**COURSE INFORMATION**

**Course Number:** MGT 845 01

**Course Title:** Portfolio Management in Practice

**Term and Year:** Fall 2017

**Class Meeting Time, Day:** Tuesdays and Thursdays, 2:40 p.m. - 4:00 p.m., Classroom 4210

**CONTACT INFORMATION**

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| **Professor(s)** | **TA(s)** |
| **Name:** William Goetzmann  **Office Location:** 4536 **Telephone Number:** 203-432-5950 **Email Address:** [william.goetzmann@yale.edu](mailto:william.goetzmann@yale.edu) **Office Hours:** by appointment only, please e-mail: [electra.ferriello@yale.edu](mailto:electra.ferriello@yale.edu)  **Co-instructor**: Osman Nalbantoglu, Ph.D., Bridgewater  Osman Nalbantoglu serves on the Management Committee of Bridgewater Associates where he is responsible for portfolio implementation and trading.  Before Bridgewater, he was a partner at McKinsey and Associates in the New York Office, where he last was the co-head of the Wholesale Banking Practice.  Osman holds a Ph.D. in Business Economics (Finance) from Harvard University and a B.A. in Economics and Mathematics from Yale University. | **Name:** Steven Fortney  **E‑mail Address:** [steven.fortney@yale.edu](mailto:steven.fortney@yale.edu)  **Name:** Emin Dokumaci  **E‑mail Address:** [emin.dokumaci@yale.edu](mailto:emin.dokumaci@yale.edu) |
| **Review Sessions:** As needed | |

**COURSE MATERIALS**

**Textbook(s):** Ang, Andrew. Asset Management: A Systematic Approach to Factor Investing. Oxford University

Press, 2014. **ISBN:** 9780199959327

**Readings:** See Detailed Outline of Class Sessions

**Software:** None

**COURSE DESCRIPTION AND OBJECTIVES**

**Course Description:** Portfolio management demands a range of different perspectives.  This course is designed to apply the range of integrated SOM perspectives to the important problem of investing on behalf of clients. These perspectives include the Investor, Employee, State and Society, Customer, Financing, Operations, Innovation and Macro economy.  Students learn by doing. *Portfolio Management in Practice* is designed to provide hands-on experience with the asset management process.  Students are assigned to a range of mandates that are current in today’s investment universe – some complex, some traditional, some client-specific, some generic.  Coursework includes weekly presentations and PowerPoint assignments by student groups around different portfolio management perspectives and investment mandates; active student, faculty and visitor feedback and discussion and the use of Bloomberg to construct and deliver portfolios and portfolio analysis for presentation.

**Specific topics include:**

* Understanding client needs
* Understanding an investment style or mandate and its value proposition
* Designing a feasible and robust strategy to fulfil the mandate
* Testing and implementing the mandate with screening and back-testing tools
* Understanding the strategic environment for your investment style
* Understanding the micro-structure of executing the strategy
* Understanding how investment decisions are made in real time
* Methods for performance analysis and attribution
* Risk metrics and stress-testing the investment portfolio
* Communicating complex investment topics simply and clearly to clients
* Identifying and mitigating operational risk, event and headline risk
* Understanding and articulating the long-term expectations about the portfolio: forecasting methods
* Understanding self-assessment, group dynamics and the functioning of the investment team
* Developing and presenting and explaining investment results

Students work in teams to fulfill different investment mandates.  The meetings will consist of lectures, discussion and student presentations.  Assignments are specified as either memos or PowerPoint “decks” due prior to class on the day of the assignment via Canvas. Late submissions lose a full grade.

**Each team should be prepared to make a 20 minute presentation on the mandate, their strategy and their progress thus far in addition to the assignment. We recommend to maintain a set of overview slides in addition to the current, topic-specific assignment.**

**A few important points to remember:**

1. GRADING WILL NOT DEPEND ON THE INVESTMENT RETURN OF YOUR PORTFOLIO.  This is not an investment competition. Short-term performance is irrelevant to assessment of investment skill in virtually all cases, and may lead to inappropriate risk-taking.
2. Teams should take portfolio construction seriously from the beginning. The portfolio is a serious simulation. From day one, think about what is best for a hypothetical client.
3. When we have visitors to class from practice, take extra care to represent Yale SOM well. The quality of your presentations and comments affect your and SOM’s reputation.

