Master of Science in Financial Technology

Unchaining the Potential of FinTech
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About the Schools

**School of Business and Management**

Established in 1991, the School of Business and Management (SBM) at the Hong Kong University of Science and Technology (HKUST) is young, dynamic, and well respected for the quality of its programs and the impact of its research. We are the first business school in the region to be accredited by both the U.S.-based Association to Advance Collegiate Schools of Business (AACSB) and the European Quality Improvement System (EQUIS). SBM is recognized as “Asia’s youngest but most respected business school” (Financial Times), and our degrees are recognized worldwide. The joint EMBA program with the Kellogg School of Management at Northwestern University was ranked No. 1 in the world in 2018, and the MBA program was ranked No. 1 in Asia in 2016.

**School of Engineering**

The School of Engineering (SENG) is the largest of the five Schools within HKUST, with almost 40% of the University’s student body. SENG has a strong international reputation and consistently ranks high among the major engineering schools around the world. HKUST was ranked No. 17 in the QS World University Rankings in Engineering and Technology in 2018. The School’s research excellence is also globally recognized. Over the past decades, our faculty members have made significant discoveries in cutting-edge research and received major international honors. These achievements have made important contributions to the social and economic development of Hong Kong and its transition to a knowledge-based society.

**School of Science**

The School of Science (SSCI) comprises five academic units, covering Life Science, Chemistry, Mathematics, Physics, and Ocean Science. The School is committed to providing students with a high-quality, balanced education in an intellectually stimulating environment. To enhance students’ university experience, the School continues to improve the curriculum by making it more diverse, interdisciplinary, and inquiry-driven. SSCI has recruited numerous outstanding faculty members, many of whom are leaders in their research fields and have attained international stature because of their scientific contributions. With their different backgrounds and research interests, the faculty members provide diverse, interdisciplinary perspectives on the fundamental questions in science. With a strong commitment to teaching and research, our faculty instills in students the importance of scientific rigor and ethics, while inspiring and encouraging them to achieve their full potential.
Combining novel technologies, rigorous analytical skills and methodologies, and domain knowledge in finance and business, Fintech aims to transform work and improve the variety and quality of financial services. Various novel Fintech applications and services have appeared in the global marketplace in recent years, and the market needs well-educated and informed talents to support and drive continuous Fintech innovation.

The MSc FinTech program (MScFinTech) nurtures competent knowledge workers in Fintech. Drawing on the strengths of the School of Business and Management (SBM), School of Engineering (SENG), and School of Science (SSCI) at HKUST, the program provides a truly interdisciplinary educational experience for students. We offer a variety of courses from foundational mathematics and analytical tools to advanced applications such as artificial intelligence, blockchain, and Fintech regulation and compliance. Our broad range of courses and complementary extra-curricular activities ensure that students are exposed to broad Fintech topics and, most importantly, new ideas, with sufficient depth of knowledge to appreciate, assess, and extend these timely Fintech developments.

Join us and be part of our journey to transform the global Fintech landscape. I am sure our program will be instrumental to your future FinTech leadership!
Program Design

FinTech is an emerging but important area that has been developing rapidly in recent years. The MScFinTech program at HKUST is designed for talents and working professionals who want to combine technical and financial knowledge to generate innovative solutions that meet the challenges of this emerging field.

In view of the multi-disciplinary nature of FinTech, the MScFinTech program, jointly run by the School of Business and Management, School of Engineering, and School of Science, draws expertise from timely areas such as information technology, blockchain, data science, machine learning, and decision analytics.

The program provides students with fundamental knowledge and important skills relating to popular financial technologies and their engineering and financial principles, thereby enhancing their market competitiveness in the booming FinTech field.

Our graduates are able to analyze the engineering mechanisms and financial principles of new and emerging financial technologies, and to formulate and solve FinTech-related problems using practical means supported by the latest engineering methodologies and quantitative techniques.
## Program Schedule

The MScFinTech program is offered in one-year full-time and two-year part-time study modes. Both full-time and part-time students are required to complete a total of 30 credits\(^{\#}\) in core courses and electives.

