Syllabus for Capital Markets (FINC 950)
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Class Overview
Main Questions the Capital Markets Class Will Answer

- This class will focus on answering two main questions

  - The first question is the “thinking” part of our class and is:

    - *How do financial markets work?*

  - The next question is the “doing” part of our class, which builds on the first question, and is:

    - *What is the best (optimal) investment portfolio for you to hold?*

- There will be lot of sub-questions to these main questions that we will answer as we go through the class
Perspective of the Capital Markets Class

- This class will answer the previous questions from two different perspectives
  - The main approach we will use is **quantitative analysis**, which uses mathematical and statistical techniques to determine portfolio strategies
  - In Module 2 we will use these techniques to study what is called the passive approach to investing and indexing
  - The other approach we will examine is the traditional active management approach to **stock picking**
    - In Module 3 we will do this via **fundamental analysis** (discounted cash flow analysis) and the **multiples approach**, both of which you might remember from Fin I/ACF
- Modules 5 through 7 will use quantitative techniques for both passive, as well as active, investment strategies such as arbitrage trading
- Please be aware that the quantitative approach uses a lot of regression analysis, which is the backbone of quantitative investing as it is practiced on Wall Street today
Class Overview

- Besides the lectures, we will have a series of cases and portfolio trading simulations to understand

  1. Different financial securities you can invest in
  2. Different portfolio strategies (investment philosophies) you can employ

- We will predominately study bonds, stocks, options, mutual funds and exchange-traded funds (ETFs)
  
  - We will briefly discuss investing in commodities and real estate

- Note that this class is not just about making money via your investments, but equally important, about how to minimize potential investment loses
Outline of Class

- Module 1: Beginnings
- Module 2: Advanced Portfolio Theory
- Module 3: Stock Picking
- Module 4: Using Options in Your Portfolio
- Module 5: Factor Models
- Module 6: How do Financial Markets Work
- Module 7: Asset Pricing Models and Active Investing
Are you a CFA?

- If you are already a CFA I strongly recommend that you do NOT take this class

  - This class covers material that is required knowledge for the CFA exams

    - Therefore, if you have a CFA you will find the material covered in this class to be very rudimentary and a review of material you already know

    - CFA’s that have taken the class in the past have all strongly suggested I discourage CFA holders from taking this class
## Grading Structure

<table>
<thead>
<tr>
<th>Task</th>
<th>Percent of Grade without Midterm</th>
<th>Percent of Grade with Midterm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Assignments</td>
<td>18%</td>
<td>18%</td>
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<tr>
<td>Case Participation Grade</td>
<td>Your individual score for a case assignment will be increased or decreased based on your in-class participation</td>
<td></td>
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<tr>
<td>Group Peer Evaluations</td>
<td>Peer evaluations reduce an individual’s overall case score</td>
<td></td>
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<tr>
<td>Portfolio Simulations</td>
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<td>4%</td>
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<tr>
<td>Online Quizzes</td>
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<tr>
<td>Midterm</td>
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<tr>
<td>Final</td>
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<td>40%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>9%</td>
<td>9%</td>
</tr>
</tbody>
</table>

The midterm is a free option. If the midterm does not help your overall final grade, then 65% of your overall grade will be based only on the final; but, you must take the midterm
Course Topics,
Recommended Readings,
Cases and Simulations
Module 1: Introduction to Financial Markets

- Realized returns vs. expected returns
- Risk
- Details on some financial instruments: Different types of bonds, different types of stocks
- Interest rate risk (duration)
- Credit risk
- Taxes and returns
- Primer on trading: Market orders and limit orders
- Buy-side market participants and their holdings: Households, mutual funds, dealers, brokers, hedge funds and high frequency traders

Reading:
- “The Wolf Hunters of Wall Street”
Module 1 Case

• **Exchange-Traded Funds at Vanguard**
  
  • Vanguard Group management, led by CEO John Brennan, was considering whether to launch exchange-traded funds (ETFs) in early 2000. ETFs, first created in the early 1990s, combined aspects of traditional mutual funds and closed-end funds. Because ETFs were exclusively index-tracking products, Vanguard, the largest index mutual fund company, had some potential expertise in managing ETFs. However, entering this market would present also unique challenges for Vanguard. Vanguard had a philosophy espousing low-turnover investing, while ETFs enabled short-term trading. The company would also need to develop a distribution network for ETFs. Finally, since Vanguard's mutual fund investors owned the company, management considered whether existing shareholders would benefit from an ETF product launch.