The course will meet twice a week on Tuesdays and Thursdays from 2:40 pm to 4:00 pm.  Students will manage the portfolio with Bloomberg.  Some analysis may be done in Excel because professional software lacks certain capabilities – i.e. risk analysis.

Investment Management is a useful pre-requisite for this course. If you have not taken this, please contact the instructor to discuss.

**Course Objectives:** Contact the Instructor.

**COURSE REQUIREMENTS**

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| --- | --- |
| **Submitted Reports** | 40% |
| **Presentations** | 30% |
| **Attendance and Participation** | 30% |

Please see the Yale SOM Grading Policy at <http://portal.som.yale.edu/page/grading-policy>

**DESCRIPTIONS OF ASSIGNMENTS/PROJECTS/PROBLEM SETS**

**Student Presentations:** On days for which each assignment is due, one group will be selected to present their analysis using PowerPoint. Come prepared to be asked to present.

**Mandate Allocation**

On the first day:

1. Form a team of 3-5 students. If you cannot find a group, please inform us and we will match you with a group.
2. Read the options below. Each team must rank their top 3 mandate choices “1” = top.  You must specify a mandate from each column.  We will collect these in the first class meeting.
3. Each student must fill out these four questions about your professional/educational background. We will use these as part of the process of choosing a mandate for the group. On a scale of 1-5 rank yourself:   
     
    **Less More**
   1. Quant background/experience 1 2 3 4 5
   2. Bloomberg knowledge 1 2 3 4 5
   3. Presentation skills 1 2 3 4 5
   4. Investment industry experience 1 2 3 4 5

