BUSI 448: INVESTMENTS
SPRING 2025
This version: December 16, 2024

Class Time:	Tues/Thur, Section 1: 10:50-12:05, Section 2: 9:25-10:40 (McNair 218)
Professor:	Kevin Crotty
E-mail:	**kevin.p.crotty@rice.edu**
Office:	McNair Hall 341
Office Hours:	Tuesday 3:30-5 pm. I am happy to deal with most questions and issues via email, though some things might require a face-to-face meeting. You can contact me for alternate times, but be aware my spring schedule is fairly crowded.
TA Office Hours:	TBD
My Webpage:	https://kevin-crotty.com
Program Specialist:	Crystal Gant, cggant@rice.edu, 713-348-3730, McNair 319

Course Requirements and Prerequisites:
Students must have successfully completed **introductory finance** (BUSI 343 or ECON 343) and a **statistics** course (e.g., BUSI 395, STAT 310, STAT 315). This course assumes familiarity with the material covered in those courses. I will also assume familiarity with concepts from **calculus.**

Course Objectives:
This course provides an overview of financial asset classes, including equity and fixed income securities, and how they are traded. Students will develop a theoretical and practical understanding of modern portfolio theory, with an emphasis on measuring and managing investment risk and return. The course will cover asset pricing models and their role in understanding risk and return. We will also consider how to evaluate performance of professional asset managers and the role of taxes in investment performance.

Throughout the course, we will have one eye on theory and one on practical implementation. The goal is for each student to develop a fairly robust understanding of the theory of risk and return and to be exposed to a core set of analytical portfolio management tools. By the end of the course, each student should have an understanding of the historical risk and return behavior of major asset classes and a foundational understanding of investment management practices.

Software:
Demonstrations of the course material will be conducted using a mix of Excel and Python. **I will assume you have zero Python experience.** You do not need to install Python on your machine (although you are welcome to do so). We will work together in Jupyter notebooks in the cloud on Google Colab.

Assignments will be run through Canvas, and I am somewhat agnostic about the software used to arrive at the answer. However, for some of the material, I will **strongly encourage** you to use Python for a few reasons. First, I will be able to assist you more readily if you come to me with questions in Python. Second, Python is an extremely useful asset to have in your portfolio. Third, the course materials are in Python, so it will likelier be easier to adapt them than starting from scratch in a different software.

Textbook and Web Resources:
For most topics, there are recommended readings from the standard investments text, **Investments** (12th edition) by Bodie, Kane, and Marcus. BKM are currently on their 12th edition, but recent earlier editions would also be fine as a reference if you want a cheaper used copy.

A good general Python reference is **Python for Data Analysis** by Wes McKinney. A free version is available at https://wesmckinney.com/book/. You can also order a print copy if you are like me and enjoy having a hard-copy book.

A number of the concepts we'll discuss are visualized on the Rice Business Learn Investments Dashboard. We will use the website occasionally throughout the course, and it may be useful for some problem sets.

Grading:
Final grades will be determined using the weighting scheme below. Grades are assigned following the BUSI grading policy: the class mean GPA is capped at 3.5.

Assessment	Weight
Problem Sets (Best 10 of 11 scores)	50%
Class Participation	10%
Midterm	20%
Final	20%

Problem Sets:
Each week, there will be a problem set administered through Canvas. The objective of the problem sets is to ensure that you are spending some time thinking about the material we cover. Note that I will drop your lowest problem set grade in calculating the overall grade. This is designed to be a free hedge against busy weeks in your semester, idiosyncratic personal events, etc. As a result, I will generally not accept late problem sets for credit unless I have granted permission well prior to the due date. Any accepted late assignments are usually assessed a deduction to be fair to other students.

Class Participation
Please display your name placard each class meeting, and please come to class prepared to participate in the day's discussion of material. I have found that students learn a great deal from their peers' experiences and observations. To incentivize sharing one's pertinent experiences, observations, and expertise, part of the final grade is earned through class participation. Attendance and working the exercises in class earns a baseline level of participation. Useful participation in class discussion earns a higher participation grade. I may occasionally administer an in-class Canvas-based quiz in order to assess attendance.