### Full-time Sample Schedule [One-year]

<table>
<thead>
<tr>
<th>Fall Term (Sep – Dec)</th>
<th>Spring Term (Feb – May)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Courses</strong></td>
<td><strong>Electives</strong></td>
</tr>
<tr>
<td>[8 courses, 16 credits]</td>
<td>[a selection of 14 credits]</td>
</tr>
<tr>
<td>• AI for FinTech</td>
<td>• Cryptocurrency, Blockchain, and Their Business Applications (2 credits)</td>
</tr>
<tr>
<td>(2 credits)</td>
<td>• Economics of Financial Technology (2 credits)</td>
</tr>
<tr>
<td>• Blockchain</td>
<td>• Entrepreneurship and Innovation in FinTech (2 credits)</td>
</tr>
<tr>
<td>(2 credits)</td>
<td>• FinTech and Big Data Financial Analytics (2 credits)</td>
</tr>
<tr>
<td>• Corporate Finance</td>
<td>• FinTech: The Future of the Financial Industry (2 credits)</td>
</tr>
<tr>
<td>(2 credits)</td>
<td>• Portfolio Management with Fintech Applications (2 credits)</td>
</tr>
<tr>
<td>• Data Analysis</td>
<td>• Statistics for Financial Analysis (2 credits)</td>
</tr>
<tr>
<td>(2 credits)</td>
<td></td>
</tr>
<tr>
<td>• Financial Data Mining</td>
<td><strong>SBM electives</strong></td>
</tr>
<tr>
<td>(2 credits)</td>
<td>• Decision Analytics for FinTech (3 credits)</td>
</tr>
<tr>
<td>• FinTech Regulations and Compliance</td>
<td>• Optimization in FinTech (3 credits)</td>
</tr>
<tr>
<td>(2 credits)</td>
<td>• Technology and Analytics of Alternative Finance (3 credits)</td>
</tr>
<tr>
<td>• Foundations of FinTech</td>
<td></td>
</tr>
<tr>
<td>(2 credits)</td>
<td><strong>SENG</strong></td>
</tr>
<tr>
<td>• Investment Analysis</td>
<td>• Decision Analytics for FinTech (3 credits)</td>
</tr>
<tr>
<td>(2 credits)</td>
<td>• Optimization in FinTech (3 credits)</td>
</tr>
<tr>
<td></td>
<td>• Technology and Analytics of Alternative Finance (3 credits)</td>
</tr>
<tr>
<td><strong>Required Course</strong></td>
<td></td>
</tr>
<tr>
<td>[2 credits]</td>
<td><strong>SSCI</strong></td>
</tr>
<tr>
<td>• Mathematical Foundation of FinTech       (2 credits)#</td>
<td>• Statistical Machine Learning (3 credits)</td>
</tr>
<tr>
<td></td>
<td>• Statistical Methods in Finance (3 credits)</td>
</tr>
</tbody>
</table>

* The electives offered in a particular year will be announced at the beginning of each academic year. Students have to take at least one elective course from each of SBM, SENG and SSCI. The offering of elective courses is subject to availability.

# Subject to the decision of the Program Director, promising students who do not have a strong mathematics background may be required to take the required course - Mathematical Foundation of FinTech (2 credits) on top of the graduation requirement of 30 credits.
Part-time Sample Schedule [Two-year]

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall (Sep – Dec); Spring (Feb – May)</td>
<td>Core Courses (8 courses, 16 credits)</td>
</tr>
</tbody>
</table>

**Year 1**

- Core & Electives* Courses  
- Required Courses

**Year 2**

- Core & Electives* Courses
Curriculum

Core Courses (8 courses, 16 credits)

AI for FinTech

This course covers the basic theories of artificial intelligence and machine learning, and their applications to FinTech. Topics include natural language understanding and sentiment analysis using various deep learning architectures. The course also covers basic natural language processing methods for applications such as event and anomaly, fraud, and fake news detection. The course also relates sentiment and affect analysis to stock market trading, market monitoring, and compliance and regulatory-related adverse events.