• **Learning objective:**
  
  • To educate students about how exchange-traded funds (ETFs) work, their differences from other types of mutual funds, and the strategic issues for ETFs going forward.
Module 1 Portfolio Simulation

- **Baseline Stock and Bond Portfolio**
  
  - In the first portfolio simulation students will create a portfolio of one stock exchange traded fund and one bond mutual fund.
  
  - This will be a baseline portfolio that will be used as a performance benchmark for the other portfolios created during the quarter.
Module 2: Advanced Modern Portfolio Theory

- Quick review of Fin 1 or Accelerated Corporate Finance (ACF) material on portfolio theory

- Portfolio theory for when you are considering investing in more than two assets
  - Minimum-variance frontier
  - Capital allocation line and the tangent portfolio
  - Selecting the optimal portfolio with a utility function

- Rebalancing a portfolio
Module 2 Case 1

- **Choosing Mutual Funds for Retirement Accounts (A)**
  - Focuses on an individual's decision to participate in her firm's retirement plan and how to invest her contributions. The (A) case focuses on which mutual funds the participant should invest in. Plan participants have a choice of 24 mutual funds with different investment strategies. Includes data from Morningstar on the composition and performance of the different funds and historical data. Uses Northwestern’s new 403(b) plan as its example.
  
- **Learning objective:**
  - To expose students to the concepts of Sharpe ratios and mutual fund/exchange-traded fund fees and their role in selecting investments.

- **Subjects covered:**
  - Investments; Mutual funds; Pension plans; Personal finance; Retirement savings; Mutual fund and exchange-trade fund fees; Sharpe ratios.
Module 2 Case 2

- Creating Your Own Portfolio
  - This case is for students who do not currently have an investment portfolio. The case instructs students in how to create a hypothetical portfolio that they will analyze during the quarter.
  - Learning objective:
    - To expose students to the principals security selection
  - Subjects covered:
    - Asset allocation; Asset management; Portfolio management;
Module 2 Case 3

- **Optimizing Your Portfolio**
  
  - This case has you take your current investment holdings and then optimize the portfolio to increase its return while minimizing its risk. For those students who do not have an investment portfolio, they will use the portfolio they create in the “Creating Your Own Portfolio”
  
  - **Learning objective:**
    
    - To expose students to the principals of portfolio theory
  
  - **Subjects covered:**
    
    - Asset allocation; Asset management; Portfolio management;
  
  - **Case reading:**
    
    - Vanguard’s Diversification Strategy
Module 2 Portfolio Simulations

- Your Investment Portfolio and Your Optimal Investment Portfolio

  - In two different trading simulations students will use their investment portfolios (including the portfolios created in the “Create Your Own Portfolio” case)

  - The first simulation has students buy their current portfolio

  - The second simulation has students buy their optimized portfolio from the “Optimizing Your Portfolio” case

  - Across the term students will compare the performance of these two simulations to each other and to the baseline stock and bond portfolio created in the Module 1 simulation
Module 3: Stock Picking

- The process of picking a stock
- Finding a stock to pick: stock screening
- Overview and strategic position of picked firm
- Define investment theses and forecast firm’s financials
- Conduct DCF and multiples calculations
- Value firm
- Selecting portfolio weights: the Kelly Criterion

Reading:
- “The Risk and Fall of Performance Investing”
- “Concentrated Investing”
Module 3 Case 1

- **Stock Picking**

  - In this case groups screen for a mispriced stock they want to invest. After they have picked a stock they will value the stock via multiples and discount cash flow (DCF) analysis to determine its target price.

- **Learning objective:**
  - To expose students to the basic principle of stock picking.

- **Subjects covered:**
  - Stock picking; Asset allocation; Asset management.
Module 3 Simulation

- **Your Stock Pick**

  - In this portfolio simulation, students will trade the stock they picked in the “Stock Picking” case or another stock of their choice.
Module 4: Using Derivatives in Your Portfolio

- Review of option payoff diagrams from Fin I/ACF

- Option portfolio strategies
  - Protective puts
  - Covered calls
  - Collars

- Discussion of mutual funds that include options
Module 4 Simulation

- **Using Options in Your Portfolio**
  
  - In this simulation students will take either their initial investment portfolio or their optimized portfolio and add futures or options to the portfolio to enhance the return of the portfolio and/or manage risk the risk of the portfolio.
  
