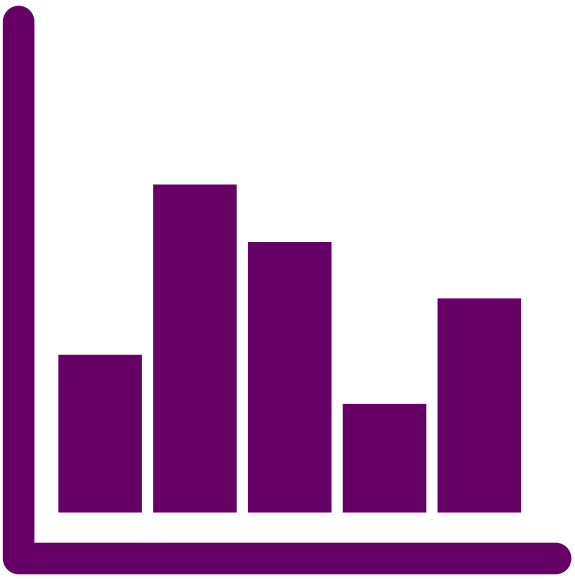
Getting into... **Data Science**



Working with data is about using information to make informed decisions and meet business needs. As the amount of data collected about us grows (for example when using your phone or browsing online), the ways organisations can use data to understand people and their behaviour grows.

Data roles exist within most sectors, with aims being to gain insight and increase efficiencies. Not every opportunity within data science will have 'data' in the job title, and might include words like 'intelligence' or 'analytics'. Make sure to check job descriptions as well as job titles when identifying potential roles.

What's in this guide?

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 roles

Data Scientist

Use data to solve business problems, making predictions about a business' by predicting future performance based on past patterns to inform decision-making. Data Scientists compile and interpret large amounts of data from multiple sources and use using coding and mathematical modelling in their analysis. algorithms and programming. An important part of this work is presenting the findings from the data, creating reports and visualisations that can be easily understood and used by colleagues. They develop new analytical methods and machine learning models, visualising data and interpreting the findings for the wider business. They may work with others teams to suggest possible solutions based on the data.

Big Data Professional

Utilise creativity to build largescale data processing systems and process data which cannot be analysed with traditional applications. Big Data Professionals need to find meaning from mass amounts of raw data and interpret links to help the businesses develop strategies and solve problems. Mathematical and statistical skills are essential, but business knowledge is also important; Big Data Professionals need to have an understanding of business drivers and objectives in order to help drive efficiency and growth. **Example job titles include**: Big Data Engineer and Big Data Analyst.

Data Protection Officer

Requires a good understanding of data protection laws and practices. Data Protection Officers are responsible for securing and protecting the large amounts of data that is increasingly being collected and stored by businesses. Compliance with data protection laws is vital as failure to do so can be costly to the business. Dealing with high volumes of personal and private information requires strong ethical conduct. **Similar example job titles include:** Data Protection Administrator or Data Privacy Officer.

Marketing Analyst

Analyse the performance of advertising and marketing campaigns to gain an understanding of what is successful for particular products and demographics. Marketing Data Scientists analyse consumer behaviour data in order to create insights into their customer interests and

engagement, to inform marketing content for products or services. Advertising and marketing can be expensive, so understanding what is effective for the intended audience creates efficiencies and saves costs for the business. Similar example job titles include: Consumer Insight Analyst or Market Research Analyst.

Data Analyst

Analyse data and look for trends, which are used to identify patterns that inform business decisions. They design and create data reports using software and reporting software, to create visualisations which present the 'story' of the data in a way that is meaningful to technical and non-technical audiences. A data analyst is unlikely to use mathematical modelling and coding, as a data scientist would. A large part of data projects tends to be cleaning and ordering the data, so it is consistent and ready for analysis.

Business Analyst

Aim to improve an organisation's processes and systems. They conduct research and analysis in order to understand the organisation and come up with solutions to business problems. This often involves using data analysis while also working closely with various teams within the organisation to understand how they work and what their needs are. When developing solutions you will be taking into consideration things like cost, and how much time is available. They are not normally involved with programming or coding directly, but may work closely with those who do. Some Business Analysts will specialise in IT system change or financial forecasting (aka Finance Analysts, Financial Modellers and Systems Analysts). A business Analyst may be brought into an organisation as a consultant to work on a particular project.

