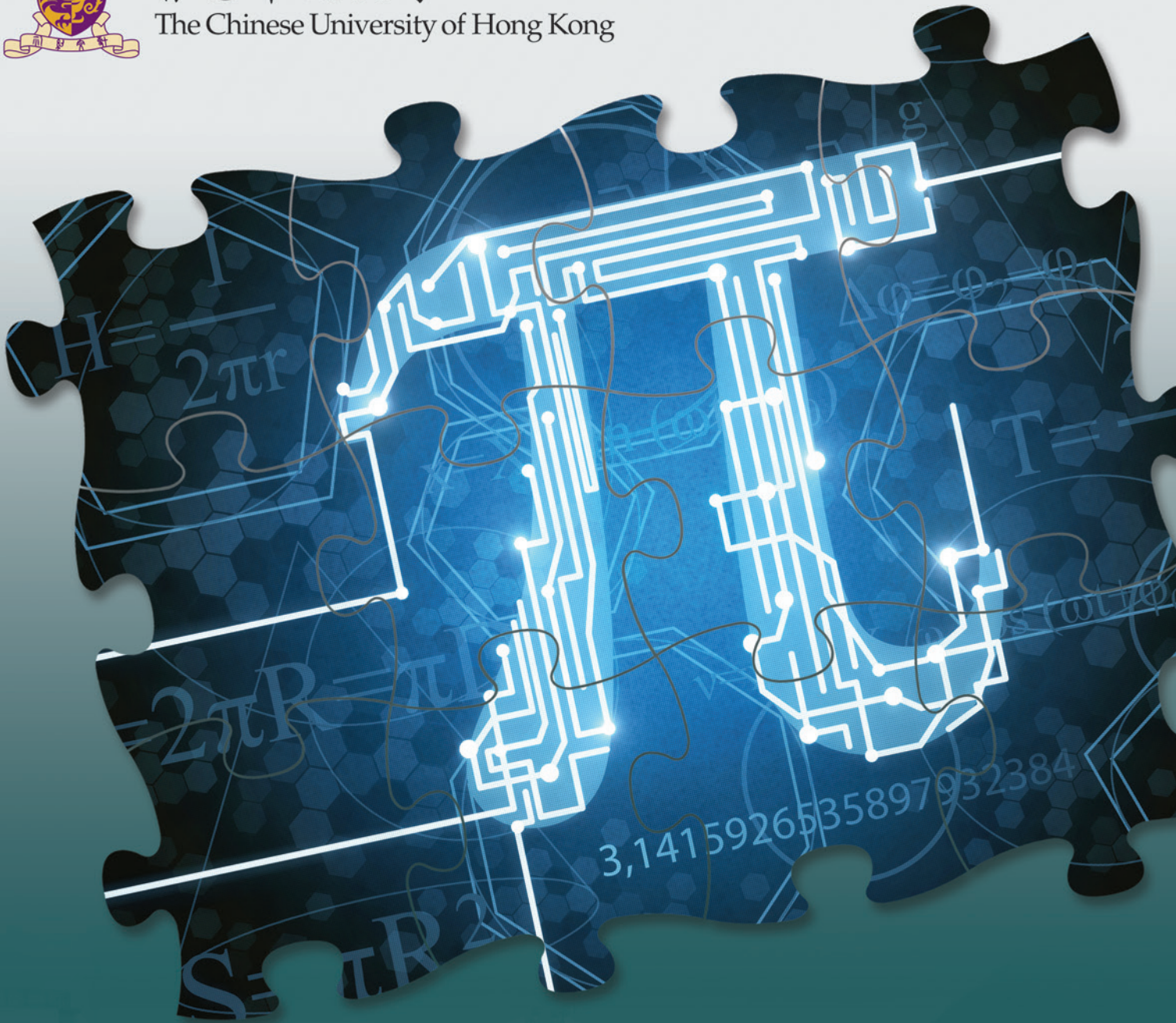




香港中文大學
The Chinese University of Hong Kong



DEPARTMENT OF
MATHEMATICS
數學系

FACULTY OF SCIENCE | 理學院

DEPARTMENT OF MATHEMATICS



MISSION

The Department continues its great tradition in nurturing young talents and enhancing their ability to serve the society; it also strives to be an international research center of mathematical sciences and applications.

