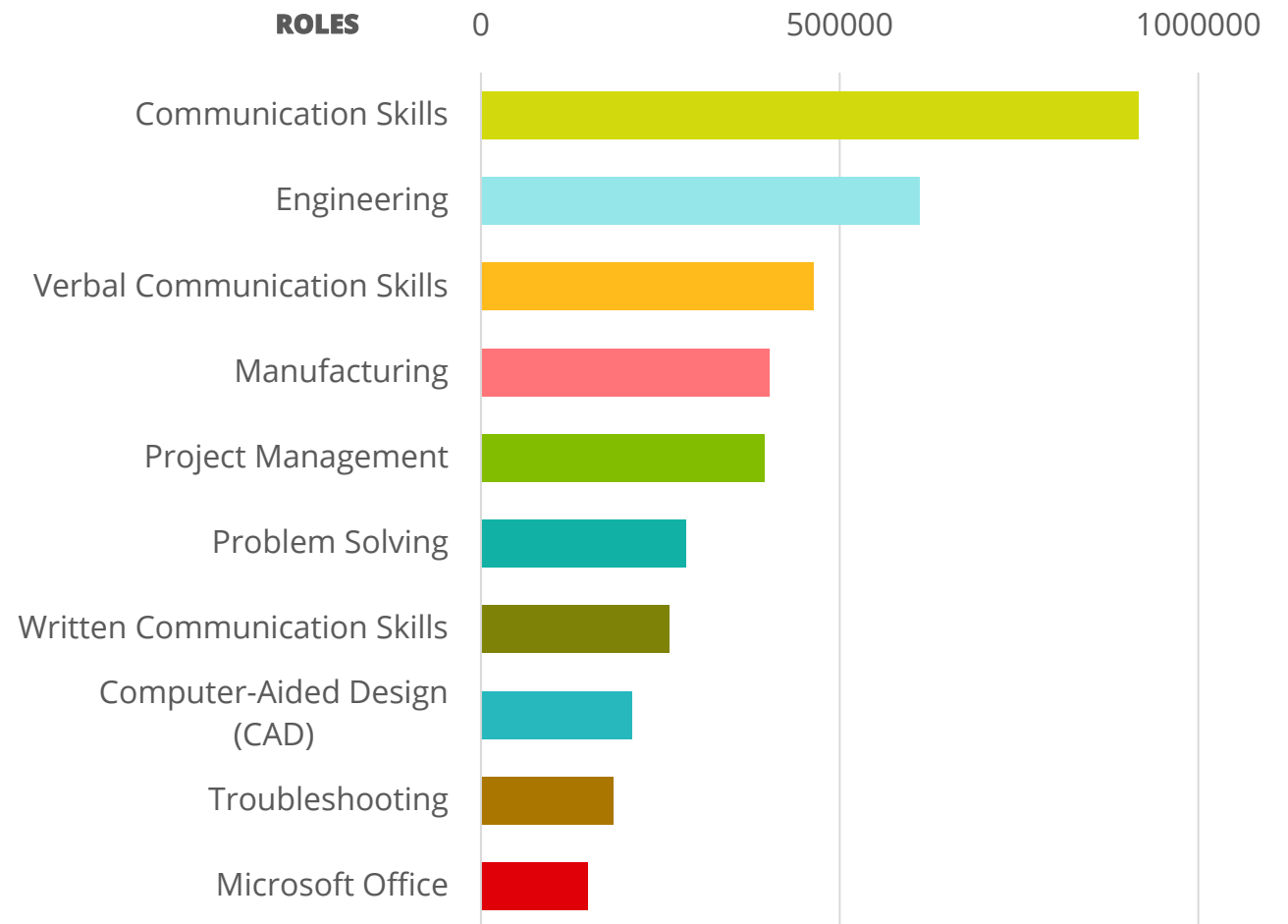
**Problem
Solving**

Our Findings: Top 10 Most Demanded Skills in Engineering Roles

The necessity for a diverse engineering skill set can be found in the [global shift towards green energy](#). In the UK, for example, [the transition to cleaner, greener operations](#), including major transportation projects like Crossrail, HS2, and the Stonehenge Tunnel, would require a recalibration of engineering skills, leading to a more multifaceted and comprehensive application of engineering roles.

Our research somewhat aligns with external findings, with six out of ten top-demanded skills identified as soft skills. This reaffirms the importance of a well-rounded skill set in engineering, particularly in excelling in communication and problem-solving abilities to navigate the evolving landscape. While engineering skills remain foundational, further categorization may be necessary to address the specific demands of individual roles within the sector.

The Top 10 Skills for Engineering Roles are...