Midterm
The midterm exam will be a take-home on-line exam administered through Canvas. It will be a timed assignment made available sometime in the week prior to its due date. I will be clarify the material to be tested in class. You may use the Learn Investments Dashboard, Google Colab, Python, Excel, or R to work the problems.

Final:
The cumulative final exam will be an **in-class exam.** It will be administered through Canvas. You may use the Learn Investments Dashboard, Google Colab, Python, Excel, or R to work the problems. More details will be provided in class. **Please do not schedule travel or other conflicts until you know the date of the exam.**

Course Schedule

Class #	Date	Topic	Suggested Reading	Deliverable
1	Jan 14	**Introduction** Course intro + Bond pricing	BKM 14	
2	Jan 16	Saving for retirement		
3	Jan 21	Savings with real & nominal cash flows Savings with uncertain returns		
4	Jan 23	Calculating returns Fetching data	BKM 5	
5	Jan 28	Portfolio returns		PS 1
6	Jan 30	**Financial Markets** Equity Markets	BKM 2	
7	Feb 4	Fixed Income Markets		PS 2
8	Feb 6	Arbitrage + No-arbitrage pricing		
9	Feb 11	Markets, Trading, + Adverse Selection	BKM 3	PS 3
	Feb 13	*SPRING RECESS – NO CLASS*		
10	Feb 18	Leverage + Margin		PS 4
11	Feb 20	Short-selling + Limits to arbitrage		
12	Feb 25	**Optimal Portfolios** Diversification	BKM 6	Midterm
13	Feb 27	Portfolios: Theory	BKM 5	
14	Mar 4	Portfolios: Practice: Borrowing Frictions		PS 5
15	Mar 6	Portfolios: Practice: Shorting Constraints		
16	Mar 11	Rebalancing		PS 6
17	Mar 13	Input Sensitivity		
		SPRING BREAK		
18	Mar 25	**Equity Topics** Benchmark models	BKM 8	PS 7

19	Mar 27	CAPM	BKM 9	
20	Apr 1	Return predictability + anomalies	BKM 13	PS 8
21	Apr 3	Multi-factor models	BKM 10	
22	Apr 8	**Fixed Income Topics** Duration	BKM 16	PS 9
23	Apr 10	Convexity		
24	Apr 15	Credit Risk		PS 10
25	Apr 17	**Taxes** Tax-advantaged accounts		
26	Apr 22	**Performance Evaluation** Asset mgt + performance measures	BKM 4, 24	PS 11
27	Apr 24	Review		
	TBD	*FINAL EXAM*		

Other Policies, Expectations, and Information:

- *Generative AI policy*: Generative AI tools like ChatGPT can be a very useful reference in this course. In particular, I encourage you to use ChatGPT to help interpret the Python code distributed in class. You are welcome to use ChatGPT to aid in the weekly problem sets. **The midterm and final exams are to be completed without the use of generative AI tools.**

- *Special needs*: If you have any special needs (including observances of religious holidays, etc.) or a documented disability for which you need accommodation, please let me know privately right away.

- *Laptop policy and phone policy*: The Jones School's policy is that laptops should remain closed except when instructed otherwise. We will use laptops regularly though, so please make sure you have a laptop or tablet with keyboard. Please silence your cell phone during class.

- *Name tents:* I will distribute name tents for you to display during class. Please bring and display them each class to facilitate our discussions in class. Hopefully, I won't need them by the end of the semester, but my track record confusing my children's names suggests otherwise.

- *Academic honesty*: The Rice University Honor Code applies to all work in this course. The intent of the Honor Code in general and specifically in this course is to ensure that each student claims and receives credit for their own efforts. The intent is not to limit the valuable exchange of ideas through *discussion* among fellow students. The atmosphere at Rice University and the Jones School must be one of academic and personal integrity. Any suspected violations of the Honor Code are submitted to the Rice University Honor Council. **Use of solution materials from other sections of this course, use of any solutions found online, or unauthorized use of generative AI are violations of the Honor Code. If you have any questions about what is or is not allowed, please ask me.**