PORTFOLIO MANAGEMENT
FINC-UB 44
Tues./Thurs. 2-3:15pm
Tisch UC-25

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Course Description

Portfolio management: *The art and science of making decisions about investment mix and policy, matching investments to objectives, asset allocation for individuals and institutions, and balancing risk against performance.* (Investopedia)

There has been a proliferation of new products and strategies in the asset management space in recent years, e.g., smart beta, alternative beta, fundamental indexing, low volatility, and leveraged and inverse ETFs. This course applies portfolio theory to understand and evaluate these products and strategies in the context of the empirical evidence about return patterns across assets (i.e., the factors such as value/growth, momentum, and carry that drive returns) in multiple markets/asset classes (e.g., US and international equities and bonds, currencies, and commodities). Key questions include:

- What factors drive asset returns? Is it risk or mispricing?
- Can this structure of returns be used to construct better portfolios and products?
- How should the performance of existing products be evaluated given the empirical evidence?

The basic theoretical framework is standard portfolio theory, as developed in Foundations of Finance, and its extensions, and the course will rely heavily on Excel modeling using real world data.

The course also covers, to a lesser extent, the institutional landscape of the asset management business—the firms (e.g., Blackrock, Vanguard), the vehicles (e.g., mutual funds, ETFs, hedge funds), and the trends (e.g., active vs. passive, fee competition).

Pre-Requisites

Foundations of Finance (FINC-UB 2) is the pre-requisite for this course. Students are expected to understand statistics, basic portfolio theory, including the idea of mean-variance optimization, and the CAPM.

Required and Recommended Materials

There is no required textbook for the course, but there are several books that cover some or most of the material and also provide additional information and practice problems. The primary such resource is

Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, William N. Goetzmann, **Modern Portfolio Theory and Investment Analysis**, Wiley, 9th Edition, 2014.

which will be made available in the bookstore as an e-textbook. Basic portfolio theory and some of the more advanced material is also covered in the textbook that is required for the Foundations of Finance course

Zvi Bodie, Alex Kane and Alan J. Marcus, **Essentials of Investments**, McGraw-Hill Irwin, 10th edition, 2017.

Note that earlier and later editions of the same book provide essentially equivalent coverage of the material. You might also want to take a look at

Andrew Ang, **Asset Management: A Systematic Approach to Factor Investing**, Oxford University Press, 2014.

This book is an excellent resource that covers a number of the topics that we will be discussing during the course.

There are 2 required cases that are available in the bookstore in the form of an electronic course pack:

Innovating into Active ETFs: Factor Funds Capital Management LLC, 9-211-031, Harvard Business School Publishing

ProShares Hedge Replication ETF, UV6939, Darden Business Publishing

There will also be lecture notes and supplementary materials (e.g., journal articles, newspaper articles, and sample Excel spreadsheets) for many classes. Lecture notes will be distributed in three "books" each covering approximately one third of the class sessions, and they will also be available on NYU Classes. The supplementary materials will also be available on NYU Classes, as will links to other relevant information.

Finally, you need a calculator for this class. It is a distinct advantage to have a financial calculator, but not an absolute requirement.

Course Requirements

Assignments:
The assignments for the course will consist of 4 problem sets, 2 cases, 2 in-class quizzes and a final project. There will be NO final exam. Problem set questions and the associated Excel templates will be available under the Assignments tab on NYU Classes. Each student should submit an individual set of solutions electronically via NYU Classes. However, you are encouraged to discuss the problem sets with other students. Case questions and the associated Excel templates will also be available under the Assignments tab on NYU Classes, and the same rules apply. Both problem sets and cases will be graded on a check/no-check basis. If you make a reasonable effort to complete the assignment, you will receive full credit. However, there will be 10% extra credit awarded if the assignment is 100% correct.

The 2 quizzes will consist of multiple choice and fill-in-the-blank questions and short problems like those on the problem sets, in the recommended textbooks, and in the lecture notes. They will be closed book; however, you may bring in a limited number of pages of notes. In addition, I will provide a formula sheet with all the relevant formulas. There will be no make-up exams. If you know that you will be unable to make it to class on the scheduled dates, let me know far enough ahead of time so that you can take the quiz beforehand.

The final project will be an effort to apply the concepts of the class to analyze an existing investment management product and to employ it in a portfolio context. Projects will be done in groups of up to 4 students. The project write-up will be due on the last day of classes. Further details will be provided later in the semester.

Other requirements:
In addition to the problem sets, students may wish to attempt to do end-of-chapter problems from the textbooks. Answers to these problems will not be collected, and the solutions will be available on NYU Classes. These problems are an excellent way to check your command of the material. Looking at the solution before attempting to do the problem is NOT a good way to approach these problems.

