Syllabus

FIN 5320 – Investment Theory (1.5 Units)

Sections 01 / 03 / 04 – Fall 2025

Instructor:	Lorenzo Naranjo
Office:	Simon Hall 281
Office Hours:	Monday / Wednesday (1:00pm – 3:30pm)
Email:	naranjo@wustl.edu
Classroom:	Sections 01 and 03 in Bauer Hall 160 / Section 04 in Simon Hall 112
Meeting Times:	Section 01: Monday / Wednesday 10:00am – 11:20am
	Section 03: Monday / Wednesday 4:00pm – 5:20pm
	Section 04: Wednesday 6:15pm to 9:15pm
Class Modality:	In-person

Class Information

Course Description

This course covers the theory of risk and return in capital markets. Topics covered include the CAPM and factor models of asset pricing, measures of mutual fund performance evaluation, interest rates and fixed income securities.

Classroom Etiquette

Class time is important and I will make sure that every minute we spend in the class is productive. Therefore, any activity that prevents me or other students to use class time in a productive manner is forbidden.

Make sure to arrive on time. If during the term I see that many students are constantly arriving late I will start taking attendance as soon as the class starts. You have mu commitment that the class will start and end on time.

> **!** Important
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> No computers are allowed in class unless authorized by the instructor for a specific activity that requires the use of a computer. You can use a tablet only if you plan to take notes with it and as long as you keep your tablet horizontal at all times. The usage of an external keyboard, a computer mouse or headphones in class is also forbidden.

Learning Goals

1. Knowledge
    - Describe fundamental financial instruments such as stocks and bonds.
    - Describe important investments concepts such as portfolio diversification, efficient portfolios and factor models.
2. Comprehension
    - Describe how efficient portfolios can help some investors achieve a desired level of risk and expected return.
    - Describe the difference between systematic and idiosyncratic risk.
    - Describe the relation between interest rates and bond prices.
3. Application
    - Determine the capital allocation line of a risky and a risk-free asset.
    - Compute the weights of the optimal risky portfolio for a mean-variance optimizing investor.
    - Compute the expected return of a risky asset using the CAPM or an index model.
    - Compute bond prices, forward rates and duration of a portfolio of bonds.
4. Analysis

- Question the validity of the assumptions used to compute expected returns.
- Explain the importance and limits of bond portfolio immunization.

5. Synthesis

    - Create and evaluate new trading strategies.
    - Summarize the main ideas behind the capital asset pricing model.
    - Advice on how to reduce exposure of a portfolio to interest rate risk.

6. Evaluation

    - Value the merits of an asset pricing model.
    - Choose between different asset pricing models to assess the performance of an investment strategy.

Class Materials

All class materials are available in https://lorenzonaranjo.com/fin5320/. I have linked all the material we will cover in the class to Canvas.

In addition, you may complement the lecture notes with the following textbook:

- Investments by Zvi Bodie, Alex Kane and Alan J. Marcus, 11th Edition, McGraw Hill.

Probably the most standard and popular text on investments among academics, students, and practitioners, this book serves as a useful reference not only for this course but also for years to come in your finance profession. Older editions (5th-9th) of the book are fine to use, too.

While our lectures present topics in a self-contained manner, reading the textbook will reinforce your learning from the lectures.

> **!** Important
>
> You will need a calculator for this class. Any scientific calculator that can compute exponential functions and logarithms should do the job. These type of calculators sell for around $10. I do not recommend using a financial calculator since typing

> long expressions is hard and prone to errors. You cannot use your phone during the final exam.

Grading

Following is the summary of weights on the various components that I will use to evaluate your performance in this course:

Assignment	Weight
Problem Sets	25
Group Project	15
Final Exam	50
Class Attendance	10

The grading scale of the class will approximately follow the table below.

Percent	Grade
90-100	A
80-89	B
70-79	C
60-69	D
59-Below	F

The precise grade cutoffs between and within letter grades will be chosen so that the average grade for the class is around 3.5 GPA. For MBA students, as per school rules no more than 20% high passes can be awarded in total.

Grades are non-negotiable. If you feel I have graded one of the course requirements incorrectly, please bring it to my attention immediately. Grade appeals (e.g., because

your points were not added up correctly) must be submitted within a week after the grades are released. I certainly want all of you to receive the grades you have earned.

Attendance and Participation Policy

Class participation, classroom interaction, and collaboration are a signature of the Olin culture and Code of Conduct. Class time is critical to learning, and prompt attendance during our class times is expected.

I will take attendance by either roll calling your name, asking you to sign an attendance sheet or asking you to do a small assignment on Canvas. Students that are more than 20 minutes late will only get half of the attendance points.

> ❗ Important
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> All students are expected to attend **in person**. All classes will be recorded using Kaltura. If you miss a class please make sure to watch the corresponding recording and ask me questions if you need help. There will be no hybrid option via Zoom in this class except for PMBA students who have been previously authorized to attend remotely.

Problem Sets

There will be weekly problem sets so you can practice the concepts covered in class and that will help you prepare for the final exam. Each problem set is due at 11:59 pm CST on the dates indicated below. All problem sets are individual and must be handwritten. You must submit your work via Canvas as a PDF file. If you do not have a scanner, download a scanner app such as Adobe Scan that allows you to scan on your phone and generate a PDF.