Corporate Finance

This course covers the valuation of cash flow streams (PV of cash flow streams, annuities, and perpetuities), valuation of bonds, valuation of stocks using the dividend discount model, capital budgeting decisions (NPV, IRR, payback), capital structure, limits on the use of debt (trade-off models), estimation of the cost of debt and equity, WACC, and terminal value.

Blockchain

This course introduces the basic concepts and technologies of blockchain from an engineering perspective, such as the Bitcoin architecture, consensus protocol of Bitcoin, proof of work, Ethereum, Hyperledger, smart contracts, and the blockchain applications. The course also covers the limitations of and possible improvements to the blockchain system.

Data Analysis

This course covers the basic and advanced statistical approaches to data analysis and the application of these techniques in analyzing financial data with statistical packages, such as Python and R. The key topics are reading and describing data, categorical data, time series data, correlation, nonparametric comparisons, ANOVA, multiple regressions, general linear models, and quantile regression models.

Sample Electives (a selection of 14 credits)

Cryptocurrency, Blockchain, and Their Business Applications

This course examines cryptocurrencies (including Bitcoin, Ethereum, and others), blockchain (the technology behind the meteoric rise of cryptocurrencies), and the multidimensional business applications of blockchain technology. The course provides a basic set of skills to understand the hype about cryptocurrencies, and more importantly, their underlying technology, and to envision a future of blockchain with or without cryptocurrencies.

Economics of Financial Technology

This course focuses on the use of economic concepts to analyze the macroeconomic implications of financial technologies, and addresses the policy implications of FinTech in relation to financial stability, central banking, and monetary policy. The aim is to highlight the importance of formulating appropriate policies to foster the healthy development of the FinTech sector while ensuring economic stability.
MSc in Financial Technology

Financial Data Mining
In this course, students first learn the basic concepts and techniques of data mining, including data preprocessing, data cleaning, clustering, classification, and outlier detection. The students then learn how to apply these techniques to financial data, such as via sentiment analysis and social network mining.

Foundations of FinTech
This course aims to provide a foundational introduction to financial technologies. More specifically, this course covers various important financial technologies and innovations, including investment and financing technologies such as P2P lending and crowdfunding, payment technologies such as mobile payments, wealth management technologies such as robo-advisors, blockchain technologies such as cryptocurrencies, and other technologies such as InsurTech and RegTech.

FinTech Regulations and Compliance
This course provides students with the frameworks, concepts, and background needed to understand the roles that regulation, compliance, and assurance play in the FinTech markets from the technology and business perspectives. The course also examines the perspectives of government officials, investors, managers, and consumers in terms of how they benefit from, guide, and influence the evolution of regulations and the associated compliance activities.

Investment Analysis
An introduction to the fundamental concepts of investment analysis. The first part of this course covers the risk and return tradeoff, portfolio diversification, and modern portfolio theory, including the capital asset pricing model and arbitrage pricing theory. The second part covers the basic analytical tools used in analyzing fixed income securities. Topics include interest rates and yield curve mathematics, duration, and convexity.

Decision Analytics for FinTech
This course aims to introduce decision analytics instruments and their applications in FinTech. Main topics covered in this course include basic probability and statistics, predictive analytics, prescriptive analytics such as linear programming, integer programming, dynamic programming and sequential decision making, stochastic models, quality control, Monte Carlo simulation, game theory, and their applications in various areas of FinTech.

Statistical Machine Learning
This course provides students with an extensive exposure to the elements of statistical machine learning in supervised and unsupervised learning with real world datasets. Topics include basic models in regression and classification, resampling methods, model selection/assessment, and some standard techniques in unsupervised learning such as clustering and dimensionality reduction.
Faculty

School of Business and Management

**Professor Allen HUANG**
Associate Professor, Department of Accounting
PhD, Duke University

**Research interests:**
Capital markets, Earnings management, Earning quality, Executive compensation, Financial analysts, Market efficiency

**Professor Ekkachai SAENYASIRI**
Associate Professor of Business Education, Department of Finance
PhD, The City University of New York

