Bachelor of Science in COMPUTING MATHEMATICS
計算數學理學士

The Department of Mathematics at City University is among the top in the region and has earned remarkable recognition internationally. This is achieved through not only attracting high caliber scholars around the world but also producing outstanding graduates from its full-fledged BSc in Computing Mathematics programme.

The constant development of new fascinating applications of Mathematics, so far thought to be completely out of reach of mathematical reasoning, combined with the ever-increasing performances of computers, make studying the Mathematics of Computing more exciting and gratifying than ever!

The Department specialises in applied and computational mathematics. Undergraduate teaching is backed up by extensive research on a wide range of topics. This places us in close contact with many modern uses of mathematics. Our programme is both relevant and up-to-date.

We are proud of our academic staff, many of whom are internationally renowned scholars. For example, Professor Stephen Smale, member of the U.S. National Academy of Sciences, and winner of a Fields Medal (which is the highest achievable honour in mathematics, comparable to a Nobel Prize) and a Wolf Prize, was Distinguished University Professor in the Mathematics Department from 1995 to 2001. Professor Philippe G. Ciarlet, member of the French Academy of Sciences and of seven other academies, was Chair Professor of the Department until August 2011. He joined the office of the College of Science and Engineering in September 2011 as University Distinguished Professor. Professor Ciarlet has received numerous distinctions, among which a Grand Prize of the French Academy of Sciences and an Alexander von Humboldt Research Award.

Professor Smale and Professor Ciarlet are currently Honorary & Emeritus Professors in the Department.

Mathematics is not only an exciting subject in itself, it also has many far-reaching applications in all branches of science and technology. It is also at the heart of numerous modern commercial and industrial activities. During the past decades, mathematics has developed beyond belief. New theories such as chaos, solitons, fractals and wavelets have been introduced. New applications, such as option pricing in finance, X-ray tomography, coding, image and video compression, soliton optical communication, and nuclear waste disposal, are constantly being discovered. Mathematics is an ever-expanding subject. The next decades promise to be as exciting and full of new innovations as the last ones!
**MAJOR AIMS**

The Bachelor of Science in Computing Mathematics programme was introduced in 1994. This major is unique in Hong Kong. It emphasizes the balance between theories and their applications to practical problems, with a special focus on applied mathematics linked to computational aspects.

The major aims at equipping students and producing graduates with a strong background in:

- data analysis
- mathematical modelling
- scientific computing
- technical computer software

Students are trained to think quantitatively and analyse problems critically.

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**EXCHANGE OPPORTUNITIES**

The Department of Mathematics strongly supports and encourages students to join outbound exchange programmes to widen their horizon and enrich learning experiences. Students can participate in the student exchange programmes from their second to fourth year of studies.

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**University of Wisconsin–Madison, USA**

“It was really a fantastic experience for me to go abroad and be an exchange student…. the academic atmosphere made me find the motivation for learning…. It was the first time that I began to understand the true meaning of cultural blending, to respect their traditions, to learn their manners behaving in a way different from that we got used to, to exchange stories in each others’ own countries and see how diversified this world is.”

*Miss Biyue HUANG/BSCM*

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**University of Mannheim, Germany**

“It was a marvelous journey of self-discovery to support personal growth and a straight forward path to become familiar with diverse cultures. I had come out of my shell speaking in German every day.

Language barrier is not a serious problem because the majority of workers are able to speak in English…. It is also highly recommended to study in Mannheim for competitive students who like challenges in an international environment because most of the classmates are the elite around the world. The fantastic teaching atmosphere provides more room for students to think outside the box. Meanwhile, classmates you know here might be your business partners in the future career.”

*Mr Lucas S K MAK/BSCM*
Students are required to complete 121 credit units in different courses. Cores cover the followings:

- Analysis
- Applied Analysis
- Applied Statistics
- Complex Analysis
- Computing Mathematics Laboratory
- Data Structures and Data Management
- Discrete Mathematics
- Elementary Numerical Methods

Students also need to satisfy the university requirements in language and Chinese civilization. The curriculum is very flexible. The university requirement for gateway education and free electives give students opportunities to develop their own interests in other subjects.

Korea Advanced Institute of Science and Technology, Korea

"Exchange is not a year in your life, but a life in one year." I didn’t quite get the meaning of this sentence until I joined the exchange program myself. During this four-month exchange life in South Korea, I have experienced much more than I could ever expect…. I am no longer a stranger as I first arrived. I have adapted to the new life, become good friends with those people and I can even communicate with local people in Korean... Thanks to the exchange program, I have become more independent and mature, developed intercultural knowledge, and more importantly had friends all around the world. I recommend everyone to join the exchange program and I am sure this will become a treasure in your life."

Miss Diqian HU/BSCM

University of Toronto, Canada

"...it was a really great experience for learning about the teaching system abroad and practicing English. It really broadened my vision and gave me an opportunity to know another world. It also made me think about the teaching and learning environment in Canada and let me think about my future in choice of graduate school. I appreciate the chance to explore the world in my youth as Ostrovsky said, youth should be “full of power, full of expectation for voluntary, full of knowledge and the aspirations of the struggle, filled with hope and confidence”.