Assignment	Due Date
PS #1	9/4

Assignment	Due Date
PS #2	9/12
PS #3	9/18
PS #4	9/25
PS #5	10/2

There is a 0.2% grade deduction per hour, i.e. 4.8% per day, for late submissions.

Group Project

There will be a graded group project that will allow you to work with real data and see how the theory works in practice. Groups can have at most three students. The deliverable will be a well formatted document with answers to the questions that will be uploaded to Canvas. You can do the project using Excel, Python or any other language of your choice. The deadline to submit the project will be Friday October 17 at 11:59pm CST.

There is a 0.2% grade deduction per hour, i.e. 4.8% per day, for late submissions.

Final Exam

There will be a comprehensive final exam that will allow you to demonstrate your learning on each of the course units. The final exam will be held on **Saturday, October 18 from 9AM - 12PM CST**. I will announce the rooms and logistics later. The exam is closed-book and closed-notes. I will provide you with a formula sheet, and you must bring a calculator.

The exam time is non-negotiable. If you have a conflict, you must inform me by the end of the second class of the course. Hence, I encourage you to check your schedule early (e.g., make sure that the exam dates do not conflict with a religious holiday, etc.). If you think you will miss the final exam, please (1) immediately e-mail me prior to the exam

time and (2) send me a justifiable and reliable proof of absence. Without clear and hard evidence, you will get no credit.

Honor Code and Code of Conduct

This course will follow the standards specified in the Code of Conduct and Code of Academic Integrity, which were presented to faculty and students of the Olin Business School. Students are expected to be familiar with the codes.

Course Schedule

The tentative course schedule for different sections is given below. The topics covered on each proposed date may change as the course progresses, but the main content and the general order should not vary.

Sections 01 and 03

Session	Date	Topic
1	8/25	Sequential Trading
2	8/27	Statistics of Asset Returns
–	9/1	Labor Day (No Classes)
3	9/3	Utility Theory Under Uncertainty
4	9/8	Optimal Capital Allocation
5	9/10	Risky Portfolios
6	9/15	Perfect Correlation
7	9/17	The Index Model
8	9/22	The Treynor-Black Model
9	9/24	Bond Pricing

Session	Date	Topic
10	9/29	Forward Rates
11	10/1	Interest Rate Risk Management
–	10/6	Fall Break (No Classes)
–	10/8	Fall Break (No Classes)
12	10/13	Review for Final Exam
–	10/18	Final Exam

Section 04

Session	Date	Topic
1	8/27	Sequential Trading
		Statistics of Asset Returns
2	9/3	Utility Theory Under Uncertainty
		Optimal Capital Allocation
3	9/10	Risky Portfolios
		Perfect Correlation
4	9/17	The Index Model
		The Treynor-Black Model
5	9/24	Bond Pricing
		Forward Rates
6	10/1	Interest Rate Risk Management
		Review for Final Exam
–	10/8	Fall Break (No Classes)
7	10/18	Final Exam (6:15pm to 9:15pm CST)

Required Policies

Academic Integrity

In all academic work, the ideas and contributions of others (including generative artificial intelligence) must be appropriately acknowledged and work that is presented as original must be, in fact, original. You should familiarize yourself with the appropriate academic integrity policies of your academic program(s).

Unauthorized Recording and Distribution of Classroom Activities and Materials

The following applies to all students in my class: "Except as otherwise expressly authorized by the instructor or the university, students may not record, stream, reproduce, display, publish or further distribute any classroom activities or course materials. This includes lectures, class discussions, advising meetings, office hours, assessments, problems, answers, presentations, slides, screenshots or other materials presented as part of the course. If a student with a disability wishes to request the use of assistive technology as a reasonable accommodation, the student must first contact the Office of Disability Resources to seek approval. If recording is permitted, unauthorized use or distribution of recordings is also prohibited."

Disability Resources

WashU supports the right of all enrolled students to an equitable educational opportunity and strives to create an inclusive learning environment. In the event the physical or online environment results in barriers to your inclusion due to a disability, please contact WashU's Disability Resources (DR) as soon as possible and engage in a process for determining and communicating reasonable accommodations. As soon as possible after receiving an accommodation from DR, send me your WashU Accommodation Letter. Remember that accommodations cannot be applied retroactively. https://disability.wustl.edu/

Sexual Harassment and Assault

If you are a victim of sexual discrimination, harassment or violence, we encourage you to speak with someone as soon as possible. Understand that if you choose to speak to me as an instructor, I must report your disclosure to my department chair, dean, or the Gender Equity and Title IX Compliance Officer, which may trigger an investigation into the incident. You may also reach out to the Relationship & Sexual Violence Prevention (RSVP) Center to discuss your rights and your options with individuals who are not mandatory reporters. https://titleix.wustl.edu/students/confidentiality-resources-support/

Religious Holidays

To ensure that accommodations may be made for students who miss class, assignments, or exams to observe a religious holiday, you must inform me in writing before the end of the third week of class, or as soon as possible if the holiday occurs during the first three weeks of the semester. For more information, please see the university's Religious Holiday Class Absence Policy.

Emergency Preparedness

Before an emergency affects our class, students can take steps to be prepared by downloading the WashU SAFE App. In addition, each classroom contains a "Quick Guide for Emergencies" near the door.

Resources for Students

WashU provides a wealth of support services that address academic, personal, and professional needs. To start exploring resources that can help you along the way, please visit: Resources for Students.