香港科技大学(广州)
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (GUANGZHOU)

金融科技学域
FinTech Thrust
社会枢纽 SOCIETY HUB

HKUST(GZ) SOCIETY HUB
FINANCIAL TECHNOLOGY THRUST

POSTGRADUATE PROGRAMS

ABOUT FINTECH THRUST

Mission

Financial Technology Thrust nurtures creative minds to explore frontiers in Financial Technology by employing advanced technologies to improve financial services, promote financial innovations, and establish more efficient financial systems.

Cross-Disciplinary Focus Areas

- Blockchain technology, smart contracts, and digital currencies
- Robo advising, quantitative investing, and risk management
- Machine learning, artificial intelligence, and big data analytics in finance
- Technological innovations for financial services
- Regulatory issues and challenges in FinTech
- Digital economy and financial inclusion

Head of FTEC

Prof. Ning CAI

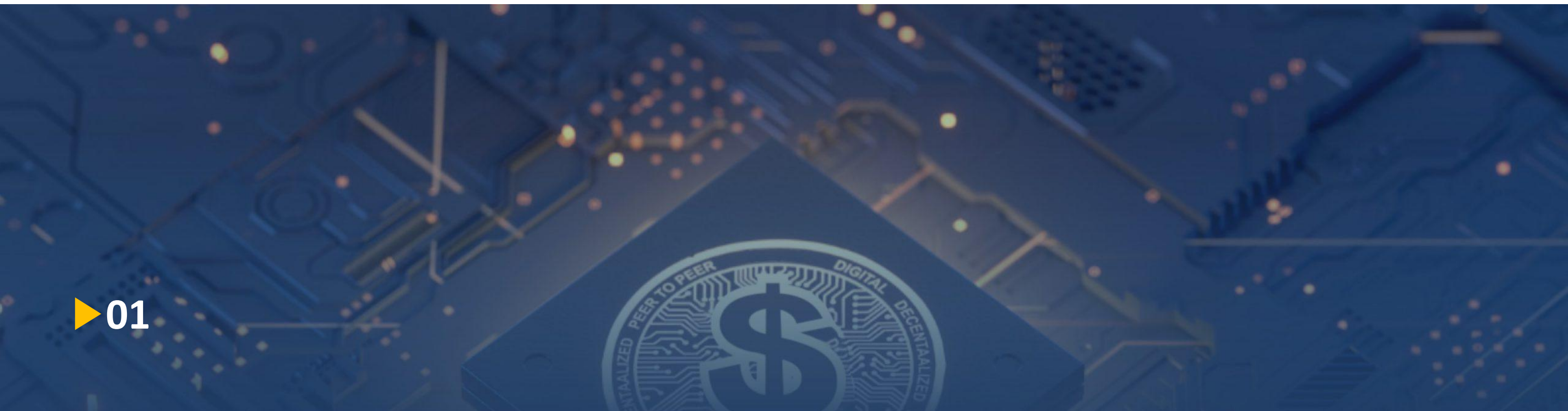
Professor

Ning Cai joined The Hong Kong University of Science and Technology (Guangzhou) as Professor and Acting Head of Financial Technology Thrust in 2022. Prior to that, he joined the Department of Industrial Engineering and Decision Analytics at The Hong Kong University of Science and Technology (HKUST) in 2008 and was promoted to Associate Professor in 2014 and to full Professor in 2020. Ning Cai received both MS and PhD in operations research in the Department of Industrial Engineering and Operations Research at Columbia University and both BS and MS in probability and statistics in the School of Mathematical Sciences at Peking University.

Ning Cai was the founding Academic Director of the Master of Science Program in Financial Technology (MSc in FinTech) at HKUST, which was jointly offered by School of Business and Management, School of Engineering, and School of Science. He also served as the Director of the Financial Engineering and FinTech Laboratory in the Department of Industrial Engineering and Decision Analytics at HKUST.

Ning Cai's research interests include FinTech, financial engineering, risk management, data science, applied probability, and stochastic modeling. He has published papers in the top-tier journals such as *Management Science*, *Operations Research*, *Mathematical Finance*, *Mathematics of Operations Research*, and *INFORMS Journal on Computing*.

