The Hong Kong University of Science and Technology (Guangzhou)

UG Course Syllabus

Academic Orientation for FTEC Students

FTEC 1010

1 Credit

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Office Hours: Every Tuesday 7-8 PM at instructor's office.

TAs: Yizhi Luo (yluo198@connect.hkust-gz.edu.cn) and Jianping Bai(jbai147@connect.hkust-gz.edu.cn)

TAs' office hour:

Yizhi Luo: Every Thursday 3:00-4:00 PM, at W4-5F-158

Jianping Bai: Every Thursday 4:00-5:00 PM, at W4-5F-055

Course Description

This course provides foundational academic and professional development for students in the FinTech (FTEC) program. Designed to foster holistic growth, the course integrates academic advising with the cultivation of professional ethics, social awareness, civic responsibility, and effective communication skills.

The curriculum is structured to build a comprehensive, interdisciplinary, and evidence-based understanding of contemporary issues in financial technology. It begins with a general introduction to the FinTech landscape and its role in modern financial markets, followed by four in-depth thematic modules:

- **AI for Financial Risk, Markets, and Trading:** This module introduces foundational artificial intelligence concepts and methods as applied to core areas of finance, including risk management, market analysis, and automated trading systems. It focuses on developing a practical understanding of how AI models are used to simulate scenarios, analyze complex relationships, and inform data-driven decision-making in financial contexts.
- **Blockchain and DeFi:** Examining decentralized systems, cryptocurrencies, and their transformative impact on financial services.
- **Machine Learning and LLMs for FinTech:** This module explores advanced machine learning techniques and large language models (LLMs), examining their transformative role in the FinTech ecosystem. Students will gain insight into how these technologies process complex financial data, automate sophisticated tasks, and power next-generation intelligent applications in the sector.
- **FinTech Policy and Regulation:** Exploring the legal, ethical, and governance frameworks shaping responsible innovation.

Each module spans three weeks, offering focused immersion into critical sub-fields. The 13 instructors of this course all come from the field of fintech, possessing diverse doctoral backgrounds (in finance, economics, computer science, electronic engineering, mathematics, statistics, operations research, etc.).

However, their academic research is focused on fintech, covering almost all significant areas within the field. They will provide students with a multidimensional professional perspective that combines both depth and breadth. Through this integrated approach, students will develop the analytical toolkit and professional mindset essential for success in the evolving FinTech sector.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Develop a comprehensive insight into the fintech industry
2. Develop essential academic skills and strategies
3. Recognize the ethical and legal considerations within the fintech industry
4. Reflect on their personal strengths, weaknesses, and career aspirations

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Due date
Attendance	20%	-
Project report	80%	Dec 7, 2026

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Attendance Requirements

Satisfactory attendance is essential for success in this course and is a factor in your final grade. Students are expected to attend all classes on time. Excessive tardiness or absences will negatively impact your attendance record and may affect your overall grade, except in cases of documented illness or emergency.

Project report

Objective: To independently explore and analyze a specific area within financial technology.

Requirements:

• Topic: Students must choose a specific fintech-related topic (e.g., blockchain applications, digital payments, robo-advisors, regulatory technology, etc.).

• Length & Format: The final report should be 3-5 double-spaced pages (not including references or appendices), using a standard academic format (e.g., 12-point font, 1-inch margins).

• Submission: The final report is due on May 6, 2026, at the end of the semester. Late submissions will be penalized.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs
Attendance	ILO1, ILO2, ILO3. ILO4
Project report	ILO1, ILO2, ILO3. ILO4

Final Grade Descriptors:

Grades	**Elaboration on subject grading description**
Pass	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking.
Fail	A failed course (graded F) will not be credited toward a degree.

