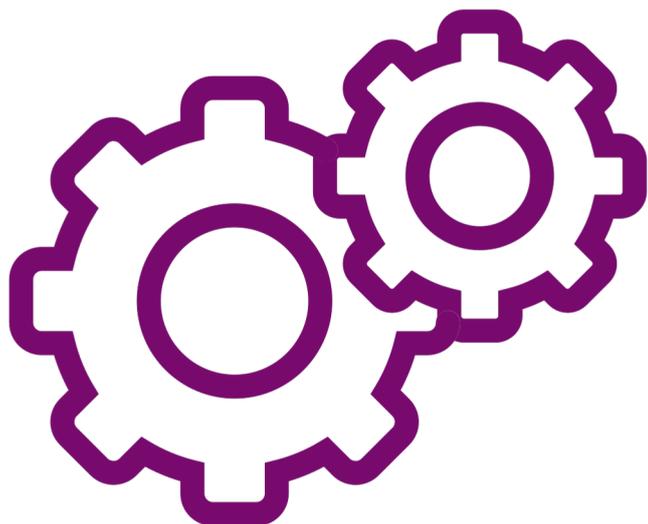


Getting into...

Engineering (Mechanical and Material)



Engineering is developing rapidly, reflected by the growth of new job roles and interdisciplinary fields such as medical and environmental engineering. This is due not only to significant scientific and technological advances, but wider global challenges such as climate change, growing populations and lack of resources.

A vast range of jobs are available in many different branches of engineering, so considering the type of work you are interested in will help you know what you are looking for when job-hunting.

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Exploring Your Options

In this section we will be talking about the types of roles that exist within the industry, and where you might expect to work. There will be many roles and employers that we don't cover here, but these are some popular examples that you can use as a starting point when exploring your options.

Typical areas

Research, Design and Development

Aims to develop new products or improve the efficiency and performance of existing designs. Computer Aided Design (CAD) is used to develop both new products and production systems by producing technical plans and prototypes. R&D departments are generally found within many forward-looking, innovative engineering and technology organisations.

Academia

Academics conduct and analyse experiments to develop new and better technologies, processes and applications. Universities and other higher education institutions employ researchers to undertake teaching and research. For example, working on cutting-edge areas, such as Nanotechnology or Tribology, which have the potential to help reduce energy consumption and CO2 emissions of machines.

Manufacturing and technical services

Engineers in this type of job plan, design, install, modify and monitor manufacturing and technical processes to produce cost-effective, high quality products and systems. A typical role would be working within control and instrumentation or maintenance departments maintaining equipment used to monitor and control engineering systems, machinery and processes e.g. vehicles, aircrafts, satellites, production systems, energy plants and much more.

Management

Project management involves managing and overseeing the delivery of projects on time and within budget, assigning tasks to the technical engineering team and ensuring client satisfaction. Operations management puts effective methods into place so that the company's day-to-day operations run smoothly. For example, the main responsibilities of an operations manager include handling logistics, preparing budgets and stock, and the supervision of employees.

Regulatory affairs

Is made up of the following areas: Quality assurance engineers monitor and improve the quality of the company's products and minimise production costs by enhancing productivity and efficiency in the manufacturing process. Health and Safety/Inspection jobs are found mainly within industrial and systems engineering, and focus on ensuring that machinery and systems behave in line with safety regulations even when their component parts malfunction or fail. Test engineers are responsible for verifying that products meet the correct specifications. They determine the best way a test can be performed using different processes.

Technical Sales, Procurement & Supply Chain

Sales engineers provide pre- and post-sales technical advice and support. Engineers working in procurement focus on the acquisition of goods, services or works from an external source. The aim in both jobs is for the materials and products to be sold or procured at the best possible cost to meet the needs of the company in terms of quality, quantity, profit, time, and location. In each of these roles it is possible to work 'in-house' for an organisation, or as a consultant, providing technical expertise to clients.

Engineering Consulting

A growing industry that is becoming more popular for recent graduates. As an engineering consultant, you won't work 'in-house' for a particular employer, but rather for a firm that provides its services to a wide range of clients. This will allow you to work on varied client projects, though you'll typically build a specialism within an industry (Built environment, Mechanical, Environmental etc.)

