中正大學課程大綱

課程名稱(中文)：	程式設計與應用	開課單位：	金融科技碩士學位學程(Master Program in Financial Technology)
課程名稱(英文)	Computer Programming and Applications	課程代碼	5405302_01
授課教師：	簡廷軒	學分數	3
必/選修	選修	開課年級	1
先修科目或先備能力：	It is recommended that students have a basic knowledge of computers. 建議學生具備基本的電腦知識。		
課程概述：	This course can let students understand the basic concepts of computer programming and application development. During the course, students will learn to design financial application projects using the Python programming language. 本課程以 Python 語言為主，進行金融相關領域，應用導向之程式設計基礎介紹，以及軟體開發的基本觀念，並以 Python 語言為工具，透過實例學習奠定程式設計及應用觀念，進而培養後續金融科技相關課程之能力。		
學習目標：	1. 學習python語言之基礎: 輸出輸入、變數、資料型態及控制指令。 2. 練習使用Python庫，如pandas、NumPy和SciPy來分析數據。 3. 使用金融模型，如 CAPM 和 GARCH，撰寫應用程式解決問題。		
教科書：	Python for Finance 2e : Mastering Data-Driven Finance, Yves Hilpisch ISBN : 9781492024330		

課程大綱		分配時數				核心能力	備註
單元主題	內容綱要	講授	示範	作業	其他		
Python and Finance	Discusses Python in general and argues in some detail why Python is well suited to addressing the technological challenges in the financial industry as well as in financial data analytics.	6		2			
Python Infrastructure	set up a proper Python installation with the most impor- tant tools as well as numerical, data analysis, and visualization packages on a profes- sional infrastructure.	2		2			

Mastering the Basic	This lesson is concerned with the basics of Python programming. The topics covered in this part are fundamental for all other lessons to follow in subsequent parts and for Python usage in general.	12		2			
Financial Data Science	This lesson equips the quants and financial analysts with the Python tools they need to become financial data scientists.	8		2			
Algorithmic Trading	Use of Python for algorithmic trading. More and more trading platforms and brokers allow their clients to use, for example, REST APIs to programmatically retrieve historical data or streaming data, or to place buy and sell orders.	6		2			
Derivatives Analytics	This lesson concerned with the development of a smaller, but nevertheless still powerful, real-world application for the pricing of options and derivatives by Monte Carlo simulation.	4		3			

教學要點概述：
1. 教材編選： ☑ 自編教材 ☑ 教科書作者提供
2. 教學方法： ☑ 投影片講述 ☑ 板書講述

3. 評量方法： ☑ 上課點名 10.00%, ☐ 小考0%, ☑ 作業20.00%, ☑ 程式實作40.00%, ☐ 實習報告0.00%, ☑ 專案30.00%, ☐ 期中考(0%, ☐ 期末考0%, ☐ 期末報告0%, ☐ 其它0%,
4. 教學資源： ☑ 課程網站 ☑ 教材電子檔供下載 ☑ 實習網站
5. 教學相關配合事項：

課程目標與教育核心能力相關性
請勾選：