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| --- | --- | --- |
| **Column 1: Long-Only** | **Column 2: Alpha, Beta Lambda Strategies** | **Column 3: Institutional and Individual Portfolios** |
| Best ideas/high conviction equity fund for the general institutional market. Clients include pension funds, endowments, sovereign funds and family investment trusts. Your firm offers separate accounts for investors over $50 M, and a pooled product for investors in the range of $500K to $50M.  “High conviction” implies choosing securities you have a high expectation will outperform their risk-adjusted benchmark (i.e. generate alpha”).  Client risk assessment may be appropriate for this mandate. | Long-short environmental impact global equity fund for institutional investors.  A mandate to minimize carbon footprint. Clients include pension funds, endowments, sovereign funds and family investment trusts. Your firm offers separate accounts for investors over $50 M, and a pooled product for investors in the range of $500 K to $50 M.  Goal: to define and manage to a goal of minimizing the fund’s carbon footprint while meeting the investment goals of a range of institutional funds which include diversification and, in some cases, a mandated spending policy of 4% to 5% per annum. | A 2035 target-date fund for the 401(k) market. It will be the default option, and will be reviewed periodically for performance by fiduciaries.  Your clients are either employees in corporate defined contribution pension plans, overseen by a committee with fiduciary responsibility, advised and reviewed by a consultant and managed through a record-keeper that negotiates fees and lineups with a plan sponsor, or individual investors in either a taxable or a tax-advantaged account. |
| An emerging markets equities fund for the retail 401(k) market. Your clients are either employees in corporate defined contribution pension plans, overseen by a committee with fiduciary responsibility, advised and reviewed by a consultant and managed through a record-keeper that negotiates fees and lineups with a plan sponsor, or individual investors in either a taxable or a tax-advantaged account.  Goal: to provide “exposure” to emerging markets within a broader diversified portfolio – either with additional alpha or with efficient beta management. | Equity market neutral hedge fund.  Clients include pension funds, endowments, sovereign funds and family investment trusts.  Your firm offers separate accounts for investors over $50 M, and a pooled product for investors in the range of $500 K to $50 M.  Your goal is to deliver an “absolute return” of 300 basis points over treasury bills per year net of fees and transactions costs; with zero beta exposure to the S&P 500, using long and short positions in U.S. equity securities and options or futures where appropriate.  Fees are 1% fixed and 15% incentive fee over a high water mark set at the beginning of the period. | A risk-parity portfolio for a 30% under-funded public pension plan, with the mean age of 35 and inflation-protected benefits. The fund is currently $13 BB 60/40 U.S. equities and corporate bonds, and the underfunding is calculated using a 7% expected return/discount rate for future liabilities and contributions of 3% per year.  For simplicity you can assume ages are log-normally distributed round 35 years with a standard deviation of 6%. And that all employees receive the same payout.  You are allowed to use publicly traded securities and short positions as needed.  The risk-parity portfolio encompasses 90% of the portfolio, with a 5% liquidity buffer to cover immediate anticipated payouts.  Your goal is to minimize the chance that the pension fund will fail to deliver its promised benefits, given the current contributions, and to assess what level of contributions are necessary to insure payouts are protected with 75% certainty. |
| Best concepts behavioral finance equity fund for the institutional and retail market. You offer two products: a long-only mutual fund appropriate for individual investors in either a taxable or a tax-advantaged account and a separate account institutional product aimed at pension funds, endowments, sovereign funds and family trusts.  Goal: to use behavioral finance theory and empirical evidence to construct a portfolio to generate positive risk-adjusted returns to a portfolio that may rely of this fund as its primary vehicle for equity exposure. | Short selling zero-beta hedge fund.   Clients include pension funds, endowments, sovereign funds and family investment trusts. Your firm offers separate accounts for investors over $50 M, and a pooled product for investors in the range of $500 K to $50 M.  Goal:  to deliver positive alpha with zero beta exposure to the S&P 500, using short positions in U.S. equity securities and options or futures where appropriate to hedge the negative beta risk. | Taxable family investment trust that pays out 4% in real terms in perpetuity. The fund is currently holding a portfolio that is comprised of 75% U.S. blue-chip stocks with embedded capital gains of 60%.,  10% non-US equities with 50% embedded capital gains and 15% in high-grade municipal bonds.  Prime concerns include inflation and stability of payout.  Re-construct this portfolio, understand its logic and then implement changes. |