Typical Employers

It is also important to think of the location and type of organisation you would like to work for, as well as your work lifestyle. Opportunities in engineering exist throughout the UK and internationally. Some organisations may base their work entirely abroad, possibly requiring lengthy field trips away from home. Willingness to work outdoors and away from larger cities could be required, particularly for offshore oil jobs. For most jobs you will be working indoors - in offices, laboratories, industrial plants or production sites.

Location

It's important to understand that due to the way certain industries have developed historically, it's quite common to see certain industries tied to specific locations, for a multitude of reasons, for example the Naval & Marine Engineering Industry being located near port cities, the automotive industry being based in the Midlands. It's important to be flexible in your location preferences as you begin your graduate and seek to build your career in your industry of choice, this is not to say employers won't exist elsewhere in the U.K or closer to home, but do recognise the historical links between certain regions and industry which still dictate where many employers are based to this day.

Private Sector

Engineers work across all sectors including small, medium and large companies and corporations in the private sector. This could include working in industry - manufacturing, energy and construction companies in the UK and internationally. Alternatively, a role in the company's headquarters might involve office-based functions like writing project reports.

Public Sector

Opportunities exist in the public sector, typically working for the national and local government or the armed forces. Engineers in the civil service provide expertise for technical policy formulation or implementation, or in areas such as education, construction, and healthcare services. A clinical engineering technologist for the NHS is responsible for the servicing, repair and maintenance of medical equipment. Other public sector agencies such as universities and research institutes also employ engineers for teaching and / or research.

Third Sector

Engineers can also work in the “third sector” (charities and non-governmental organisations e.g. RedR or Télécoms Sans Frontières) using their technical skills to create better living conditions for communities across the globe.

Find out more about this industry by visiting Prospects' Engineering page. You can also take a look at our Getting into Electrical and Electronic Engineering industry guide.

Getting Industry Ready

What employers are looking for will vary depending on the role, but this is a general overview of key areas you might like to think about. It is important to always read the job description carefully to see exactly what the job responsibilities are, and what skills and experiences are required.

What employers want

Qualifications

Entry into engineering roles is possible with an undergrad degree but some employers require chartered status via MEng or further postgraduate or professional body exams. Read job adverts and person specifications for the roles you are looking to apply for in the future, to identify the level and type of qualification they require.

Employers often encourage professional development, and some may cover tuition fees and grant study leave. See the relevant professional body for information on qualifications required and lists of accredited courses.

Skills

Always read the job description to see what the job responsibilities are, and what skills and experiences are required for that role. Here are some key skills many employers within this sector are looking for when hiring graduates.

Passion for Engineering

Employers are keen to see passion for engineering and practical application of engineering and theory, so it's worth listing projects on your CV and being prepared to speak about these in an interview. It's also helpful to demonstrate this passion through extra-curriculars, this could be through getting involved in engineering related societies, internships, placement or seeking student demonstrator and student research assistant opportunities.

Effective communication skills

These are required to draft reports, give technical instructions, share ideas and make presentations. Listening skills are just as essential; engineers need to hear what their colleagues, customers, clients or project partners are saying and build on this to communicate with different audiences.

Analytical, critical thinking, problem-solving skills

Engineers consider various ways of approaching and resolving problems to create feasible solutions. The ability to make professional judgements is essential: this means analysing/ interpreting data and assessing/ managing risks while balancing issues such as costs, benefits, quality, health and safety.

Attention to detail

An engineer must pay meticulous attention to detail. The slightest error can cause an entire structure to fail, so every aspect must be reviewed thoroughly and continually during the course of completing a project.

Creativity

This is particularly important in design and R&D roles, where thinking innovatively and laterally can help formulate break-through designs and ingenious solutions.

Team working, management and leadership

Engineering often involves working in large teams with different backgrounds and skill sets, including non-engineers, so teamwork is essential. Engineers who are also project managers must know how to build a team, considering items such as goal setting, communication and collaboration.

Technical Skills

Machine Learning and Artificial Intelligence are becoming increasingly integrated into Engineering. Rather than replacing traditional roles, Engineers are increasingly using these innovations to aid their work, for example A.I (Artificial Intelligence) algorithms to learn the performance of a prototype car, which can be used to predict the dynamic behaviours of the car in different environments. Getting to grips with common Machine learning languages such as Java, Python, C++ will only increase your appeal to employers, as well as demonstrate your self-motivation and time-management in learning such languages alongside your degree. You can build additional proficiency in programming languages and CAD tools such as SolidWorks via [LinkedIn Learning](#).