Navigating Skill Trends:

A Closer Look at Emerging Skills vs. Popular Skills vs. Trending Skills



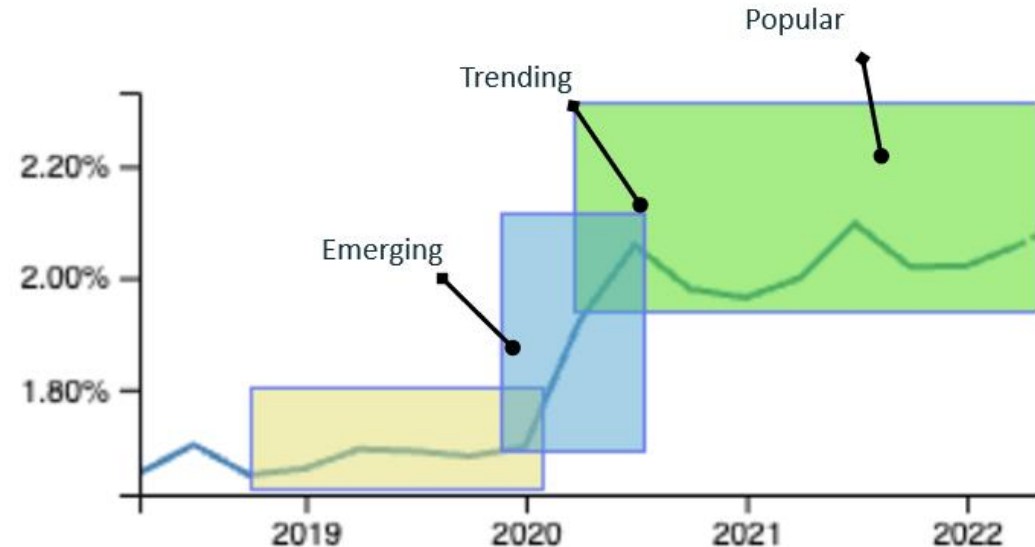
Methodology

For this study, we categorize engineering as a white-collar workforce.

Identifying skills in white-collar jobs that are transferable or adaptable to the engineering industry can provide you with a competitive edge to enhance the versatility of training programs.

This part of the report examines job market data collected in the US, UK, and Australia since 2019. We extracted and analyzed the skills listed in job ads over time, categorizing them into three groups:

- **Emerging skills:** Skills that were previously in low demand but are now beginning to show signs of increased interest in the job market.
- **Trending skills:** Skills that have seen a significant rise in demand over the past six months and are among the top 5% of sought-after skills.
- **Popular skills:** Skills that are most often mentioned in job ads.



In this report, we will focus on analyzing emerging skills, as this forward-looking perspective helps individuals and organizations prepare for upcoming industry shifts.

Additionally, trending skills provide valuable insights into immediate market demands, while popular skills enable training programs to be aligned with current employer expectations. However, it's essential to acknowledge the potential discrepancy between skills in demand and those mentioned in job ads, underscoring the need for agility in skill development to navigate the dynamic landscape effectively.

White-collar jobs

White-collar labor is frequently related to management, professional, or administrative positions in industries like business, law, medicine, technology, etc. These positions frequently involve working in an office or a similar environment and typically call for advanced degrees or specialized training.

White-collar jobs typically involve critical decision-making, complex problem-solving, and specialized expertise. Professionals in these roles also require great interpersonal and communication skills as they work in office settings.

What we found:

As AI technologies, particularly in [data analytics and automation](#), become more advanced, there is a natural shift in the skills that are highly valued and in demand in the job market. This can explain the increasing demand for skills in industry analysis, performance metrics, and market trends.

In addition, although AI may excel in its computational capabilities, [soft skills are key to unlocking AI's true potential](#). Our data indicates a growing need for several soft skills, including collaboration, progress monitoring and incident reporting.

Analysis of Emerging Skills – White-Collar Roles



Analysis of Trending vs. Popular Skills

Trending skills offer insight into current market demands, while popular skills, often featured in job ads, ensure alignment with current employer expectations. In our research, we found:

- The **top trending skills for white-collar roles are all soft skills**. This comes as no surprise, given that many white-collar positions involve routine and technical duties—think scheduling appointments or fielding calls—[tasks that generative AI can efficiently replicate](#). This underscores the indispensable value of human-centric abilities amid the ever-expanding presence of AI.
- **Lifelong learning is one of the top trending skills** for white-collar workers. This can be explained by the fast-changing business environment and evolving workplace landscape. Individuals must continuously update their skills and knowledge of new technologies and industrial trends to stay relevant.
- **Collaboration is increasingly vital globally**, enabling data interpretation, creativity, and idea generation. While AI facilitates information exchanges crucial for white-collar decision-making, human collaboration adds meaning and purpose.
- **Green skills are not among the top sought-after skills for white-collar workers** despite [a notable increase in green hiring worldwide](#). It is evident that [green skills continue to be in demand in blue-collar sectors](#), while white-collar roles need to catch up.

