Financial Modeling Schedule

Week	Dates	Topic	Lectures	Projects Assigned	Projects Due
Week 1	08/31-09/07	Introduction to the Class, Modeling, Python, and Excel	1: Financial Modeling with Python and Excel 2: Getting Started with Python and Excel		
Week 2	09/07-09/14	Building a Full Excel Model and Python Basics	3: The Depth of a Financial Model 4: Going Beyond an Initial Python Script	1: Excel and Python TVM	
Week 3	09/14-09/21	Python Basics, Continued	4: Going Beyond an Initial Python Script		
Week 4	09/21-09/28	Building a Full Python Model	5: The Depth of a Financial Model, Continued		
Week 5	09/28-10/05	Visualization	6: Understanding Complex Results		
Week 6	10/05-10/12	Sensitivity Analysis	7: Exploring the Parameter Space		1: Excel and Python TVM
Week 7	10/12-10/19	Sensitivity Analysis and Probability Modeling	7: Exploring the Parameter Space 8: Probabilistic Modeling	2: Probabilistic Loan Pricing	
Week 8	10/19-10/26	Probability Modeling	8: Probabilistic Modeling		
Week 9	10/26-11/02	Probability Modeling and Combining Excel and Python	8: Probabilistic Modeling 9: Combining Excel and Python		
Week 10	11/02-11/09	Monte Carlo Simulation	10: Monte Carlo Simulation	3: Monte Carlo Cost of Capital	2: Probabilistic Loan Pricing
Week 11	11/09-11/16	Introduction to DCF Valuation and Cost of Capital Estimation	11: Introduction to DCF Valuation and Cost of Capital Estimation		
Week 12	11/16-11/23	Free Cash Flow Estimation and Intro to Forecasting	12: Free Cash Flow Estimation and Forecasting	4: Full DCF Valuation	
Week 13	11/23-11/30	Forecasting Free Cash Flows	12: Free Cash Flow Estimation and Forecasting		3: Monte Carlo Cost of Capital
Week 14	11/30-12/07	Advanced Financial Modeling Roadmap	13: Advanced Financial Modeling		
Week 15	12/07-12/17	Final Project Time			4: Full DCF Valuation

Week 1 (08/31 - 09/07)

Lectures Covered

- Financial Modeling with Python and Excel
  - About Me
  - Syllabus
  - What is a Financial Model?
  - Tools and Skills
  - Installing Python
- Getting Started with Python and Excel
  - Introduction and an Example Model
  - Building a Simple Excel Model
  - Building a Simple Python Model
  - Basic Iteration
  - Extending a Simple Excel Model
  - Extending a Simple Python Model
  - Getting Started with Python and Excel Labs

Week 2 (09/07 - 09/14)

Lectures Covered

- The Depth of a Financial Model
  - Simple Retirement Model Assumptions
  - Relaxing the Salary Assumption
  - Skills for the Advanced Excel Model
  - Implementing the Dynamic Salary Model
  - Lab Exercise
- Going Beyond an Initial Python Script
  - Structuring a Complex Python Model
  - Branching Logic with Python Conditionals

Projects Assigned

- 1: Excel and Python TVM

Lab Exercises Due by 09/14

- Extending a Simple Retirement Model
- Determining Desired Cash in the Dynamic Salary Retirement Excel Model
- Python Basics - Conditionals

Week 3 (09/14 - 09/21)

Lectures Covered

- Going Beyond an Initial Python Script
  - Grouping Objects with Python Lists
  - Grouping Logic with Python Functions
  - Python Basic Data Types
  - Creating Python Data Types with Classes
  - Handling Errors in Python

Lab Exercises Due by 09/21

- Python Basics - Lists
- Python Basics - Functions
- Python Basics - Data Types
- Python Basics - Classes

Week 4 (09/21 - 09/28)

Lectures Covered

- The Depth of a Financial Model, Continued
  - Using Jupyter to Structure a Python Model
  - Salaries in the Python Dynamic Salary Retirement Model
  - Wealth in the Python Dynamic Salary Retirement Model
  - Retirement in the Python Dynamic Salary Retirement Model
  - Lab Exercise

Lab Exercises Due by 09/28

- Determining Desired Cash in the Dynamic Salary Retirement Python Model

Week 5 (09/28 - 10/05)

Lectures Covered

- Understanding Complex Results
  - Introduction to Visualization
  - Visualization in Excel Example
  - Introduction to Pandas
  - Styling Pandas DataFrames
  - Introduction to Graphs in Python with Pandas
  - Visualization in Python Example
  - Lab Exercises

Lab Exercises Due by 10/05

- Getting Started with Pandas
- Styling Pandas DataFrames
- Introduction to Graphing with Pandas

Week 6 (10/05 - 10/12)

Lectures Covered

- Exploring the Parameter Space
  - Introduction to Parameter Exploration
  - Introduction to Sensitivity Analysis
  - Sensitivity Analysis in Excel
  - Using Python Dictionaries
  - Python List Comprehensions - Convenient List Building
  - Python Imports and Installing Packages

Projects Due by 10/05

- 1: Excel and Python TVM

Lab Exercises Due by 10/12

- Adding Sensitivity Analysis to Project 1 - Excel
- Learning How to Use Dictionaries
- Learning How to Use List Comprehensions

