

Student Section: Careers for Mathematicians

The following is adapted from a careers advice leaflet compiled by Sue Briault and made available through the Bath Careers Advisory Service.

How Employable Are You?

Every year, six months after graduation, data is collected on the employment situation of graduates. The latest data available is for 2006 graduates. 46.5% of Mathematics graduates in the UK entered employment in a wide range of work sectors. This is lower than the graduate average of over 60%. However **unemployment for Maths graduates is below the graduate average** (5.4% compared to 6%) and has been falling, supporting the idea that employers value the high levels of numeracy you can offer. This is because **a greater number choose further study** (24.3%) when compared with all graduates (13.9%). The most popular area of employment by a large margin was business and finance, 37.9% took this route. (see "What do Graduates do?" <http://www.prospects.ac.uk/links/WDGD/>). Anecdotally Careers Advisers will tell you that **Maths undergraduates are frequently targeted by employers because they have the key skills sought by business**.

Occupations Using Maths

Although you will see very few jobs titled Mathematician, your subject has a wide application across the working world. It is easy to fall into the trap of thinking that the only options open to you are either finance sector jobs or teaching. These areas have the highest profile across university campuses when it comes to advertising power. Also destinations figures for Mathematics graduates seem to confirm this. However you could also find employment across a broad range of sectors including engineering, information technology, oil industry, biotechnology and the civil service. **Any industry that uses modelling, simulation, cryptography, forecasting, statistics, risk analysis and probability will value your subject knowledge and skills.** In business employers look for excellent analytical and problem solving skills for such diverse areas as logistics, market research, operational research, business analysis and management consultancy. In some cases it can be hard to achieve specialist roles straight from an undergraduate degree. An MSc in a specialist topic or a PhD might be required for some roles. Here are some ideas to help you think about what you might want to do:

Finance: Banking, accountancy, actuarial, tax, underwriter, pensions, insurance

Medicine: Medical statistics, medical and epidemiological research, pharmaceutical research

Design: Engineering design, computer games

Science: Biotechnology, Meteorology, oceanography, pure and applied research and development

Civil Service: Scientists (Fast Stream, DSTL, DESG), GCHQ, Security Service, Statisticians

Business: Logistics, financial analysis, marketing, market research, sales oil industry, management consultancy, operational research

IT: Systems analysis, Research

Engineering: Aerospace, building design, transport planning, telecommunications, surveying

Remember you may need to do some research on these jobs to be sure that you understand what they involve.

What Jobs Do Mathematicians Do?

This information is compiled from destination data from a selection of universities. For destination data for individual universities get in touch with the course contact at the institution. Some University Careers Service websites contain this information.

Jobs include:

Accountant, Actuary, Analytical Engineer, Assistant Underwriter, Business Analyst, Certified Accountant, Chartered Accountant, Clergy, Computer Analyst and Programmer Client Relations Manager, Credit Analyst, Customer Care Manager, Data Analyst, Director/Owner, Engineer, Equities Trader, Finance Trainee, Financial Adviser, Financial Analyst, Financial Controller, Financial Products Designer, Human Resources Officer, Information Mining Specialist, Insurance Analyst, Investment Analyst, Investment Banker, IT Consultant, Management Consultant, Market Researcher, Network Engineer, NHS Financial Management Trainee, Pricing Analyst, Researcher, Risk Analyst, Settlements Analyst, Scheduler, Scientific Analyst, Scientific Officer, Share Trader, Statisticians, Software Developer, Statistician, Stockbroker, Supply Manager, Tax Adviser, Teacher, Technical Analyst, Technical Engineer, TEFL Tutor, Trading Global Analyst, Trainee Quantity Surveyor, Transport and Distribution Manager, Transportation Planner

Well-known companies they work for include:

Investment Banks: ABN AMRO, Barclays Capital, BNP Paribas, Citigroup, Credit Suisse, Deutsche Bank, Dresdner Kleinwort, Goldman Sachs, HSBC, JP Morgan, Lehmann Brothers, Merrill Lynch, Morgan Stanley, UBS Warburg

Retail Banks: Alliance and Leicester, Barclays, Capital One, HBOS, Nationwide, Woolwich Bank

Actuarial Firms: Bacon & Woodrow, Lane Clark & Peacock, Mercer HR Consulting, Watson Wyatt

Insurance: Friends, Legal & General Provident, MGM Assurance, NFU Mutual, Prudential, Royal & Sun Alliance

Accountancy and Professional Services Firms: Baker Tilly, BDO, Stoy Hayward, Buzzacott, Deloitte, Ernst & Young, KPMG, Grant Thornton, Horwath Clark Whitehill, Larking, PriceWaterhouseCoopers

Other Financial businesses: Bloomberg, Fidelity Investments, Schroder Investment Mgt