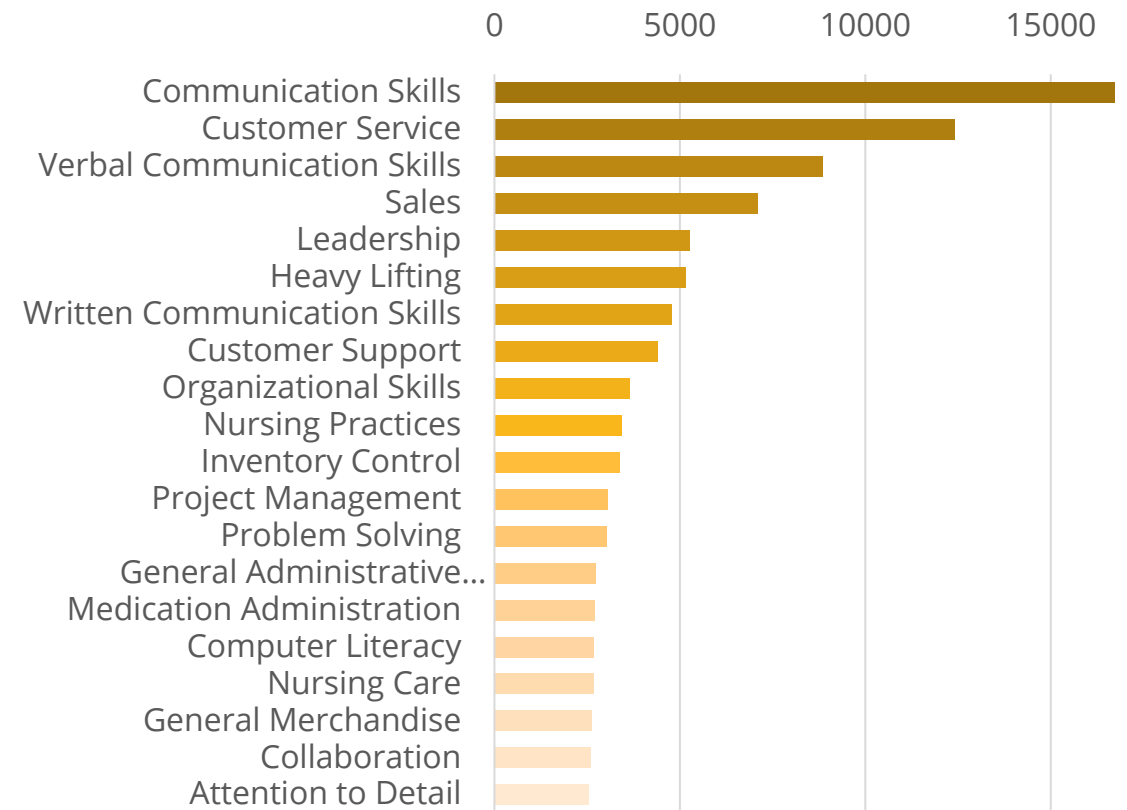


Analysis of Trending vs. Popular Skills

Top Trending Skills for White Collar Roles Across the US, UK and Australia



Most Sought After Skills in White Collar Roles Across the US, UK and Australia



Seizing Opportunities in 2024: How Digital Credentials Can Help

Now that you possess this valuable data to shape the groundwork of your training and membership program, it is equally crucial to explore the use of digital credentials to authenticate these skills for your learners. This will enable you to provide a well-rounded and competitive offering.

A digital badge is a tangible representation of an individual's competencies and skills. They are designed to be easily shareable and verifiable, typically containing verifiable data such as the badge earner's name, the issuing organization, and the criteria met to earn the badge.

Here are some key benefits of including digital credentials by Credly in your program.

- 1. Standardization and Consistency:** Digital credentials provide a standardized format for presenting certifications, ensuring consistency and clarity across industries. This helps avoid misinterpretation of skills and achievements.
- 2. Add Value to Your Training & Membership Programs:** The [metadata](#) offers detailed insights into skills and accomplishments, facilitating easy verification and boosting learners' employability. For corporate clients, this information streamlines verification, enhances clarity and provides valuable insights into their workforce's skills and competencies.
- 3. Drive Demand for Your Programs:** Every time an earner shares their profile or digital credential, there's a measurable, organic impression of your brand, programs, and certifications. This digital credential sharing represents free marketing that engages new and existing customers and attracts individuals who want to upskill.
- 4. Rich Data Analytics:** The [rich analytics](#) within the digital badges provide details and trends on course engagement, program performance, and which badges are most accepted and shared. This helps you identify areas for improvement and make data-driven decisions to enhance your training program and membership.



NEXT STEPS

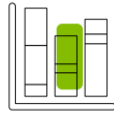
We trust this exclusive data guides you in creating tailored training for today's workforce. Digital credentials offer wide-reaching benefits, showcasing your alignment with sought-after skills and commitment to learner needs. Speak to our sales team now to learn more.

[Talk to Sales](#)



Data Sources

Data Sources



Pearson Labor Market Data

This report leverages Pearson Labor Market Data. Utilizing Natural Language Processing (NLP), Faethm by Pearson gathers data from millions of job advertisements across the UK, US and Australia monthly. This process helps in identifying the skills demanded in the market. The collected data is then scrutinized to uncover trends and patterns.