Course AI Policy

The use of Generative AI is permitted and requested to assist students with brainstorming, drafting, and writing their papers.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include [specific details, e.g., strengths, areas for improvement]. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST(GZ)'s Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Regulations for Academic Integrity and Student Conduct for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Additional Resources

Weekly Schedule

1. (1 Sep, 2026) We will offer a general introduction to financial technology, including its core implications and current landscape. In addition, the importance of financial technology will be illustrated through some practical examples. (Ning Cai)

2. (8 Sep 2026) We will provide an overview of AI-powered quantitative trading, which includes introduction on major tasks, different types of financial data, and popular machine learning techniques. (Shuo Sun)

3. (15 Sep, 2026) We will introduce fundamental graph types and core modeling techniques for analyzing graph-structured data, with a focus on applications in finance and business management, such as financial fraud detection and recommendation systems, etc. (Liang Zhang)

4. (22 Sep, 2026) We will provide an introduction to generative AI methods in finance, with a focus on simulating realistic market behavior. We will explore why generating data is crucial for applications such as risk management, stress testing, and scenario analysis. (Chao Zhang)

5. (29 Sep, 2026) We will delve into blockchain technology, a groundbreaking system that serves as a decentralized digital ledger, ensuring secure, transparent, and immutable record-keeping. In this lecture, our focus will be on understanding the fundamental principles and key components of blockchain technology, providing a solid foundation for further exploration of this transformative innovation. (Leifu Zhang)

6. (13 Oct, 2026) We will delve into decentralized exchanges (DEXs) and automated market makers (AMMs), which form the core trading infrastructure of decentralized finance. In this lecture, our focus will be on understanding how on-chain trading works without centralized intermediaries, how liquidity is provided and priced through algorithms rather than order books, and how incentives, fees, and risks are structured. This module provides the conceptual foundation for analyzing market design, efficiency, and stability in DeFi trading systems. (Siguang Li)

7. (20 Oct, 2026) We will delve into oracles, a critical component of decentralized finance that bridges blockchain-based smart contracts with real-world data such as asset prices. In this lecture, our focus will be on understanding why smart contracts rely on oracles, how oracle feeds are constructed and updated, providing a solid foundation for analyzing the DeFi systems. (Xuechao Wang)

8. (27 Oct, 2026) Nowadays, financial data exhibits high sensitivity, strong domain specificity, strict regulatory constraints, and dynamic nature. This requires models to adaptively shift from general knowledge to finance specific intelligence. In this lecture, we will adopt a "scenario-driven, technology-deployed, value-verified" logic to unpack the application framework of LLM pre-training and fine-tuning in fintech domain. (Zixuan Yuan)

9. (3 Nov, 2026) The inherent limitations of single-agent systems in the existing Large language models have motivated growing interest in constructing multi-agent systems (MAS), where multiple LLM-based agents interact through language to pursue diverse, and sometimes conflicting, objectives. This lecture will provide an introduction of large model multi-agent systems and their applications in fintech. (Guang Zhang)

10. (10 Nov, 2026) We will begin with a brief review of the development history and models for option pricing. We will then introduce the application of cutting-edge machine learning methods in option pricing and compare them against traditional numerical approaches (finite difference methods, Monte Carlo simulations). Additionally, we will briefly outline relevant convergence results associated with these machine learning algorithms. (Zimu Zhu)

11. (17 Nov, 2026) We will introduce the foundations of monetary policy and explain how central bank actions and communication influence financial markets. We will also discuss how artificial intelligence is used to analyze central bank language and quantify the informational content of policy communication. (Junxuan Wang)

12. (24 Nov, 2026) We will explore how financial markets react to trade shocks, data privacy challenges, and carbon governance, and highlights the role of FinTech innovations—such as AI-driven analytics and blockchain-based systems—as strategic levers for managing information asymmetry and uncertainty. (Shi Qiu).

13. (1 Dec, 2026) We will examine the cutting edge of green transition risks and present the general theoretical framework explaining how agencies respond to policy shocks via financial management. Furthermore, we will demonstrate the adoption of AI in identifying proxies for ESG regulation risks through integrated multi-modal analysis and in quantifying the subsequent implications on financial markets. (Yi Zhang)