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Editor's column

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Put yourself in the best possible position!

This year, the coronavirus has brought about great change – and the engineering industry is not immune. Engineering companies across the UK have had to adapt their work environments and mitigate the effects of the pandemic on business.

We've also seen engineering employers transform their work and use their capabilities to fight the virus: from manufacturers switching to vital ventilators and PPE equipment, to automotive companies providing delivery services to those in need, to the pharmaceutical industry preparing to upscale production of potential vaccines.

Student and graduate recruitment has also seen a lot of change, with employers rapidly moving online. Think virtual careers fairs, virtual assessment centres and even virtual internships. This publication is here to guide you through it and help you figure out your next steps.

- Do your CV and covering letter make the cut? Double check on pages 14–17.
- What work experience is usually available for engineering students? Go to pages 28–29.
- Which engineering industry do you want to work in? Explore 14 of your options on pages 32–33.
- Should you join a professional body as a student? The answer is yes, but find out why on page 46.
- How much money could you earn as an engineer? Take a peek at page 50.
- Not sure if you want to be an engineer after all? Look into alternative careers on page 52.

And there's plenty more advice to help you start your career online at **targetjobs.co.uk/engineering**.

Rachael, Editor

@TjobsEng_Tech

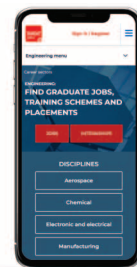


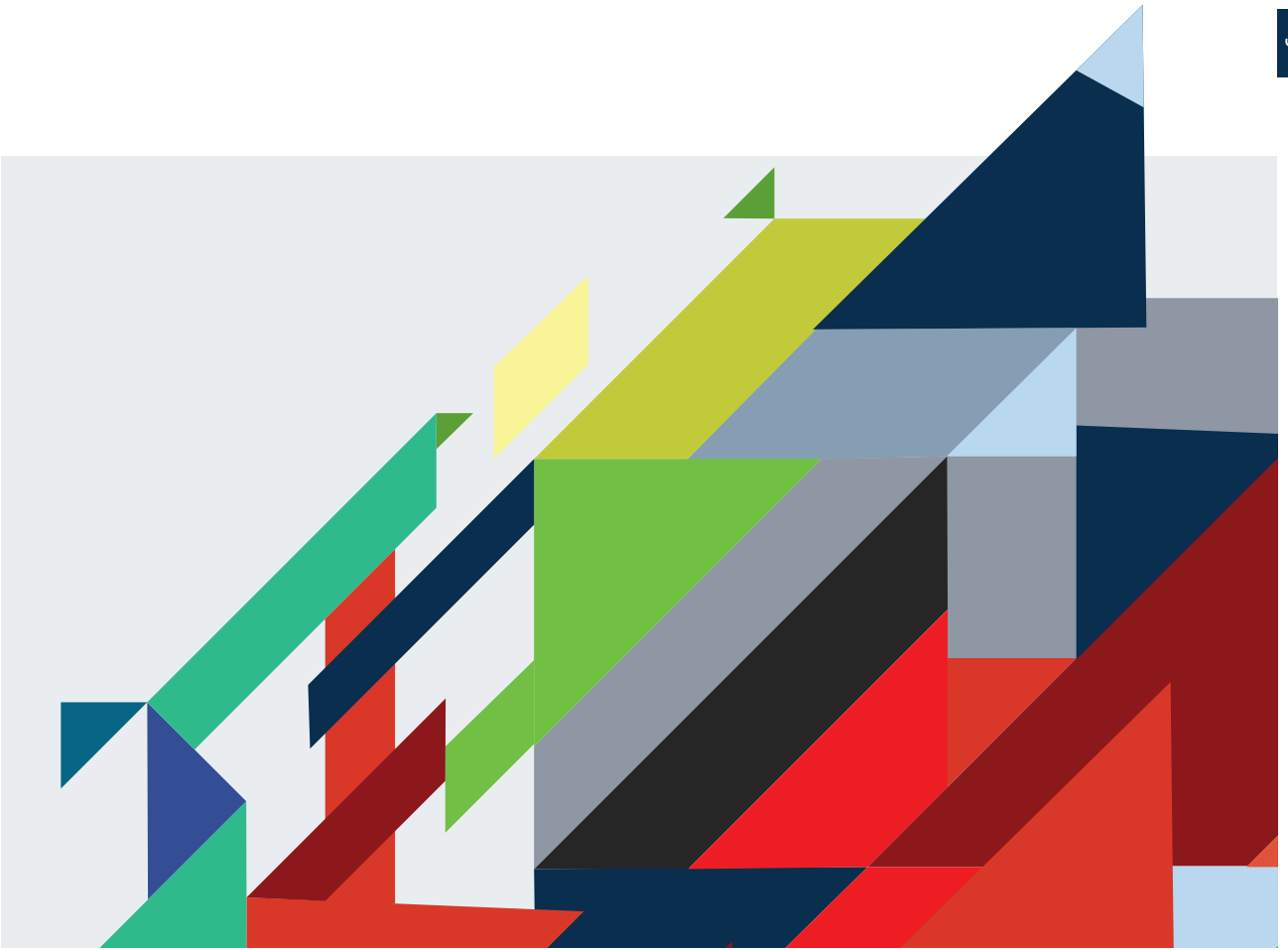
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Welcome to engineering

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- 4 Finding your place in engineering
- 6 Your essential engineering timeline



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Finding your place in engineering

Consider these five factors when looking for your first engineering job.

1. Which engineering industry do I want to go into?

Engineering is made up of a whole host of sectors: everything from aerospace to telecoms. You'll need to research all of the possibilities before deciding which one you want to work in. Get the ball rolling with our 14 industry overviews, starting on page 32. To help you find out which industries recruit your engineering discipline, each industry overview lists the degree disciplines that are typically required.

2. What kind of employer do I want to work for?

Do you want to work for a multinational engineering corporation or a small start-up? Each one has its own benefits, so you'll need to decide which is best for you. For example, many large organisations offer structured graduate schemes that rotate you between areas. You may even be able to complete a commercial placement in, say, finance or supply chain. With a smaller company, graduates are likely to be recruited into specific roles, but you may be awarded more responsibility at an early date.

Deciding whether an employer is right for you goes beyond its size, though. Other important considerations include its culture and values and strategic plans for the future. Use our checklist for researching engineering employers on page 12 to guide you.



3. What do I want out of my job and working life?

Thinking about your skills, qualities, interests and what you've enjoyed during your degree, work experience and other activities will help you pin down what kind of job role you want. You should also evaluate what kind of working life you're after. A lot of employers have been working differently due to coronavirus but you should think about whether the work environment will suit you if and when it returns to normal. For example, which environment appeals to you most out of a fast-paced factory, high-tech design office or offshore oil rig? Do you want a nine-to-five job or would you be happy to do shift work?

Equally, you'll need to decide how mobile you are prepared to be. While coronavirus has limited travel for work, ordinarily some engineers travel a lot within the UK or overseas. Would you relish the opportunity to travel, either for short-term trips or long-term projects, or is it important for you to remain permanently in one place in an office-based team? Find out more about travel for engineers on page 48.

4. Do I want to become chartered or incorporated?

Lots of engineering employers (but not all) will encourage you to work towards becoming a chartered engineer (CEng) or incorporated engineer (IEng). If professional qualification is important to you, check if – and how – the employers you're interested in will support you.

Do you have a preference between CEng and IEng status? CEng is a higher status, and the easiest route to chartership is to have an MEng or a BEng plus a masters. This is why some employers will require you to have an MEng before they hire you.

If you are studying for a BEng but ultimately want to become a chartered engineer, your university may let you transfer onto an MEng course or you can take a separate masters degree after you graduate. It is possible to achieve IEng status and then work towards CEng status but this will take longer. Turn to page 44 for more information on professional registration from the Engineering Council.

5. What do I need to do to get the job I want?

There may be a demand worldwide for STEM graduates, but engineering is still a competitive field to get into. You'll need to prove that you are passionate about engineering and the industry you're applying to. Get help with how to win over recruiters, from your initial application to the final assessment centre, on pages 10–25.

Work experience is typically a must when applying for a full-time engineering job, although recruiters are very aware of the difficulty for students to get work experience (and for employers to run work experience programmes) due to Covid-19. This won't be held against you. Take a look at our internships section, starting on page 28, to find out what types of work experience engineering employers typically offer. 📍

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Your essential engineering timeline

We'd normally recommend following this plan of action over the course of the academic year. Just bear in mind that while some activities will carry on as normal or be adapted online, some will be on pause for now.

Non-finalists

Final-year students

2020

2021

Autumn

- Take advantage of everything university life has to offer. Sign up for extracurricular activities and put yourself forward for a position of responsibility with your university club or society. You will develop valuable transferable skills.
- Make the most of your university careers service from day one. Investigate the opportunities on offer, such as employability awards and skills sessions, and sign up for any that interest you.
- Apply for summer internships or placement years for 2021. Some employers won't take students until their penultimate year, but that's not the case across the board. Application deadlines often fall before Christmas and many recruiters will not wait till the closing date to start filling places so get your application in early.
- Register on [targetjobs.co.uk](https://www.targetjobs.co.uk) to receive job alerts, get headhunted and save your favourite roles to your personal dashboard.

- Find out what careers fairs and employer presentations are happening at your university – and make a note of the ones you want to attend and the specific employers you want to target. These are great opportunities to meet potential employers and ask them questions.
- Apply for graduate jobs and schemes. A large number of engineering employers have fixed deadlines, usually falling in November and December, and may run assessment centres as early as November. Some employers will start making offers before the deadline has passed so don't leave it to the last minute; quality applications take time and are employer specific.
- If you want to pursue postgraduate study, applying early is ideal. Popular courses fill up quickly and for some universities you need to accept a place before you can apply for funding. Funding deadlines vary widely and it's financially inadvisable to miss them.

Autumn

Winter

- Apply for any remaining internships or placement years.
- Use festive social occasions to your advantage; ask family and friends if they know of any suitable contacts or ways to expand your CV.
- Keep up the networking. Make sure your LinkedIn profile is up-to-date – or sign up if you haven't already – and ask your tutor or careers service to put you in touch with one of the university's alumni doing the type of engineering job you want.
- Review the skills, knowledge and attributes you've gained at university so far through your course, part-time work, work experience and extracurricular activities. Are you missing any skills that recruiters value? If so, plan ways to develop them.

Spring

- No luck finding an internship so far? Some employers may still have vacancies so keep an eye out. Seek out other options for the summer vacation too. Top of your list should be engineering-related experience, such as work shadowing at a local engineering firm or volunteering on a construction project in the developing world. However, any role will help you to develop transferable skills.
- Got any choice as to your modules or projects for the next academic year? Find out which options would tie in best with the work of employers who interest you. You can always phone the company's recruitment team if you can't find this information on its website.
- If you want a trip abroad this summer, consider organising some independent travel. It's likely to develop your planning and problem-solving skills, which employers will like, and is more likely to provide job-interview-appropriate experiences than a package holiday to Ibiza.

Summer

- Doing an internship, job or voluntary role? Keep a record of what you do, who you work with, any improvements you make and any challenges you help overcome. This will help with applications and interviews later on.
- If you can't find any jobs for over the summer, consider initiating your own engineering project for the summer – could you design and build a vehicle, app, website, handy energy-saving household device?
- Research which engineering companies interest you for internships or graduate jobs so you are ready to apply in the next year.

- Keep applying for graduate schemes. Some will accept applications into the new year or have 'open' deadlines (though they will still close once they've recruited enough people).
- Make any remaining applications for postgraduate study or funding.
- Prepare for psychometric tests, interviews and assessment centres. Read the information in this publication on pages 18–25 and head to targetjobs.co.uk/engineering for more advice. Find out what help, resources and events your university careers service can offer you, such as a mock interview.
- Ensure you factor in time to attend assessment centres and interviews alongside your university work and have a respectable interview outfit at the ready.

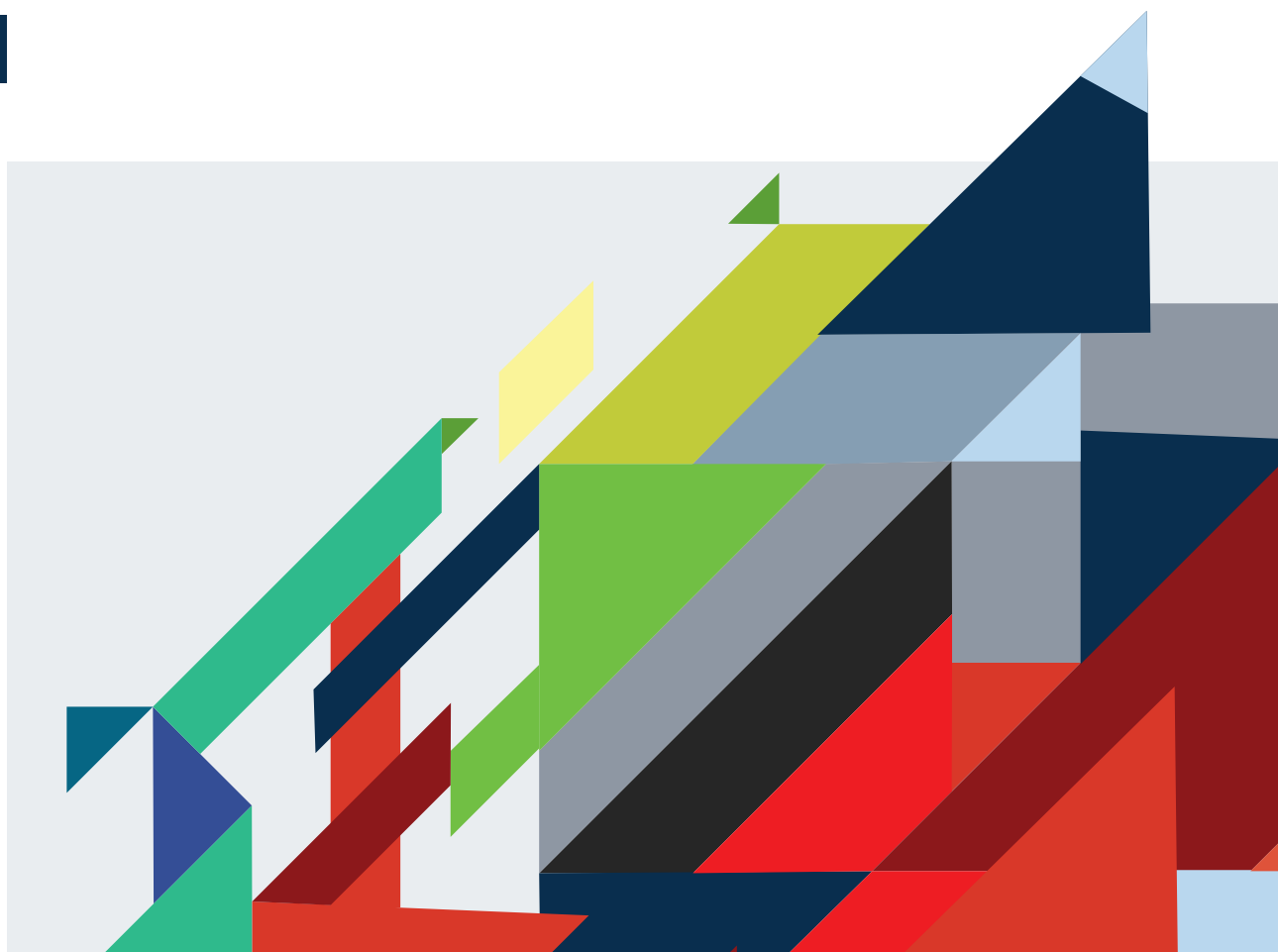
- Knuckle down to your studies in preparation for your exams – graduate job offers at some of the large engineering employers will often depend on you achieving a 2.1 or above.
- If you have some free time, keep your eyes peeled for any schemes that haven't closed yet or may reopen. Make a note in your diary ready to apply once your exams are over.
- Remember that it's not essential to have a job lined up for September. Some employers, particularly smaller ones, advertise vacancies all year round. See our advice for the summer for more options.

- Look out for immediate vacancies with small employers who don't run graduate schemes. Some organisations, such as STEP and ScotGrad, also offer internships for graduates. Many employers who use this scheme like to offer good interns permanent jobs.
- See if you can find the odd graduate scheme still available for the autumn with companies who have struggled to recruit or who have had graduates drop out at the last minute.
- If you've decided to wait and apply for graduate schemes again next year, plan how you are going to use the time between now and then to make yourself even more employable. Get further work experience? Travel?
- Got a job? Congratulations. Give yourself a decent break but make sure you're prepared for work so you can make a good impression from day one.

Winter

Spring

Summer



Applications & interviews

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Networking dos and don'ts

It's a good idea to start building your professional network while you're at university. Here are a few dos and don'ts to get you started.

Do...

