

MATHEMATICS

in the
faculty of
Arts

Mathematics is a powerful and versatile tool for solving practical problems, and is a highly creative field of study, combining logic and precision with intuition and imagination. Mathematicians seek to reveal and explain patterns, and to analyse growth and change.

Mathematics, both as a language and a body of knowledge and technique, has long been recognised as providing the fundamental underpinning of science and technology. Today the influence and applicability of mathematics includes the physical sciences and engineering, medicine, business and finance, the life sciences and the social sciences.

Apart from its wide-ranging applications, mathematics is also studied for the elegance and coherence of its ideas and for the excitement of the intellectual challenge it presents. Many mathematicians work on abstract problems that are independent of any immediate practical application creating new mathematics, building new mathematical structures, and unravelling new mathematical patterns

CAREER OPTIONS

Mathematics Graduates, because of the particular skills they offer, do well in the employment market and, as society becomes increasingly more complex and more technologically oriented, the capacity for clear thinking and the quality of 'numeracy' are in continuing and growing demand. Employers recognise that mathematics graduates have the ability to master difficult ideas and solve challenging problems, and consequently have the capacity and flexibility to learn quickly new techniques and new problem-solving skills.

A wide range of career options is open to mathematics graduates:

- Careers that **require the ability to think logically and quantitatively**, such as accountancy, actuarial work, banking, management services and insurance.
- Careers directly **related to a mathematics qualification**, such as teaching and lecturing, scientific research and development, statistical work and computing.
- Careers that are **open to graduates in any discipline**, such as retail, sales and marketing, administration, media and the civil service.

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BA DEGREES

The Mathematics Department offers two distinct courses in the Arts Faculty:

MATHEMATICAL STUDIES

a broadly based course in the theory and practice of mathematics, specially designed for students in the Arts Faculty, and emphasising the links between mathematics and the humanities

MATHEMATICS

a more concentrated mathematics course involving a deeper study of the concepts and techniques of modern and classical mathematics

Both subjects may be taken as three-year joint honours degrees with a range of other subjects in the Arts Faculty.

A fundamental objective in both mathematics courses is to provide the stimulus and the environment for you to sharpen your problem-solving skills and to develop your capacity for analytical and logical thinking.

The Mathematics Department is committed to providing an effective teaching service to students at all levels. Courses are taught through a combination of lectures and problem-solving tutorials.

Degree course in

MATHEMATICAL STUDIES

YEAR ONE

The first year of Mathematical Studies consists of three courses in calculus, linear algebra and statistics. These are core subjects that underpin the rest of the degree, and provide a range of mathematical tools that are useful for work in the humanities. A D3 grade in Higher Level Leaving Certificate in Mathematics is a suitable entry qualification for the degree. If you attain the pass mark (40%) in the first year examinations in Mathematical Studies you will be eligible to proceed to the second year of the programme.

YEARS TWO & THREE

In the second and third years there are a wide range of modules to choose from, ranging from pure mathematical areas such as discrete mathematics, geometry and algebra, to more applied subjects such as mechanics, mathematical modelling, statistical methods and data analysis that combine well with other quantitative disciplines such as Economics and Geography.

Students taking the Joint Honours option take 30 credits of Mathematical Studies in each of second and third years, whereas those who choose to take Mathematical Studies as a minor subject will take 20 credits of this subject in each of second and third years, and 40 credits in their other subject. Mathematical Studies is also available within the BEd Sport Science and Physical Education degree.

A BA degree that includes Mathematical Studies is an excellent qualification for a wide range of careers requiring quantitative skills. Students who master appropriate modules in this degree will have a suitable preparation for a career in teaching at all levels of the school curriculum in mathematics.

Degree course in

MATHEMATICS

YEAR ONE

In the first year of the honours programme in Mathematics you will take one course that covers calculus and analysis, introduces abstract algebra (functions, relations and groups), and takes in linear algebra and geometry. To be eligible to proceed to second year, you must attain honours standard (at least 55%) in the first year examinations in Mathematics. A student who does not reach this standard, but who passes the examination, may enter the Second Year of the Mathematical Studies programme.

YEARS TWO & THREE

After first year you will take courses from such core areas of mathematics as Analysis (real and complex), Algebra (linear algebra, rings, and fields), Differential Equations, Number Theory, Topology and Differential Geometry.

These courses will introduce you to the fundamental concepts and techniques of modern and classical mathematics and build bridges to some of the many areas in which mathematics is applied today—areas such as chaos theory, fractals, coding theory and computing. You will have access to a departmental computer laboratory.

Students taking the Joint Honours option take 30 credits of Mathematics in each of second and third years. It is also possible to take 20 credits of Mathematics in combination with Applied Mathematics, Economics or Philosophy.

A BA degree that includes Mathematics is an excellent qualification for a wide range of careers, in particular teaching, banking, research, academia.