Class attendance is an important part of the learning experience. I do not take formal attendance; however, keep in mind that class participation does account for 5% of the final grade. If you are not in class, you cannot participate in the discussion. If you will miss class, please inform me beforehand via email. For those of you who may miss class, I will attempt to videotape every class session. The URL for the streaming video will be posted on NYU Classes as soon as it becomes available. However, keep in mind that viewing the video is not a good substitute for attending class.

Finally, participation is an essential part of learning in this course. Students are expected to participate in all facets of classroom learning. In particular, you are expected to contribute, in a constructive manner, to classroom discussions, including those of the assigned cases. These contributions will determine your class participation grade. The assigned reading should be done before the corresponding class session, and you are also expected to keep up with current business news by reading a publication such as the *Wall Street Journal*, the *Financial Times*, and/or the *Economist*. I will attempt to alert you to particularly interesting news items via an announcement on NYU Classes. Thus, you should make an effort to check the course page regularly.

Policies and Procedures

The problem sets should be submitted before the end of the class session in which they are due. The associated Excel files should be submitted via NYU Classes. Assignments that are late but within 24 hours of the deadline, will receive ½ credit. After 24 hours, no assignments will be accepted (unless due to documented serious illness or family emergency); it is unfair to the other students in the class.

I will make every effort to start and end class on time. If you arrive late, please enter quietly without disturbing the rest of the class. While in class, please be courteous to your fellow classmates and me. During lectures and discussions only one person should speak at a time. I encourage you to ask questions of your fellow students and me. I consider a good question as valuable as a good answer. In lectures, it is difficult to ask good questions unless you already have some familiarity with the material. Therefore, you should do the required reading before the relevant class session.

I am available during the office hours listed at the beginning of the syllabus. If I have to cancel office hours, I will try to make an announcement both in class and on NYU Classes. If you cannot make it at these times, you can make an appointment to see me at another time.

Academic Integrity
Integrity is critical to the learning process and to all that we do here at NYU Stern. As members of our community, all students agree to abide by the NYU Stern Student Code of Conduct, which includes a commitment to:
- Exercise integrity in all aspects of one's academic work including, but not limited to, the preparation and completion of exams, papers and all other course requirements by not engaging in any method or means that provides an unfair advantage.
- Clearly acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations (which should be designated with quotation marks), paraphrasing, creative expression, or any other incorporation of the work of others should be fully referenced.
- Refrain from behaving in ways that knowingly support, assist, or in any way attempt to enable another person to engage in any violation of the Code of Conduct. Our support also includes reporting any observed violations of this Code of Conduct or other School and University policies that are deemed to adversely affect the NYU Stern community.

The entire Stern Student Code of Conduct applies to all students enrolled in Stern courses and can be found here: www.stern.nyu.edu/uc/codeofconduct

General Conduct and Behavior
Students are also expected to maintain and abide by the highest standards of professional conduct and behavior. Please familiarize yourself with Stern's Policy in Regard to In-Class Behavior & Expectations
http://www.stern.nyu.edu/portal-partners/current-students/undergraduate/resources-policies/academic-policies/index.htm
and the NYU Disruptive Behavior Policy
http://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/bullying--threatening--and-other-disruptive-behavior-guidelines.html.

Students with Disabilities
If you have a qualified disability and will require academic accommodation of any kind during this course, you must notify me at the beginning of the course and provide a letter from the Moses Center for Students with Disabilities (CSD, 998-4980, www.nyu.edu/csd) verifying your registration and outlining the accommodations they recommend. If you will need to take an exam at the CSD, you must submit a completed Exam Accommodations Form to them at least one week prior to the scheduled exam time to be guaranteed accommodation.

Grading Policy

The final grade will be calculated as follows:

Class participation	5%
Problem sets	20%
Cases	10%
Quizzes	50%
Final project	15%

At NYU Stern, we strive to create courses that challenge students intellectually and that meet the Stern standards of academic excellence. To ensure fairness and clarity of grading, the Stern faculty have agreed that for elective courses the individual instructor or department is responsible for determining reasonable grading guidelines.

The Finance Department has elected to use the following grading guidelines for this course and all other elective courses. Instructors should award grades of "A" or "A-" to approximately 35% of students in elective courses with enrollments of more than 25 students.

Course Outline

The problem sets and cases are listed in the session when they are due (see the last page for dates). Readings should be done prior to the class session in which the material is discussed. Any changes to this schedule will be announced in class and on NYU Classes. EGBG refers to Elton, Gruber, Brown & Goetzmann, **Modern Portfolio Theory and Investment Analysis**; BKM refers to Bodie, Kane and Marcus, **Essentials of Investments**; and Ang refers to Ang, **Asset Management**.

