

主導課程四：金融科技導論 (Introduction to FinTech)

課程基本資料

開設學校：臺灣大學

開授教師：張智星

班級人數：2630人 (保留 200人給開課學校，聯盟校上限45人)

開課級別：研究所

授課語言：中文

授權方式：封閉型

同步遠距上課時間：星期三 9:10~12:10

是否接受非同步授課：是

實體期末評量時間：2025 /12/17 9:10~12:10

遠距上課位置：<https://ntucc.webex.com/meet/rogerjang>

課程網頁：<http://mirlab.org/jang/courses/fintech>

課程概述

金融科技(Financial Technology, FinTech)是目前全球金融業與科技業的焦點，它所引發的破壞式創新，正挑戰既有金融服務的供給方式和消費行為。本課程由資工、數學教授群共同開設，旨在釐清 FinTech 本質、相關的創新科技、以及關鍵的趨勢。同時我們也會在課程當中邀請相關學者專家進行演講，並在金融機構 (或金融科技新創公司) 的協助之下完成期末的AI程式競賽。歡迎想參與或是有志於跨金融與科技領域的同學們，來共同探索此新興領域 - FinTech。

課程內容大綱

週次	日期	課程內容	備註
1		Intro to the course	
2		Math for fintech	
3		Technical indicators, quantitative trading, backtest, dynamic programming	
4		Intro to bitcoin and blockchain	
5		Hash function and elliptic curve digital signature algorithm (ECDSA)	
6		Portfolio optimization	
7		Ethereum and Other Blockchain/Cryptocurrency	
8		Performance indices, feature selection for ML	
9		Missing data imputation in ML	
10		Imbalanced dataset, cost-sensitive classification	

11		Advanced Functions and Post-Quantum Cryptography for Blockchain	
12		Intro to the final project	
13		Invited talk by guest speaker	
14		Invited talk by guest speaker	
15		AI/ML applications in finance	
16		Heads-up for final project	

成績評量方式

- Percentages
 - Homework: ~40%
 - Term project: ~30%
 - Final exam: ~30%
- Grade computation
 - Raw score computation in double precision ==> Rounding to nearest integers ==> Final letter grades
 - Final grades are based on scores and ranking. The instructors reserve the rights to
 - Adjust percentage of each categories if necessary
 - Determine the way to combine scores and ranking
 - No-change policy: We will not change the final grades once they are sent to the academic affairs office, unless it is due to mistakes on our part.
 - Grade statistics: Usually we have 25% of A+ and A

先修課程要求

- Percentages
 - Calculus
 - Basic differentiation, differentiation to find optimum

- Linear algebra
 - Matrix operations, determinant, eigenvalue/eigenvector
- Probability
 - Discrete/continuous random variables
- Machine learning
 - Basic idea of training/test for model construction, preferably with hands-on experience