  - This portfolio will be compared to the other portfolios created during the term.
Module 5: Factor Models

- Multifactor models
  - Fama-French three-factor model
  - Carhart four-factor model
  - Fama-French five-factor model
  - AQR six-factor model
  - Macroeconomic factor models
  - Three factor model for bonds

- Application of factor models: Portfolio performance evaluation

- Investing with factor models: Smart beta ETFs
  - What are they and the value added (if any) of investing in them

- Readings:
  - Characteristics, Covariances, and Average Returns
  - Dissecting Anomalies with the Five-Factor Model
  - Explorations in Factors Explaining Money Market Returns
  - Luck versus Skill in the Cross-Section of Mutual Fund Returns
Module 5 Case 1

- **AQR’s Moment Funds (A)**
  - AQR is a hedge fund based in Greenwich, Connecticut, that is considering offering a wholly new line of product to retail investors, namely the ability to invest in the price phenomenon known as momentum. There is a large body of empirical evidence supporting momentum across many different asset classes and countries. However, up until this point momentum was a strategy employed nearly exclusively by hedge funds, and thus not an investment strategy available to most individual investors. This case highlights the difficulties in implementing this "mutual funditizing" of a hedge fund product, along with the challenges that the open-end and regulatory features that a mutual fund pose to many successful strategies implemented in other contexts.
  - **Case readings:**
    - Aspects of Investor Psychology: Beliefs, Preferences, and Biases Investment Advisors Should Know About
    - Fact, Fiction and Momentum Trading
Module 5 Case 2

- **Smart Beta Exchange-Traded Funds and Factor Investing**
  - iShares by Blackrock is considering launching an innovative investment management product in the rapidly evolving ETF space, a multifactor ETF. iShares is the world market leader in the overall ETF market, as well as the newer smart beta ETF market. To understand the motivation for this product they reviewed recent academic literature on what are relevant factors that drive investment returns and factor investing. iShares needed to determine if this new multifactor ETF had value added over the ETFs they already sold.

- **Learning objective:**
  - To examine the launching of an innovative factor-based smart beta ETF in the investment management industry.

- **Subjects covered:**
  - Competitive strategy; Corporate strategy; Financial instruments; Investment management; Investments; Smart beta exchange-traded funds.
Module 5 Case 3

- **Your Portfolio’s Performance**

  - Students will examine the performance of their personal portfolio. The performance analysis will be conducted with a factor model. Students are to decompose the return and risk of their portfolio relative to individual factors and active management.

- **Learning objective:**
  
  - To study the details of portfolio performance measurement

- **Subjects covered:**
  
  - Portfolio performance; Active management; Asset allocation; Stock picking ability
Module 6: Arbitrage and Active Trading

- Law of one price
- Law of no arbitrage
- Arbitrage trading with stocks
- Stock picking with arbitrage
- Arbitrage trading with bonds
Module 6 Simulation

- **Pairs Trading**
  
  - In this simulation exercise students enter into a pairs trade using the stock they selected in the previous “Your Stock Pick” simulation and another stock picked for this simulation.
  
  - Students need to find a stock to pairs trade with their original stock that they picked. The new company needs to be a comparable firm with their original stock pick. To form the pairs trade, the two stocks need to be mispriced relative to each other, one too expensive and the other too cheap. They can use any metric(s) they wish to determine that the stocks are (1) similar and (2) mispriced relative to each other.
Module 7: Asset Pricing Models and Active Trading

- What is an asset pricing equation?
- The CAPM’s asset pricing equation
- The arbitrage pricing theory
- Arbitrage trading with an asset pricing model
- Equilibrium asset allocation
Class Wrap-Up

- Miscellaneous material
- Putting the pieces together: How financial markets work
- The passive investment process
  - How to diversify your portfolio
  - How to select specific investments
  - How to determine your portfolio weights
  - Trading your portfolio
  - How to measure and monitor your portfolio’s performance
  - Rebalancing
- The active investment process
  - Screening
  - Picking
  - Valuing
- Beware of behavioral biases
- Current academic and Wall Street research
- A few expectations for the future of personal investing