| A high-yield corporate fixed income fund for the retail market. 401(k). Your clients are employees in corporate defined contribution pension plans, overseen by a committee with fiduciary responsibility, advised and reviewed by a consultant and managed through a record-keeper that negotiates fees and lineups with a plan sponsor.  Your fund should also be appropriate for individual investors in either a taxable or a tax-advantaged account.  Goal: to deliver exposure to the asset class, understanding that 401(k) investors in this product typically choose it as a means to access higher income. You may presume that clients are diversified beyond this fund but cannot be sure of it. | U.S. Equity momentum factor fund for an ETF strategy. The fund is benchmarked against peer quantitative momentum funds and alpha is tracked against a three-factor Fama-French model.  Goal: providing momentum factor returns to retail clients, taking into account the risk of under-diversification; microstructure issues such as liquidity, turnover, failure to deliver, and macroeconomic risk. | A socially responsible $200 M college endowment with a 5 ½% real return mandate, full public transparency, benchmarked to the Higher Education Price Index.  The endowment contributes 30% of budget, tuition 60% and gifts 10%.  It is currently invested as follows:  40% US equities  10% non-US equities  10% U.S. corporate debt  15% U.S. hedge fund fund-of-fund with *de minimus* lock-up.  20% committed or paid-in private equity buyout fund of funds with average vintage of 4 years.  5% committed or paid-in venture fund of funds with average vintage of 4 years. |
| Real estate securities fund for the general institutional market. A long-only fund that invests in REITs and other real-estate securities in the U.S. market and non-U.S. market.  Goal: to deliver exposure to the real estate asset class by tracking and if possible exceeding an appropriate (global) REIT/property security benchmark. | Low-volatility/low-beta factor fund ETF.  The fund is benchmarked against peer quantitative low volatility and low beta funds and the alpha is tracked against a four-factor Fama-French model.  Goal: providing low-volatility factor returns to retail clients, taking into account the risk of under-diversification, liquidity, turnover and macroeconomic risk. | An outsourced CIO firm that manages a pooled portfolio of $4 billion for a dozen clients ranging from sovereign funds to foundations with a mandated 5% spend, to universities, foundations, sovereign funds and some high net worth individuals with spending rates from 4% to 6% real spending policy.  The goal of the fund is to replicate a broadly diversified, “Yale Model” portfolio through the use of publicly traded securities and add significant “alpha” for clients. |
| A best ideas FinTech fund for the retail market 401(k). Your clients are either employees in corporate defined contribution pension plans, overseen by a committee with fiduciary responsibility, advised and reviewed by a consultant managed through a record-keeper that negotiates fees and lineups with a plan sponsor, or individual investors in either a taxable or a tax-advantaged account.  You can presume this is not the entirely of your clients’ investment portfolio, but rather the “aspirational” allocation in most portfolios.  Your goal is to provide exposure to new, possibly transformative, technology by identifying “FinTech” companies with the potential for extremely high growth. | M&A arbitrage fund ETF.  Goal:  To generate a 600 bp expected return by investing in announced merger deals (U.S. and abroad) by taking long positions in target firms and short positions in acquirers, taking into account diversification (which impacts the expected information ratio) and the probability of extreme losses that impacts investor returns and the viability of the fund. | A $4 billion pooled stable value fund for the 401(k) market.  The only low-risk option in most plans.  The goal is to use longer maturity and higher-yielding (yet very low risk) securities to manage as pooled fund that has 200 401(k) plans, in which the average client’s stable value allocation is 20%.  Major risks include deviation of the crediting rate from yield, default or value impairment and dilution due to client withdrawals. |
| A "sin stocks" fund for the mutual fund market. Your clients are either employees in corporate defined contribution pension plans, overseen by a committee with fiduciary responsibility, advised and reviewed by a consultant managed through a record-keeper that negotiates fees and lineups with a plan sponsor, or individual investors in either a taxable or a tax-advantaged account.  Goal: is to exploit compressed valuations of these socially “unpopular” securities, using research that these outperform in the long run. You will be challenged to make the case for holding sin stocks. | A risk-timing fund that reallocates between equity and treasuries.  Clients are very large (>>$1 B) pension funds, endowments, sovereign funds and family investment trusts.  Returns are measured in dollars. About half of these clients have a natural exposure to energy.  You can presume that their major risk concerns are about global recession and financial crises and their target return for the fund is 80% of the expected return of a global equity index.  You rely on macroeconomic assessments and forecasts, historical events and precedents, risk premia implied by prevailing asset prices and other information at your disposal to construct meaningful scenarios and evaluate probabilities. | A portfolio strategy for the Alaska Permanent Fund Corporation which takes the current allocation as a starting point and seeks to improve the risk/return profile, using publicly traded securities. |