**Research interests:**
Corporate finance, Investments, International financial markets, Asset pricing
Professor Garvin Percy DIAS
Associate Professor of Business Education, Department of Information Systems
PhD, Fudan University
Research interests:
IT auditing, IT governance, Computer networking, FinTech

Professor Entela BENZ-SALIASI
Adjunct Associate Professor, Department of Finance
PhD, Finance Institute & HEC University of Lausanne
Research interests:
Pricing venture capitalist contracts; asset allocation; credit risk pricing
Professor Ning CAI
Professor, Department of Industrial Engineering and Decision Analytics
PhD, Columbia University

Research interests:
Applied probability; Computational finance; Financial engineering; Numerical transform inversion; Stochastic modeling

Professor Shiqing LING
Chair Professor of the Department of Mathematics (MATH)
Co-Director of MSc Program in Financial Mathematics
PhD in Statistics, The University of Hong Kong

Research Interests:
Statistics, Financial Time Series and Econometrics
**Professor Pascale FUNG**  
Professor, Department of Electronic & Computer Engineering and Department of Computer Science & Engineering  
Director, Centre for Artificial Intelligence Research (CAiRE)  
Fellow, IEEE  
Fellow, ISCA  
PhD, Columbia University  

**Research interests:**  
Speech recognition; Machine translation; Cross-language information processing; Music information extraction

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**Professor Can YANG**  
Associate Professor, Department of Mathematics  
PhD, The Hong Kong University of Science and Technology  

**Research interests:**  
Computer Age Statistical Inference; Data Science with Statistical Machine Learning; Empirical Bayes and Scalable algorithm; Statistical Genetics and Genomics

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**Professor Daniel PALOMAR**  
Professor, Department of Electronic and Computer Engineering  
Fellow, IEEE  
PhD, Technical University of Catalonia  

**Research interests:**  
Big data, Financial econometrics, Financial risk management, Optimization, Signal processing
Around 90 students were admitted to the MScFinTech program in the 2021-22 intake. The students in the full- and part-time streams are from diverse educational backgrounds and countries. Over 75% of the class are graduates with diverse undergraduate majors from universities outside of Hong Kong.

**Country of First Degree Institution**
**[Full-time & Part-time]**

- United States: 20%
- Australia: 11%
- United Kingdom: 8%
- Mexico: 1%
- Mainland China: 31%
- Hong Kong: 25%
- Canada: 4%
- United States: 20%
- Australia: 11%
- United Kingdom: 8%
- Mexico: 1%
- Mainland China: 31%
- Hong Kong: 25%
- Canada: 4%
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- Mexico: 1%
- Mainland China: 31%
- Hong Kong: 25%
- Canada: 4%

**Major of Bachelor Degree**

- Engineering: 21%
- Economics: 18%
- Information Technology: 7%
- Mathematical & Statistics: 12%
- Business / Marketing / Management: 16%
- Accounting & Finance: 19%
- Others: 1%
- Science: 6%
Industry (Part-time)

Accounting & Finance: 50%
Information Technology & Services: 15%
Health Care: 4%
Real Estate: 4%
Insurance: 4%
Others: 23%

List of Employers
- Amazon
- Bank of China (Hong Kong)
- BOSC International
- Citibank
- Guangfa Securities
- Guotai Junan Securities
- Hang Seng Bank
- Macquarie Asset Management
- Nielsen
- Octopus Cards
- Royal Bank of Canada
- SBI China Capital
- SPD Bank
- TF Securities
Alumni Testimonial

**FUCHS Alexander, Alex**  
2019-20 Intake - Full-Time  
Company: Amazon  
Current Position: Software Development Engineer

My education at HKUST was highly focused on the practical application of the material covered in the course. The different projects allowed me to explore the class topics in more detail and form better connections with my classmates.

The MScFinTech program has equipped me well for the professional career I strive to achieve. Because I am looking to work for a FinTech company or established financial institution as a product owner, it was very important to me to gain domain knowledge in finance as well as technical knowledge. The program offered exactly this, in addition to highlighting the current market trends. I also took advantage of the many extracurricular activities offered by the Career Center, Entrepreneurship Center, and program office to further explore my career opportunities and extend my professional network.

