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：2026 /12/23 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	9, Sep.	Intro to the course	
2	16, Sep.	Math for fintech	
3	23, Sep.	Technical indicators, quantitative trading, backtest, dynamic programming	
4	30, Sep.	Intro to bitcoin and blockchain	
5	7, Oct.	Hash function and elliptic curve digital signature algorithm (ECDSA)	
6	14, Oct.	Portfolio optimization	
7	21, Oct.	Ethereum and Other Blockchain/Cryptocurrency	
8	28, Oct.	Performance indices, feature selection for ML	
9	4, Nov.	Missing data imputation in ML	
10	11, Nov.	Imbalanced dataset, cost-sensitive classification	

11	18, Nov.	Advanced Functions and Post-Quantum Cryptography for Blockchain	
12	25, Nov.	Intro to the final project	
13	2, Dec.	Invited talk by guest speaker	
14	9, Dec.	Invited talk by guest speaker	
15	16, Dec.	AI/ML applications in finance	
16	23, Dec.	Heads-up for final project	

成績評量方式

- Percentages
  - Homework: ~30%
  - Term project: ~35%
  - Final exam: ~35%
- Grade computation
  - Raw score computation in double precision ==> Rounding to nearest integers ==> Final letter grades
  - Final grades are based on s\cores 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