Sign up for networking opportunities

Universities offer lots of events throughout the academic year, from careers fairs and employer presentations to guest lectures and workshops/skills sessions run by recruiters. If you've joined one of the engineering professional institutions, they will also provide plenty of networking opportunities. Don't forget about TARGETjobs' Future Female Engineers networking event too. Visit targetjobs.co.uk/events to find out more.

You can also expand your network outside of these events. Many of your lecturers will be in touch with former colleagues in the engineering industry and alumni networks. Careers advisers and placement officers for your faculty often have contact details for former students too.

Be prepared

Before attending an event or approaching an individual, doing some research is essential. If multiple employers are attending an event, for example a careers fair, identify which ones you want to approach. Once you know who you will be talking to, knowing about the work they do and the graduate scheme at their company will make you look switched on. Some research into their industry will also help you. Start by reading the industry overviews on pages 32–33 of this publication. Prepare some questions to ask and take a notepad and pen to take notes.

Make a good first impression

- Shake the person's hand (if in person) and tell them your name, your degree, your university (if it isn't obvious) and what you want to talk about.
- Approach employers on your own rather than with a group of friends. This shows recruiters that you are a capable, independent individual and you are more likely to be remembered.
- Speak to the employer before you pick up the freebies. It's likely that they'll encourage you to take the free USB stick or sweets, but it will look much better if you engage with them first.

Keep in touch

Networking is about creating an ongoing relationship with people. If you've exchanged contact details with somebody, drop them a line shortly after to say it was nice to meet them. You could continue the conversation or ask any questions that have come to mind since, and you can then get in contact in the future if you would like some more information or advice. You should also stay in touch with your line manager and colleagues from your work experience. Drop them a line periodically and update them on your progress.

Don't...

Prioritise quantity over quality

Don't just network for the sake of seeing how many business cards or LinkedIn connections you can get. That isn't the way you meet people and get to know them. Instead, be targeted. When you're at careers events, don't make it your mission to talk to everybody in the room. It's better to have in-depth conversations with fewer people and come away with some valuable information and advice than to have lots of brief conversations full of small talk.

Ask for a job or internship straight out

While employers understand that ultimately the reason why you're networking is because you want to get a job, they probably won't appreciate you asking for a job or internship straight out. Instead, show an interest in the person you're speaking to, their work and their thoughts or ask for their advice on getting a job. You could ask questions about the recruitment process, the skills and qualities needed, current trends in their industry and so on.

Forget about the graduates

Engineering employers send recent graduates along to these events for a reason: they are the people who have been through the application process and are doing the job you want to do. Make sure you talk to them as well as the recruiters and ask about their experience on the scheme so far or ask for their application advice. Recruiters also often ask their grad hires what they thought of you and a good recommendation could boost your application.

Underestimate the power of LinkedIn

If you haven't already, join LinkedIn. After all, according to the Graduate Survey 2020, 74% of the students who said they were interested in engineering employers also said that they use LinkedIn for careers purposes.* You can join engineering-specific groups, follow engineering employers and professional bodies and participate in discussions. Connect with people you know (fellow students and colleagues you met on work experience) but be cautious about asking to connect with somebody you haven't met. The golden rule here is to always send a customised message explaining why you'd like to connect.

*The Graduate Survey 2020 was conducted by Trendence UK, a GTI business. A total of 71,713 students took part between September 2019 and January 2020. Visit targetjobs.co.uk/uk300 to learn more about the survey methodology.

The formula for application success

Follow these five steps to make sure your application stands out for the right reasons.



An online application is the first step in the recruitment process for engineering graduate jobs. First impressions count so think about what engineering employers are looking for and how they might assess your application.

1. Get your application in sooner rather than later

It pays to take action in September and October. Search out the closing dates for the employers you want to apply to and set aside time to write your application. Starting early in the autumn means you can take your time and you're less likely to be under pressure with university deadlines at the beginning of the academic year. Deadlines can fall as early as November and engineering employers go out of their way to stress the advantage students can give themselves by applying early.

Most recruiters assess applications as and when they're submitted and may even have made job offers to early-bird candidates by the time the official closing date rolls round. Some employers warn graduates that they will close their scheme early if they fill all of their vacancies before the official closing date – but you should work on the assumption that this could happen with any company.



2. Tailor it to the employer

The golden rule for applying for graduate jobs is never to send an identical application to multiple employers. The best applications are tailored to each employer and demonstrate genuine enthusiasm for the job, the organisation and the industry. To do this, good research is vital. You can use the TARGETjobs employer hubs (targetjobs.co.uk/employers) and our research checklist on page 12 to help you.

Once you've done your research, you can use it to inform your application. Don't just copy and paste a sentence from the company's website into your covering letter though. Instead, use your research to support your reasons for wanting to work there. For example, if one of your reasons is 'I like the projects that you work on', mention one or two of the employer's projects that interest you.

3. Sell your skills and experience

Before you start your application, put together a list of your experiences and achievements to date – and the main skills you developed from each one. You can then decide which ones are the most relevant to your application. Try to use examples from different scenarios rather than the same one and, if possible, read through the entire application form before starting to avoid using scenarios in your initial answers that are better suited to later questions.

If you have any engineering work experience, definitely shout about it. Focus on what you did, what you learned and what you achieved. However, non-engineering work experience is also impressive. You can demonstrate important transferable skills through ventures such as working in a café at the weekend, acting as a student ambassador for your university, volunteering at a soup kitchen or extracurricular activities and hobbies.

4. Take the STAR approach

Applications often have a word limit for responses to questions about your skills and competencies. Keep your answers concise, well-structured and specific. Read each question carefully and try to analyse what skill(s) in particular the question is trying to assess. Then use the STAR approach to structure your response:

Situation and Task: describe the situation or the task that you had to accomplish. Use a specific event or situation. Don't devote too much space to this bit.

Action: describe the actions you took, focusing on your own input even if you were working as part of a team. Talk about 'I', not 'we' or 'they'.

Result: describe what happened, what the outcome was and what you achieved and learned.

5. Pay attention to detail

Recruiters judge applications not only on evidence that you meet their requirements, but also on the quality of your writing: think clear, concise answers and good spelling and grammar. Click out of social media mode and switch on your professionalism. Accuracy is important in the life of an engineer so recruiters want to see evidence of attention to detail.

- Use full, grammatically correct sentences.
- Prepare your answers in a word-processing document so that you can use the spell-checker and review your text more easily.
- This also means that you can save your work and take a break. When you return later you'll be more likely to spot errors.
- Before you send your application, read through it one last time and get someone else whose judgement and opinion you trust to look over it as well.
- Finally, print out a copy for your reference and read back over it before an interview or assessment centre. ☺

Your research checklist

Researching employers will ensure that they tick all your boxes – and you tick theirs.

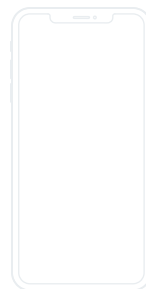
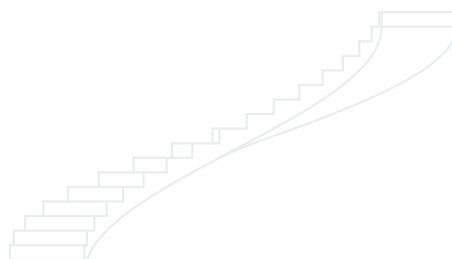
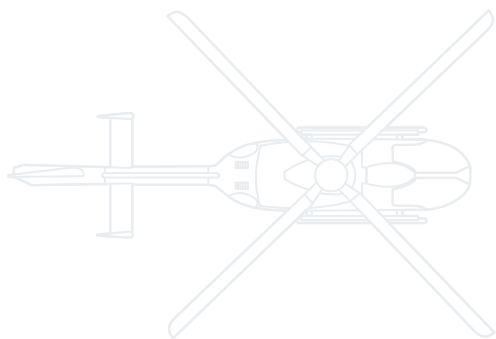


It's essential to do some research before you start applying for jobs and attending interviews. This will help show employers that you know what you are applying for and are genuinely interested in this specific job, rather than just any job. Research also helps you to decide whether the company is right for you. It could save you time in the long run if you find out early on that an organisation would not suit you.

Decide what type of projects you'd like to be involved in, what skills you want to use on a day-to-day basis, and which kind of culture you'd be happiest working in.

Use our research checklist to find out everything you should know. The more detail you can find, the more you will set yourself apart from other candidates. If your research has left you with questions, don't worry – that's a good thing! When you come to the 'Do you have any questions?' part of the interview, you will be able to ask intelligent and relevant ones – and show your enthusiasm once again.





Find the right information

Begin your research online at targetjobs.co.uk/engineering and targetjobs.co.uk/employers, before moving on to companies' own websites.

Seize opportunities to meet employers at careers fairs and other careers events (many of which have been moved online) and, if there are any graduates present, talk to them to get the inside view. You can meet engineering employers

at TARGETjobs' Future Female Engineers event. For more information visit targetjobs.co.uk/events/future-female-engineers.

Your careers service may also have an alumni network that can put you in contact with someone who works for the organisation. Don't forget to keep an eye on the national newspapers and the trade press for industry developments. ☺

Things to investigate...

About the company

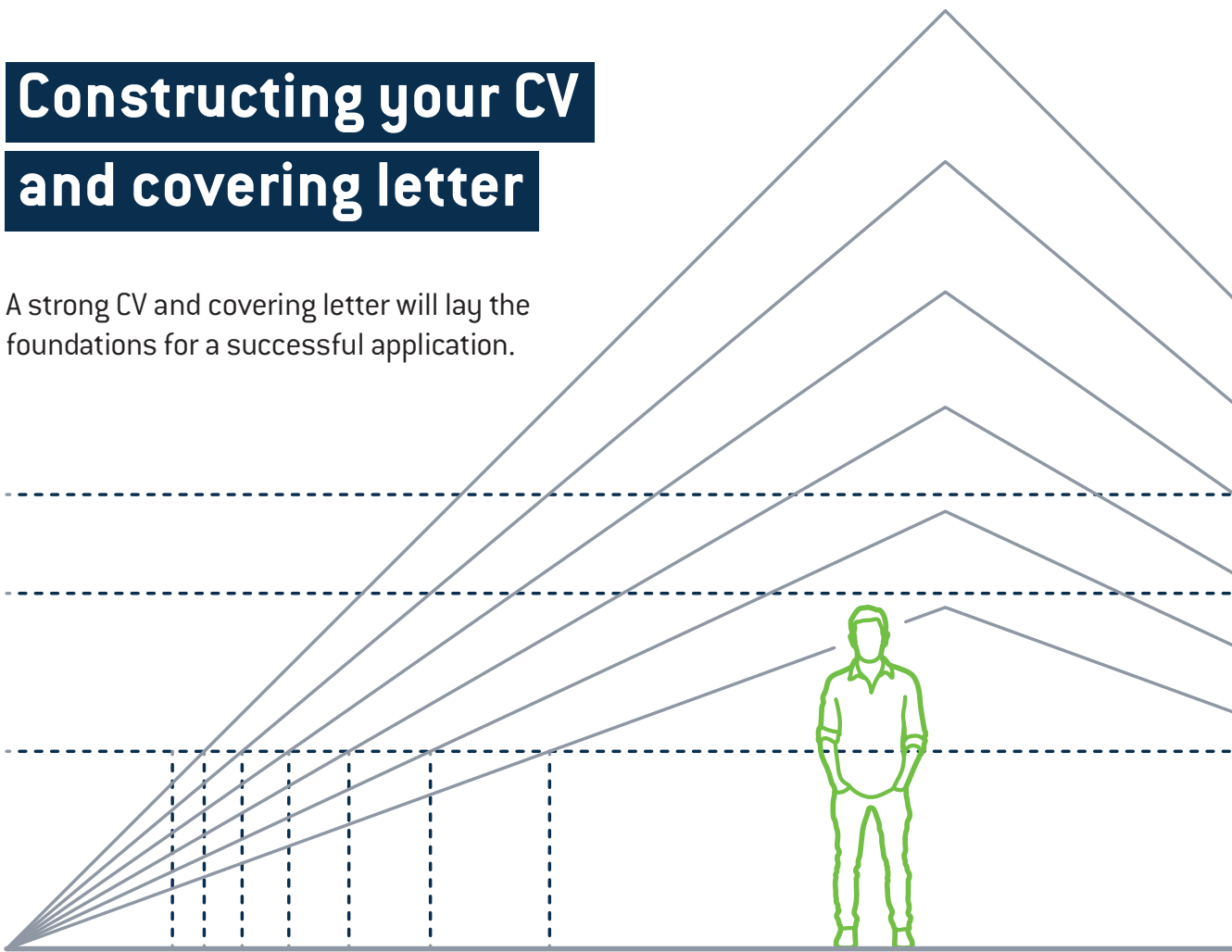
- ☐ The size of the company eg how many people it employs
- ☐ Its annual turnover
- ☐ Its history and defining moments eg when it was founded and if it has merged with other companies over the years
- ☐ The products/services it offers
- ☐ Where its locations are in the UK
- ☐ Other countries it operates in
- ☐ Who its clients are
- ☐ Who its main competitors are
- ☐ Developments in the industry eg new technologies
- ☐ Recent/big news from the company over the last couple of years
- ☐ Its strategic plans/growth areas
- ☐ Any awards it has received
- ☐ Its culture and core values
- ☐ Its corporate social responsibility
- ☐ Its response to Covid-19 eg did it alter its operations, contribute in some way to combatting the virus, release any statements or encounter any difficulties?

About the scheme

- ☐ The different graduate/intern roles it offers
- ☐ How many graduates/interns it recruits each year
- ☐ The structure of the scheme eg whether you will rotate around different areas of the business or remain in one area for the duration of the scheme
- ☐ Where you will be based
- ☐ What academic requirements there are
- ☐ The application deadline
- ☐ The recruitment process eg how many stages there are, whether there's psychometric tests or an assessment centre and the types of interview involved eg competency or technical
- ☐ What skills and qualities are needed
- ☐ The training and development on offer
- ☐ Whether it will support you in becoming a chartered or incorporated engineer
- ☐ Whether there are any opportunities to travel or complete secondments
- ☐ What current graduates have to say about their experience
- ☐ Opportunities for career progression
- ☐ How the starting salary compares to other engineering companies – and whether it offers any perks or benefits eg welcome bonus, pension, flexible working, retail discounts, bike-to-work scheme

Constructing your CV and covering letter

A strong CV and covering letter will lay the foundations for a successful application.



How do you fit everything in to your CV and covering letter? By researching the skills sought by the employers you're targeting and then devoting most space to experiences and qualifications that match these. Our advice on researching graduate employers on page 12 will help you.

CV staples

Tailor your CV to each employer. Keep a master copy and tweak it for each application.

Your CV should be either one full page or two full pages of A4. Make sure it is easy to read: choose a clear font in reasonable size, word your headings clearly and consider using bullet points to break up the text.

Dealing with gaps

The most common type of format is the reverse-chronological CV, which focuses primarily on work history and education. If you follow this approach, make sure the chronology is clear and there are no major time gaps to confuse employers. University holidays, gap years and taking six months to get your first graduate role aren't unusual holes in any case, but if you spent your gap year working in a supermarket, include this in your work history rather than leaving recruiters wondering what you did for 12 months.

Covid-19 lockdown isn't a gap on your CV that you will need to account for or one that you should feel the need to disguise. Recruiters are well aware of the restrictions students have faced. Don't worry if you have little or nothing to cover during this period, although you may decide to include some of your lockdown activities in your CV if appropriate - webinars you've attended, short courses you've completed, a new language or hobby you've picked up or volunteering in your community (virtual or in person).

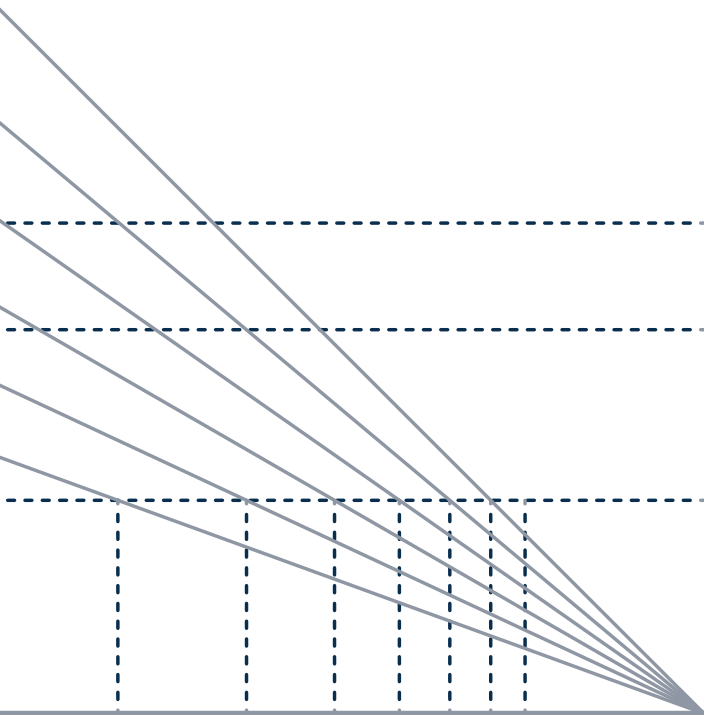
For more help with format and content, see our template engineering CV overleaf.