**SUN Yiying**  
2019-20 Intake - Full-Time  
Company: MinSheng Securities  
Current Position: Analyst

The FinTech program comprises finance-related and tech-related courses. The finance-related courses allow students to build a solid theoretical foundation, while the tech-related courses equip us with programming skills. My favorite courses were Optimization in FinTech and Statistical Machine Learning.

The MSc Career Centre provides various kinds of support in career development, including one-on-one coaching, mock interviews, assessment practice, and enrichment activities. I recommend that every student attend a compulsory one-on-one coaching session at the beginning of the first semester. A team of experienced career coaches will help you revise your resume and provide useful suggestions on career paths and interview tips, which can help you ace the job application process.
The MScFinTech program was a challenging but rewarding experience for me. I am glad to have chosen this program, as it combines the faculty members and resources of three main schools of HKUST—the School of Business, School of Engineering, and School of Science—and offers a wide range of core and elective courses ranging from finance to technology and the theories behind them. The MScFinTech program allows students to build a solid foundation in both finance and the related technological field.

The highly practical program provides an intellectually stimulating environment in which students can innovate and endeavor to solve real world finance problems through adapting technology. The guest talks and site visits also enabled me to meet leading industry experts and practitioners, which helped me keep updated on the FinTech community and broaden my networking platforms. I recommend this program to people who would like to pursue career advancement or acquire the latest knowledge related to FinTech.

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**WANG Xiaolin, Clara**  
2019-20 Intake - Full-Time  
Company: Didi Chuxing  
Current Position: Product Operation in Global Department

Academically, this program equips students with both solid fundamental knowledge and the latest bold ideas in this cutting-edge FinTech field. Some professors have attained academic excellence, while others have the latest practical industry experience.

Professionally, the career services offered by the MScFinTech program are very useful. The MSc Career Center hosts specific recruitment events for FinTech related jobs and intern opportunities. I personally benefited a lot from the workshops and one-on-one coaching sessions. The career consulting, resume editing, and mock interview sessions are also very useful.

I am also grateful for the opportunities I had to learn with other students from different cultures and backgrounds. They shared their fascinating experiences and ideas with me and offered help and encouragement in my study, career, and life.

**LEE Chun Man, Vincent**  
2019-20 Intake - Part-Time  
Company: Aozora Asia Pacific Finance Limited  
Current Position: Senior Vice President

The MScFinTech program was a challenging but rewarding experience for me. I am glad to have chosen this program, as it combines the Faculty members and resources of three main schools of HKUST—the School of Business, School of Engineering, and School of Science—and offers a wide range of core and elective courses ranging from finance to technology and the theories behind them. The MScFinTech program allows students to build a solid foundation in both finance and the related technological field.

The highly practical program provides an intellectually stimulating environment in which students can innovate and endeavor to solve real world finance problems through adapting technology. The guest talks and site visits also enabled me to meet leading industry experts and practitioners, which helped me keep updated on the FinTech community and broaden my networking platforms. I recommend this program to people who would like to pursue career advancement or acquire the latest knowledge related to FinTech.
Careers and Enrichment

“The MScFinTech program helps prepare students for their FinTech careers.”

HKUST Business School’s MSc Career & Professional Development team provides career guidance and support services for all full-time MSc students, including:

• Identifying students’ unique career-related interests, values, and capabilities;

• Enhancing students’ job searching skills and developing their workplace and career management skills;

• Accessing opportunities for internships and full-time employment with a diverse group of recruiting firms and organizations.

• One-on-one career coaching and career-related training/workshops are provided for students after they have joined the program.

The MSc Programs Office also arranges various enrichment workshops and luncheon talks for students. These activities provide a platform for students to network with industry practitioners and senior leaders in Hong Kong and mainland China.
HKUST is more than just a place to learn. We aim to develop our students to their full potential and prepare them to take the next step toward career success. We focus on creating a unique learning experience for each of our students, and developing future business leaders in Asia for the world.

