

Mathematics - careers and course choices

Modern Mathematics has its own intrinsic value and beauty, and is key to solving complex challenges in science, engineering, business and technology.

In UQ's Bachelor of Mathematics, you'll develop the skills to address abstract and real-world problems, and open doors to careers in academia, industry, teaching and government.

On graduation from UQ, you will:

- think independently and show strong personal initiative
- collaborate effectively across diverse and international teams
- understand the interdisciplinary nature and applications of mathematics
- communicate mathematical ideas clearly to a range of audiences
- possess advanced technical and analytical skills that are highly valued by employers.

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.

The top of each column lists a general job type – pick the one that interests you most. You can also see career directions and examples of employers in Queensland. Moving down the column, you'll find the core courses essential for success, followed by related courses you may also find useful.

This guide also outlines relevant majors in the Bachelor of Mathematics* to support your major selection. Below that is information on finding work experience, such as internships and UQ events. Finally, opportunities for further study at UQ are provided if you decide to deepen your knowledge.

This guide covers many careers requiring advanced mathematics but it is not an exhaustive list. To explore the full range of mathematics careers, visit the [AMSI career site](#) or the job opportunities section of the [Australian Mathematical Society](#).

	Job type/career after leaving university									
	 AI scientist, AI engineer 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.	 Dynamical systems modeller conservation, transport, and logistics modelling, computational fluid dynamics, etc.	 Cybersecurity expert applied cryptography, security analysis, etc.	 Computational scientist algorithm design, high performance computing etc.	 Teacher, Researcher all mathematics
Career direction examples	• All industries	• Statistician • Economist • Actuary	• Consulting • Retail • Finance	• Consulting • Finance • Insurance	• Consulting • Mining • Logistics	• Bioinformatics • Genomics • Pharmaceuticals	• Consulting • Engineering • Manufacturing	• All industries	• All industries	• Teaching • Research
Companies offering roles in Queensland (Examples include)	• Mining companies (BHP, Rio Tinto) • Big consulting firms (BCG, McKinsey) • AI startups and scaleups • Technical consulting (Quantum) • Government • Large retailers (Super Retail Group) • Insurers (Suncorp, Compare the Market)	• Technical consulting (Quantum) • Government • Big consulting firms (BCG, McKinsey) • Government (QIC) • Insurers (Suncorp, Compare the Market) • Hospitals	• Biz insights firms • Engineering companies (Synengco) • Biz analyst firms • Big consulting firms (BCG, McKinsey) • Government • Large retailers (Super Retail Group) • Insurers (Suncorp, Compare the Market) • McGrathNicol • Data#3	• Stock Traders • Banks (CBA, NAB) • Super funds (ART) • Insurers (Suncorp, Compare the Market) • Government (QIC)	• Biarri • Deswik • QuintiQ • Mining companies (BHP, Rio Tinto) • Theia	• CSL • QIMR Berghofer • Department of Health • Department of Agriculture and Fisheries	• Bureau of Meteorology • Bitzios Consulting • Department of Agriculture and Fisheries • FE Consultants • Stacey Agnew • The Nature Conservatory, Australia	• Defence • IT auditing • Banks • Big consulting firms • McGrathNicol	• Atlassian • Canva • Google • Meta • Microsoft • Amazon • Banks • Big consulting firms (BCG, McKinsey) • Most companies	• All schools, universities, TAFE • CSIRO • AIMS • DSTG • 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/MATH1081, MATH1052/72, STAT2003, MATH2400/01, MATH2001/2901, STAT2004, MATH2504.									
UQ core math courses	• MATH3204 • STAT3001 • STAT3004 • STAT3006 • STAT3007 • STAT3008 • STAT3500	• MATH3204 • STAT3001 • STAT3004 • STAT3006 • STAT3007 • STAT3500	• COSC3000 • STAT3001 • STAT3500	• MATH3090 • MATH4090 • MATH4091 • STAT3004	• MATH3070 • MATH3202 • MATH3204 • MATH3205 • MATH3404	• MATH3104 • MATH3070 • SCIE2100 • SCIE3100 • STAT3306	• MATH3070 • 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 (e.g., COMP3702/4702, COMP3710)	• 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)	• Algorithm (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)
Relevant majors	• Mathematical Artificial Intelligence • Statistics and Mathematical Data Science	• Statistics and Mathematical Data Science • Applied Mathematics	• Statistics and Mathematical Data Science • Applied Mathematics	• Applied Mathematics • Statistics and Mathematical Data Science	• Optimisation and Operations Research • Statistics and Mathematical Data Science	• Applied Mathematics • Statistics and Mathematical Data Science	• Applied Mathematics • Mathematical Physics	• Pure Mathematics • Mathematical Artificial Intelligence	• Mathematical Artificial Intelligence	• Pure Mathematics • Applied Mathematics • Statistics and Mathematical Data Science
Internship programs and timings	SMP Summer Industry Experience Program, external programs									
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 (Mathematics) • Master of Science (Statistics) • Doctor of Philosophy	• Master of Data Science • Master of Business Analytics • Master of Economics (Applied Econometrics) • Master of Science (Statistics) • Doctor of Philosophy	• Master of Data Science • Doctor of Philosophy	• Master of Financial Mathematics • Master of Science (Statistics) • Doctor of Philosophy	• Master of Data Science • Master of Business Analytics • Master of Science (Mathematics) • Doctor of Philosophy	• Master of Biostatistics • Doctor of Philosophy	• Master of Science (Mathematics) • Doctor of Philosophy	• Master of Cyber Security • Doctor of Philosophy	• Master of Computer Science • Master of Data Science • Doctor of Philosophy	• Bachelor/Master of Education/Teaching • Master of Science (Mathematics) • Master of Science (Statistics) • Master of Philosophy • Doctor of Philosophy

* The Bachelor of Mathematics can also be studied as a four-year vertical dual degree, Bachelor of Mathematics/Master of Data Science. The Bachelor of Science and Bachelor of Advanced Science are not listed, though similar careers are possible with the right major.