Currently he serves as associate editor or editorial board member of 7 international scholarly journals, including *Operations Research* (one of the flagship journals of INFORMS) and *Digital Finance* (a Springer journal that publishes high-quality papers on smart data analytics, investment innovation, and financial technology).



PHD PROGRAM IN FTEC

Financial Technology (FinTech) is an important emerging area that has been developing rapidly in recent years. It refers to the application of cutting-edge technologies and advanced analytics on various financial services and financial challenges, such as digital payments, robo advising, algorithmic trading, blockchain technologies, big data analytics, and central bank digital currencies, aiming to improve service efficiency, promote financial innovations, and increase end-user satisfaction.

Doctor of Philosophy (PhD) Program in Financial Technology provide training and education for students to undertake advanced research and have a sound grasp of developments in FinTech. Students graduating from these programs should be able to conduct and apply high-quality research that makes an impact on FinTech research and practice in academia and/or industry. The programs focus on advanced research with an aim to place graduates in academia, research institutes, and industry jobs that appreciate research capability and quality.

Learning Outcomes

On successful completion of the PhD program, graduates will be able to:

PhD

01 Identify and synthesize current research in FinTech;

02 Compare and contrast state-of-the-art knowledge in FinTech and relevant reference disciplines (e.g., accounting, finance, computer science, mathematics), and apply such knowledge in driving FinTech research, practice, and innovation;

03 Analyze, design, and execute FinTech research by utilizing proper research methodologies;

04 Communicate the developed FinTech knowledge and research with the academic and practitioner community; and

05 Create original, substantive, and impactful knowledge to advance the state of FinTech research and practice.

PHD PROGRAM IN FTEC

Normative PhD duration: 4 years

1st Year coursework → PhD Qualifying Exam (PQE) → PhD candidacy → 2nd to 4th Year Other required coursework → 4th Year Thesis completion and oral defense → PhD degree conferred

Postgraduate Programs 2024/25

Admission to HKUST(GZ)

Award Title	Doctor of Philosophy in Financial Technology
Program Short Name	PhD(FinTech)
Mode of Study	Full-time
Normative Program Duration	PhD Full-time: 3 years (with a relevant research master's degree), 4 years (without a relevant research master's degree)
Offering Unit	Financial Technology Thrust Area Society Hub
Program Advisor	Program Director: Prof Ning CAI, Professor of Financial Technology
Website	https://gz.ust.hk/academics/four-hubs/society-hub
Enquiry	ftect@hkust-gz.edu.cn

PHD PROGRAM IN FINANCIAL TECHNOLOGY THRUST

CURRICULUM DESIGN

- Core Courses + Required Course + Electives = 21 credits for PhD in minimum
- To meet individual needs, students will be taking courses in different areas, which may include but not limited to courses and areas listed below.

Course Type	Course Code	Course Title	Credits
Core Courses (6 credits)	IIMP 6030 OR IIMP 6010	IIMP 6030 Cross-disciplinary Design Thinking I OR Cross-disciplinary Research Methods I	2
	SOCH 5000	Technological Innovation and Social Entrepreneurship	2
	XXXX 5000	Hub Core Course of other 3 Hubs	2
Required Course (3 credits)	**FTEC 5040**	**Financial Technology Research**	**3**
PhD QE courses (18 credits)	FTEC 5030	Statistical Methods for Financial Technology	3
	FTEC 5031	Advanced Probability Theory	3
	FTEC 5032	Optimization Theory	3
	FTEC 5100	Research in Corporate Finance	3
	FTEC 5101	Microeconomic Theory	3
	FTEC 5110	Research in Asset Pricing	3
GTA training (0 credit)	PDEV 6800	Introduction to Teaching and Learning in Higher Education	0
Professional Development Course (2 credits)	PDEV 6770	Professional Development for Research Postgraduate Students	1
	SOCH 6780	Professional Development in Innovation, Technology, and Social Responsibility	1
Thesis Research Course (0 credit)	FTEC 6990	MPhil Thesis Research	0
	FTEC 7990	Doctoral Thesis Research	0