**YALE SOM POLICIES**

Please see the Yale School of Management Bulletin at <http://www.yale.edu/printer/bulletin/htmlfiles/som/rights-and-responsibilities-of-students.html> for Rights and Responsibilities of students and for information on requesting a course recording.

**Laptop/Device Policy**

Usage not allowed without the express permission of the instructor.

**CONFLICT OF INTEREST DISCLOSURE**

William Goetzmann’s outside activities and relationships are disclosed [here](http://viking.som.yale.edu/outside%20activities%202015.pdf).

**DETAILED OUTLINE OF CLASS SESSIONS**

| **#** | **Date** | **Topic** | **Readings** | | **Assignment/Case Due** |
| --- | --- | --- | --- | --- | --- |
| **Textbook** | **Canvas** |
| **1** | **8/31/17** | **Introduction. Discussion of perspectives on portfolio management. Review of mandates. Assignment of teams and mandates.** | Ang Chapter 1 | Mandate Matrix | Review the mandate matrix in the syllabus (above).  This explains the projects your will spend the rest of the semester working on.  You will not necessarily get your first choice, so look through all of them. Fill out the four questions about yourself as well. |
| **2** | **9/05/17** | **Overview of Bloomberg portfolio management tools with a Bloomberg representative and Steven Fortney** |  | Bloomberg learning materials (see Bloomberg folder) | Nothing due.  You should have met with your team for planning purposes outside of class. |
| **3** | **9/07/17** | **Portfolio missions and clients. How managers/mandates fulfil missions.**  **Case: UAW VEBA** | Ang Chapters 2-5 over the next two weeks.   A fresh perspective on financial theory. | **Case Discussion:**  **UAW VEBA**  <http://vol09.cases.som.yale.edu/uaw-veba>  *\*Log in using your netID and password.*  Come prepared to discuss how you would invest to meet the VEBA mandated return. | **Assignment Due. Security screening.**  Perform a screen via Bloomberg of securities that are consistent with your mandate or comparable funds/ETFs that match your mandate.  If you screen on funds, choose one of these and list the securities they hold.  Note that your team may not have settled on a clear strategy to implement your mandate.  That is fine.  This assignment is intended to get you familiar with the tools methodological approaches to building portfolios.  Turn in slides (5 max) that indicate:   * Your mandate * How you related this to the challenge of security screening: how it worked and what problems you foresee if any.   A list or sample of securities with some of their characteristics: ticker, name, price, capitalization/industry, P/E, or other ratios. |
| **4** | **9/12/17** | **Long-only Portfolios. Active vs. Passive: Factors vs. Skill**  **Case discussion** |  | Osman Nalbantoglu | Come prepared with discussion about active vs. passive investing. |
| **5** | **9/14/17** | **Screening and Product development** |  | **Case Discussion: Low-Carbon Investing**  <http://vol11.cases.som.yale.edu/low-carbon-investing>  *\*Log in using your netID and password.* | **Assignment Due. First Portfolio.**  Prepare and submit 5 PowerPoint slides. These should contain:   * Your mandate. * Your planned strategy to meet it. * Sample securities or list.   Pie chart allocation and graphics.  **Group 1 Presentation.** |
| **6** | **9/19/17** | **Discussion: Portfolio optimization models and analytics. Diversification, factor exposures, forecasting – limits of analytical models and their use in practice.** | Ang Chapters 6-7, 10, 16 & 17 over the next two weeks. | Osman Nalbantoglu | Come prepared with questions about analytical models of portfolio optimization and construction, forecasting of investment returns. |
| **7** | **9/21/17** | **Discussion. Value investing Comparative advantage, industry expertise, sources of alpha, return horizon, styles of value.** |  | **Guest Speaker:** Lisa Howie, Yale Investment Office <http://investments.yale.edu/yio-staff-main-page/2015/11/15/lisa-m-howie> | Come prepared to discuss value investing. |
| **8** | **9/26/17** | **Academic foundation for mandate. Theories and evidence for your strategy.** |  | **Case Discussion: Factor Investing for Retirement**  <http://vol11.cases.som.yale.edu/factor-investing-retirement>  *\*Log in using your netID and password.* | **Assignment Due. Value Proposition.**  PowerPoints or paper write-up  Present a well-researched, evidence-based rationale for the portfolio strategy based on peer-reviewed academic and practitioner journal articles and other evidence.  Cite at least 5 articles and, with 150 character captions, explain them in lay terms. POST THESE ON CANVAS using standard bibliographic form.  ***For example:***  Goetzmann, William N., and Alok Kumar. "Equity portfolio diversification." *Review of Finance* 12, no. 3 (2008): 433-463.  **The average retail stock portfolio is highly under-diversified and risky.  Investors typically hold 5 correlated stocks.**  Make the best logical argument for why and where your mandate can add value and what clientele might benefit from it. Explain what your organization needs to realize this value.  **Group 2 Presentation.** |