Data Administrator

Compile, input, clean and monitor data, which is then used to provide reports for data requests such a performance information (key performance indicators or KPIs). A large part of this role will be ensuring data is 'clean' i.e. finding and removing / reformatting inaccurate or inconsistent records. This is vital in ensuring the data is ready for analysis and prevents inaccurate results being found. They may also plan and develop new data management systems e.g. databases, ensuring data is secure, entered accurately. This is often an entry level role which can lead to other data roles or other jobs within the organisation due to the development of transferable skills. People might go into HR, IT or general management depending on their interests.

Econometrician

Use quantitative data, statistics and mathematics to model outcomes or make predictions. Other example job titles include: Quantitative Analyst, Economics Analyst and Economist.

Data Librarian

Specialise in the curation, preservation and archiving of data.

Typical employers

The demand for data professionals is prevalent in almost every sector including: medicine, finance, retail and e-commerce, media, human resources, telecoms, oil and gas, transportation, charities, tech, advertising, and academia. The skills of data scientists are transferable across all sectors; there's even the option of joining or developing start-up companies that specialise in outsourced data consulting. Data scientists in all of these fields are valued for insights they can provide to drive forward business change.

Example employers include HP, Oracle, SAP, Amazon, Spotify, Netflix, ASOS, Uber, Microsoft, Google and Hadoop Vendor; however, think outside of the box and investigate non-tech industries that also require data analytics. For example, the NHS offers a Health Analytics role as part of their Graduate Management scheme.

Find out more about typical roles and employers within the industry on the Prospects' Information Technology page.

Getting Industry Ready

In this section, we will talk about the kinds of skills and experiences employers might be looking for within this industry, and how you can go about gaining them yourself. What employers are looking for will vary depending on the role, but below 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

A STEM background isn't necessarily required, although experiences while studying for STEM degree subjects might give you a head start in more mathematical roles. Subjects within social sciences that involve statistics might also be helpful. Postgraduate study is generally not essential, and many employers will support you with additional training and development as necessary. However, further study could be an advantage when applying for data science or quantitative data roles, so it is worth looking at job descriptions for the roles you are interested in to see what their requirements are. You could also read job descriptions for junior and senior positions in the area you're interested in to find out what qualifications are typically required – you want to be certain that taking a particular course will enhance your prospects.

Research data based courses if you're interested in pursuing further study, for example MSc Big Data, MSc Data Science, MSc Business Analytics, MSc Data Science and Analytics. Data Science is also a popular field for people with PhDs, as they generally have experience with handling data, research and analysis. Even if your undergraduate degree isn't specifically within data, employers will still be interested in you if you can display strong quantitative skills, an interest in data, programming languages and coding skills.

Skills

Here are some key skills many employers within this sector are looking for when hiring graduates. As was mentioned before, 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 for that particular role.

Technical skills

Technical skills will be highly valued when applying for data science roles. Going out of your way to develop new skills beyond your degree will showcase your motivation and interest in

the field. Depending on the type of role you are interested in, this could be learning a coding language such as Python, or leaning about web analytics and trends, or a visualisation software such as PowerBI or Tableux.

Communication skills

It is important to be able to present complex data findings and visualisations in a way that is suitable for the intended audience (including those with little understanding of data). This requires being able to write and present in a clear and concise manner. It is common that colleagues make data requests that are not fully formed or entirely clear, so the ability to ask questions to clarify requirements and check understanding is valuable, as is practising presentation skills, report writing and leveraging networking opportunities.

Attention to detail and accuracy

Working with large data sets and producing reports can involve small changes or repetitive tasks, so the ability to spot errors in data and use a methodical approach to ensure accuracy is vital.

Problem solving

The ability to think about different ways to approach a data task and identify solutions is important, as you will often be using the data to produce ideas and processes that don't yet exist.

Commercial awareness

Alongside technical skills, possessing an awareness of the latest trends and industry news is key. You may be asked about topical industry developments during interviews, so ensure you have a good understanding of the latest tech trends as well as what is affecting the company you're applying for. When working with data, you need to be able to draw meaningful conclusions that inform business decisions or solve a business' critical issue. In data science work you don't just get given a clean, complete dataset, it is always in context so you need to understand that, and what the variables mean in real life.

This will require being able to show an interest and understanding of the wider business context, challenges and goals. For roles that involve using data to make recommendations on how to improve growth and efficiency, being aware of the latest trends and technologies is valuable in order to inform decision making. Take a look at our Commercial Awareness resources to learn more.

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. Not every data role e.g. a Business Analyst will require coding knowledge, so pursue the opportunities that will be of most use for the roles you are interested in.