Week 7 (10/12 - 10/19)

Lectures Covered

- Exploring the Parameter Space
  - Introduction to Sensitivity Analysis in Python
  - Sensitivity Analysis in Python Example
  - Lab Exercise - Adding Sensitivity Analysis to Project 1 - Python
- Probabilistic Modeling
  - Introduction to Probabilistic Modeling
  - Math Review for Probabilistic Modeling
  - Introduction to Scenario Analysis
  - Scenario Analysis in Excel
  - Lab Exercise - Adding Scenario Analysis to Project 1 - Excel

Projects Assigned

- 2: Probabilistic Loan Pricing

Lab Exercises Due by 10/19

- Adding Sensitivity Analysis to Project 1 - Python
- Adding Scenario Analysis to Project 1 - Excel

Week 8 (10/19 - 10/26)

Lectures Covered

- Probabilistic Modeling
  - Scenario Analysis in Python
  - Introduction to Internal Randomness
  - Intro to Randomness in Excel
  - Intro to Randomness in Python
  - Lab Exercise - Generating Continuous Random Numbers in Excel and Python
  - Discrete Randomness

Lab Exercises Due by 10/26

- Adding Scenario Analysis to Project 1 - Python
- Generating and Visualizing Random Numbers - Excel
- Generating and Visualizing Random Numbers - Python
- Building a Simple Model of Stock Returns

Week 9 (10/26 - 11/02)

Lectures Covered

- Probabilistic Modeling
  - Adding Internal Randomness to an Excel Model
  - Adding Internal Randomness to a Python Model
  - Internal Randomness Lab Exercises Overview
- Combining Excel and Python
  - Introduction to Combining Excel and Python
  - Combining Excel and Python using Pandas
  - Combining Excel and Python using xlwings

Lab Exercises Due by 11/02

- Extending the Project 1 Model with Internal Randomness
- Reading and Writing to Excel with Pandas
- Reading and Writing to Excel with xlwings

Week 10 (11/02 - 11/09)

Lectures Covered

- Monte Carlo Simulation
  - Introduction to Monte Carlo Simulations
  - Monte Carlo Investment Returns
  - Formal Introduction to Monte Carlo Simulations
  - Analyzing Relationships with Monte Carlo Simulations
  - Applying Monte Carlo Simulation to a Python Model
  - Applying Monte Carlo Simulation to an Excel Model

Projects Assigned

- 3: Monte Carlo Cost of Capital

Projects Due by 11/02

- 2: Probabilistic Loan Pricing

Lab Exercises Due by 11/09

- Monte Carlo Simulation of DDM
- Monte Carlo Simulation of Python Models
- Monte Carlo Simulation of Excel Models

Week 11 (11/09 - 11/16)

Lectures Covered

- Introduction to DCF Valuation and Cost of Capital Estimation
  - Introduction to Discounted Cash Flow (DCF) Valuation
  - Enterprise Value and Equity Value
  - Introduction to Cost of Equity
  - Cost of Equity in Python
  - Cost of Equity in Excel
  - Market Value of Equity
  - Introduction to Cost of Debt
  - Introduction to Market Value of Debt
  - Calculating the Market Value of Debt in Python
  - Calculating the Weighted Average Cost of Capital (WACC)

Lab Exercises Due by 11/16

- Finding Enterprise and Equity Value Given FCF and WACC
- Finding Cost of Equity Given Historical Prices
- Finding Cost of Debt Given Financial and Market Info

Week 12 (11/16 - 11/23)

Lectures Covered

- Free Cash Flow Estimation and Forecasting
  - Introduction to Free Cash Flows
  - Introduction to Calculating Historical Free Cash Flows
  - Historical Free Cash Flows in Python
  - Introduction to Forecasting
  - Simple Time-Series Forecasting Models
  - Simple Time-Series Forecasting in Excel
  - Simple Time-Series Forecasting in Python
  - Simple Time-Series Forecasting Lab Overview

Projects Assigned

- 4: Full DCF Valuation

Lab Exercises Due by 11/23

- Free Cash Flow Calculation
- Forecasting Simple Time-Series

Week 13 (11/23 - 11/30)

Lectures Covered

- Free Cash Flow Estimation and Forecasting
  - Complex Time-Series Forecasting
  - Complex Time-Series Forecasting in Python - Manual Method
  - Complex Time-Series Forecasting in Python - finstmt Method
  - Complex Time-Series Forecasting Lab Overview
  - Applying Forecasting to Free Cash Flows
  - Calculating a Terminal Value

Projects Due by 11/23

- 3: Monte Carlo Cost of Capital

Lab Exercises Due by 11/30

- Forecasting Complex Time-Series
- DCF Stock Price using Terminal Values

Week 14 (11/30 - 12/07)

Lectures Covered

- Advanced Financial Modeling
  - Introduction to Advanced Financial Modeling
  - Additional Types of Financial Models
  - Data Pipelines for Financial Modeling
  - Advanced Mathematical Tools for Financial Modeling
  - Better Presentation of Python Financial Models
  - Programming Skills for Advanced Financial Models
  - Extra Resources for Python Financial Modeling

Week 15 (12/07 - 12/17)

Projects Due by 12/17

- 4: Full DCF Valuation