Mathematics and statistics are creative and wide-ranging fields that provide powerful ways of understanding the world. The basic goal of mathematics and statistics is to identify and explain patterns. These patterns may appear as weather changes, water waves, geometric structures in materials, genetic mutations, fluctuations in the stock market, or a reduction in criminal behaviour as a result of new government policy. Through the study of mathematics and statistics you develop key problem solving, computing and analytical skills that employers across a diverse range of fields are looking for.

The good news is demand for mathematics and statistics skill sets in government and industry has increased “exponentially” in recent years. With the advancement of technology and the capacity to gather, store and analyse large volumes of data (“big data”) mathematical and statistical modelling and prediction are now driving a wide variety of innovations. This is evident in the medical and pharmaceutical fields, where genomic data is being used to advance our understanding of diseases and their treatments. In the corporate world, the ability to apply big data information to business objectives provides new opportunities and helps to reduce risk, which plays a significant role in underpinning the success of organisations.

A career in mathematics and statistics therefore has exciting prospects.

Engage in your career before you graduate

To enhance your future employment prospects it is important not only to do well academically, but to also undertake additional curricular and co-curricular activities. These will demonstrate to prospective employers your ability to apply your technical skills in various situations, engage with the mathematics and statistics community, enhance your transferrable (“soft”) skills and expand your networks.

This can include:

- Networking with industry, i.e. attending careers fairs and industry events for students, e.g. Deloitte Insight Night (a hands-on industry event for Science, Technology, Engineering and Mathematics (STEM) students) and the Bureau of Meteorology Graduate Program presentation evenings.
- Attending appropriate mathematics and statistics seminars at universities or through the Statistical Society of Australia, Australian Mathematical Society, ANZIAM (Australia and New Zealand Industrial and Applied Mathematics) and the Australian Mathematical Sciences Institute (AMSI).
- Attending the Annual Winter School in Mathematical and Computational Biology, and getting involved with

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COMBINE, the student group of the Australian Bioinformatics and Computational Biology Society.

- Getting involved with Perth Data Science Meetup and the Mega Data Cluster WA.
- Entering student competitions that showcase analytical problem solving, team work, etc.
- Engaging in opportunities through the Mathematics and Statistics discipline and through the University, e.g. Maths and Stats Clinic Tutor, Peer Tutor / Mentor, PASS Leader, Murdoch Student Emerging Leaders (MSEL) program participant, Open Day volunteer.
- Applying for paid vacation work opportunities offered by industry.
- Volunteering and promoting STEM through structured programs, e.g. school education out-reach/support programs such as The Smith Family program.

NOTE: The Murdoch Volunteering Hub is a useful resource for ideas on where to gain relevant volunteer work. Students can also graduate with a “Community and Career Skills Development Transcript” through volunteering. Further information is available via the Murdoch Volunteering Hub website: www.the-guild.com.au/volunteering-hub
Careers in Mathematics and Statistics

Careers in Mathematics and Statistics

There are a number of technical and transferrable “soft” skills you can develop through active engagement in your studies and university life as a whole (i.e. co-curricular/extra-curricular activities). These include:

• Abstract reasoning /Critical thinking / Problem solving
• Statistical / Data analysis and interpretation
• Mathematical model development
• Technical report preparation
• Communication of technical problems and solutions
• Collaborative team skills
• Research skills

By combining your Mathematics and Statistics studies with at least one other appropriate major or minor at Murdoch (where there are important connections and where the techniques you are learning can be applied), you will enhance your career choices. In particular, you should consider a second major or minor in Information Technology, Biomedical Science, Chemistry, Physics and Nanotechnology, Environmental Science, Marketing, Economics or Finance.

It is also worth considering an additional Honours year as this can significantly increase your employability, especially in careers where the higher level skills will be used. An Honours degree is also required to proceed to a post-graduate degree, i.e. a Master of Philosophy (MPhil) or a Doctor of Philosophy (PhD).

The study of mathematics and statistics can lead to a variety of exciting professional careers. Graduates may be employed in the following:

• Banks and investment firms
• Business corporations and multinational consulting firms
• Mining and other industries
• Schools, universities and other educational institutions
• Government research agencies and departments, e.g. Bureau of Statistics
• Defence science and technology
• Health/medical/pharmaceutical institutions and organisations
• Computer firms
• Insurance companies
• Market research departments and organisations
• Research and development departments and organisations
• Test development corporations
• Utility companies, e.g. electricity, water, gas
• Weather /Atmospheric and climate science, e.g. Bureau of Meteorology

Specific job roles (which may require additional qualifications, e.g. Honours/Post-graduate degree or an additional major/minor) include:

• Actuary
• Cost Estimator / Analyst
• Credit Risk Modeller
• Risk and Insurance Specialist
• Business / Finance / Investment Analyst
• Supply Chain Management / Logistics Specialist
• Market Research / Advertising Analyst
• Data Linkage Analyst
• Data Scientist
• Bioinformatics Specialist
• Scientific Computing Specialist
• Epidemiologist
• Health Economics Analyst
• Energy Forecasting Analyst
• Traffic/Transport Modeller
• Environmental Modeller
• Climate Modeller / Oceanographer
• Weather Forecaster / Meteorologist
• Naval Architect
• Mathematician / Academic
• Mathematics Teacher
• Statistician / Biostatistician / Biometrician / Econometrician
• Quantitative Analyst / Research Officer
• STEM Project Officer

Actual advertisements for jobs that are suitable for mathematics and statistics graduates are compiled on the websites of the Australian Mathematical Sciences Institute in their Maths Adds Job Guide, the Australian Mathematical Society and the Statistical Society of Australia (see references below). These websites also have other valuable information about careers.

To help launch your career, you may wish to also consider applying for multi-disciplinary Graduate Programs from the beginning of your final year. Employers offering Graduate Programs are keen to develop recent graduates and they include both the public sector (e.g. Statistics Bureaus, Health Departments) and corporate sector (e.g. Banks). Therefore detailing what skills you have developed throughout your university experience is an important aspect of your resume.

There are an increasing number of fulfilling career pathways available with a Mathematics and Statistics major, so make the most of your time as a student to explore your options and tailor your university experience. Remember that careers are dynamic – they evolve along with your life experiences and you have the ability to make yours meaningful through active engagement as a student and being open to opportunity.

Useful Resources

Australian Mathematical Sciences Institute

Australian Mathematical Society
http://www.austms.org.au/job+opportunities

Statistical Society of Australia

Extend your network, get advice, join the Murdoch e-Mentoring Network on LinkedIn