

BSc in Mathematics (MATH)

Mathematics permeates almost every discipline of science and technology. It is not only a tool for understanding the abstract models of real-world phenomena while solving practical problems, but it is also the language of commerce, engineering and other sciences such as biology, physics and computing. The Department of Mathematics at HKUST offers three major programs at the undergraduate level:

- BSc in Mathematics (MATH)
- BSc in Data Science and Technology (DSCT) * jointly offered by the School of Science and the School of Engineering
- BSc in Mathematics and Economics (MAEC) * jointly offered by the School of Science and the School of Business and Management



Program Highlights

The BSc in Mathematics (MATH) program is unique among all universities in the territory. It offers seven tracks:

- Applied Mathematics Track
- Computer Science Track
- Financial and Actuarial Mathematics Track
- General Mathematics Track
- Pure Mathematics Track
- Pure Mathematics (Advanced) Track*
- Statistics Track

* The Pure Mathematics (Advanced) Track is an advanced version of the Pure Mathematics track designed for mathematically talented students who aspire to pursue postgraduate studies.

Extended Major Options

The MATH students can opt for an Extended Major in Artificial Intelligence (AI) or Digital Media and Creative Arts (DMCA). Extended Major is not a standalone major, but is adhered to a certain majors as expanded choices, enabling students to keep abreast of emerging technology and innovation that are shaping our society in a multi-faceted way.

On top of expertise in mathematics, students with an Extended Major will acquire multidimensional visions and knowledge of emerging technologies (AI or DMCA), and can apply innovative technological skills to solve real-world problems in the area of their expertise. Upon fulfilment of the curriculum requirement, the students will be awarded one of the following degrees:

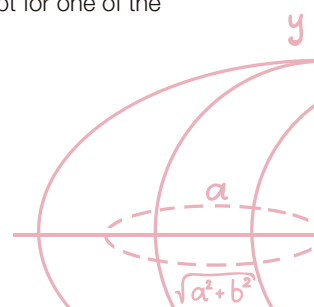
- BSc in Mathematics with an Extended Major in Artificial Intelligence
- BSc in Mathematics with an Extended Major in Digital Media and Creative Arts

Study Pathway

In Year 1, students will enroll in science foundation courses according to their interests and background, as well as language and other courses in other areas to fulfill the University Common Core requirement.

After completing the major pre-requisite courses, students can declare MATH as their major program at the end of Year 1. After declaring MATH as major at the end of the first year, students will be notified of the track selection procedure. In Year 2-4, students will study a sequence of courses according to the track chosen / assigned, in addition to MATH required courses on Calculus, Linear Algebra, Analysis, and a Capstone Project.

Students who are competent and interested in research career can also opt for the International Research Enrichment (IRE) Track, which offers outstanding students the additional resources and opportunities to nurture their research abilities. Students who are interested in the emerging technology and innovation can opt for one of the Extended Major options.



Research Excellence

Research Foci

- Algebra and Number Theory
- Geometry and Topology
- Analysis and Differential Equations
- Applied and Computational Mathematics
- Financial Mathematics
- Probability and Statistics
- Data Science

The Department utilizes a range of up-to-date facilities and equipment for teaching and research purposes. Besides a laboratory with 40 high-end desktop PCs, there is also a High Performance Computing laboratory equipped with 200 powerful CPU- & GPU-based computer servers having 250 TFLOPS processing power and 1.5 PB storage capacity. Moreover, the NVIDIA DGX SuperPOD AI Supercomputer in the Hong Kong campus and the Tianhe2 Supercomputer in the Guangzhou Fok Ying Tung Research Institute are also available. By making use of these powerful computing facilities, our faculty and students are able to solve computationally intensive problems in their innovative research projects so that they can stay at the forefront of their research fields.

Career Prospects

About a quarter of MATH graduates pursue further studies, with a majority of them enrolled in well-known institutions abroad. Another quarter of MATH graduates chooses careers in teaching. The remaining graduates are employed in various business and service sectors, including but not limited to administration and management, computer programming, data analysis, accounting, insurance, marketing, sales, purchasing, banking and finance, and academia.

Enrichment Activities



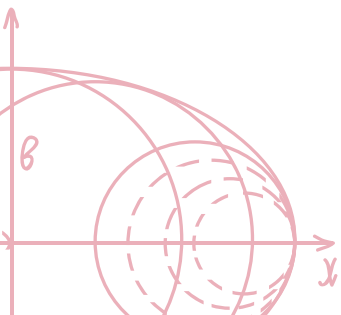
MATH Competition Award Ceremony



Career Training Alumni Sharing Session



The Epsilon Fund Award Ceremony





Words from MATH Graduates

I've had many opportunities ever since HKUST, but one highlight would be the exchange program to the University of Waterloo in Canada. Apart from this, I have joined research projects supervised by computer science and math professors and worked alongside postgraduate students. As a sweet bonus, I got the internship opportunities in Indonesia and Hong Kong. Overall, the MATH program and the University have given me the tools required for my early career, and I only need to utilize them!

Angeline CANDICE

BSc in Mathematics (Computer Science Track), Class of 2023



Working as a consultant to diagnose organization problems and devise solutions for our clients might not seem to have direct relationship with math at first sight. However, math forms the backbone of how we approach things here – from dissecting a problem from different angles, drawing findings from models and analysis, to supporting with multi-dimensional solutions. Most importantly, the determination of a breakthrough mindset where we keep challenging ourselves and generating new ideas are originated in math, cultivated through every course and learning experience at HKUST.

Manvela LUI

BSc in Mathematics (Applied Mathematics Track), Class of 2016

Admissions Requirements

Prospective students may apply for the *Science (Group A) program (JS5102)* through direct choice in the JUPAS / Non-JUPAS admissions scheme. Students who want to opt for an Extended Major may also apply for the *Science (Group A) with an Extended Major in Artificial Intelligence program (JS5181)*.

Upon completion of the major pre-requisite courses at the end of the first year, students can declare major in Mathematics.

The pre-requisite courses include:

- MATH 1013 Calculus I / MATH 1023 Honors Calculus I, and
- MATH 1014 Calculus II / MATH 1024 Honors Calculus II

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MATH website



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