Commercial awareness

Commercial awareness is about understanding the organisation you are applying to and the business environment in which they operate. Have an overview understanding of engineering news and trends, know who the key organisations in the industry are, and familiarise yourself with company specific news and projects.

This shows the employer that you are motivated to work for them and their industry, but it also gives you context to help you make informed decisions as an employee.

How to gain relevant skills and experiences

Use your time at university to develop the skills mentioned above. Remember that part-time work, volunteering and involvement in clubs and societies are all opportunities to do this! Don't underestimate the importance of non engineering transferable experience. Anything outside of/in addition to your degree on your C.V can say so much about you. Balancing part-time work in hospitality, leisure or tutoring alongside your degree demonstrates strong time management and organisation skills. Participating in extra-curriculars or pursuing additional certifications demonstrates commitment to personal development etc.

Take on responsibility

Your school will also offer positions of responsibility such as being a course rep, becoming a school ambassador. You can also seek out 'hidden opportunities' for example asking the module organiser who taught you in labs last year if you can now help as a student demonstrator.

Read job descriptions

Keep a look out for the technical skills they're asking for, it's likely you'll have developed these through your course, but look for other opportunities to upskill yourself here, through doing additional certifications in these on [LinkedIn Learning](#)

Follow organisations online

Use social media to see what organisations are doing and build commercial awareness and your network. You can also look at industry magazines and join professional associations.

Attend events

Look into professional bodies associated with your degree or career path of choice for example the Royal Aeronautical Society' or the 'Institute of Chemical Engineers' many offer discounted student membership and gives you access to careers resources and conferences and events. If you are a SEMS student an extensive list of professional bodies is available on the SEMS Careers QM+ page.

Get application ready

Update your CV and have a speculative letter ready to adapt should you need to apply for an opportunity at short notice. Book an appointment to get it checked by Careers and Enterprise.

Explore Societies & Competitions

QMUL has a range of engineering focused societies from Formula Student to Engineers without Borders. Getting involved in a society allows you to demonstrate your passion for a particular sector (i.e. Formula Student for the Automotive sector, Aurora Rocketry for Aerospace sector) and showcase your passion for engineering more widely, by pro-actively getting involved in engineering projects outside of the classroom, and develop your skills as part of working in a multi-disciplinary team

Gain Research Experience if you're considering a career in Academia or pursuing a PhD

If Student Research Assistantships are advertised, they're generally advertised on [QTEMPS](#). However in most instances, it requires a student to be pro-active in seeking this out. Take a look at [Research that your school is doing](#), find areas that align to your own research interests and reach out to academics in that research centre to see if they have any term-time or summer time opportunities for non-phd students (often know as student research assistantships) or even just the ability to shadow/observe their work. If you're an undergraduate, there's also the [QM Centre for Undergraduate Research](#) based in SEMS.

How can Careers and Enterprise help you?

There are a number of ways Careers and Enterprise can help you build skills and prepare for applying to opportunities.

Appointments

We run one-to-one appointments with expert career consultants who can talk to you about a variety of topics including your CV and applications, as well as give you career guidance and advice surrounding making career decisions. You can also book [Practice Interview appointments](#) to test your skills, for when you have an upcoming interview

Events

We hold a range of [careers events](#) throughout the year where you can learn more about an industry, network with employers and find out what people look for in a graduate.

Programmes

If you are looking to develop your skills, Careers & Enterprise is home to the [Aspire Programme](#): Queen Mary's Student Career Development Programme. These programmes take place alongside your degree, allowing you to gain vital employability skills to add to your CV, as well as raise your commercial awareness. Please note: Eligibility requirements apply

Online Resources

Our bank of [online resources](#) is a great place to go for careers support. We have guides (such as this one), templates for things like CVs and applications, as well as tools that you can use to build or improve a CV ([QM CareerSet](#)), practice for a psychometric test ([Graduates First](#)) or practice for a video interview ([ShortlistMe](#)).

Make the most of work experience opportunities

Once you have found a work experience opportunity, it is important to make the most of it! Here are some things to keep in mind before, during and after the opportunity.