| **9** | **9/28/17** | **Discussion:**  **Strategic environment** |  | Osman Nalbantoglu | Come prepared to discuss topics related to innovation, competition and disintermediation in the investment industry. |
| **10** | **10/03/17** | **Class presentations: competitor analysis** |  | Osman Nalbantoglu | **Competitor analysis**  PowerPoints  Define your universe of competitors. Identify some leading funds or managers in your category.  How are they organized, how are their services delivered, how are they priced and how do they articulate their value to the investor?  What longer-term forces represent opportunities for and threats to your strategy, structure and profitability-SWOT analysis?  Compare your strategy to these competitors and assess how (or whether) you can compete.  This includes how you measure success.  **Groups 3 & 4 Presentations.** |
| **11** | **10/05/17** | **Discussion: Investment Personnel & Teams** |  | **Guest Speaker:**  Myra Drucker, Board of Trustees, Financial Accounting Foundation  <http://accountingfoundation.org/jsp/Foundation/Page/FAFSectionPage&cid=1176164714927> | Come prepared to discuss the role of people in an investment organization.  What are the most important factors in hiring? How do you assess performance?  How do you elicit ideas about investment, presentation, analysis, mistakes & innovative possibilities?  How do you allocate tasks? How do you give feedback?  How does formality and informality, familiarity and privacy affect the investment workplace? |
| **12** | **10/10/17** | **Case discussion: Bridgewater** |  | **Case Discussion: Bridgewater**  Osman Nalbantoglu | **Assignment Due: Organization report**  Memo: 3 pages  In light of team experience thus far consider the organization needed to staff this portfolio strategy effectively. What functions i.e. research, trading, compliance, marketing are needed and why?  How have you managed without a full staff?  **Group 5 Presentation.** |
| **13** | **10/12/17** | **Discussion: Market microstructure:  information, liquidity, competition.** |  | Osman Nalbantoglu  **Reading:**  Easley, David, Marcos Lopez de Prado, and Maureen O'Hara. "The microstructure of the ‘Flash Crash’: Flow toxicity, liquidity crashes and the probability of informed trading." The Journal of Portfolio Management 37.2 (2011): 118-128. | Come prepared to discuss the securities markets in which your portfolios trade.  What is the role of information?  What are the various current sources of valuation information? What are the ways that quantitative variables are estimated?  What information is legal and ethical to use? How do you estimate transactions costs, different kinds of trading venues, execution times, capacity of strategies? |
| **14** | **10/24/17** | **Class presentations: Trading and market analysis** |  | Osman Nalbantoglu | **Assignment Due: Capacity, trading and markets report**  PowerPoints or memo  Can your strategy be executed at a portfolio size of: $1 thousand, $10,000, $1 million, $1 billion, $100 billion?   Can you supply intra-day, daily, monthly or annual purchase and redemption liquidity to investors?   Estimate trading and execution costs. How many trades do you need to execute over a given month?  Is the bid-ask spread relevant?  Does your strategy involve short-selling, options or futures positions? How are these financed and what additional market factors need to be considered?  Identify and discuss any problematic events related to maintaining and trading your portfolio. These could be liquidity issues, timeliness, cut trades, exceeding bounds, responsibility issues, reactions to corporate events, market-wide events, analyst reports, personnel departure, etc.  What broke down over the week – either in trading or in reporting? What events or actions could cause severe losses or problems?  **Group 6 Presentation.** |
| **15** | **10/26/17** | **Performance Metrics. Portfolio benchmarks & performance measurement: Alpha, beta, information ratio, timing metrics, relative performance.** |  | Grinold, Richard C. "The fundamental law of active management." *The Journal of Portfolio Management* 15.3 (1989): 30-37.  Le Sourd, Véronique. "Performance measurement for traditional investment." Financial Analysts Journal 58.4 (2007): 36-52.  [Section 8] | Come prepared to discuss performance metrics as they apply in practice and how to use them. |
| **16** | **10/31/17** | **Performance Metrics 2: Attribution analysis** |  | Osman Nalbantoglu  Sharpe, William F. "Asset allocation: Management style and performance measurement." The Journal of Portfolio Management 18.2 (1992): 7-19. |  |