Making a statement

Many students will begin their CV with a brief personal statement outlining their abilities and aspirations. If you do include one, keep it short, specific and relevant to the engineering job in question. It's a waste of space to write 'Student with great teamworking skills seeks challenging job.' Instead, write 'Final-year mechanical engineering student with particular interest in aerodynamics seeking a graduate role in the defence industry.'

Education history

For your university years, you should include your predicted or actual degree class, information on group



projects and your dissertation, any modules relevant to the job, and relevant academic awards. Engineering employers don't need to know the specifics of modules that don't relate to them.

Include your A level (or equivalent) subjects and grades. Give GCSE/standard grade results. Rather than listing each one individually, give combined results and write out the grades of two to four subjects that are relevant to the position. For example, 'ten GCSEs, grades A* to C, with an A* in chemistry and mathematics, and an A in product design'.

Technical work experience

Outline engineering work experience in your CV, judging how much detail to give by how closely it relates to the specific job you're applying for. It's a good idea to start with a brief summary of your key responsibilities and achievements, looking at how you helped the company and the skills and technical knowledge you learned from the experience. Explain how these can be transferred to the position you're applying for.

If your internship or industrial placement doesn't link closely, it's likely that these will be skills such as 'prioritisation', 'explaining technical information to non-

technical colleagues' or 'communicating with suppliers', rather than specific technical skills.

Other achievements and skills

Many engineering employers look very favourably on achievements and experiences outside engineering. This can be a real boost if you haven't been able to secure engineering work experience – and can give you an extra edge if you have. Examples worth mentioning include fundraising, voluntary work, organising independent overseas travel, sporting achievements or taking a leading role in a university society. Don't go into too much detail: summarise your achievements and any transferable skills developed.

Likewise, part-time work or summer jobs are worth a brief mention, but focus on the transferable skills you developed that will be useful in your engineering career, rather than listing your responsibilities at length.

Covering letters

Your covering letter is a chance to convince the engineering recruiter that you want to work in their industry, for their specific organisation, and in the job role in question. For example, why do you want to use your mechanical engineering degree in the rail industry specifically? What's the appeal of following a commercial route rather than a more technical one?

The trick is to have a clear idea as to what the company does and what the job entails, then draw out evidence of your own skills, interests and experience that relate to this. 'I'm applying to you because you are a vibrant, international company that is a market leader in the automotive industry' (flattery) won't get you anywhere.

A much better approach is to:

- Clearly state your career aim.
- Say specifically what attracts you to that particular employer (eg you could mention a couple of projects it has been involved in that interest you).
- Mention a work placement, project or module you have enjoyed that relates to the role in question.

Keep your covering letter succinct – no more than one side of A4. See overleaf for an example of how to achieve this.

Keep it sharp and error free

Careers in engineering demand professionalism and accuracy, whether for communicating effectively with clients, suppliers or non-technical colleagues, or for ensuring that calculations are correct. Make sure that your use of written English in your CV and covering letter reassures recruiters that you have these qualities. If written communication isn't your strong point, consider running draft copies of your CVs and covering letters past trusted friends or careers advisers. ☺

Sample engineering CV and covering letter

BENJAMIN JEFFRIES

123 Oak Grove, Southampton SO11 5DK

Email: Benjamin_Jeffries@gmail.com

Phone: 07970 394739

EDUCATION

2019–2020 University of Southampton, MSc Sustainable Waste Management

- Relevant modules: bio-processing of waste; integrated waste management; monitoring, aftercare and residuals management.
- Group project on the processing of hazardous waste.

2015–2019 University of Manchester, BEng (Hons) Chemical Engineering (2.1)

- Relevant modules: environmental science; biotechnology; fluid mechanics.

2008–2015 Newton Heath School, Abingdon

- A level Physics (A), Mathematics (A), Chemistry (B)
- 10 GCSEs (grades A* and A)

TRAINING

2019 (October–November) Southampton University Research Institute for a Sustainable Environment (SUNRISE) – waste management in business course

- Attended evening and weekend lectures and tutorials over a six-week period.
- Learned about different elements of a business, working with departments, implementing ideas and getting people to work with you.
- Networked with key figures in the industry.

INDUSTRIAL PLACEMENTS

2020 (January–March) Three-month masters placement with BioChem

- Completed calculations and subsequent analysis into how the organisation disposed of the by-products produced.
- Produced a report based on the results that outlined how the organisation could implement very simple and cost-effective measures to streamline this work and reduce waste by 40%.

2017–2018 (July–June) Industrial placement with Eastern Electric

- Helped project manage an internal campaign to reduce the amount of residual energy and workplace waste produced across all of the organisation's plants.
- Spent time at each plant planning trials (deciding what should be tested and how to do it), assisting with the trial, making sure that all the necessary data was collected and the safety procedures followed, and then analysing the data.

Devote plenty of space to relevant work experience, highlighting what you achieved and how it benefited the company.

Where relevant, summarise what you learned from the experience.

Many engineering employers will be interested to know about your IT skills, but don't exaggerate your abilities.

A short 'Interests' section can show that you are well rounded, but only include things that you would feel confident discussing at an interview.

If you're a member of a professional body, say so on your CV. It could be a brief mention next to your name, a bullet point in your 'Interests' section or, if you've got a lot to mention, a section of its own.

If you don't have the space, including references on your CV is optional. The information about yourself is more important.

Give contact details at which recruiters can easily get hold of you. Ensure your email address sounds professional. Don't waste space with your date of birth, marital status, state of health or NI number.

Include university modules that are relevant to the job rather than listing them all.

Give your A level subjects and grades but don't list your GCSEs individually.

If you've completed relevant training in addition to your degree, include it.

Include part-time or holiday jobs, highlighting transferable skills gained, but devote less space to these than to more relevant experience.

- Produced a waste and energy efficiency report based on my findings. This was used as the framework for the organisation's first corporate responsibility report.
- Also produced a report on how by-products produced could be effectively harnessed to create more energy. I presented my ideas to the board of directors and the initiative is now being implemented within the organisation and trialled across several plants.

VOLUNTARY WORK

2016 (June–September) Voluntary charity programme in Mozambique

designing and constructing irrigation tunnels

- Worked alongside an international group of experienced engineers mapping out and constructing a series of irrigation tunnels in three villages.
- Successfully brainstormed a solution to a waste disposal problem the team had been facing. My calculations have now been adopted as the standard model for this type of project.
- The experience taught me the value of teamwork, flexibility and good communication skills. It also gave me a fantastic opportunity to experience new cultures and different working practices.

FURTHER EMPLOYMENT EXPERIENCE

2019–2020 (October–present) Bartender, King's Head, Southampton (part time)

- Duties include serving customers, cashing up and assisting with stocktakes.
- Working part time while completing my MSc has helped further develop my time management and prioritisation skills.

2013–2015 Customer service assistant, Tesco, Abingdon (part time)

- Duties included working on the checkout and at the customer service desk.
- Helped develop my commercial awareness and communication skills.

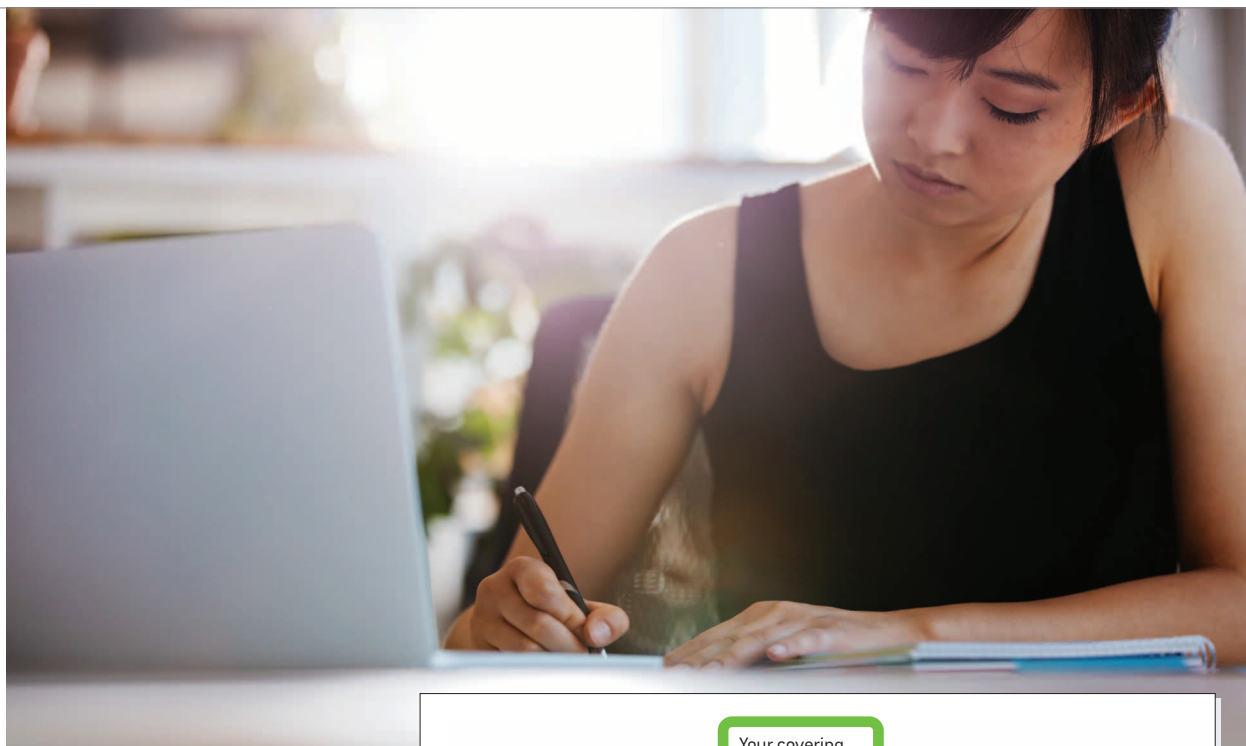
IT SKILLS

- Able to program in C# and Java.
- Proficient in Microsoft Office applications.

INTERESTS

- Student member of the Institution of Engineering and Technology – part of the Solent Network and an IET on campus student volunteer.
- Rowing – member of the men's squad at both Manchester and Southampton university boat clubs. Competed in local regattas, BUCS events and head races.
- Hiking – previously hiked up Ben Nevis, Scafell Pike and Snowdon in the UK, as well as completing the Inca Trail to Machu Picchu in Peru.
- Running – completed several 5km and 10km runs, as well as Reading Half Marathon, for charity.
- World cinema – member of Union Films, a student-run cinema at Southampton University.

References Available on request.



Address the recipient by his or her title and surname. If these aren't stated on the job ad, get in touch and ask. If this isn't possible, say Sir/Madam.

State clearly which position you are applying for. If the job ad gives a reference number, include it.

Very briefly mention your most relevant qualification(s) for the position.

Say why you are applying for this specific job.

Show that you have taken time to understand the company. Highlight why you are right for the role by linking the job requirements to your skills, experience and achievements.

Explain why you want to work for this company in particular.

If you have additional specific skills that are especially relevant to the job, mention them briefly here.

Sign off your letter with 'Yours sincerely' if you've addressed it to a named person, or 'Yours faithfully' if you've addressed it to Sir/Madam.

Your covering letter should not exceed one page of A4.

123 Oak Grove
Southampton
SO11 5DK
07970 394739

3 September 2020

Ms Claire Jones
HR Manager
ABC Water Consulting
Nottingham
NG2 2XY

Dear Ms Jones,

Application for Graduate Water Treatment Engineer vacancy, ref A123

I am writing to apply for the Graduate Water Treatment Engineer vacancy advertised on targetjobs.co.uk. I have an MSc in Sustainable Waste Management from the University of Southampton and an BEng in chemical engineering from the University of Manchester. I am seeking my first role in the water industry and enclose my CV for your consideration.

I am attracted to the Graduate Water Treatment Engineer role at ABC Water Consulting as I wish to combine my knowledge of the waste management industry with my understanding of chemical processes and biotechnology developed on my undergraduate degree.

I wish to work for a consultancy as I particularly enjoy working on projects that provide a clear business benefit and am keen to have a high level of client contact. During a three-month placement with BioChem I produced a report outlining how the organisation could reduce the waste from its processes by 40%. On a one-year industrial placement with Eastern Electric, I produced a report on how by-products could be harnessed to create more energy, which is now being implemented. I have also completed an optional 'waste management in business' course at Southampton University, learning about business skills and functions, and have strong customer service skills developed through working as a Bartender and as a Customer Service Assistant.

During my time at Eastern Electric my work formed the basis of the company's first corporate social responsibility report, something I note ABC has a strong record in given its volunteer programme. In the summer following my first year as an undergraduate I spent three months as a volunteer on a charity programme in Mozambique, designing and constructing irrigation tunnels.

I have a basic understanding of InfoWorks CS, strong programming ability in C# and Java, and good working knowledge of Excel.

I am available for an interview at any time.

Yours sincerely

Benjamin Jeffries

State your availability for interview.

Interviewing 101: keep your cool



ou'll usually face at least one interview as part of the recruitment process for engineering graduate schemes, entry-level jobs and internships. An interview in the early stages of the process usually takes the form of a telephone or video interview, while a final interview is typically face-to-face and could be accompanied by a technical interview (see page 20), form part of an assessment centre (see page 22) or take place on its own. However, engineering recruiters may have changed how they run interviews due to the Covid-19 pandemic. You should check details with individual employers. The information here details how interviews are typically carried out. Whether on screen or in person, likely interview questions and the prep you should do largely stay the same.

Likely interview questions

Questions you may be asked include:

- Motivation questions, such as 'Why do you want to work in the automotive/marine/power generation industry?', 'Why do you want to work for this company?' and 'Why have you applied for this job role eg electronic engineering/quality assurance/project management?'
- Competency-based questions, which usually start with something along the lines of 'Tell me about a time when...' and require you to give an example of when you have demonstrated the skill the interviewer is asking for, such as teamwork, problem solving, resilience, organisation or leadership.
- Scenario-based questions, which are based on how you think you would act in a workplace scenario and usually start with 'What would you do if...?'. These questions are designed to see how you think and how you would approach a situation – and whether this is in line with the company's values and strategy.
- Strengths-based questions, which aim to assess what you are good at and what motivates you. Examples of questions include 'How do you judge success?' and 'Do you find deadlines motivating or inspiring?'. While these questions don't require you to, it's still good to draw on examples from your previous experience.

Time to prepare

- Do some thorough research into the organisation, using our research checklist on page 12 to help you.
- Make sure you know what is going on in the industry you're applying to (eg the aerospace or construction industry) and any issues it is currently facing or may face in the near future.

- Re-read the job description, paying close attention to what you'll be doing on a day-to-day basis, the training you'll receive and the core skills you'll need. Read any graduate engineer profiles on the employer's website or on its employer hub on [targetjobs.co.uk](https://www.targetjobs.co.uk).
- Use all of this research to help put into words what interests you about the job, the employer and the industry you're applying to.
- Think about what experiences you would like to talk about in your interview. It's good to draw on a variety of experience, from engineering work experience to your degree, part-time job and extracurricular activities. Reading over your CV is a good place to start.
- Think about your career ambitions too, both in the immediate and distant future, as you may be asked a question on this. What sorts of projects would you like to work on? Do you want to achieve chartered status? Do you see yourself taking on a management role?

Cool, calm and collected

Don't be afraid to pause to think before answering a question, or ask for clarification if you do not understand. If you don't think you can answer it, don't panic. Admit that you're not sure and explain how you would approach the problem – by asking a more experienced colleague for advice, for example. Whatever you do, don't lie – you are likely to trip yourself up, damaging both the interviewer's opinion of you and your confidence.

Asking your own questions

At the end of your interview you'll usually be given an opportunity to ask a few questions. Don't ask questions that have been answered during the interview and choose questions that you actually want to know the answer to – and that demonstrate your enthusiasm for the position.

Questions you could ask include:

- How did you start at this organisation?
- How has your career developed since then?
- Could you tell me a bit more about the training I'll receive?
- Will there be opportunities to develop skills outside of my immediate technical area? ☺



Tips for Zoom and video interviews

1. **Choose the right device.** We'd usually advise using a laptop on a desk or table if you have one. Don't be afraid to use headphones and external microphones if they will help you.
2. **Practise beforehand.** You could use your laptop to record yourself or rope in a friend. Review your body language (eg do you slouch or fidget?) and your voice (eg are you speaking at a suitable volume and pace?).
3. **Get in the zone.** Dress smartly, check your background is tidy and warn your flatmates or family that you'll need some peace and quiet. Give yourself the best chance of success.
4. **Be on time.** After all, it's not like you can blame the traffic. Leave plenty of time to navigate meeting invites, dodgy internet connections, or unplugged microphones.
5. **Remember that you're on camera.** You can never tell for certain which people will show up on other participants' screens so act like you're going to be on screen at all times.
6. **Don't panic about technical glitches.** Stay calm if something does happen. Recruiters will be in the same boat, can often help you resolve it and may even have issues of their own.



