Mathematics – careers and course choices

Whether you specialise in mathematics, statistics or physics, you'll find employment in diverse careers around the world throughout academia, industry and government.

You'll leave UQ equipped to apply your skills and knowledge to real-life challenges.

On graduation from UQ, you will:

- have highly developed levels of personal initiative and be able to think independently
- have the ability to work collaboratively across national and international boundaries
- understand the importance of the interdisciplinary nature of science
- possess superior technical skills
- be able to communicate the nature of your discipline to the wider community
- understand the various dimensions of sustainability
- have some of the highest in demand skills on the market
- be immediately employable.

How to use this guide

Choose the type of job or career you want and find out which courses to study at UQ. Refer back to this document if you change your mind in the future.

At the top of each of the columns is a general job type – pick the one which is most interesting for you. You can also see the types of career directions and examples of employers in Queensland. Going down the column for that job you can see which core courses are essential for success in your career, and beneath that, which related courses you may find interesting too. Below that is information on how to find work experience such as internships and UQ events. Finally, opportunities for further study at UQ are presented if you decide to deepen your knowledge.

This guide covers many career types requiring advanced mathematics but doesn't cover some well-known careers, such as teaching. To find out more about the full range of careers in mathematics go to the AMSI career site or Job opportunities on the Australian Mathematical Society site.

	Job type/career after leaving university									
	Data scientist artificial intelligence, machine learning, etc	**Statistician** statistics, machine learning, econometrics, etc	**Data analyst** data visualisation, data modelling, etc	**Quantitative analyst** share trading, risk and actuarial analysis, etc	**Optimisation consultant** operations research, etc	**Bioinformatician, Biostatistician** computational biology, etc	**Dynamic systems modeller** computational fluid dynamics, etc	**Cybersecurist** applied cryptographer, security analyst, etc	**Software engineer** algorithm design, high performance computing, etc	**Teacher/ Researcher** all mathematics
Career direction examples	• Consulting • Mining • Retail	• Statistician • Economist • Actuary	• Consulting • Retail • Finance	• Consulting • Finance • Insurance	• Consulting • Mining • Logistics	• Bioinformatics • Genomics • Pharmaceuticals	• Consulting • Engineering • Manufacturing	• All industries	• All industries	• Teacher • Research
Queensland employers – examples	• Mining companies • Big consulting firms • AI startups and scaleups • Quantium • Government • Large Retailers • Compare the Market • Insurers	• Quantium • Government • Big consulting firms • QIC • Insurers • Hospitals	• Biz insights firms • Synengco • Biz analyst firms • Big consulting firms • Government • Large Retailers • Compare the Market • McGrathNicol • Data#3	• Stock Traders • Banks • Super funds • Insurers	• Biarri • Deswik • QuintiQ • Mining companies	• CSL • QIMR Berghofer • Department of Health • Department of Agriculture and Fisheries	• Bureau of Meteorology • Bitzios Consulting • FE Consultants • Stacey Agnew	• Defence • IT auditing • Banks • Big consulting firms • McGrathNicol	• Atlassian • Canva • Google • Facebook • Microsoft • Banks • Big consulting firms • Most companies	• All schools, universities, TAFE • CSIRO • AIMS • DST • QIMR Berghofer
UQ foundation math courses	Certain UQ math courses are recommended to be undertaken by all students, as they provide a good foundation for all job types/careers. These are: MATH1051/71, STAT1201/1301, MATH1061, MATH1052/72, STAT2003, MATH2400/01, MATH2001/2901, STAT2004, MATH2504.									
UQ core math courses	• MATH3204 • STAT3001 • STAT3004 • STAT3006 • STAT3007 • STAT3500	• MATH3204 • STAT3001 • STAT3004 • STAT3006 • STAT3007 • STAT3500	• COSC3000 • STAT3001 • STAT3500	• MATH3090 • MATH4090 • MATH4091 • STAT3004	• MATH3202 • MATH3204 • MATH3205/4202 • MATH3404	• MATH3104 • MATH3070 • SCIE2100 • SCIE3100 • STAT3306	• MATH3101 • MATH3404 • MATH2100 • MATH3102 • MATH3201 • MATH3403	• MATH2301 • MATH3302	• MATH3201	• Research Area and all related foundational second and third year courses
Related UQ math courses that should be considered	• Mathematical analysis (e.g. MATH3402) • Numerical methods (COSC2500/ MATH3201) • Differential geometry (MATH3405) • Machine learning (COMP3702/4702)	• Mathematical analysis (e.g. MATH3402) • Numerical methods (COSC2500/ MATH3201) • Econometrics (ECON2300/3330)	• Machine learning (STAT3006/3007, COMP4702)	• Statistics (e.g. STAT3001) • PDEs (MATH3403)	• Game theory (ECON2070) • Statistics (e.g. STAT3001/3500) • ODEs/PDEs (MATH2100/ 3101/3102/3403)	• Statistics (e.g. STAT3001/3500)	• Natural sciences, physics (e.g. PHYS 1001/1002/ 2020/2055/2100) • Computational physics (PHYS3071)	• Algorithms (COMP3506) • Security (CYBR3000) • Programming (e.g. CSSE1001/2002) • Math structures (MATH3303/3306)	• Discrete mathematics (MATH2302/3301) • Algorithms (COMP3506) • Programming (e.g. CSSE1001/2002)	• Algebra (MATH2301/3303) • Analysis (MATH3401/ 3402/3405/3901) • Differential equations (MATH3101/3403) • Discrete maths (MATH3301/3306)
Internship programs and timings	SMP Summer Industry Experience Program, external programs									Winter Research Scholarship, Summer Research Scholarship, AMSI Vacation Research Scholarship
Relevant UQ career events	Case Comps, Maths Conferences, Hackathons, Datathons, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Maths Conferences, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Case Comps, Maths Conferences, Hackathons, Datathons, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Hackathons, Tradeathons, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Maths Conferences, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Maths Conferences, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Hackathons, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	Hackathons, STEM Careers Fair, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)	AMSIConnect, Vacation Research, Seminars, Summer School, Winter School, Student Society events (MSS, UQ PAIN, UQFINTECH, UQ SASS, UQCS, etc)
Further study at UQ	• Master of Data Science • Master of Business Analytics • Master of Science (Maths) • Master of Science (Statistics) • Doctor of Philosophy	• Master of Data Science • Master of Business Analytics • Master of Applied Econometrics • Master of Science (Statistics) • Doctor of Philosophy	• Master of Data Science • Master of Business Analytics	• Master of Financial Mathematics • Master of Science (Statistics) • Doctor of Philosophy	• Master of Data Science • Master of Business Analytics • Master of Science (Maths) • Doctor of Philosophy	• Master of Quantitative Biology • Master of Biostatistics • Doctor of Philosophy	• Master of Science (Maths) • Doctor of Philosophy	• Master of Cyber Security • Doctor of Philosophy	• Master of Computer Science • Master of Data Science	• Bachelor/Master of Education/Teaching • Master of Science (Maths) • Master of Science (Statistics) • Master of Philosophy • Doctor of Philosophy

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