Session	Date	Topics	Assignments
1	Tues., Sept. 3	*Introduction*	
2	Thurs., Sept. 5	*Portfolio Theory I* Statistics review Two risky assets Efficient portfolios	EGBG: Chap. 4 BKM: Chap. 5, 6.1-6.2
3	Tues.., Sept. 10	*Portfolio Theory II* Adding a risk-free asset Min. variance and max. Sharpe ratio portfolios	EGBG: Chap. 5 BKM: Chap. 6.3 Ang: Chap. 3
4	Thurs., Sept. 12	*Portfolio Theory III* Multiple risky assets Constructing the frontier	EGBG: Chap. 6 BKM: Chap. 6.4-6.6
5	Tues., Sept. 17	*Portfolio Theory IV* Constrained optimization	Problem Set #1
6	Thurs., Sept. 19	*The Asset Management Landscape I* Mutual fund and ETFs	EGBG: Chaps. 2 & 25 BKM: Chap. 4 Ang: Chaps. 15 & 16
7	Tues., Sept. 24	*The Asset Management Landscape II* Fees, performance, flows Hedge funds	BKM: Chap. 20.1-20.2, 20.6 Ang: Chaps. 17 & 18 Problem Set #2
8	Thurs., Sept. 26	*Factor Theory I* Diversification and the CAPM Alpha	EGBG: Chap. 13 BKM: Chap. 7.1-7.3 Ang: Chap. 6
9	Tues., Oct. 1	*Factor Theory II* Multi-factor models	EGBG: Chaps. 7 & 16 BKM: Chap. 7.4-7.5 Problem Set #3
10	Thurs., Oct. 3	*U.S. Equity Factors I* Active management Value-growth	EGBG: Chap. 8
11	Tues.., Oct. 8	*Review & Synthesis*	
12	Thurs., Oct. 10	*Quiz #1*	Study
	Tues., Oct. 15	***NO CLASS***	

Session	Date	Topics	Assignments
13	Thurs., Oct. 17	*U.S. Equity Factors II* Black-Litterman Size	EGBG: Chap. 16 Ang: Chap. 7
14	Tues., Oct. 22	*U.S. Equity Factors III* Momentum Conditional optimization Other factors	EGBG: Chap. 10
15	Thurs., Oct. 24	*U.S. Equity Factors IV* Smart beta and fundamental indexing ESG investing (green bonds) Levered and inverse products	
16	Tues., Oct. 29	*Case: Innovating into Active ETFs*	Case questions
17	Thurs., Oct. 31	*International Equities I* International diversification Currency effects	EGBG: Chap. 12 BKM: Chap. 19
18	Tues., Nov. 5	*International Equities II* International factor models	
19	Thurs., Nov. 7	*Performance Evaluation I* Sharpe ratios and alphas Return attribution	EGBG: Chap. 26 BKM: Chap. 18
20	Tues., Nov. 12	*Performance Evaluation II* Alternative measures Market timing	Problem Set #4
21	Thurs., Nov. 14	*Fixed Income I* The yield curve Treasury return factors	EGBG: Chap. 21 BKM: Chaps. 10 & 11 Ang: Chap. 9
22	Tues., Nov. 19	*Review & Synthesis*	
23	Thurs., Nov. 21	*Quiz #2*	Study
24	Tues., Nov. 26	*Fixed Income II* High yield bonds Bonds and stocks	EGBG: Chap. 22
	Thurs., Nov. 28	**NO CLASS**	
25	Tues., Dec. 3	*Fixed Income III* Smart beta Active management International sovereign debt	
26	Thurs., Dec. 5	*Alternative Assets I* Cryptocurrencies Liquid alternatives Hedge fund replication	EGBG: Chap. 24 BKM: Chap. 20.3-20.5 Ang: Chaps. 17 & 18

Session	Date	Topics	Assignments
27	Tues., Dec. 10	*Case: ProShares Hedge Fund Replication ETF*	Ang: Chap. 11 Case questions
28	Thurs., Dec. 12	*Alternative Assets II* Robo-advisors Variance risk premiums Options and performance evaluation Complete CFEs	Final Project (due Dec. 13)

Assignment Due Dates

Assignments (problem sets, cases, quizzes) are due on the following dates. Problem sets and cases are due before the end of the corresponding class session. Assignments that are late, but within 24 hours of the deadline, will receive ½ credit. After 24 hours no assignments will be accepted (unless due to documented serious illness or family emergency). There will be no make-up exams. Any changes to this schedule will be announced in class and on NYU Classes.

Assignment	Due Date
Problem Set #1	Sept. 17
Problem Set #2	Sept. 24
Problem Set #3	Oct. 1
Quiz #1	Oct. 10
Case: Innovating into Active ETFs	Oct. 29
Problem Set #4	Nov. 12
Quiz #2	Nov. 21
Case: ProShares Hedge Fund Replication ETF	Dec. 10
Final project	Dec. 13