Find more tips
at targetjobs.co.uk

Take on your technical interview



E

ngineering employers want to check out your technical abilities, drawing out

your experience and knowledge to see how well you would match the role and how easily you can get your head around unfamiliar scenarios. The form of assessment is likely to be a technical interview but you could also face any of the following:

- a short test
- a presentation
- some technical questions within a more general interview
- a technical exercise, for example a case study group exercise at an assessment centre.

A gentle warm-up

Many interviews will start off in familiar territory, asking you about modules and projects from your degree that you found interesting or that relate directly to the organisation's work. It's essential to do some preparation, for example refamiliarising yourself with your first-year work. Brush up your basic engineering knowledge, particularly subjects that tie in with the recruiter's line of business, as you may be tested on this.

Sector-specific questions

It's definitely worth trying to get an insight into the employer's activities and any issues that may be of concern to the industry. Find out what sort of work it does and anticipate from that the sorts of basic questions you might be asked relating to its work. For example, an employer that constructs oil and gas facilities might ask you questions about steel structures, so you should brush up on your general knowledge about steel.

A two-way street

Approached in the right way, a technical interview can help you to learn about employers as well as the other way round. Most interviewers are happy for candidates to ask questions about how the company works and have a two-way conversation. Being proactive and asking questions also tends to make a good impression on employers – it shows that you are thinking seriously about whether the role will suit you, and that you're not a wallflower.

Communication is key

In many ways, technical interviews focus on how you communicate technical ideas and information. If a sketch or a diagram would help you to explain something, ask for a piece of paper. It's perfectly alright to ask for further clarification if you need it. Engineering projects rarely present textbook problems so your future employer wants to see how you approach problem solving.

It's OK to not know the answer

If you don't know the answer to a question, it's best to be honest about it. An interviewer might not always expect you to know the answer to a question but will be focusing on your thought process. Don't try to guess the answer; instead, say that you don't know and, if appropriate, talk about how you would go about finding out. ©

Example technical interview questions

Graduates have previously told us that they were asked these questions in their technical interviews:

What is your final-year project on?

How will your studies help you in this job?

How would you explain a complicated technical concept to a non-technical person?

Describe your degree subject as if to a five year old in three minutes.

How would your degree subject contribute to the production of Mars bars?

What are the issues of installing underground cables?

What is the minimum number of cuts needed to split a cube into 27 smaller cubes?

Can you explain this jet engine/PWR nuclear reactor/geology profile to me?

Can you give some examples of your previous technical reports?

What do you know about this industry?



*Find more tips
at targetjobs.co.uk*

Get up to speed with engineering assessment centres



ost assessment centres are designed around an employer's core competencies – the skills they most need in their graduate engineers.

Technical ability is obviously important, but it's the soft skills that allow engineers to use this in a business context. There's no point designing a brilliant new product or system if you can't communicate the concept to colleagues, convince them of its potential value to the business, or adapt your ideas in the light of practical or commercial considerations. Turn to page 24 to see eight skills engineering recruiters want and how you will be assessed for them.

What happens on the day

How engineering recruiters run assessment centres may have changed due to the Covid-19 pandemic. During lockdown, some employers set up virtual assessment centres. The information in this article details the typical format of an assessment centre but employers may have made adjustments and there will certainly be some differences if you are asked to attend a virtual assessment centre.

An in-person assessment centre generally lasts one day and may range in size from four to forty candidates. A virtual assessment centre is usually shorter (between two and three hours) with fewer candidates in attendance.

You'll be observed in various situations by multiple recruiters and engineers. It's also a chance for you to find out about the organisation and form a clearer picture of whether you'd like to work there.



Each organisation will tailor the day to its requirements, but common tasks include the following.

- **Interviews:** technical interviews, competency-based interviews or both.
- **Group activities:** discussing and making decisions around a given business issue in small groups.
- **Giving a presentation:** some recruiters give applicants the topic for their engineering assessment centre presentation in advance so they have a chance to prepare (eg discussing a technical project they have previously been involved with). Others give candidates their topic on the day: this often relates to the employer's business and may involve candidates doing fact finding or decision making before presenting their conclusions.
- **Tests:** psychometric tests (for example reasoning tests or numerical tests), personality questionnaires, or tests to check that you understand the basic engineering principles of the area in which the employer works. Some employers also test whether you can extract relevant details from a large amount of information, and/or communicate this information; in some cases this links to giving a presentation.

The more you prepare beforehand the more confident you will feel. Find out as much as you can about the employer and what it is looking for, and try your university careers service for information and advice. It may have details of different engineering companies' assessment centres based on feedback from previous students who have attended, or hold talks or workshops to help you prepare. See page 12 for our engineering employer research checklist.

Chat to current employees

Where possible, most assessment centres include opportunities to chat to recruiters or current employees. Use the chance to learn more about the business; you might find it helpful to think of some questions you could ask about the industry, employer and individual in advance. For example you could ask about their background with the company or you could ask questions about commercial awareness issues in the industry. Keep in mind that your assessors might ask the people you speak to for their opinion on you. Genuine enthusiasm, interest in the company and good manners will go down well.

Be engaged and respectful

To succeed at an assessment centre you need to participate fully. If the assessors don't see or hear anything from you, they can't assess you. If you have something to say that could have an important effect on the outcome of a group exercise, it's important to get your point across – but without being overbearing or rude. Assessors are looking at how people listen to and help others in the group, and also how you help move things forward to a positive conclusion.

Focus on yourself

Remember that employers will be matching you against their selection criteria, and not against the other candidates. It's possible that everyone at your assessment centre will be hired. Keep the employer's selection criteria in mind throughout. ©

Eight skills engineering recruiters want

Communication skills

What it is

Communication skills cover written and verbal abilities, and interpersonal skills. In your working life you'll have to deal with many different people at different levels of seniority, of different nationalities and quite possibly based in different countries with different time zones – so it's important you can adapt your style of communication if necessary.

How you will be assessed

In group tasks, you may find that other candidates have been given different information from you and that you need to negotiate and decide among yourselves which aspects are most important. Recruiters will be impressed by candidates who appreciate and respect each other while still getting the task done, make sure everyone gets their say and, if they challenge other group members, do it in an appropriate way.



Leadership potential

What it is

Assessors for many graduate schemes will be interested in whether you have an aptitude for leadership. It's important to be able to identify the most important facts and communicate these clearly, concisely and enthusiastically to a team. Being organised and aware of time constraints and remaining courteous and respectful in stressful situations are also important leadership qualities.

How you will be assessed

Group exercises are a key tool for assessing your leadership potential but this doesn't mean that you should try to take charge of your group from start to finish. A would-be leader trying to bully a team in the wrong direction will be viewed negatively. However, it's important to speak out when you have something productive to say, or to challenge a view that you think is incorrect.



Teamworking ability

What it is

Teamwork is a huge part of working life for an engineer, so recruiters are looking for candidates who realise that they can achieve more as part of a team than as individuals and focus on working towards common goals.

How you will be assessed

Employers are impressed by graduates who actively participate; are open, honest and respectful; and who support others: for example listening to what they have to say, building their confidence and encouraging quieter team mates. All these things will be noted in candidates' behaviour towards each other.



Problem-solving skills

What it is

A crucial aspect of problem solving is the ability to extract the key facts from a mass of information and keep them to hand in a quickly accessible format.

How you will be assessed

At assessment centres you may be given a task involving a lot of information so it's wise to note down what you think are the most important points in a fashion that works for you – perhaps as a chart or flow diagram. Remember your notes may be collected and analysed afterwards by the assessors. This can count in your favour if you've been on the right track but unable to get your points across to other team members. You may also be asked in an interview to think of an example of a problem you have solved, describing how you tackled it, what the outcome was and what you learned from the experience.



Planning skills

What it is

At work, you may have to plan your own day-to-day tasks and those of others, as well as organising longer-term projects. How good are you at breaking down tasks, monitoring progress and building in contingency plans? Do you typically take the lead in planning and organising how to progress with group work or social events?

How you will be assessed

You may be asked in an interview how you went about planning a project or event – for example a university ball, sporting event, academic assignment or DIY project – looking at what you did right and what you learned from it. The leadership and problem-solving behaviours you show in group tasks, such as considering who will be responsible for what, are also relevant here.



Motivation and enthusiasm

What it is

Enthusiasm is important in your work with others. To engage and lead a team and to work well with customers, it's a big help to be keen about the task in hand – you need to believe in something yourself to be able to sell it to others.

How you will be assessed

Recruiters will be keen to identify genuine enthusiasm. Help yourself out by doing your homework on the companies you are applying to. What do they do, where are they located and are the roles they are offering really what you want? In group exercises, showing enthusiasm can help bring the team together and lead it forward. In interviews, make sure you mention any projects, roles or interests you are particularly passionate about, even if they aren't directly related to the position.



Adaptability and flexibility

What it is

For some engineering positions you'll be expected to be flexible geographically. Other positions require less travel but employers will still be keen to see a flexible mindset to deal with new methods and processes, enthusiasm for doing new things and willingness to take on tasks or roles that may not have had their structure mapped out for you.

How you will be assessed

Doing your homework when you apply will help. In group exercises, assessors may throw in challenges to see how you adapt, for example waiting till the task is well under way, then saying that the customer has changed its mind about what it wants.



Ability to build relationships

What it is

Engineers must be able to understand and build relationships with their customers, suppliers, teams, managers and other key stakeholders. It's often not possible to choose who you work with so you need to be able to assess others' behaviour and adapt to it.

How you will be assessed

Again, recruiters will observe how you interact with other candidates and may ask you relevant questions in interviews, for instance to give an example of a time when you have dealt with a difficult person.



The Graduate Benchmark

Tests provided by Assessment Day  Delivered by TARGETjobs 

Test yourself. Compare your score.



FREE for
TARGETjobs
members

Do you want to know how well you can do in standard employer aptitude tests? Use the Graduate Benchmark to get an employer's-eye view on how your performance compares to your peers.

1) PREPARE with three practice tests to warm up.

2) TEST YOURSELF on the assessments most used by graduate recruiters: numerical reasoning, verbal reasoning and inductive reasoning.

3) REVIEW YOUR RESULTS in a personalised report and compare your scores to students in your uni, your year, your subject or across the whole country.

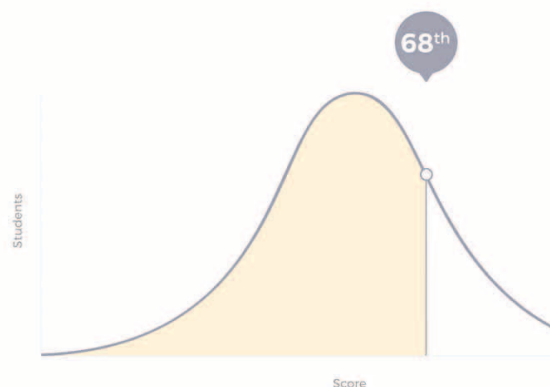
Sign in to **targetjobs.co.uk** and go to your dashboard, or search 'Graduate Benchmark'.

Your Graduate Benchmark result

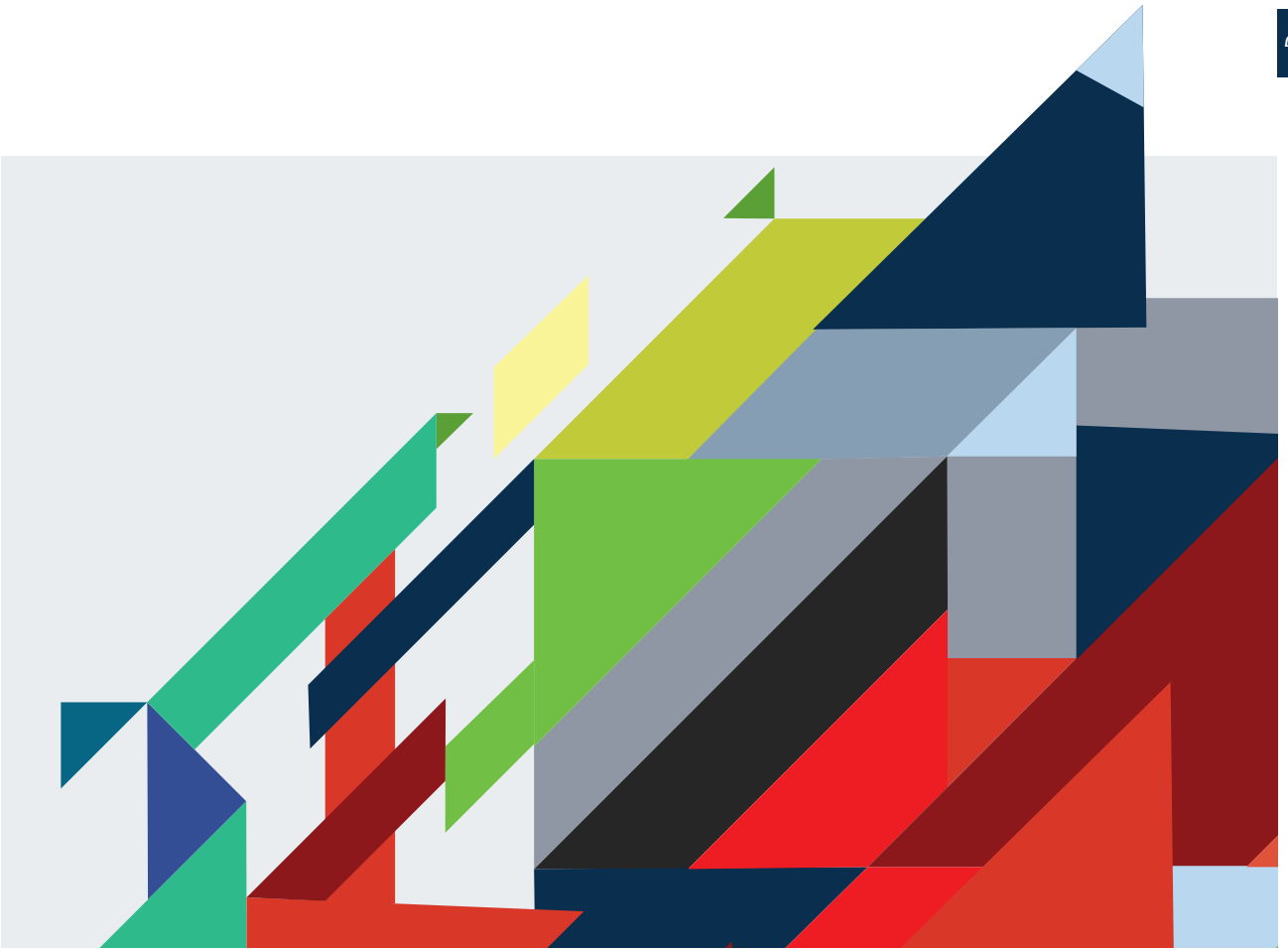
You scored higher than 68% of 1,475 people.

68 Percentile score

1,475 Comparison group



Built by 



Work experience

IN THIS SECTION

- 28 Secure a placement...
- 29 ...or explore your options

Engineering work experience

Having work experience on your CV is a big advantage for engineering students. It helps to demonstrate your commitment to a career in the sector, provides you with experiences that you can talk about at interviews, builds a network of colleagues and industry contacts that you can ask for advice and sometimes leads to a graduate job offer.

In fact, work experience is often cited as a must to secure an engineering job. However, employers realise that the Covid-19 pandemic has posed considerable challenges to gaining this experience. Some of the options recommended below may not be running normally due to Covid-19, but this won't be held against you when applying for jobs. Check regularly to see what's available and speak to employers directly (for example at virtual careers fairs) to seek out more information and advice.



Even in normal circumstances, not every engineering student will land a paid summer internship or placement year. First years (and second years on four-year courses) often find it harder to get work experience early on in their studies, for example. By being proactive and open to less-obvious options, you can still gain some of the skills and experiences employers want from engineering graduates.

Secure a placement...

What's available?

The two main types of work experience offered by engineering employers are:

Summer internships. They typically last between six and ten weeks and run between your penultimate and final year at university. Some employers also offer shorter placements over the Christmas and Easter breaks.

Engineering placements. They are largely aimed at penultimate-year students, especially those who are studying a degree that incorporates a year in industry. However, if your degree doesn't include a placement year, it doesn't mean you can't do one. Your university will encourage you in your pursuit of work experience so, if you think you want to spend a year in industry, ask your university department if it's possible.