Spread over 60 hectares in a beautiful setting in Clear Water Bay, the HKUST campus provides students with a relaxing environment in which to study and grow. Students enjoy all the benefits of a full-scale university campus with a wide range of facilities and support services.

Student amenities such as banks, postal services, medical clinics, a supermarket, a bookstore, a hair salon, a souvenir shop, and Asian and Western catering outlets are located on campus. Other facilities include a five-story library with over 700,000 books, periodicals, and microfilms, 100 electronic databases, computer barns, wireless Internet access, a language-learning center, a self-access center with multimedia resources, swimming pools, a fitness center, tennis courts, an athletic track, and a soccer pitch.

A wide range of facilities are also provided to encourage engagement in extra-curricular activities and hobbies, and to enhance the quality of campus life. These include conference and meeting rooms, common and quiet rooms, workshops and a darkroom, karaoke and music rooms, and a performance stage.

Public transportation is conveniently available, with the campus located less than 30 minutes away from the city center. HKUST is near Hang Hau, home to Tseung Kwan O Public Hospital, major supermarkets, an impressive range of restaurants, various shopping malls, and a wet market. Only 10 minutes from the main campus by bus, Sai Kung is famous for its seafood restaurants, water sports facilities (including one of Hong Kong’s two yacht clubs), and country parks, with a wealth of hiking, mountain biking, and camping options.
Admissions

Admission Requirements

Applicants to the MScFinTech program are expected to have the following credentials:

1. A Good First Degree
Applicants should have obtained a Bachelor’s degree from a recognized institution, or an approved equivalent qualification. Applicants preferably should have a programming and mathematics background.

2. English Proficiency
Applicants whose first language is not English, and whose Bachelor’s degree or equivalent qualification* was awarded by an institution where the medium of instruction was not English, are required to fulfill the minimum English Language admission requirements of the University.

3. GMAT/GRE
Applicants are highly recommended to have a satisfactory GMAT/GRE score, but it is not compulsory.

4. Work Experience
For full-time applicants, no minimum work experience is required. However, any relevant work or business experience will add weight to the application under consideration.

For part-time applicants, at least two years of full-time post-qualification work experience is highly recommended, but it is not a compulsory requirement.

* Qualification with duration equivalent to a full-time Bachelor’s degree (i.e. at least 3 years)
Program Fee and Expenses

The total program fee for the 2022/23 intake is HK$315,000. The program fee covers tuition, selected textbooks, and course materials for some of the core courses. It does not include travel or living expenses.

Application Materials

Applicants should include the following materials in their applications:

- Application fee
- Academic transcript(s)
- Completed online application form, including a personal statement
- CV/resume with photos
- Degree certificate(s)
- Official GMAT or GRE score report (if applicable)
- Official TOEFL or IELTS score report (if applicable)
- Professional qualifications (if applicable)
- Two academic reference letters

Applicant profiles are reviewed upon full completion of the online applications and full payment of the application fee. Shortlisted applicants may be invited for an interview upon request.

Scholarships

Eligible candidates will be considered for the admissions scholarship.

CEF Reimbursement

The program have been included in the list of reimbursement courses for Hong Kong’s Continuing Education Fund (CEF) purposes. Hong Kong residents can apply for reimbursement.

Please refer to the CEF website at www.wfsfaa.gov.hk/cef/tc/index.htm for more information.

Application Deadlines

We invite applications from September 2021 onward for the 2022/23 intake. Admissions operate on a rolling basis. We recommend non-local applicants to apply as early as possible to allow sufficient time for the student visa application, personal preparation, and arrival in Hong Kong. Application deadlines for the 2022/23 intake are as follows:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Full-time Mode</th>
<th>Part-time Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 Nov 2021</td>
<td>15 Dec 2021</td>
</tr>
<tr>
<td>2</td>
<td>15 Dec 2021</td>
<td>18 Feb 2022</td>
</tr>
<tr>
<td>3</td>
<td>1 Feb 2022</td>
<td>1 Apr 2022</td>
</tr>
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</table>

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The Hong Kong University of Science and Technology
Master of Science in Financial Technology

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Website: www.mscfintech.ust.hk