1. Discuss your expectations with the employer at the start, so that you have the same understanding of what the experience will involve.
2. Always be polite, motivated and interested. Work experience can involve boring tasks, but being flexible, helpful and willing to get involved will make a good impression and could lead to more opportunities.
3. Be inquisitive and learn everything you can about the way the organisation works. How do they hire? What key skills are they looking for? What are the main issues affecting the organisation at the moment?

4. Talk to people who work at the organisation and find out what they do and how they got there. You might uncover job roles and employers that are new to you, as well as pick up some helpful tips. Keeping in touch with people you meet can be a great way of finding out about future opportunities and expanding your network.

5. Ask for feedback at the end of the placement to identify your strengths and the skills you need to develop further.

6. It doesn't matter if the work experience is not aligned to the role you may wish to pursue upon completion of your studies, work experience allows you to build and evidence transferable soft skills such as 'relationship building' 'time-management' 'solving challenges' which don't necessarily need to be specific to any industry.

For more information on where you can develop your skills and experiences, see the Resources section.

Finding Opportunities

Work experience

For most roles, work experience is highly valued, if not essential. It builds your skills and convinces future employers of your abilities and commitment to the job. It will give you a better understanding of the industry and of different job roles, develop your commercial awareness and strengthen future job applications, giving you an advantage over other candidates.

It is also an opportunity to build a contacts network, which is valuable when looking for further work experience or graduate jobs. If you want to work in industry also consider business work experience such as a first year insight week. Work experience can also be gained through internships, summer placements and more informal work experience or work shadowing.

Any work experience is great whether it's relevant or not, as non-relevant work experience may help you build and demonstrate key soft skills employers are looking for such as communication, team work and time-management. Take a look at [QTEMPPS](#), [Student Union Jobs](#) for part time work in or around campus designed to fit around your studies. Check your careershub regularly, especially as our careers team sources paid term time science & [engineering internships – recent roles](#) advertised have included Science Policy Intern, Biomaterials Intern and Materials Researcher.

Industrial placements

The school of Engineering and Materials Science offers optional industrial experience. A placement is typically 10-12 months working for a company in a paid role. It is fantastic experience for your CV and can count towards the requirements to be a chartered engineer. Sometimes employers hire students who perform well on their placements. Contact the Placement and Careers team in SEMS ([School of Engineering & Material Science](#)) for further information.

You don't need to be enrolled in a year in industry programme to apply for placements, If you're on the regular 3 year BENG or 4 year MENG, all we ask if you secure a placement first and once you've received an offer let the school know and they'll switch you over to the Year in Industry programme.

Plan from your first year

Most large engineering businesses advertise placements a year in advance. It is important to plan to find the area(s) and companies that interest you, so you don't miss deadlines.

Placements are competitive and recruiters will look for a combination of good academic results (typically being on track for a 2:1 though many have flexibility with evidence of extra-curriculars).

They won't be looking for previous work experience in this field, but will want to see a passion for engineering (and the specific sub-area) as well as being pro-active in hobbies, interests, work experience and volunteering outside of your degree. Many employers take applications from students at the start of their 2nd year, so you need to have relevant experiences in your 1st year to include e.g. industrial visits, work shadowing and non-engineering experience like being a Student Ambassador.

In the curriculum Y1 Careers activity will focus on acquiring skills and experience employers look for beyond your degree. We also run placement panels twice a year where current students return to describe their experiences applying to and on placement. Ahead of your second year we also run a two day placement boot camp.

Speculative Applications

As well as searching for jobs online, improve your chances by making speculative applications. This is where you contact companies you are interested in directly to ask whether they have any placements or work shadowing opportunities. This is a common method of finding opportunities and can be very effective, as many of these roles will not be advertised. Look for companies that fit your skills and interests, e.g. work in the area you studied for your final project.

You are more likely to be successful if you make your application specific to the organisation and demonstrate your suitability and interest in that particular employer. Although you may see yourself working in a large company, the greatest number of jobs are in small and medium sized companies. Smaller organisations are often more flexible with their recruitment and are more likely to consider work experience positions.