Central and Local Government: GCHQ, Housing Associations, Local authorities, NHS, Office for National Statistics, HM Customs and Excise, HM Treasury, Home Office

IT, Science and Engineering Companies: Accenture, Air Products, BT, Costain, DSTL, EDS, IBM, Logica, Mansell, National Grid, NPower, Nortel, Powergen, Parsons Brinkerhof, QinetiQ, Renishaw, Rolls Royce, Siemens

Miscellaneous: BP, BMW, Britvic, Enterprise Car Rentals, George Wimpey, Premier Foods, Reebok, Shell, Unilever

Job Profiles On The Web

<http://www.prospects.ac.uk> click on Using your subject and Explore types of jobs

+plus is an internet magazine which carries regular job profiles of mathematicians. <http://plus.maths.org>

The Royal Statistical Society has 11 job profiles on their website www.rss.org.uk/main.asp?page=1999

Look at 29 career profiles on <http://www.mathscareers.org.uk/14to16/careersprofile/default.aspx>

Further Study

As well as data on what job graduates go on to do, information about the courses they choose to take is also collected. The following information, again, relates to Mathematics graduates from several universities:

Msc: Accounting & Finance, Applications With Maths, Computational Mathematics Computational Science And Modelling Computer Science, Finance, Finance & Economics, Finance And Investment Financial Mathematics, Interactive Systems Design, International Finance Management & Regulation Of Risk Management Science, Mathematical Modelling, Mathematics, Medical Statistics, Numerical Analysis Operational Research And Finance Philosophy & Economics, Risk Management, Statistics,

Mphil / PhD: Applied Maths, Mathematics, Mathematics Statistics, Mathematical Physics, Management Mathematics, Finance, Mechanical Engineering

Vocational Training : Actuarial Science, Business And IT, Drama, Law, PGCE

Skills Employers Look For

In spite of the greater number of graduates on the job market employers still regularly report difficulties in recruiting because there are not enough applicants with the right skills or qualifications. So what are employers looking for?

Typically any graduate recruiter will look for evidence of a range of skills or competencies relevant to the job. This would be sought within an application and at interview. In some cases you will need to demonstrate appropriate technical/subject skills as well. In general most graduate recruiters will look for the following skills:

Motivation and enthusiasm - having energy and enthusiasm in pursuing projects. Evidence you might have includes reading books beyond the recommended material for your course, joining a professional body relevant to your subject area, doing voluntary work in a related field, pursuing an interest or activity for a significant period of time, especially when it involves personal improvement.

Team working - working well with others in order to achieve a common objective. Evidence you might have includes academic group project work, team sports, working on a committee, working with others to organise an event, being part of a team in a job.

Communication - the ability to communicate effectively through speech, in writing or electronically. Evidence you might have includes your coursework and presentations, being a course representative, working in a customer focused role such as shop or bar work.

Flexibility and adaptability - the ability to handle change and adapt to new situations. Evidence you might have includes independent travel, working part-time while studying, or successfully changing course.

Initiative and proactivity - the ability to seize opportunities and to set and achieve own goals. Evidence you might have includes organising work experience, setting up your own society or organising a charity event.

Other skills sought might include:

- **Leadership**
- **Problem Analysis/Problem Solving**
- **Judgement/Decision Making**
- **Imagination and creativity**
- **IT competency**
- **Numerical competency**

Use employers' websites and job adverts to identify those appropriate to the career of your choice.

Skills of A Mathematician

You are highly employable for your subject knowledge. In addition to this employers will value you because you will also have developed the following transferable skills:

- **Analytical and logical problem solving skills**
- **Ability to absorb, condense and logically present vast amounts of information**
- **Ability to present rigorous arguments and communicate results**
- **Ability to understand the "big picture" through the development of theories**
- **Readiness to address new problems**
- **High level numeracy, statistical and good IT skills**
- **Independent learning and time management**

The downside of studying Mathematics is that you may have less opportunity to develop your team working and interpersonal skills through course group work. You will need to work harder to gain experience through work and extra curricular activities.

Be Business Aware

Business or commercial awareness is one of the key skills regularly flagged up by employers as being a skill they need, but which too many graduates lack. You do not need to have studied a business degree to gain it. If a business career interests you, start to take some steps now to improve your knowledge.

Broadly employers are looking for evidence of an in-depth understanding of the job you would be doing and an understanding of the business environment you would be working in.

You can build up your knowledge of your chosen sector by keeping up to date with relevant business news through newspapers and specialist journals. Use the Web if you do not buy a paper regularly. The BBC website is very good for business news and <http://www.bized.co.uk/> for useful background resources. You may need a basic business textbook.

Even within the not-for-profit sector this level of understanding about the world you will be working in, is important. □

SUE BRIAULT

Sue Briault is a Careers Adviser in the Careers Advisory Service at the University of Bath and has previously worked at the Universities of Nottingham and Oxford. www.bath.ac.uk/careers