Where to find opportunities

Large employers will typically start advertising their internship and placement vacancies from September onwards. Smaller employers tend not to advertise their opportunities as much so try hunting around on their websites and applying speculatively (go to [targetjobs.co.uk](https://www.targetjobs.co.uk)

for advice on speculative applications). Your university careers service and lecturers are good ports of call too; they often have close links with employers in the local area.

Don't forget, you could also win a placement or internship as part of the TARGETjobs Undergraduate of the Year Awards. See [undergraduateoftheyear.com](https://www.undergraduateoftheyear.com) for more details.

Take your application seriously

Apply early! Deadlines for summer internships and year-long placements with engineering companies can fall as early as November, with December to February being a popular deadline window among large employers. Several recruiters have also told us that they don't wait until after the deadline to start inviting candidates to interview and making offers. Beware of 'open' deadlines too: just because you can apply whenever you like doesn't mean there will be a vacancy left at the time you want it.

Spend as much time on your application for work experience as you would for a permanent job. Read the 'Applications and interviews' section of this publication for help with each step of the application process.



...or explore your options

Apply for insight days and weeks

Some large employers offer insight days or weeks, usually for first- and second-year students. They give you a chance to experience an office environment, get to know the company better, shadow current graduates and network. The employer is also likely to put on workshops to help you improve your soft skills or give you some guidance on applications and interviews. If you're hoping to go on to secure a placement, an insight day or week could be the perfect stepping stone.

Get work experience with small engineering employers

Don't be afraid to get in touch with people working in the industry to create your own opportunities. Research local engineering companies and ask them if they can offer you anything. This could be a day shadowing an engineer, a week or two of unpaid work experience or even a whole summer.

Create your own projects

Try working on a project of your own, either over the summer or alongside your degree. This will show employers that you have initiative, are creative and can solve problems. You could try your hand at creating your own mobile app, building a robot or fixing up and modifying a motorbike, to name just a few options.

Enter engineering competitions

Look out for any engineering-related competitions or events you could get involved in. The TARGETjobs Undergraduate of the Year Awards (undergraduateoftheyear.com) are partnered by a number of top employers in the UK, with

prizes including paid work placements, trips abroad and networking lunches. Keep an eye on the professional institutes too: the Institute of Mechanical Engineers' Formula Student competition invites teams of students to produce a prototype for a single-seat racing car.

Learn a programming language

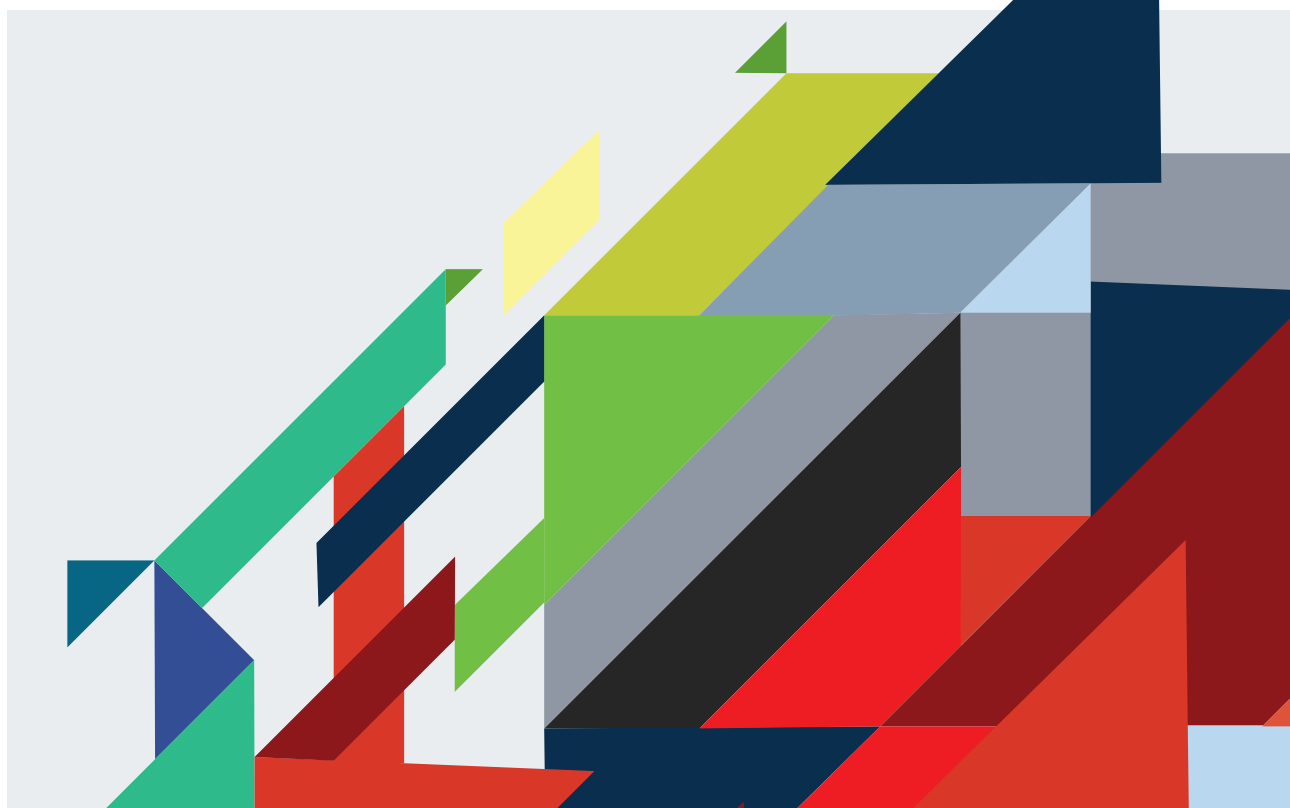
Teaching yourself a skill in your spare time, such as a programming language, shows that you are self-motivated. There are loads of free online resources and tutorials as well as open-source software that you can download and play about with. Not sure which one you should learn? Ask an employer you're interested in or a family friend that's an engineer for their suggestions.

Don't forget about non-engineering experience

Many engineering graduates may discount non-engineering work experience as irrelevant to an application, but this could be a mistake. Engineering employers don't just seek technical expertise; they're looking for soft skills including teamwork, organisation and people skills, which you can acquire through all sorts of life experiences.

Other ventures that engineering employers want to hear about include part-time jobs, travelling, involvement in sports and university societies, charity work and volunteering. In particular, think about construction- and environment-related voluntary projects (usually abroad). Working overseas can also be a great way to pick up soft skills, for example teaching English as a foreign language or working at a summer camp for young children. ☺





Exploring industries

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- 34 What jobs can you do with a mechanical engineering degree?
- 36 What jobs can you do with an electrical engineering degree?
- 38 What jobs can you do with an electronic engineering degree?
- 40 What jobs can you do with a civil engineering degree?

Exploring industries



Aerospace

What it is: Helicopters, fighter jets, unmanned vehicles, commercial planes, satellites, space stations, rockets etc. Fuel efficiency, safety, reliability and environmental targets are all important considerations for the industry. Project lead times are long (up to 20 years) and it's a collaborative effort with other engineers, suppliers, contractors and academic partners.

Engineers typically recruited: aerospace, chemical, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Automotive

What it is: All things motor vehicle related, from mainstream and premium sports car manufacturers, to bus and coach manufacturers, to vehicle parts manufacturers. Engineers must keep up with the latest technologies and meet customer expectations of vehicle performance, reliability, safety and durability. A small project could take up to six months, while designing an entire car might take three years.

Engineers typically recruited: aerospace, automotive, chemical, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Built environment

What it is: Houses, offices, schools, hospitals, sports stadiums, train stations, airports, roads, railways, bridges, tunnels, dams, nuclear power plants, wind farms etc. Engineers can work for a consultancy, contractor or

specialist subcontractor. Travel within the UK and overseas for projects is common. Key priorities for the industry include the health and safety of the user and energy efficiency.

Engineers typically recruited: aerospace, automotive, chemical, civil/structural, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Chemicals

What it is: The backbone of industry, covering a huge range of products: food and additives, pharmaceuticals, fertilisers, plastics, batteries, paints, cosmetics, petrochemicals, metal refining and much more. Engineers will usually work in research and development (R&D), design, commissioning or operations. Challenges include moving away from fossil fuels, tight regulations and rising costs.

Engineers typically recruited: chemical, civil/structural, electrical, environmental, manufacturing, materials, mechanical, software.*

Defence

What it is: Equipment, support and services for the armed forces and national security, covering land, sea and air as well as electronics and cyber security. Engineers often work at the cutting edge of technology. Most of the products are complex and it can take a number of years to develop and agree a contract. Cyber security is more fast paced with a high turnaround on projects.

Engineers typically recruited: aerospace, automotive, chemical, civil/structural, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Electronics

What it is: A semiconductor company designs the chips or integrated circuits; other companies design passive components such as resistors and capacitors or manufacture silicon; and consumer electronics companies take these components and design smartphones, medical scanners, TVs, washing machines, radios, unmanned vehicles etc. Engineers might work in design, manufacturing, packaging, testing or field application engineering (supporting the customer to use the product).

Engineers typically recruited: electrical, electronics, software.*

Energy and power

What it is: Finding energy sources and generating power... oil, gas, wind, hydro, tidal, solar, biomass, nuclear etc. The industry is divided into three areas: generation, transmission and distribution, and metering and sales. Oil and gas generation is split into upstream (exploring and producing), downstream (refining, distributing and supplying products) and chemicals (production and supply of petrochemical products).

Engineers typically recruited: aerospace, automotive, chemical, civil/structural, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*



Fast-moving consumer goods

What it is: The manufacturing of goods that fly off the production line onto shop shelves: food, cleaning products, cosmetics etc. Thousands of products can be produced every minute. Engineers might be looking at the chemical make-up or the packaging of a product, for example. Engineers will always be working in a team, often cross-functionally with scientists and marketing.

Engineers typically recruited: aerospace, automotive, chemical, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Marine

What it is: Ships and other vessels or equipment in four key areas: naval, commercial, leisure and offshore. With around 95% of the UK's exports and 75% of its imports transported by sea, the industry is a significant contributor to the economy. The industry is subject to strict environmental, safety and nuclear legislation. Engineers work in a research lab and sometimes at sea.

Engineers typically recruited: chemical, civil/structural, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Materials and metals

What it is: Procuring, innovating, manufacturing and selling the raw materials that make up finished products: skyscrapers, cars, chairs, drinks cans etc. Competition in the industry is tough and engineers are

needed to help companies differentiate their products from others. Key clients include the automotive, construction, consumer goods and energy industries.

Engineers typically recruited: aerospace, automotive, chemical, civil/structural, electrical, electronics, environmental, materials, mechanical, software.*

Pharmaceuticals

What it is: Researching, developing, manufacturing and selling the products that make people feel better and live longer. There are three key markets: the core pharmaceuticals (medicines that treat conditions such as asthma and cancer), vaccines and consumer products (including some over-the-counter products such as toothpaste and mouthwash). Engineers usually work alongside chemists and pharmacists in R&D or in operations.

Engineers typically recruited: chemical, civil/structural, electrical, electronics, environmental, manufacturing, materials, mechanical, software.*

Rail

What it is: Moving passengers and products from A to B. Train and freight operations companies run the trains, while network operators maintain everything that makes up the rail network: train stations, tracks, bridges, viaducts, tunnels, level crossings, signals etc. Safety and reliability are at the forefront of everything an engineer does, whether that's day-to-day maintenance or

developing infrastructure for the future.

Engineers typically recruited: civil/structural, electrical, electronics, environmental, materials, mechanical, software.*

Telecoms

What it is: Making communication possible. There's three sides to the industry: everything that the users see (telephones, broadband, mobile devices and apps), the infrastructure behind the scenes that make these possible and the infrastructure behind the cloud. Engineers might work for tech giants, start-ups, hardware manufacturers, service providers, software companies or IT consultancies.

Engineers typically recruited: electrical, electronics, manufacturing, software.*

Utilities

What it is: The lifeblood of the UK's economy, delivering energy, water, sewage treatment and telecoms to millions of homes, businesses, schools, hospitals etc. Many utilities companies have a monopoly in the area they operate in, so there are regulatory bodies in place to set frameworks: Ofgem (gas and electricity), Ofcom (telecoms) and Ofwat (water).

Engineers typically recruited: chemical, civil/structural, electrical, electronics, environmental, mechanical, software.* Ⓢ

*Always check individual employers' requirements.

What jobs can you do with a mechanical engineering degree?

Find out how mechanical skills can fit in with the bigger picture in different sectors.



mechanical engineering graduates are sought by employers in almost all sectors of the engineering industry. See the industry overviews on pages 32–33 for more information on the different engineering sectors and the engineering disciplines they typically recruit. Some of the industries where a mechanical engineer can put their degree to use are listed on this page, alongside the type of work engineers have previously told us you might be given. ©



Chemicals

Mechanical engineers in the chemicals industry are typically involved in delivering reliability improvements, technical support or major CAPEX projects on a range of automated production assets including conveyors, industrial ovens, pipework, valves, pumps and robotics.

Power generation

A mechanical engineer in the power generation industry will design, build and maintain the mechanical plant items such as steam turbines, gas turbines, wind turbine blades, gearboxes, high-pressure boilers, nuclear reactors, pipework, pumps, valves, fans, coolers and storage tanks.

Materials and metals

Mechanical engineers in the materials and metals industry will be responsible for the maintenance of the mechanical plant items, from steam and gas turbines to valves, pipework, coal mills etc. They will also be involved in the design, development and testing of complex mechanical systems.

Aerospace

A graduate mechanical engineer in the aerospace industry will work with new technologies, materials and manufacturing processes, converting demanding requirements into optimised designs. Later in your career, you might lead on the innovation of technologies, for example advanced composite fan blades or a unique power gearbox.

Rail

A mechanical engineer in the rail industry will usually work on the overhead line systems, but some mechanical engineers will become track engineers. In both roles, your job would involve writing specifications, reviewing designs and answering technical queries.

Oil and gas

A mechanical engineer at an oil company will work with a range of equipment such as gas turbines, compressors, heaters, vessels and piping. For example, they might investigate operational difficulties or help to build new assets and modify existing ones. Mechanical engineers at an oil service company are responsible for designing the equipment and machines that the offshore engineers and technicians depend on, such as pipelines, valves and turbines, making sure that it is reliable, efficient and safe to use.

Built environment

Mechanical engineers in the built environment sector are responsible for the heating, ventilation, air conditioning and smoke ventilation systems that make up buildings, designing specific environments that meet client requirements. They can work on projects ranging from hospitals, offices and shopping malls to airports, universities and railway stations.

Marine

Engineers in the marine industry usually either operate and maintain vessels and equipment or design and build them. A mechanical engineer could be involved in designing, installing or maintaining engines, boilers, shafts and propellers. You could be part of enforcing regulations for sea and air pollution or designing the next generation of cleaner ships.

Defence

Mechanical engineers in the defence industry will be involved in designing, developing and testing a range of mechanical systems. They'll ensure that a product meets the requirements set in terms of structural integrity, thermal properties, mass, manufacture, assembly and cost, so that it can operate safely and as expected in the environment it has been built for: land, sea or air.

Automotive

A mechanical engineer in the automotive industry will work closely with engineers from other disciplines and will often become a multi-skilled engineer. They may specialise in a particular area such as body engineering, chassis engineering, powertrain engineering, manufacturing engineering or engineering quality.

Fast-moving consumer goods

A graduate engineer in the fast-moving consumer goods industry will work in either manufacturing/engineering or supply chain operations/logistics. The work isn't divided neatly into different engineering disciplines and is often a mixture of mechanical, electrical, chemical etc so you'll pick up skills from other disciplines as you develop in your career.

Pharmaceuticals

A mechanical engineer in the pharmaceuticals industry will be involved in designing, testing, installing and maintaining machinery and equipment, from boilers to HVAC (heat ventilation and air conditioning) and water systems. They will also optimise equipment performance and provide day-to-day support for risk assessments and equipment breakdowns.