PHD PROGRAM IN FINANCIAL TECHNOLOGY THRUST
CURRICULUM DESIGN

Course Type	Course Code	Course Title	Credits
PhD Electives	FTEC 5050	Machine Learning and Artificial Intelligence	3
	FTEC 5060	Stochastic Processes	3
	FTEC 5061	FinTech Stochastic Calculus	3
	FTEC 5120	Text Mining in Finance and Economics	3
	FTEC 5210	Quantitative Models for Financial Derivatives	3
	FTEC 5220	Monte Carlo Simulation in Finance	3
	FTEC 5230	Financial Risk Management	3
	FTEC 5310	Blockchain Technology	3
	FTEC 5320	Decentralized Finance	3
	FTEC 6000	FinTech Attachment	2-4
	FTEC 6101	FinTech Program Seminar	0
	FTEC 6910A	Quantitative Investing	1
	AIAA 5024	Advanced Deep Learning	3
	AIAA 5025	Deep Reinforcement Learning	3
	DSAA 5009	Deep Learning in Data Science	3
	DSAA 5013	Advanced Machine Learning	3
	DSAA 5022	Data Analysis and Privacy Protection in Blockchain	3
	IOTA 5501	Convex and Nonconvex Optimization I	3
	IPEN 5130	Economics of Technology Innovation and Entrepreneurship	3
	IPEN 5200	Uncertainty, Information and Decision Making	3
	IPEN 5250	Text Analysis and Machine Learning	3
	IPEN 5300	Experimental Economics and Organizational Behavior	3
	IPEN 5900	Policy and Technology for Carbon Neutrality	3
	UGOD 5020	Quantitative Social Science	3

Please refer to our program catalog for more details:
https://prog-crs.hkust.edu.hk/pgprog/2024-25/mphil-phd-fintech

HIGHLIGHTS OF FINTECH
PQE GUIDELINE

PhD Qualifying Examination (PQE)

The objective is to assess whether students are qualified to proceed to pursue PhD degrees.

Comprehensive Written Exam
(Fin part + Tech part)

+

1st year **critical survey paper** & **paper presentation**

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A Pass/Fail grade will be given

Written comprehensive examination

- Students are required to take the written comprehensive examination in two sessions. a) The first session focuses on the Tech part. b) The second session focuses on the Fin part.
- The PG committee will make a Pass/Fail decision based on the graded examination.

Critical survey paper

- Students should discuss and ask for advice from their supervisor(s) on the critical survey paper topic. The paper is due by October 1st following the first-year summer. The paper will be presented to the faculty in a 45-minute presentation followed by a 15-minute Q&A session in October following the first-year summer.
- The paper should be at least 20 pages long (including references), double-spaced with 1" margin on all sides, and written in academic English. It should be spell-checked and proof-read. The student should provide a cover page with title and an abstract with no more than 100 words. The paper should cite sources appropriately and be checked for plagiarism.
- After the presentation, the PG committee will evaluate both the written critical survey paper and the oral presentation, which are of equal importance. A Pass/Fail grade will be given.

Recent two QE written exams – 2023 June and 2024 August:

(1) The Tech part mainly focuses on the materials covered in the following three courses:
- FTEC 5030 Statistical Methods for Financial Technology
- FTEC 5031 Advanced Probability Theory
- FTEC 5032 Optimization Theory

(2) The Fin part mainly focuses on the materials covered in the following three courses:
- FTEC 5100 Research in Corporate Finance
- FTEC 5101 Microeconomic theory
- FTEC 5110 Research in Asset Pricing

Both Tech part and Fin part will be given a grade of P/MP/F.

'P'=Pass, 'MP'=Marginal Pass, 'F'=Fail
To pass, the student should obtain one P plus one MP or above in sub-category grades

RESEARCH SEMINARS

Thrust Seminars

Academic Year 2023/24:

Friday 9:00am-10:30am***

Improving academic communications and enhancing PG students' access to the cutting-edge FinTech research

Public Seminars

Previous public seminars:

***The timeslot is subject to change upon the availability of the speaker(s)

OUR FACULTY

Regular Faculty at Fintech Thrust

(All names are arranged in alphabetical orders)

CAI Ning

FTEC (Acting Head)

Research Interests:
FinTech, Financial engineering, Risk Management, Stochastic modeling

Ni Lionel Ming-shuan

FTEC, DSA

Research Interests:
Big Data, High-performance Computing, Internet Technologies, Mobile Computing, Wireless Networking, Intelligent Computing