Miss Siyu ZHANG/BSCM
**ENTRANCE REQUIREMENTS**

Applicants with Hong Kong Diploma of Secondary Education (HKDSE) (for 2023 Entry)

In addition to the General Entrance Requirements of the University, candidates must satisfy the following programme-specific entrance requirements:

- Level 3 or above in English Language, Chinese Language and Mathematics Compulsory Part;
- Level 2 or above in Liberal Studies; AND
- Elective 1
  - Level 3 or above in one elective subject from:
    - Biology
    - Business, Accounting and Financial Studies (Accounting or Business Management)
    - Chemistry
    - Design and Applied Technology
    - Information and Communication Technology
    - Mathematics Extended Part (Modules 1 or 2)
    - Physics
    - Science (Combined Science or Integrated Science)
- Elective 2
  - Level 3 in any elective subjects (excluding Applied Learning subjects)

**CAREER PROSPECTS / FURTHER STUDIES**

As graduates of our programme, they are in hot demand in a number of fields, including data analysis, business intelligence analysis, mathematical modelling, quantitative business planning, scientific programming. There is also a demand for mathematics teachers in Hong Kong secondary schools. In recent years, about 10% of our graduates found jobs in intelligent business units of major banks in Hong Kong.

Apart from joining the workforce, some of our graduates further their studies locally or in overseas universities, such as University of Cambridge and University of Oxford in UK, University of Toronto in Canada, and Harvard University, New York University, University of Chicago and Universities of California in the US.

**INTERNSHIP OPPORTUNITIES**

The major provides internship opportunities for our students to work in local firms and overseas universities during the summer of their third-year studies. Students may join the Industrial Attachment Scheme (IAS) to work in local firms. For the Overseas Internship Scheme (OIS), students take part in research projects conducted in overseas universities.

**ENQUIRIES**

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Website: http://www6.cityu.edu.hk/ma/ug/bscm.htm
Why Should You Study this Programme

There is an increasing number of legal tasks in which a detailed knowledge of mathematics is a significant asset to lawyers. The law-math double degree programme therefore fills an important market need in the legal profession.

The training provided by this double degree programme will bring additional mathematical knowledge to law students and equip them with critical skills in areas such as probability and statistics, quantitative analysis and formal logic that are becoming increasingly important in the legal world. The mathematical and computational skills that the graduates acquire in this double degree will give them an advantage in several legal fields.

Professional Recognition

The law component of this double degree covers the required legal units and entitles graduates who wish to practice law in Hong Kong to apply for a position in the Postgraduate Certificate in Laws (PCLL) programme which we offer at City University.
Programme Structure
Students are required to complete 153 credit units:

<table>
<thead>
<tr>
<th>Credit Units</th>
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<tbody>
<tr>
<td>1. University English</td>
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<tr>
<td>2. University Chinese or Chinese Civilization</td>
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<tr>
<td>3. University (GE) distributional requirement</td>
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<tr>
<td>4. CSCI: MA1300 + MA1301 + CS1302</td>
</tr>
<tr>
<td>5. CSCI: PHY1201/ PHY1101/ CHEM1101/ CHEM1300/ CHEM1200</td>
</tr>
<tr>
<td>6. MA required courses</td>
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<tr>
<td>7. MA elective courses</td>
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<tr>
<td>8. LLB required courses</td>
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<tr>
<td>9. Four Postgraduate Certificate in Laws (PCLL) pre-requisites as electives for entering the PCLL programme</td>
</tr>
<tr>
<td>10. Internship/ Consultancy Project/ Research Project</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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Entrance Requirements

For JUPAS Applicants

Applicants with Hong Kong Diploma of Secondary Education (HKDSE)

In addition to the General Entrance Requirements of the University, candidates must satisfy the following programme-specific entrance requirements:

- Level 5 or above in English Language;
- Level 3 or above in Chinese Language and Mathematics Compulsory Part;
- Level 2 or above in Liberal Studies; AND
- Elective 1
  - Level 3 or above in one elective subject from: Mathematics Extended Modules 1 or 2; Physics; Chemistry; and Business, Accounting and Financial Studies (Accounting or Business Management)
- Elective 2
  - Level 3 in any elective subjects (excluding Applied Learning subjects)

For Local Non-JUPAS Applicants

Applicants to be admitted to the double degree programme via the non-JUPAS route must satisfy, via either the following channels or other equivalent qualifications, the subject-specific requirements for both English and Mathematics stated below.

<table>
<thead>
<tr>
<th>English Proficiency Test / Public Examination</th>
<th>Minimum Requirement</th>
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<tbody>
<tr>
<td>IELTS</td>
<td>Overall band score of 7</td>
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<tr>
<td>TOEFL</td>
<td>Total score of 100 in the Internet-based test (iBT) or total score of 600 in the paper-based test (PBT)</td>
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<tr>
<td>IB English (SL/ HL)</td>
<td>Score of 6</td>
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<tr>
<td>IGCSE English</td>
<td>First Language: Grade B / Grade 6</td>
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<tr>
<td></td>
<td>Second Language: Grade A / Grade 7</td>
</tr>
<tr>
<td>HKALE</td>
<td>Grade C in AS-level Use of English</td>
</tr>
<tr>
<td>HKDSE</td>
<td>Level 5 in English Language</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mathematics Public Examination</th>
<th>Minimum Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB Diploma</td>
<td>HL Math: 4</td>
</tr>
<tr>
<td>GCEAL</td>
<td>Further Math: D</td>
</tr>
<tr>
<td>SAT</td>
<td>Math: 600</td>
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<tr>
<td>AP</td>
<td>Calculus BC: 3</td>
</tr>
<tr>
<td>HKDSE</td>
<td>Mathematics: Level 3</td>
</tr>
</tbody>
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Enquiries

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