Welcome to the Department of Mathematics

Mathematics and Applied Mathematics are powerful and versatile degrees - almost every sphere of knowledge and activity in the modern world relies on mathematics, because it is the language through which nature, technology and reality are described.

The Department of Mathematics is one of the largest and most diverse departments within the University of Auckland, covering both Pure and Applied Mathematics and Mathematics Education. It has an excellent international reputation and offers degrees and diplomas that enjoy widespread recognition from employers in New Zealand and internationally.

You can study Mathematics or Applied Mathematics in combination with a wide range of other subjects, especially in the Faculties of Arts, Science, Engineering and the Business School for the degrees of BA, BCom, BE or BSc.

Graduates of this University will need to apply their skills to solve complex problems in an ever-changing world. Mathematics and Applied Mathematics play fundamental roles in providing the skills and framework needed to tackle such challenges.

Mathematics and Applied Mathematics are also ideal supporting subjects for many other disciplines. Your future prospects and employability in other fields are enhanced by significant mathematical content in your degree. Graduates from the department take up positions in business, industry, planning and environmental organisations, and a wide range of other areas.

BERND KRAUSKOPF
Head of Department

Our department is ranked in the top 100

Mathematics
QS World University Rankings by subject 2016

www.science.auckland.ac.nz/excellence
Bachelor of Science in Applied Mathematics

Applied Mathematics provides you with the skills to develop theory and methods that investigate and explain phenomena in the world around us, including in science, engineering, business and industry.

Mathematics and Applied Mathematics interact with other disciplines and make essential contributions to science, engineering, medicine and commerce, as well as to many important contemporary areas of technology such as communication, linguistics, genetics and climate science.

Wherever problems need to be solved, mathematics has a role to play. In fact, many sciences rely so heavily on mathematics that their most important questions are, fundamentally, mathematical.

3 The average number of years it takes to complete a Bachelor of Science degree

You can choose either a single or double major

Preparation for school leavers

Students will be selected on the basis of their rank score. There are no required subjects for entry into Applied Mathematics, however, it is strongly advised that students take Calculus in school.

It is important that you choose the mathematics courses that are right for you. To help you choose your first mathematics course, visit www.math.auckland.ac.nz/stage1-faq

Complementary majors

The numerical and analytical skills you develop by studying mathematics can be applied across all scientific fields of study, making mathematics the perfect match for all other majors in science.

APPLIED MATHEMATICS +

Computer Science
Information Systems
Logic and Computation
Mathematics
Physics
Statistics

www.science.auckland.ac.nz/doublemajors

For course planning and enrolment, go to www.science.auckland.ac.nz/student-centre
Thinking about postgraduate study options? Visit www.math.auckland.ac.nz/pg
Planning your major in Applied Mathematics

1. Courses in a minimum of three subjects listed in the BSc Schedule.
2. At least 180 points (12 courses) must be above Stage 1.
3. Up to 30 points (2 courses) may be taken from outside the Faculty.
4. 30 points (2 courses) must be taken from the appropriate General Education Schedules for BSc students.
5. At least 75 points must be at Stage III, of which 60 points must be in the majoring subject.

To view regulations for majors, and course descriptions, see www.calendar.auckland.ac.nz

BSc degree requires: 360 points (24 x 15 point courses). Each box represents one 15 point course. It is recommended that students enrol in 8 courses each year.
Undergraduate Mathematics Courses

### Stage I

- MATHS 102: Functioning in Mathematics
- MATHS 108: General Mathematics 1
- MATHS 110: Mathematics for Science
- MATHS 150: Advancing Mathematics 1
- MATHS 162: Computational Mathematics
- MATHS 190/MATHS 190G: Great Ideas Shaping Our World
- SCIGEN 101/101G: Communicating for a Knowledge Society
- MATHS 153: Accelerated Mathematics (Young Scholars Programme)

### Stage II

- MATHS 202: Tutoring in Mathematics
- MATHS 208: General Mathematics 2
- MATHS 250: Advancing Mathematics 2
- MATHS 253: Advancing Mathematics 3
- MATHS 255: Principles of Mathematics
- MATHS 260: Differential Equations
- MATHS 270: Numerical Computation
- COMPSCI 225: Discrete structures in Mathematics and Computer Science

### Stage III

- MATHS 302: Teaching and Learning Mathematics
- MATHS 315: Mathematical Logic
- MATHS 320: Algebraic Structures
- MATHS 326: Combinatorics
- MATHS 328: Algebra and Applications
- MATHS 332: Real Analysis
- MATHS 333: Analysis in Higher Dimensions *(not offered in 2017)*
- MATHS 340: Real and Complex Calculus
- MATHS 361: Partial Differential Equations
- MATHS 362: Methods in Applied Mathematics
- MATHS 363: Advanced Modelling and Computation
- STATS 370: Financial Mathematics

For course descriptions and prerequisite information, go to [www.math.auckland.ac.nz/ugcourses](http://www.math.auckland.ac.nz/ugcourses)
Careers in Mathematics and Applied Mathematics

A good mathematical background enhances and develops your problem-solving skills, comprehension of abstract concepts and analytical and creative thinking. These are valued qualities in technical roles and in positions of leadership and management.

Academia and research
Actuarial and business analysis
Biostatistics and biotechnology
Data science
Government (IRD, Defence, Security Intelligence etc)
Economic analysis
Information systems and technology
Financial services (Banks, Investment Funds, Insurance etc)
Modelling (Engineering, Industry, Logistics, Meteorology and many other areas)
Operations research
Risk management
Software development (Programming, AI, Robotics etc)
Statistical analysis
Sustainability analysis
Teaching
Telecommunications industry

“My background in Applied Maths from the University of Auckland has given me a methodical approach to problem solving that employers really value. In my position at Compac I use the algorithms and code writing skills I developed as a student on a daily basis, and use them to help solve real world problems – something I never knew maths could be used for when I was a teenager.”

Kate O Byrne completed a PhD in Applied Mathematics.

Disclaimer
Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration. All students enrolling at the University of Auckland must consult its official document, the University of Auckland Calendar, to ensure that they are aware of and comply with all regulations, requirements and policies.

Meet John Holt, his background includes a BSc, MSc and PhD in Mathematics.
Helpful information

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Applications close on December 8 for Semester 1 or December 1 for Summer School.

Questions about Mathematics? Email ugadvice@math.auckland.ac.nz