KWOK Yue-Kuen

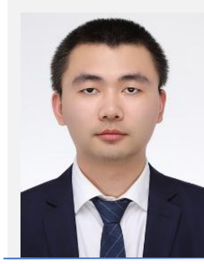
FTEC

Research Interests:
Financial Mathematics, Computational Mathematics, Financial Engineering

LI Yingying

FTEC, ISOM, FINA

Research Interests:
Financial Big data, Statistical Learning, Portfolio Analysis, Risk Management



HAN Bingyan

FTEC

Research Interests:
FinTech, Financial Engineering, Optimal Transport, Model Uncertainty, Time-Inconsistency, Rough Volatility, Multi-Agent Reinforcement Learning in Finance

LI Siguang

FTEC

Research Interests:
Fintech, Digital Economies, Social Media, Industrial Organization, Applied Theory

WANG Xiaoyu

FTEC

Research Interests:
Machine Learning, Financial Engineering, Stochastic Systems.

WANG Xuechao

FTEC

Research Interests:
Decentralized Consensus Protocol (blockchains)

XUE Yingjie

FTEC

Research Interests:
Distributed Computing, Blockchain Technologies, Decentralized Finance, Cryptocurrencies, Cybersecurity and Privacy

YUAN Zixuan

FTEC

Research Interests:
Data Science and Artificial Intelligence, Financial Technology, Text Analytics, Recommendation Systems

ZHANG Guang

FTEC, ISOM

Research Interests:
Financial Econometrics, Empirical Finance, Machine Learning

ZHANG Leifu

FTEC

Research Interests:
FinTech, Information Economics, Machine Learning in Strategic and Adversarial Environments, Decentralized Finance

ZHANG Yi

FTEC

Research Interests:
Theoretical and Empirical Climate Asset Pricing, Climate Finance, Macro Finance, ESG, Text Mining, China Economy, Applied Machine Learning

ZHANG Ying

FTEC

Research Interests:
Numerical Algorithms Design, Machine Learning and Finance, Stochastic Optimization

ZUO Ruiting

FTEC

Research Interests:
Finance-Operations Interface, E-commerce and marketplace analytics, Operations-Marketing Interface, Game theory, Optimal control, Data-driven decision making

Professor of Practice and Industry Advisors

QI Lei 齐磊 博士 – *Associate Professor of Practice with Fintech*
Co-Founder and CEO 创业合伙人兼总经理
Wizard Capital Research Ltd. 蔚泽资本

CHENG Rocky 郑松岩博士
General Manager of Information Technology Department 资讯科技部总经理兼首席信息官
Bank of China (HK) 中国银行（香港）

GUO Jian 郭健 博士
Assistant President and Chief Scientist of AI Finance & Machine Learning 助理院长兼人工智能金融与机器学习首席科学家
International Digital Economy Academy at GBA(IDEA) 粤港澳大湾区数字经济研究院

JIA Hongrui 贾红睿 博士
CEO 行政总裁
SPDB International 浦银国际

MA Henry 马智涛 先生
Executive Vice President and Chief Information Officer 副行长兼首席信息官
WeBank微众银行

MA Jian 马坚 博士
Executive Director of Quantitative Research 量化研究总监
J.P. Morgan 摩根大通

XIAO Jing 肖京 博士
Chief Scientist 首席科学家，执委
Ping An Group 平安集团

XU Xiaohong 徐晓红 博士
Partner and Chief Executive Officer 创业合伙人及总经理 兼任国家外汇管理局中央外汇业务中心顾问
Zhuhai Defen Financial Technology Co. 珠海得分金融科技有限公司

OUR STUDENTS

Educational/Academic background of current Fintech Students

Academic Backgrounds

Applied Mathematics

Big Data Technology

Economics

Financial Engineering

Computer Science

Finance

Statistics

Electrical Engineering

Mathematical Finance

Mathematics

Information Engineering

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Graduate Universities/Colleges

Undergraduate Studies:

Postgraduate Studies:

HKUST(GZ) SOCIETY HUB

FINANCIAL TECHNOLOGY THRUST

POSTGRADUATE PROGRAMS

@ Email: ftect@hkust-gz.edu.cn

Website: https://www.hkust-gz.edu.cn/academics/hubs-and-thrust-areas/society-hub/financial-technology/

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