Develop technical skills

Here's a few ideas below for building your technical skills and knowledge:

- Learn SQL and scripting languages such as Java, Ruby, Python, and statistical tools such as R.
- Enter online competitions e.g. Kaggle, Topcode or Defence Science Technology Laboratory's (DSTL) data science challenge.
- #MakeoverMonday on Twitter provides weekly datasets for anyone interested in analysing them.
- Springboard courses – (e.g. Data science bootcamps).
- Familiarise yourself with the Hadoop platform.
- Get involved with or start a relevant society on campus.
- Find a short course: Future Learn, Coursera, Code Academy, Flood Light, City Lit. You can also learn online using YouTube tutorials.
- Kaggle (mentioned above) is an online data science community, with courses, competitions and resources that you can use to learn and practice data science skills.

Take on responsibility

Take on positions of responsibility, whether voluntary or paid. This could be a Team Leader at work, or a committee member for a university society. Relevant student societies that you might want to get involved with include the Queen Mary Data Science Society or the Mathematics Society.

Read job descriptions

Find out what skills recruiters are looking for by reading job adverts. As mentioned previously, this is also a good way of determining what qualifications you might need to reach certain jobs.

Follow organisations online

Use social media to see what organsiations are doing and build commercial awareness and your network. You can also take a look at industry magazines and join professional associations. Examples include @BBGVisualData, @TwitterData and @EU_opendata.

Attend events

Attend university or external events to hear from recruiters, develop your understanding of the industry and make new contacts. You can ask these contacts for advice, or even for an opportunity to shadow them in their role.

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.

Practice tests

Many employers are now using online psychometric tests as part of their selection process. These can include numerical reasoning, verbal reasoning, situational and critical judgement tests. If the role you are applying for is highly technical, you may also be asked to complete tests involving other programmes, like Excel, so make sure you brush up on your skills. If you're asked to complete online psychometric tests, it's a good idea to practise first. Sometimes the employer will provide you with practise test links, otherwise check out our practice test platforms on the Careers & Enterprise site.

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 for opportunities.

Appointments

We have a range of one-to-one appointment types with expert careers consultants. These include Career Guidance appointments where you can talk about your options and ideas, Application Advice appointments where you can have an application or CV checked before submission and Practice Interview appointments where you can practice for an interview you are invited to.

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, we have several skill-building programmes that you can apply to and complete alongside your studies.

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 CV Builder), practice for a psychometric test (JobTestPrep) or practice for a video interview (Interview Stream).

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.

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

Finding Opportunities

Explore Work Experience Opportunities

Internships and work experience placements are available with a range of employers, from larger companies to small start-ups, particularly within finance, retail and travel. Not all opportunities are advertised, though. So getting in touch with companies directly with a speculative application can be an effective approach to maximise your chances.

Do Your Research

Develop an understanding of which industry you would like to work in. Research the opportunities available with different employers, and work out which type of role you would enjoy.

Build Your Network

LinkedIn is a crucial tool for job-hunting and networking. Update your profile regularly, highlighting your accomplishments, particularly your technical skills. Ask for recommendations from people you have worked with previously, and request connections with people you already know. Research companies you would like to work for – LinkedIn can be a crucial source of information, which can help you prepare for applications and interviews. Make sure to follow the Queen Mary Alumni LinkedIn page to connect with graduates working in your chosen field.

Check out the Careers and Enterprise events page for opportunities to meet and network with employers at workshops and fairs.

Speculative applications

As well as applying to advertised vacancies (for work experience or full time work), send out speculative applications to organisations that interest you. A speculative application is sending an application to an organisation and enquiring whether there have any opportunities available. This is particularly beneficial if you are sending it to someone you have met before, known as a 'warm contact', for example at an industry event. By doing this you are showing initiative and drive.

See the Resources section for links to where you can look for opportunities.

Resources

Finding Opportunities

Here are some jobs boards for you to take a look at when searching for opportunities. Remember many organisations will post their jobs directly to their own website or social media platforms, so make sure that you are also looking there.

Kaggle
International & UK data science job opportunities.

Data Elixir
The jobs board for data lovers.

Data Scientist Jobs
International & UK data Science job opportunities.

Work In Startups
Jobs board dedicated to tech startups.

CW Jobs
Specialist IT recruitment website, featuring a range of graduate-level roles.

STEMGraduates
Specialist jobs board for STEM students.

DataCareer
DataCareer is a specialized career platform for data science, data analytics, data engineering and business intelligence jobs

Check out employer websites directly including EMC, IBM, Microsoft, Oracle, Google, Amazon and Bloomberg.