INTRODUCTION

You may already know that mathematics is the foundation of physics, chemistry, engineering, statistics, and computer science. But you may not be aware that mathematics has been expanding rapidly into many other areas which were not so relevant to mathematics in the past. For example, the eye-catching fractal pictures are by-products of some mathematical modeling of turbulence, climate, landscape and population growth; the kiddy game of knots was developed into a theory in algebraic topology which can be used to classify DNA; the familiar trigonometric functions are modified to be applied in communication and image processing; probability theory and differential equations are used in world wide to compute the futures and option prices in the financial market; a new area called financial mathematics is created. Indeed, in the last two decades the brainpower of the pioneer researchers and the computer horsepower has brought mathematics to undergo an unprecedented growth. Mathematics is moving quickly from a pure science into all branches of applicable sciences.

UNDERGRADUATE PROGRAMMES

The Mathematics Department offers both major and minor programmes plus a number of general education and services courses. Generally speaking, our Department aims to provide high-quality mathematical trainings for students with various interests and orientations. Our programmes are particularly suitable for those who intend to acquire higher knowledge and ascend to an advanced position in their career. Students can study mathematics in our Department through the Mathematics Programme as well as the Mathematics and Information Engineering Programme. Students can enter the Mathematics Programme by selecting either the “Enrichment Mathematics” or “Broad-based Admission Scheme”. The studies of the first foundation year of all the entrances are the same.

“Enrichment Mathematics” is directly linked to the **Enrichment Stream** of the Mathematics Programme. This stream is specially meant for students who wish to delve deeper into mathematical theories or are interested in mathematical research. Also, it is suitable for students intending to proceed on higher studies and it helps students to consolidate mathematics foundation for further academic research. After finishing the study of the first foundation year in mathematics, students with satisfactory performance may switch to “Mathematics and Information Engineering”.

“Broad-based Admission Scheme under the Faculty of Science” allows students decide their major study later. After completing the first foundation year, students may select Mathematics as major. It is a broad and holistic programme; and it also includes choices for the **Enrichment Stream** and the **CAM Stream**. The CAM stream increases the breadth of knowledge and ability of application for students.

“Mathematics and Information Engineering” an interdisciplinary single-degree programme offered by the Department of Information Engineering and Department of Mathematics. Students can study this programme through one of the following ways.

- (1) After applied and finished the first year of “Enrichment Mathematics”, switch to “Mathematics and Information Engineering” from the second undergraduate year.
- (2) After applied and finished the first year of “Broad-based Admission Scheme under the Faculty of Engineering”, choose “Mathematics and Information Engineering” as major from the second undergraduate year.

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Definition 2.1.1.

real-valued function. We say

provided that

$$\forall \epsilon > 0 \exists \delta > 0 \forall x \in U :$$

If $f : U \rightarrow \mathbb{R}$ is continuous.

