The University of Chicago

FINM 36700: Portfolio Theory and Risk Management I

Syllabus

September 30, 2019

Description

The course begins by covering the classic foundations of portfolio theory, including mean-variance mathematics and the standard equity factor models used in attribution and risk management. It goes beyond these classic results to cover return dynamics, statistical uncertainty, model selection, market frictions, and non-convex optimization. Throughout, the course examines issues of application and implementation relevant for professionals in various areas of quantitative finance. Case studies cover a range of asset classes, investment strategies, and industries.

Prerequisites

Required:	Linear Algebra
	Probability and Statistics
Recommended:*	Regression Analysis
	Markets and Investments
	Python (or R or Matlab)

*Financial Math students cover the recommended prerequisites in the September Launch.

Staff

Instructor:	Mark Hendricks	hendricks@uchicago.edu
TAs:	Jeremy Bejarano	jbejarano@uchicago.edu
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Grader:	Hyunwoo Roh	hyunwoo@uchicago.edu

Lectures

Location:	Classroom 112 of 5727 South University Avenue.
Dates:	Mondays, September 30 through December 2.
Time:	6:00-9:00pm CT.

Course Materials

Required:	Lecture notes
	Harvard Business cases (cost $4/each)
	Occasional reading
Supplementary:	Textbooks listed on Canvas
	Articles listed on Canvas

Topics

Returns	Returns, volatility, correlation, mean-variance optimization
Risk Premia	LOOP, beta, systematic risk, CAPM
Beyond Equities	Term structure, FX, commodities, carry
Multi-Factor Models	Value, momentum, model selection
Performance Attribution	Replication, attribution, ETFs, mutual funds, APT
Risk Management	Hedging, PCA, immunization
Allocation	ICAPM, Black-Litterman, robustness
Nonlinear Risk	Value-at-Risk, non-parametric estimation, machine-learning techniques
Beyond Mean Variance	Market frictions, taxes, Monte Carlo, dimension reduction
Delegated Management	Hedge funds, fund flows, pensions, endowments

*Subject to change.

Help

Reviews	Fridays, 4:00-5:00pm	Seminar Room
Office Hours	Mondays, 12:00-1:00pm	Seminar Room
	Thursdays, 9:00pm-10:00pm	Online
	By appointment	Office 208A.
Questions	To instructor and TA's	Canvas Discussion or email
Notes	Reviews will be filmed and posted on Canvas.	
	Link to online office hours will be posted on Canvas.	
	No Thurs office hours or Fri review on Nov 28-29.	

Canvas

The course website is on Canvas.

- You are expected to check it regularly.

- All course material, lecture videos, and announcements will be posted (or linked) there.

- All Q&A will be posted here.

- Emailed questions of general interest will be posted (and anonymized.)

- Student answers to questions are welcome.

Grades

Final grades will be determined as follows:

Participation:	10%
Homework:	20%
Midterm Exam:	30%
Final Exam:	40%

Participation

Some activities have positive impacts on the class, including...

- in-class discussions and activities

- answering questions on the Canvas Discussion Board

- connecting course concepts to work, interviews, or extra-curricular activities

Note that you...

- are not penalized for a wrong answer in class discussion or asking for help (email, Canvas, etc.)

- can get full participation points without full attendance.

Homework

- **Purpose:** The primary purpose of the homework is to learn to apply what we discuss in class. It's primary purpose is not to assess you. In a science class, you have a lab session to learn how the theory works in practice, and that is the primary purpose of our homework assignments.

- **Format:** Most homework assignments use an outside data set and ask you to analyze it in various ways. You will need to use computational software for the analysis, and it is up to you whether to use Python, Matlab, R, or something else. You will submit a report addressing the homework questions and explaining your results.

- **Grading:** Homework submissions will be graded as to whether it is a good-faith analysis, not based on whether it is correct. Submitting raw, unexplained work will not get full credit.

- **Groups:** You will complete and submit your homework as a group, with one submission per group. The group assignments are made via Canvas, and the groups will change during the quarter.

- **Submission:** Submit your report in a single pdf via the Assignment link on Canvas. Separately, submit a compressed folder with your computational code. Both will be reviewed by the grader.

- **Deadline:** The homework solutions are due by 6pm on the due date. No late submissions will be accepted, so ensure you submit early enough to avoid technical difficulties. The deadline will not be extended for your travel, job interview etc. These things are important, and the course accommodates this by letting you work on homework in groups.

- **Collaboration and Sources:** List any collaboration (outside your group) and any sources used (outside the 2019 course materials) in a "References" section at the very top of your homework. Any work using unattributed sources will receive a zero. (If two submissions have identical portions, both will receive a zero.) Furthermore, these violations are subject to Department and Division discipline.

  It is okay to discuss the homework with classmates, but it is not okay to copy their code, analysis, or conclusions.

Exams

Midterm:	November 4, 6:00-9:00pm CT.	KPTC 106
Final:	December 9, 6:00-9:00pm CT.	KPTC 106
Format:	Mix of open-laptop and closed-book.	(Practice exams will be provided.)

Exams test content covered via lectures and homework. The final is comprehensive w/ emphasis on post-midterm material.

Academic Honesty

- You should have all signed the *Academic Honesty Attestation.*

- Though you are allowed to work in groups and use attributed sources, copied or unattributed work is considered a violation of the academic honesty policy.

- Consequences have included failed grades, suspension, and expulsion.