Course Schedule for FIN4453

Fall, 2021

Week	Topic	Techniques	Assignments	Due	Note
Week 1	· Course Introduction · Python Basics	· R, Python Installation · Python Data types, For loops, Functions and Methods	Assignment 1		
Week 2	· Data cleaning and aggregation · Error Handling	· Excel VLOOPUP, FILTER, Pivot Table · Python Pandas dataframe · Code Report with RMarkdown			
Week 3	· Visualizing Data · Extending Python to Excel	· Python xlwings · Excel Plots and Python matplotlib · Jupyter Notebook, Google Colab · Data Validation	Assignment 2	A1 Due	
Week 4	· Introduction to Financial Modeling · Time Value of Money (TVM)	· Excel NPV, IRR functions, Data Tables · Python(numpy-financial)			
Week 5	· Bond valuation · Maucaulay Duration	· Excel RATE, PMT functions, Data Tables · Python(numpy-financial)		A2 Due	
Week 6	· Loan Amortization	· Excel IPMT, PPMT functions, Solver · Basic Excel Dashboard · Python(numpy, xlwings)	Assignment 3		
Week 7	· Financial Statement Analysis	· Python automation technique · Collecting Financial data with 'yfinance'			
Week 8	· Midterm Exam			A3 Due	Midterm
Week 9	· Measuring Portfolio Risk(Excel) · K assets portfolio model · Markowitz Bullet	· Excel DataTable · Matrix and Array in Excel · SUMPRODUCT(), MMULT() functions			
Week 10	· Optimizing Portfolio(Excel) · CAPM Beta	· Excel Solver · Linear Regression in Excel	Assignment 4		
Week 11	· Measuring Portfolio Risk(Python) · K assets portfolio model · Markowitz Bullet	· Resampling time-series data · Numpy Array and Matrix operations · Simple statistics(pandas)			
Week 12	· Optimizing Portfolio(Python) · CAPM Beta	· Linear optimization with Scipy · Using R and Python together · Linear Regression with R	Assignment 5	A4 Due	Veterans Day
Week 13	· Optimizing Portfolio(Python) · CAPM Beta	· Linear optimization with Scipy · Using R and Python together · Linear Regression with R			
Week 14	· Creative Project Idea Presentation				Thanksgiving
Week 15	· Monte Carlo Simulations(Excel,Python) · Retirement Problem · Stock Portfolio simulation	· Simulation Techniques in Excel, Python		A5 Due	
Week 16	· Final Project · Machine Learning in Finance (Time-Permitting)	· Financial data analysis tools · Intro to Machine Learning			Final Project