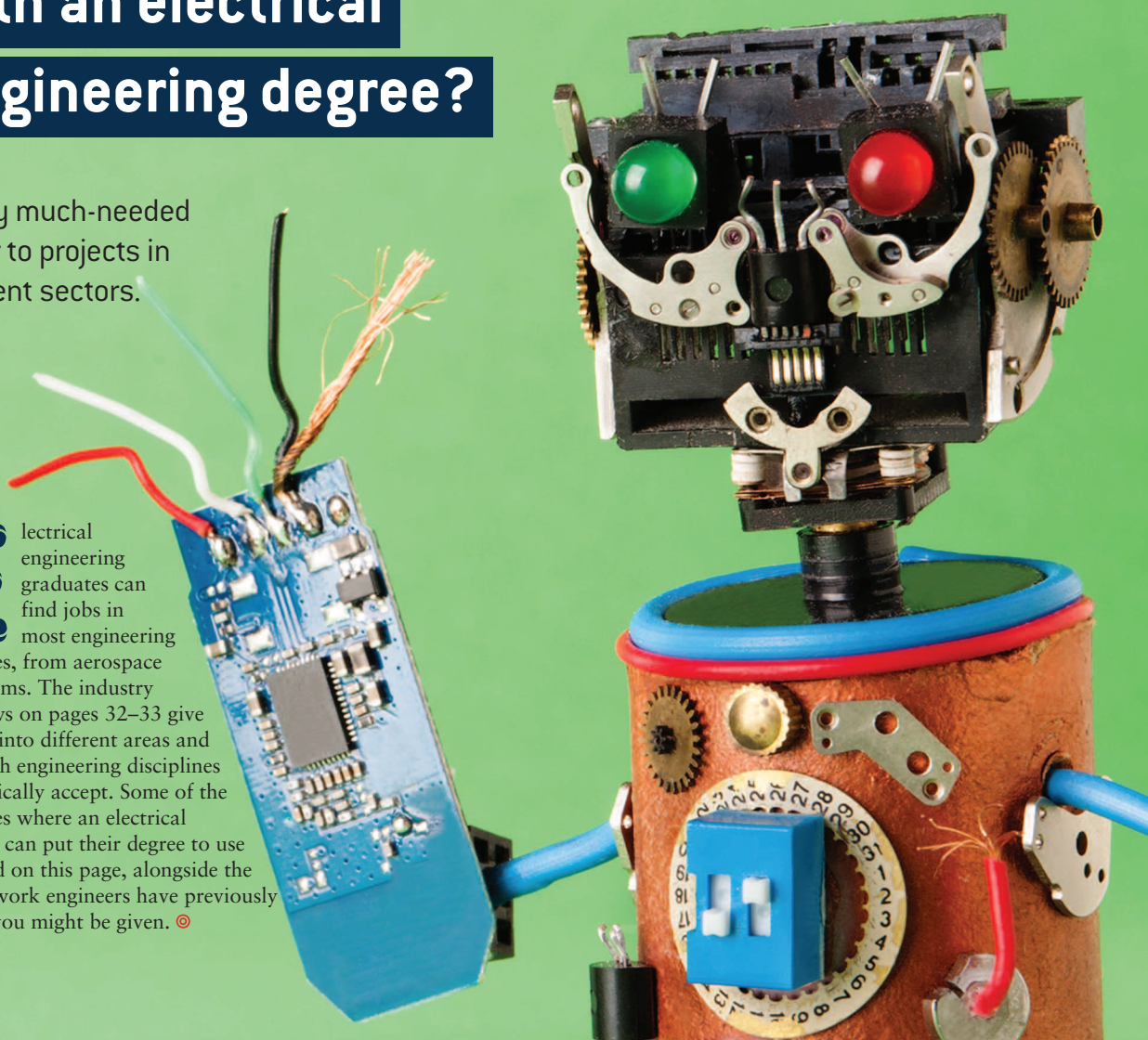
Alternative options

If you want a non-technical career in the engineering sector, a number of the larger employers run graduate schemes in areas such as finance and management. You could also consider jobs in areas such as supply chain or technical sales. Outside the engineering industry, many employers welcome mechanical engineering graduates for their high level of numeracy and problem-solving mentality. See 'What can I do if I don't want to be an engineer?' on page 52 for more details.

What jobs can you do with an electrical engineering degree?

Supply much-needed power to projects in different sectors.

Electrical engineering graduates can find jobs in most engineering industries, from aerospace to telecoms. The industry overviews on pages 32–33 give insights into different areas and list which engineering disciplines they typically accept. Some of the industries where an electrical engineer can put their degree to use are listed on this page, alongside the type of work engineers have previously told us you might be given. ☺



Built environment

Electrical engineers in the built environment sector are responsible for designing various systems including electrical power, emergency power, communications, fire alarms, security, CCTV and lighting. They could even specialise in the water sector as an EICA (electrical, instrumentation, control and automation) engineer, working on facilities ranging from small village sewer works to multi-megawatt reverse osmosis plants.

Fast-moving consumer goods

As a graduate in the fast-moving consumer goods industry, you'll likely either become a manufacturing engineer or logistics engineer. The work isn't typically separated out into the different disciplines eg mechanical, chemical, electrical so you'll work alongside a range of engineers on the same projects and pick up skills from other disciplines as you move through your career.

Aerospace

An electrical engineer in the aerospace industry will be working at the cutting edge of technology, introducing or improving a range of electrical machines and controllers. They might work on hybrid/electric propulsion for aerospace platforms, for example.

Defence

Electrical engineers in the defence industry are responsible for electrical power and network architecture or the optimisation of hardware and software designs. Your job will include designing equipment, testing it and assessing its behaviour, diagnosing faults and completing data analysis.

Power generation

An electrical engineer in the power generation industry will design, build and maintain the electrical plant items such as switchgear, generators, transformers, motors, cables, HVAC (heating, ventilation and air conditioning), UPS (uninterrupted power supply) and lighting.

Materials and metals

An electrical engineer in the materials and metals industry can expect to be given tasks ranging from fault diagnosis and data analysis to simulation and modelling. You'll be working on cutting edge technology such as electrically driven fans, HVAC (heating, ventilation and air conditioning) and UPS (uninterruptible power supply).

Oil and gas

Electrical engineers in the oil and gas industry design, develop, test, maintain and improve electrical systems and components, including generators, transformers and electric motors, making sure that they meet the right standard of safety, reliability and efficiency and can withstand extreme conditions such as depth, temperature and pressure. This can involve making small alterations or large-scale equipment changes.

Pharmaceuticals

A graduate electrical engineer in the pharmaceuticals industry will work on a range of projects, from hazardous area inspections and high-voltage operations to energy monitoring and renewable generation. They will also use their technical electrical expertise to maintain existing equipment and install new equipment on site.

Rail

Electrical engineers in the rail industry work in a number of areas, including signalling power, point heating and lighting. You could be writing specifications, reviewing designs, answering technical queries or, on the maintenance side, testing, repairing and replacing components on the rail network.

Marine

Engineers in the marine industry usually either operate and maintain vessels and equipment or design and build them. Electrical engineers play a key role in generating and distributing energy. Huge cruise ships have power demands from the ballroom to the boiler room, while the latest offshore vessels have sophisticated electric propulsion systems.

Automotive

Electrical engineers in the automotive industry are required to work on a variety of components including engine and power units, interior and exterior lighting, air-conditioning, safety systems, seating controls (movement, heating and cooling), start/stop technology, braking systems and infotainment systems. Their skills set is also important in the development of autonomous, connected and electrified (ACE) vehicles.

Electronics

A graduate electrical engineer in the electronics industry can work in different areas such as design, layout, manufacturing, packaging, testing and field applications engineering (supporting a product and its customers for its entire life). They may work with chips, integrated circuits, components such as capacitors and resistors, and devices that use electricity as part of their source of power.

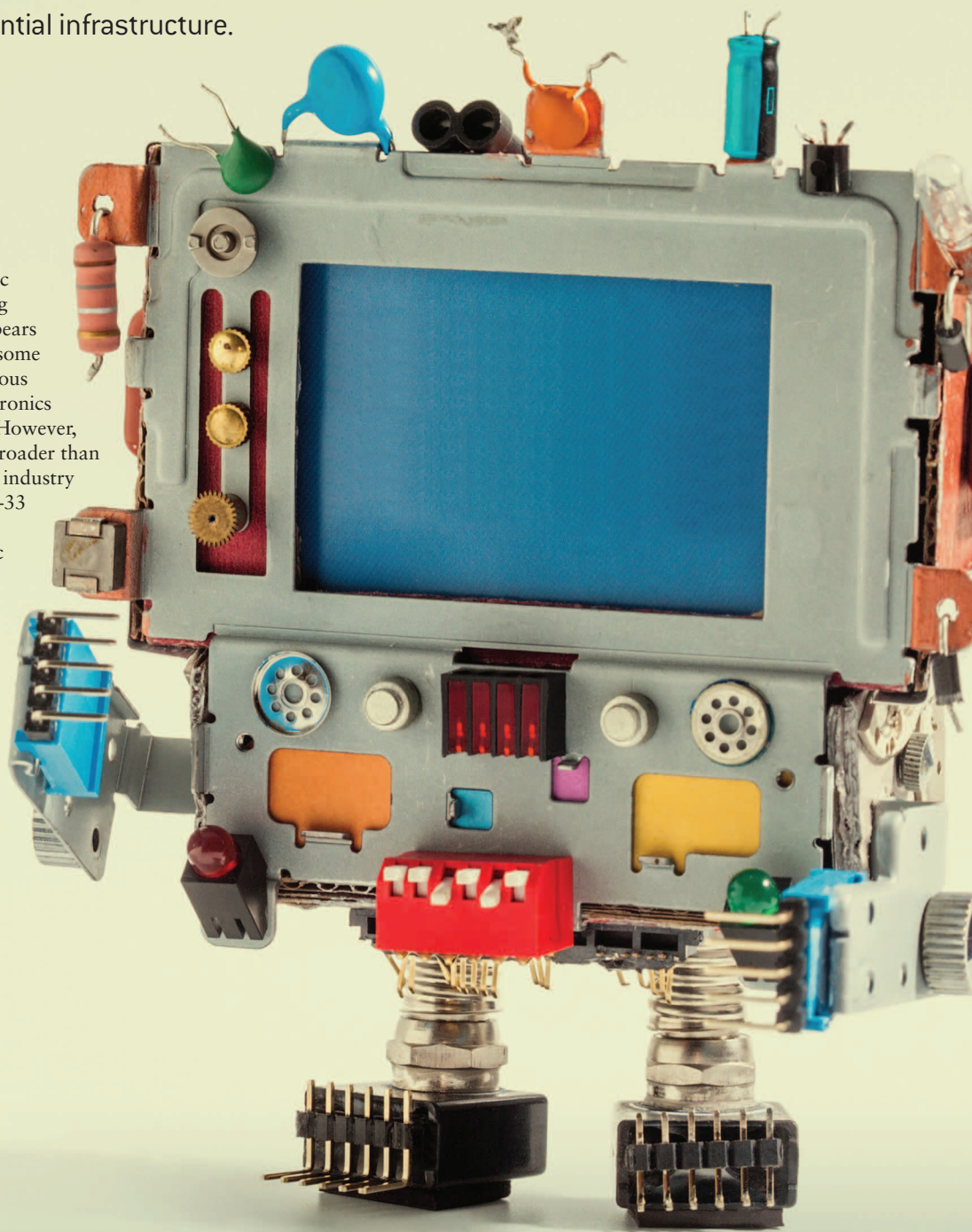
Alternative options

You could work in a finance, management or logistics role within the engineering sector, or move into a closely related field such as IT. You could also put your background to good use in careers such as science journalism, technical publishing, teaching or tech-heavy areas of law, or explore something entirely different. See 'What can I do if I don't want to be an engineer?' on page 52 for more details.

What jobs can you do with an electronic engineering degree?

You could work on must-have consumer products or essential infrastructure.

An electronic engineering degree appears to lead in some fairly obvious directions – to the electronics industry, for example. However, the options are much broader than this. Take a look at the industry overviews on pages 32–33 to see which industries typically seek electronic engineering graduates. Some of the industries where an electronic engineer can put their degree to use are listed on this page, alongside the type of work engineers have previously told us you might be given. 📍



Power generation

An electronic engineer in the power generation industry will often be involved in designing, building and maintaining control and instrumentation plant items such as SCADA (supervisory control and data acquisition), DCS (distributed control systems), instruments, telephony and data networks.

Materials and metals

Electronics engineers in the materials and metals industry will be responsible for the control and instrumentation in place at the plant. You could be designing and running a control system for a power station, for example. Day-to-day activities include fault diagnosis, data analytics and simulation and modelling.

Fast-moving consumer goods

As a graduate in the fast-moving consumer goods industry, you'll likely either become a manufacturing engineer or logistics engineer. The work isn't typically separated out into the different disciplines eg mechanical, chemical, electrical so you'll work alongside a range of engineers on the same projects and pick up skills from other disciplines as you move through your career.

Defence

Electronic engineers in the defence industry are responsible for optimising hardware and software designs. Your job will include designing circuits, testing equipment and assessing its behaviour, simulation and modelling, fault diagnosis and data analysis.

Aerospace

An electronic engineer in the aerospace industry will be working at the cutting edge of technology, introducing or improving a range of electronics. They might work on hybrid/electric propulsion for aerospace platforms, for example.

Automotive

Electronics is now an important part of the automotive industry and there is a big call for power electronics skills. Electronic engineers will work on a variety of systems including engine control units, dashboard indicators, air-conditioning, safety systems, braking systems and infotainment systems. Their skills set is also needed for the development of autonomous, connected and electrified (ACE) vehicles.

Rail

An electronic engineer in the rail industry will be put to work writing specifications for power distribution systems, reviewing designs, answering technical queries and, on the maintenance side, testing, repairing and replacing components on the rail network. They could specialise in a number of areas, including signalling power, point heating and lighting.

Electronics

A graduate electronic engineer in the electronics sector could work in roles such as design engineering (designing a product or component prior to launch) or applications engineering (supporting a product for its entire life). They may work with chips, integrated circuits, components such as capacitors and resistors, and devices that use electricity as part of their source of power.

Marine

Engineers in the marine industry usually either operate and maintain vessels or design and build them. An electronic engineer could be working on radar systems for warships or complex automation systems, reducing manning requirements at sea and tackling demands to reduce pollution and lower the cost of operation.

The IT industry

In a related vein, electronic engineers are often welcome to apply for technical roles in the IT industry. Don't assume that only computer scientists or software engineers are sought. See [targetjobs.co.uk/it](https://www.targetjobs.co.uk/it) to find out more about careers in IT.

Alternative options

Electronics is a booming sector and you could look for a more commercial role within it, for example finance or management. If you want to move away from the engineering sector, the analytical thinking and problem-solving skills garnered from an engineering degree are sought by a number of different employers. The fields of consulting, finance, logistics, education and even law (particularly related to patents) all look for graduates with technical knowledge that can be applied to a variety of situations. See 'What can I do if I don't want to be an engineer?' on page 52 for more details.

What jobs can you do with a civil engineering degree?

Your work could shape the urban landscape and contribute to iconic structures.

Civil engineering graduates are welcome on general engineering schemes and in sectors such as financial management, but every year most choose to pursue their careers in the construction industry.

Graduates typically apply for a civil or structural engineering job in a particular specialism or industry (see pages 32–33 for an outline of the main specialisms). Larger employers usually hire graduates into a specialist division or business, while smaller organisations often focus on one or two specialisms in total. Whichever sector you choose, however, the nature of the job will differ depending on the type of employer you work for.

Consultant or contractor

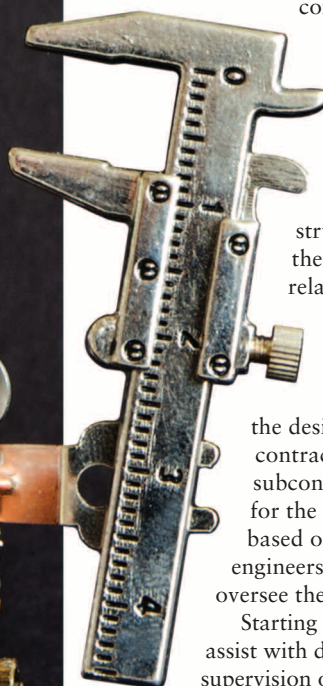
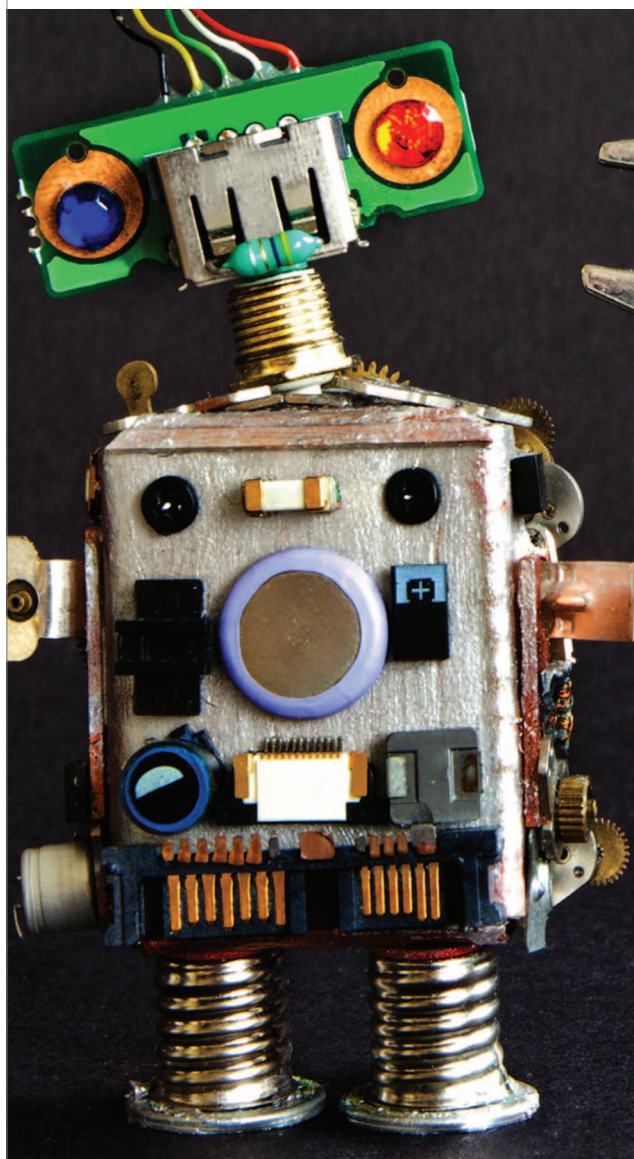
Most civil and structural engineers work for either a consultancy or a contractor.