Professional bodies, trade associations & directories

Every branch of engineering has its own professional body or learned society. Many advertise work experience placements and jobs and have directories of their members which you can contact directly for work opportunities. Some are listed below, but a Google search of your branch of engineering with 'institute', 'society' or 'association' will provide further organisations e.g. [Royal Aeronautical Society](#). As a SEMS student, the school will cover the cost of membership to several relevant associations.

Some resources are only available to members, but often reduced student rates are available. Information about courses, training and news is also regularly available and networking and educational events are often organised: these activities are useful for keeping up to date with industry developments (commercial awareness) and developing skills as well as making contacts.

Networking

Attending employer and careers events is another way to find out about companies and get advice from their employees. Build your network by attending talks, insight days, conferences and by being a member of a relevant university student society. Consider becoming a member of a professional body or engineering society to take advantage of their networking opportunities. SEMS holds twice yearly Industrial Liaison Forums for you to network with employers. Our QTaster programme link: (<https://www.qmul.ac.uk/careers/work-experience/qtaster/>) runs regular site visits to a wide range of employers, recent engineering focused treks include British Airways, Octopus Energy, Bouygues UK

Twitter, LinkedIn, and Facebook can be valuable tools for keeping up to date with careers information, events, news and jobs. Create/update your LinkedIn profile and find interesting LinkedIn groups to join and like relevant pages on Facebook.

Resources

[QM Careers Hub](#)

A range of roles across all industries. Remember data and analysis vacancies will exist across all sectors.

[GradCracker](#)

A range of roles for STEM students for both placements and graduate positions. Able to filter by disciplines (Materials, Aerospace etc. and subdisciplines within this). Many Employers also run their own insight webinars on Gradcracker as well as have their specific portal with further resources to get to know the company.

[Civil Service](#)

Vacancies, work experience opportunities and list of departments eg Defence Science and Technology Laboratory

[Earthworks](#)

Vacancies include renewable energy, environmental engineering, oil and gas

[Engineer Board](#)

Opportunities in all branches of engineering plus, Fast Moving Consumer Goods (FMCG), utilities, energy and water.

[Jobs.ac.uk](#)

Academic, research and support positions in all fields

[Just Engineers](#)

UK and Worldwide jobs including mechanical, structural, electrical, gas, oil and more. Browse jobs by sector or location.

[NHS Careers](#)

Job profiles, training programmes and job listings

[Target Jobs](#)

A range of graduate jobs, schemes and internships advertised. Careers and application advice.

[Fish4jobs \(previously The Career Engineer\)](#)

Vacancies in a range of industries with a range of graduate jobs available.

[The Institute of Mechanical Engineering \(IMechE\)](#)

Provides news, events and detailed [industry information](#).

[The Institute of Materials, Minerals and Mining](#)

Provides news, publications, grants and networking opportunities with advice on how to find work experience.

[Institute of Chemical Engineers](#)

News, events and resources plus placement opportunities. See careers video:
www.rsc.org/careers-jobs

[Aerospace Defence Security Group](#)

Trade association for the aerospace, defence and security industries, with company directories for each category.

[Association of Consultancy and Engineering](#)

Jobs board, news and resources plus undergraduate research bursaries (apply via School).

[Association of British Healthcare Industries](#)

Medical technology sector news, resources and [member directory](#).

[UK Science Park Association](#)

Advertises vacancies in UK science parks.

[Institute of Physics and Engineering in Medicine](#)

Provides sector news and information, links to related societies and a job board.

[Institute of Energy](#)

Careers information plus search [members directory](#).

[Royal Academy of Engineering](#)

Academic community of engineers. Includes the latest news and events to advance and promote engineering.

[The Engineer](#)

Provides industry news, product news, video, blogs, podcasts, webinars and forthcoming events.

[Engineering Council](#)

Regulatory body for the engineering profession which maintains internationally recognised standards of professional competence and ethics. The website includes industry news and details of course accreditations.

GEEP – Graduate Engineering Programme

Link: <https://raeng.org.uk/programmes-and-prizes/programmes/uk-grants-and-prizes/support-for-education/graduate-engineering-engagement-programme/>

Blurb

Royal Academy of Engineering's award winning programme run in partnership with employers, to help students transition from engineering graduate to engineering employment.

WES – Women's Engineering Society

Link: <https://www.wes.org.uk/>

Blurb

Society supporting women in engineering at every stage of their career. Runs events, networking, awards, projects & campaigns.

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