2.1.2. In the above

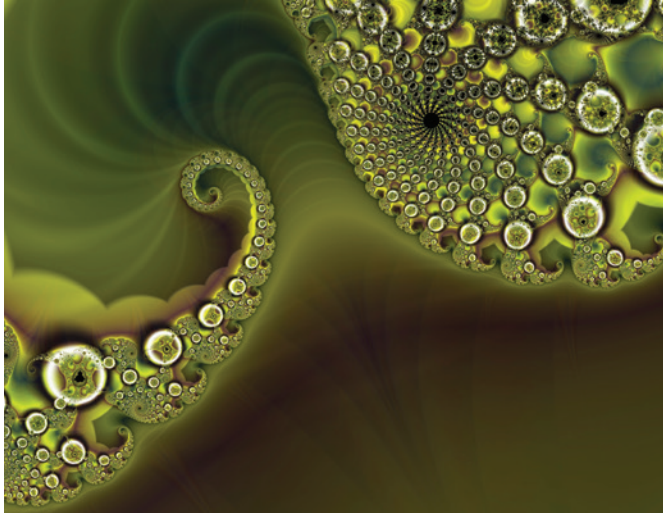
COURSE WORK FOR B.SC. IN MATHEMATICS

The Mathematics Department offers a wide range of courses on both pure and applied mathematics. Students can choose to take elective courses according to their interest and stream orientation. In the area of pure mathematics, topics include number theory, abstract algebra, real and complex analysis, functional analysis, differential geometry, topology, and differential equations. In the area of applied mathematics, topics covered include probability, financial mathematics, linear programming, operations research and logistics, optimization theory, game theory, coding theory and cryptography, numerical analysis, and chaos. Competent undergraduates may take graduate course(s) in mathematics.

Our curriculum is highly flexible. The students have a high degree of freedom in preparing for their favourite minor programmes. The most popular ones are computer-related programmes, business administration, and economics. There are plenty of summer training opportunities for our students. Apart from lectures, our undergraduates can also enrich their learning experience in manifold activities in our COSINE (China and Overseas Summer Internship and Exchange) programme. These include short-term research programmes, exchange programmes and internship trainings in Hong Kong, mainland China and overseas, with the support from some companies, organizations, and schools.

CAREER PROSPECTS

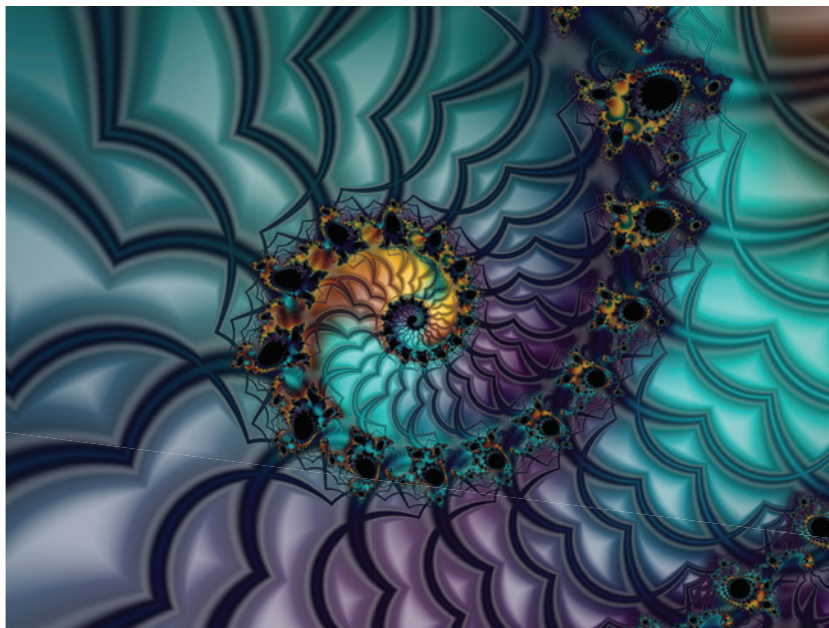
The career opportunities of a mathematics graduate are very diverse. We have specially designed courses channeled into new areas and our training emphasizes on basic analytical skills. With a suitable minor or option, their skills can be used in different careers like banking, commerce, tele-communication, insurance, logistics planning, data analysis and computer science. The traditional secondary school teaching will always be in demand. If you are more ambitious for further studies, you may go to Graduate School where you will have broad choices from classical mathematics to the latest new areas. Also, it is highly possible for you to go into some more applied areas like finance or engineering because you will have learned the needed foundation in our programmes.



We also have a summer internship programme that aims to provide the students a head start in their career development. The potential employers could have a close look at the students and assess their quality without having to make any long-term commitment. In this way, both potential employers and students benefit from this programme. The internship programme encompasses commercial, industrial, and the education sectors.

OUTLOOK

The Department is committed to continually upgrade its standard of teaching and research. It endeavors to further enhance its status as an international research center in mathematical sciences.



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