Consultants are involved with a project from the outset and work closely with the client, often managing the project on their behalf. Civil and structural engineers at consultancies are responsible for designing structures. Once building begins, they help to resolve any design-related difficulties, but, apart from the occasional visit to the site, are largely office-based.

Contractors, meanwhile, actually build the project once the designs are finalised. They may contract out some work to specialist subcontractors, but they are responsible for the construction process and are based on site. Civil and structural engineers at contractors manage teams and oversee the implementation of designs.

Starting out at a consultancy, you might assist with designs or gather data under the supervision of a team leader. Working for a contractor, you would start out by managing a small section of the project or 'package' on site. Recruiters will expect you to know the difference between consultancies and contractors and have considered reasons for applying to their type of organisation.

There are also some graduate jobs with very specialist contractors. In some industry sectors, including water and rail, you can work for client organisations (such as Network Rail or a water supply company), often in a design-based or project management role.



The main industries or specialisms you could work in are...

Specialisms in demand

The number of graduates that civil engineering employers take on – and the areas they recruit into – is very much dependent on the pipeline of projects they have in place. The construction industry is sensitive to changes within the wider political and economic world. Within the UK, the call for housing and infrastructure projects, such as road and rail, means that many of the graduate jobs available are likely to be in bridges, buildings, highways, rail, tunnelling and water.

Your modules give you an edge

It's good to have an idea about which specialism you'd like to work in before you start applying, especially as your choice of degree modules and final-year projects can boost your chances of getting hired into a particular division. Try to pick modules and projects that are relevant to the division you're interested in and then highlight them in your applications and interviews. 📌

Bridges

Engineers need a strong understanding of structural engineering and the ability to work closely with highways, geotechnical, railway and environmental engineers, and a host of other experts.

Rail

Engineers use their technical knowledge to design, build and maintain the railway system's infrastructure, including tracks, earthworks and drainage, and telecoms and power.

Highways

This job involves overseeing temporary works and permanent works and finding ways to ease traffic congestion, lessen environmental impact and improve road safety.

Coastal and marine

Projects focus on protecting coastal communities against rising sea levels and erosion using sea defences – both hard defences, constructed from concrete for example, and soft defences, which involve man-made or reconstructed beaches. Engineers may also be involved in building and maintaining ports, offshore wind farms and structures to harness tidal energy.

Water and public health

The ultimate objective of these projects is to provide clean drinking water and treat wastewater. Engineers might be involved in implementing sustainable water drainage systems, creating energy-efficient treatment plants or improving infrastructure to prevent urban flooding.

Airports

Typical projects involve modifying existing airports, including the runways and taxiways ('airside infrastructure'), maintenance and cargo facilities ('airside support services') and terminal buildings.

Environmental

Engineers can become environmental consultants, a role in which they will ascertain and then reduce the impacts of a proposed project on the environment. They can specialise in specific areas, such as flood risk.

Energy and power

Engineers design and build the infrastructure needed to create energy. Graduates could work on projects such as the designs for an offshore wind facility, the maintenance of an oil platform or the decommissioning of an old nuclear power plant.

Buildings

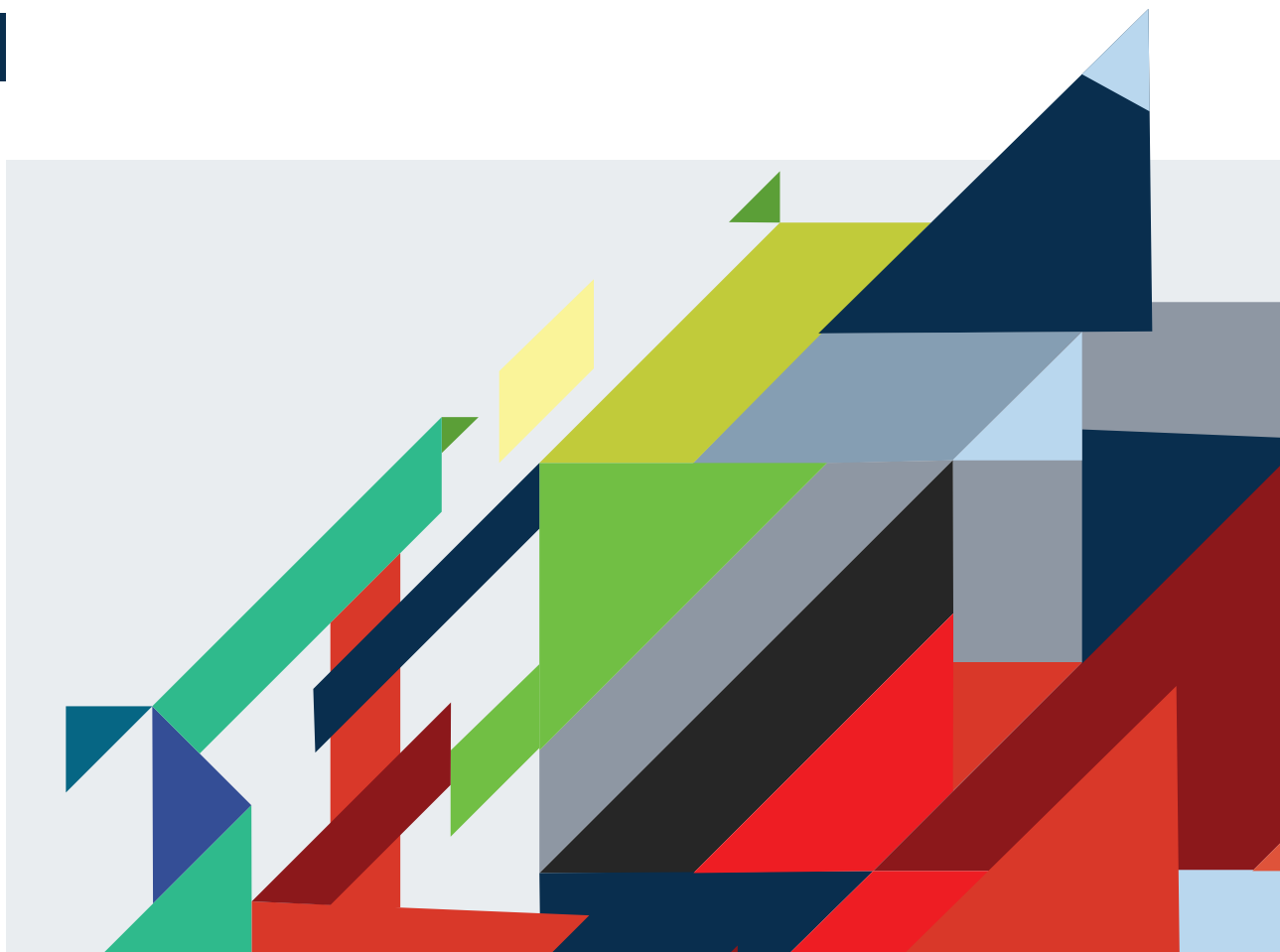
Sustainability is often a key consideration. Civil and structural engineers work with building services engineers and other specialists to ensure buildings are designed with climate change in mind and to meet ever-evolving regulations.

Tunnelling

This area chiefly calls on specialist structural and geotechnical knowledge but can also involve many elements of underground engineering – rock tunnels, shafts, caverns and stations, for example, may come under the remit of a tunnelling engineer. Engineers also take decisions on a project's viability in terms of safety, location and cost, and to ensure it has a limited impact on the environment and any buildings nearby.

Geotechnical

In this specialist area, engineers are responsible for the foundations of structures. They assess field data about the ground, soil, rock and boreholes and find ways to make sure that foundations or slopes are safe and stable. They could specialise in completing site investigations, designing foundations or overseeing the on-site construction work. Specialist postgraduate study is often advantageous.



Engineering FAQs

IN THIS SECTION

- 43 How do I become professionally registered?
- 46 Should I join a professional body?
- 48 Where in the world can I work?
- 50 How much will I earn as an engineer?
- 52 What can I do if I don't want to be an engineer?

Qualifications required

Each title requires certain underpinning knowledge, which can be demonstrated by particular educational qualifications, such as accredited degrees, although other methods are available. The diagram opposite outlines standard routes to titles including IEng and CEng and a database of approved and accredited courses is available at engc.org.uk/courses. If you feel unsure about your academic eligibility or you do not hold an accredited degree there are other pathways to becoming professionally registered. To explore alternatives, contact your relevant institution.

Demonstrating competence

You will develop the required standards of competence as you gain practical experience; this process is often known as initial professional development (IPD). How long this takes depends on the title you are aiming for, your qualifications, your type of employment and your motivation. Employer training schemes usually include support towards professional registration.

Engineers working towards IEng or CEng status need to demonstrate professional competence and commitment in the following areas, set out in UK-SPEC:

- knowledge and understanding
- design and development of processes, systems, services and products
- responsibility, management or leadership
- communication and interpersonal skills
- professional commitment.

Once you are confident that you can demonstrate the required level of competence in these areas, you can request a professional review, which is organised through your institution. This is a demonstration of competence, knowledge and understanding required for professional registration, and involves a review of documentary evidence and an interview. The process varies between institutions and some may also set an extended essay or formal examination.

Once you have gained professional registration, you commit to maintaining your competence and keeping up to date with industry changes through continuing professional development (CPD). You can find out more about how to carry out and record CPD at engc.org.uk/cpd.

Engineers often see a step up in salary and responsibilities on achieving professional status.

Select the right scheme

Many large engineering employers advertise graduate training schemes that can help lead to professional registration. Look for a scheme that is approved by the appropriate professional engineering institution and find out about the training on offer to make sure it's what you need. Research how you will be supported and how you will gain the right breadth of experience through your IPD. At

Incorporated or Chartered?

Incorporated Engineer (IEng)

Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.

Chartered Engineer (CEng)

Chartered Engineers develop solutions to engineering problems using new or existing technologies through innovation, creativity and change, and they may have technical accountability for complex systems with significant levels of risk.



*Find more tips
at targetjobs.co.uk*

interviews and employer presentations, ask recruiters about numbers of people on the scheme, pass rates and the average time it takes for a graduate to achieve professional registration.

You may work in an organisation that doesn't have a training scheme approved by your institution – for example, a smaller engineering organisation. You can still work towards professional registration independently, by developing a profile of competence and professional activity to prepare for registration. Your professional engineering institution will be able to give advice and guide you in doing this.

Matched with a mentor

Graduate engineers are often matched with a mentor: an experienced engineer who supports them in structuring their work to gain the competence and range of experience necessary for achieving registration. If you aren't assigned a mentor in your workplace, your institution can put you in touch with members who take on mentoring roles.

To find out more about professional registration, visit the Engineering Council's website at engc.org.uk, where details of UK-SPEC, professional engineering institutions and accredited courses are available. @

TARGETjobs Engineering would like to thank CATHERINE ELLIOTT, education and skills manager at the ENGINEERING COUNCIL, for her kind help with this article.

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Graduate engineers are often matched with a mentor: an experienced engineer who supports them in structuring their work to gain the competence and range of experience necessary for achieving registration. If you aren't assigned a mentor in your workplace, your institution can put you in touch with members who take on mentoring roles.

To find out more about professional registration, visit the Engineering Council's website at engc.org.uk, where details of UK-SPEC, professional engineering institutions and accredited courses are available. ©

TARGETjobs Engineering would like to thank CATHERINE ELLIOTT, education and skills manager at the ENGINEERING COUNCIL, for her kind help with this article.

Should I join a professional body?

Joining a professional body not only demonstrates your passion for engineering – it's also a great way to meet other engineers.





There are a number of ways that joining an engineering professional body can bolster your degree, social life, job hunt and future career, as long as you are prepared to put in the effort and engage with the opportunities it opens up to you.

We asked Laura Hoang, a member of the Royal Aeronautical Society, to tell us more:

Why join a professional body?

Laura When I first joined my engineering professional body, I knew about the obvious perks such as attending careers fairs and receiving industry magazines, but it was only really when I looked into what else student membership offered that I recognised the real benefits: being able to speak to experts in the industry and attend lectures and conferences on topics that were relevant to my university work. The networking opportunities on offer are so crucial. Plus, being a member of a professional body shows prospective employers that you are dedicated to your career development and interested in the industry.

Student membership is often free so why wouldn't you join?

Ways to get the most out of your membership

Laura Membership includes access to a whole variety of resources, including journals, magazines, lectures and ebooks. Talks and networking events are held locally by branches of the professional body and there will also be conferences and careers fairs. There are plenty of opportunities to network and build relationships with people in the field, both face-to-face and virtually. Your professional body may have a dedicated job site where you can find opportunities and most also run a STEM ambassador programme of some sort, where you are able to get involved with educational outreach activities.

Mentioning membership on your CV

Laura I think that you should mention it on your CV. You should also elaborate on anything you've been involved in that can be linked to the job you're applying for, such as a conference or event you attended on a relevant topic.

Which professional body should you join?

There are numerous professional engineering institutions registered with the Engineering Council. To make your choice, you should consider a) which one is most aligned with your studies and your career ambitions and b) which one makes you feel most welcome.

Your options include the following:

- Chartered Institution of Building Services Engineers
- Chartered Institute of Water and Environmental Management
- Energy Institute
- Institution of Civil Engineers
- Institution of Chemical Engineers
- Institution of Engineering Designers
- Institution of Engineering and Technology
- Institute of Marine Engineering, Science & Technology
- Institution of Mechanical Engineers
- Institute of Materials, Minerals and Mining
- Institution of Structural Engineers
- Royal Aeronautical Society

You can find a full list of professional bodies on the Engineering Council's website.

Laura Some engineering professional bodies are more general and some are more specialised. While some students just look at which professional body accredits their degree course, I think you should do a bit more research before deciding which one to join. Look at which area(s) you're interested in, the different professional bodies and what they have to offer. ☺

With thanks to our contributor:



**ROYAL
AERONAUTICAL
SOCIETY**



Steve Joining a professional body opens up a vast network of knowledge and expertise that is much wider than your immediate university community. You'll gain access to those who are one or two steps ahead of you and it helps you feel part of a community of like-minded people. Student membership is often free so why wouldn't you join?

Ways to get the most out of your membership

Steve Being a member of a professional body can boost your job hunt and enhance your employability. For example, you can make contact with potential employers at networking events and get application advice from staff at your professional institution. Many professional bodies also have a graduate and student network that you can join.

Student membership is often free so why wouldn't you join?

There are also a host of events run by professional bodies that can complement and broaden your studies, including online webinars and evening lectures in your local area. Student members will have access to industry magazines, keeping you up to date with the latest news and important industry issues. You could also apply for scholarships and awards to help you stand out from the crowd and many professional bodies host UK-wide events and competitions for students.

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Mentioning membership on your CV

Laura I think that you should mention it on your CV. You should also elaborate on anything you've been involved in that can be linked to the job you're applying for, such as a conference or event you attended on a relevant topic.

Steve We would recommend that you highlight your membership on your CV and in your applications. If you've been involved with activities that your professional body has offered, say so. For example, you may have been a student representative on one of its committees, won a competition or helped organise an event. This will show employers that you are committed and you have transferable skills that are highly sought after in the workplace.

Which professional body should you join?

There are 39 professional engineering institutions registered with the Engineering Council. To make your choice, you should consider a) which one is most aligned with your studies and your career ambitions and b) which one makes you feel most welcome.

Your options include the following:

- Chartered Institution of Building Services Engineers
- Chartered Institute of Water and Environmental Management
- Energy Institute
- Institution of Civil Engineers
- Institution of Chemical Engineers
- Institution of Engineering Designers
- Institution of Engineering and Technology
- Institute of Marine Engineering, Science & Technology
- Institution of Mechanical Engineers
- Institute of Materials, Minerals and Mining
- Institution of Structural Engineers
- Royal Aeronautical Society

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Where in the world can I work?

Engineering is a particularly good career choice for graduates who want to spread their wings.

Travel for work purposes has been limited due to the coronavirus pandemic, but engineering has traditionally always been a career that brings plenty of opportunities to broaden your horizons. This article outlines the usual travel possibilities for engineering graduates. Just bear in mind that some or all of these may be on hold or reduced due to the pandemic.

Engineers are often able to experience life in other countries with permanent positions abroad, overseas projects or short work trips. The engineers we've spoken to previously have worked in Angola, Australia, Belgium, Brazil, China and the Middle East, to name just a few places. Or you can become better acquainted with the UK with rotational graduate schemes or trips to sites. Whether you yearn to see as much of the world as possible or remain with family and friends, it's all a question of choosing the right employer.

An international career

With some engineering employers your working life will consist of a series of long-term placements, often lasting for several years, anywhere in the world. You'll fully experience life in different cultures, perhaps becoming fluent in new languages. However, you might need to give thought to your personal life, for example if you want to settle down with a partner who can't or won't move with you. Investigate opportunities with international organisations if a career overseas is calling to you.



Overseas placements

Many other engineering employers will offer medium-term opportunities to work abroad, for example on a project or as a placement on a graduate scheme. These organisations may offer longer-term overseas options later in your career. Again, look into international employers or those who do significant amounts of work for overseas clients. Shorter stints overseas may be more manageable for your personal life, but you'll still need to be sure you can leave any commitments in the UK for several months or more at a time.

Rotate around the UK

Considerable numbers of engineering companies have bases across the UK. Many of these rotate graduate-scheme engineers through multiple locations in order to expose them to as many aspects of the business as possible. Such schemes will give you good experience of different processes, increase your confidence in getting to know new colleagues and clients, and give you the chance to explore the UK.

Your employer may even help with accommodation costs, for example assisting you to keep a permanent base in one part of the country while moving round to others. Look into

employers with operations in multiple locations across the UK. However, do be sure if you sign up that you're happy to spend 18 months or more moving from town to town.

Work trips abroad

Don't actually want to live abroad? Joining an engineering company with international connections may well throw up short work trips abroad from time to time. If you enjoy travel, keep in mind that you'll mainly see airports, meeting rooms and hotels rather than getting out to meet the locals. You may need to take a couple of days' annual leave to stay on afterwards if you want to explore.

With any employer, overseas work or travel will be based on business need. The timing and location of your travel will be based mainly on project requirements rather than your preferences. Remember also that there's unlikely to be a guarantee of going on work trips abroad.

Going out onto site

In sectors such as construction, utilities and energy, you may keep the same permanent office base but be required to travel out to relevant sites on a very regular basis. This may be easier if you want to live in one place, and will certainly get you out and about, but could mean that you spend a sizeable chunk of your working week commuting. However, engineers working for construction industry contractors may need to move to sites in different parts of the country at short notice.

There's no place like home

If you want to minimise travel for work purposes, look out for companies based in just one geographical location, or roles that are more desk- or lab-bound – for example design work, software development or R&D. Do still expect some travel, though, and try to be flexible as to where in the country you're based. Being prepared to move to where the work is will dramatically increase your opportunities. ☺

How much will I earn as an engineer?

Salaries for engineering roles advertised with TARGETjobs *Engineering* tend to range between £22,000 and £30,000. A few engineering employers pay more, typically (but not exclusively) oil and gas giants. Salaries for graduate engineers working for small and medium-sized enterprises tend to be slightly lower, often between £18,000 and £25,000.

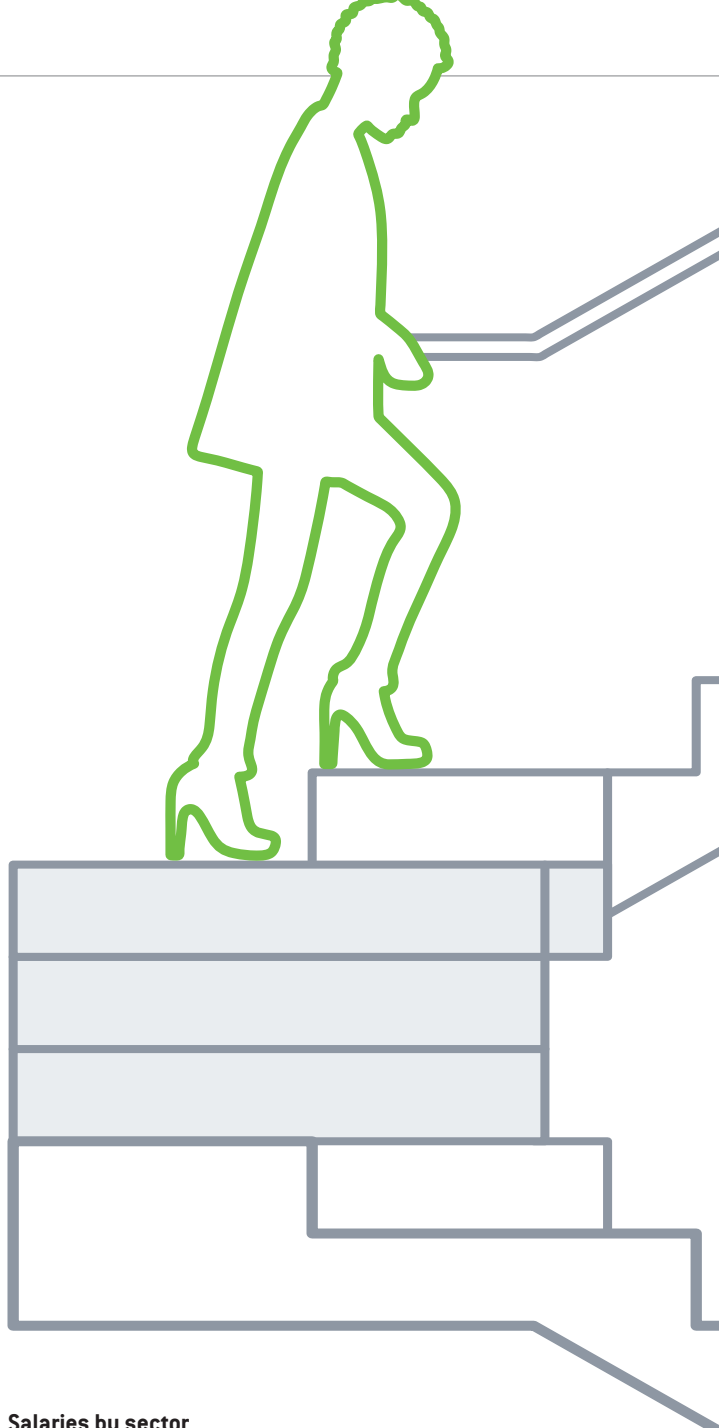
Average graduate salaries

The *Graduate Outcomes* survey by the Higher Education Statistics Agency (HESA) found that the median salary of engineering and technology graduates in high-skilled roles (managers, directors and senior officials; professional occupations; and associate professional and technical occupations) in 2017/18 was £28,000, compared to the average of £24,000 for all graduates in high-skilled roles. Of the graduates who were in work in the UK and studied engineering and technology subjects, 82% went on to high-skilled occupations.

Salaries by region

The Institute of Student Employers' (ISE) Inside student recruitment 2019 survey broke down median graduate salaries by region (covering all graduates, not just engineers).

East of England	£26,387
East Midlands	£25,558
London	£30,500
North East	£25,000
Northern Ireland	£23,000
North West	£25,000
Scotland	£25,000
South East	£26,500
South West	£25,500
Wales	£25,558
West Midlands	£25,779
Yorkshire and the Humberside	£26,000



Salaries by sector

Meanwhile, the ISE Inside student recruitment 2019 survey also reported the median salaries for graduates and placement students in the following sectors; just bear in mind that this covers all job roles, not just engineering, and ISE members typically pay more than other employers.

	Graduates	Placement students
Retail and fast-moving consumer goods	£27,000	£18,000
Energy, engineering and industry	£27,500	£18,000
Built environment	£26,900	£19,000

Climbing the salary ladder

With experience, you can expect your wage to rise. Many engineering employers state that their graduates can expect their salary to be reviewed – and potentially increased – on a regular basis. The 2018 Development Survey from the ISE found that the median salary increase after three years for graduates who started work in 2014 was 11% at engineering and industrial companies, 25% at construction/built environment companies and 35% at energy, water and utilities companies.

To give you an idea of what you might earn in the future, the Office for National Statistics Annual Survey of Hours and Earnings 2019, which looks at all engineers, not just fresh graduates, reported the following median annual full-time gross pay by occupation.

Electronics engineers	£44,383
Electrical engineers	£49,674
Mechanical engineers	£41,099
Civil engineers	£41,117
Production and process engineers	£40,647
Design and development engineers	£42,434

Increasing your earning potential

Your earning potential can be boosted by having a postgraduate degree. The Engineering Council's most recent Survey of Registered Engineers and Technicians, published in 2014, reported the following median basic incomes for engineers educated to graduate and postgraduate levels.

Engineers educated to graduate level £56,000

Engineers educated to postgraduate level £62,000

Equally, becoming professionally registered is likely to increase your future salary. The Engineering Council's survey also reported the following median annual earnings (including bonuses, overtime pay etc) for chartered and incorporated engineers.

Incorporated engineers £45,500

Chartered engineers £63,000

Find out more about becoming professionally registered on page 44.

Perks of the job

Your base salary isn't everything, of course. Typical benefits include:

- welcome bonus/golden hello
- performance bonuses
- season ticket loan
- pension scheme
- life assurance
- relocation allowance
- private healthcare and dental cover
- subsidised gym membership
- retail discounts
- share options
- paid volunteering days
- employee events.

The benefits you are offered may be influenced by the type of company you join. Transport companies often offer travel perks such as a heavily-discounted season ticket, while automotive manufacturers almost always offer car-related benefits, from a car purchase scheme to off road and race track driving experiences. ☺

What can I do if I don't want to be an engineer?

Engineering graduates are highly sought after – both within the engineering sector and further afield.

It's not uncommon for engineering students to examine their options at the end of three or four years of study. Some decide to take a more commercial path or use their management skills, for example. Rest assured that there are many other options available – and a good number of them are still within engineering or related sectors.

Other possibilities with engineering employers

You don't need to leave engineering to explore commercial, financial and management opportunities. Many larger engineering employers run programmes that focus on these areas of their business, for example:

- commercial management
- finance
- human resources
- logistics
- operations management
- procurement
- supply chain management
- technical sales.

Take a look at the extended version of this article on targetjobs.co.uk/engineering for more information on these areas.

If you're not sure which role is right for you, look for a graduate programme that provides you with the opportunity to rotate through a number of functions – both technical and non-technical. These rotations will give you a greater appreciation of how the organisation operates and the chance to find out where your strengths and interests lie.



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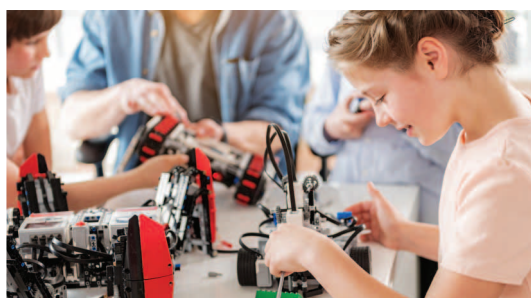
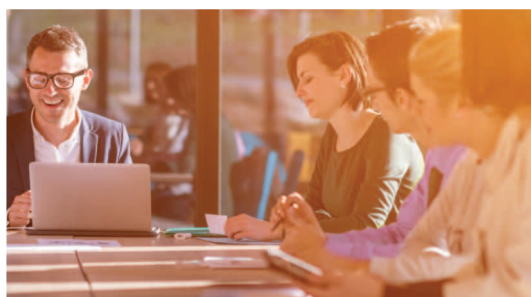
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Opportunities in different sectors

An engineer's fundamental skills set, including logical thinking, problem-solving and strong numeracy, is highly desirable in many other industries. This immediately opens up opportunities for an engineer who can combine these skills with good communication, interpersonal skills, commercial awareness, teamwork and leadership potential.

Logical thinkers with good soft skills are very welcome in the **world of IT**. You could work for an IT company or you could take on an IT role in a range of other business sectors, from retail and media to the public sector.

Banks and financial organisations also love engineers – and not just for roles within their technology divisions. They look for strong problem-solving skills, confidence with numbers and the ability to communicate ideas clearly.

Technical and management consultancies are always keen to attract engineering graduates with excellent communication and presentation skills. You could even find yourself advising engineering organisations on how to make their businesses and processes more efficient and productive.

You could also go into **teaching** if you think you'd enjoy using your technical knowledge to help turn young scientists into budding engineers. If this sounds like a good option for you, try to get some experience of working with children.

Alternatively, you could **stay in academia** and become a higher education lecturer, specialising in a particular area. As well as delivering lectures, tutorials and laboratory sessions, you may carry out personal research.

Or you could become a **patent attorney**. A legal background is not required; the essential requirement for patent law is technical expertise. See our 'spotlight on patent attorneys' series at targetjobs.co.uk/engineering for more details. ©





Postgraduate study

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Choosing your postgraduate qualification

Engineering employers value postgraduates for numerous qualities: greater maturity, an ability to learn new subjects quickly, experience of managing and driving a project, time management skills and an enquiring mind that has been trained to define, investigate and solve complex problems. However, a postgraduate degree doesn't automatically lead to a job or a higher starting salary and you'll still have to prove your worth at interviews and assessment centres. Also bear in mind that it may be beneficial to work for a few years before returning to education. You may gain more insight into a potential topic, and your employer might even offer support while you study.

The path of further study you follow will have a significant impact on your career direction so think carefully about what sort of job you'll ultimately want before you start applying for courses. There's a wide range of both taught and research degrees open to you.

Master your career

A masters course allows you to specialise in an area of interest. A masters-level qualification may also speed up the route to chartered status if you have a BEng degree.

The MSc is usually a taught course that lasts for one year (full time) and sometimes a short dissertation is required. MRes and MPhil degrees are also typically one-year courses but involve more independent study and producing a substantial piece of research. Whether taught or research-based, a masters degree will provide you with an in-depth knowledge of a specific subject – as well as transferable skills that can give you the edge over a graduate straight from an engineering degree. An MPhil or MRes will also give you a thorough training in research skills and is an excellent foundation for pursuing a doctorate.

There are also a number of part-time masters courses available, though these tend to be taken up by those who have already been working for a while rather than fresh graduates, as some support from an employer is usually required.



Engineering employers value postgraduates for numerous qualities, including an ability to learn new subjects quickly and experience of managing and driving a project.

Beyond a masters degree

The PhD is the traditional ‘academic’ research-based doctorate in the UK. A PhD normally takes three years and should involve original research. It’s a good option if you want to develop expertise in a particular field of interest and/or wish to become an academic. You will be allocated a supervisor to guide and oversee your research, and you will also benefit from working alongside other PhD students and researchers in the department.

It is possible to do a PhD that incorporates an element of industry-related training, taking on a research project that has been defined with dual input from an academic department and an industry partner. Some of your time may be spent at the premises of your sponsor.

Engineering doctorates

The advantage to employers of recruiting postgraduates with specialist engineering knowledge as well as transferable skills developed during their research was formally recognised with the creation of the four-year engineering doctorate (EngD).

An EngD focuses on commercially relevant research: typically a project that presents a research challenge while simultaneously solving a genuine problem faced by the industrial sponsor. EngD students usually spend 75% of their time working on the employer site with a supervisor from within the organisation. The remaining time is spent at the university studying specialist technical and professional development subjects to prepare the ‘research engineer’ for industry management roles.

Finding the right place for you

Once you’ve chosen a type of course, you will need to find institutions that run the course and pick one. Staying at your current university could be positive as you will already be familiar with the department staff and perhaps potential supervisors. You might also have access to additional sources of funds, or a reduction in fees. Don’t just choose it as a safe option, though: make sure it offers the courses and/or research activities that interest you. Moving to a new institution could expand your horizons, enlarge your network of contacts and give you access to additional academic expertise. Investigate the institution’s resources as well as the research interests, specialisms and publication records of the relevant department staff.

Do some basic checks on the department you are considering. You could ask for statistics on the department’s postgraduate employment record, check their Research Excellence Framework (REF) ratings (www.ref.ac.uk) and investigate the teaching standards on the Quality Assurance Agency website (www.qaa.ac.uk).

A life outside the lab

Whether you plan to start a career within an engineering organisation or want to stay in academia, your prospects will be immeasurably enhanced if you develop a wide range of skills, interests and contacts to complement your specialist academic knowledge. Keep an eye on developments in the commercial world to improve your business awareness and get involved in extracurricular activities to build the competencies that employers look for.

Seize opportunities to attend professional development courses. If you’re planning an academic career, make sure that you participate in and contribute to academic activities such as conferences, committees and outreach programmes. These will develop your transferable skills, build up useful networks and help you to make an impact as a researcher. ☺



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