| **17** | **11/02/17** | **Class presentations: performance report** |  |  | **Assignment Due: Performance Report**  PowerPoints and/or paper write-up  Performance measured by standard risk metrics applicable to your investment style.  Include:   * Peer quartiles [this requires identifying a universe of competitors. Morningstar Direct software may be useful here] * CAPM Alpha * Sharpe ratio  Information ratio * Factor exposure to relevant market indexes * Fama-French factor benchmark (or similar), compared to your benchmark * Tracking error timing measure: use the Henriksson- Merton, Treynor- Masuy or uncapture-downcapture measures.   Analyze what these tell you (in the short-term) about your portfolio.  **Groups 1 & 2 Presentations.** |
| **18** | **11/07/17** | **Building a business and understanding clients** |  |  | Come prepared to discuss with launching an outsourced CIO investment company, building a team and a specific investment style, responding to competitive forces, understanding clients and managing client reporting. |
| **19** | **11/09/17** | **Client Presentation & Primer on Simulation and Bootstrapping and Value at Risk** |  | Steven Fortney | **Assignment Due: Client presentation preparation**  PowerPoints  Consider:  Purpose of the meeting.  What your clients expect and deserve.  What information is relevant to client decision-making?  What do you need to know about the reasons for your performance?   * Markets * Decisions you made   **Group 3 Presentation.** |
| **20** | **11/14/17** | **TBA or Modern quant methods in investment practice: data, sentiment analysis.** |  | Theory 56 Fact Sheet;  Marcelle Chauvet, Stuart Gabriel, and Chandler Lutz. “Mortgage default risk: New evidence from internet search queries.” Journal of Urban Economics 96 (2016) pgs. 91-111. | Come with questions about quant investing. Read and come prepared to discuss Theory 56 memo. |
| **21** | **11/16/17** | **Class presentations: Forecasting** |  | Elton, Gruber, Brown, Goetzmann. “Simulations in Portfolio Choice.” Modern Portfolio Theory and Investment Analysis, edition 9, pgs. 241-247. | **Assignment Due: Forecasting**  PowerPoints or paper report    Construct graphs of long-term forecasts of portfolio risk and return. What is the expected return of 1, 3, 5, 10 and 20 years out?    What are the confidence bands around this? What is the statistical probability the fund will beat its benchmark over the long term?    All mandates have some kind of implicit or explicit liability.     * Estimate a liability stream. * Consider what it is correlated to.   Address how best to build a portfolio to hedge this.  **Group 4 Presentation.** |
| **22** | **11/28/17** | **Case Discussion: LTCM (or TBA)** | Lowenstein, Roger. When Genius Failed: The Rise and Fall of Long-Term Capital Management. (Book to be distributed in class if you do not own a copy) | Osman Nalbantoglu   * Long-Term Capital Management, L.P. (A)   <https://cb.hbsp.harvard.edu/cbmp/pl/70528854/71959694/157c1528bc4600012bebe0643c9af477>   * Long-Term Capital Management, L.P. (A), Spreadsheet Supplement   <https://cb.hbsp.harvard.edu/cbmp/pl/70528854/71959696/7400f21c7d5f11e79e9e2dbdcab6d1af>   * Long-Term Capital Management, L.P. (B)   <https://cb.hbsp.harvard.edu/cbmp/pl/70528854/71959732/a48eabdaf8959a614055352b6a035c48>   * Long-Term Capital Management, L.P. (C)   <https://cb.hbsp.harvard.edu/cbmp/pl/70528854/71959724/2a086f1137f27c1662d0c2c671c47099>   * Long-Term Capital Management, L.P. (C), Spreadsheet Supplement   <https://cb.hbsp.harvard.edu/cbmp/pl/70528854/71959726/b1722d954b7588fc656fdda1f715beea>   * Long-Term Capital Management, L.P. (D)   <https://cb.hbsp.harvard.edu/cbmp/pl/70528854/71959734/a16ebb4c656463128e5477ac66b3d191> | * Read LTCM case for discussion. Read “When Genius Fails” Free book if you do not have it. * Optional: Watch “The Big Short” |
| **23** | **11/30/17** | **Risk management within the firm and/or advanced quant methods** |  |  | **Memo:** Find a recent example of a significant “risk event” experienced by an investment manager.  In a one-page memo explain it. Suggestions for starting points:   * <http://hf-implode.com/> * <https://en.wikipedia.org/wiki/Pensions_crisis> * <http://www.401khelpcenter.com/401k_court_legal.html#.V7s3kPkrLuo> |
| **24** | **12/05/17** | **Class presentations: Risk analysis** |  | Elton, Gruber, Brown, Goetzmann. “Simulations in Portfolio Choice.” Modern Portfolio Theory and Investment Analysis, edition 9, pgs. 241-247. | **Assignment Due: Risk Analysis**  PowerPoints or paper report  Present a risk analysis of your portfolio. Include quantitative assessments of:   * Systematic risk, exposures * Macroeconomic scenario risk * Value-at-risk: monthly VAR and cVAR at 1% and 5% levels     **Group 5 & 6 Presentations.** |
| **25** | **12/07/17** | **Presentations** |  | Osman Nalbantoglu | **Final Reports I**  Final presentations based on prior reports.  Executive summary of 6 slides, 10 minutes.  Hand in full pdf of prior reports with executive summary cover.  **Groups 1, 2, & 3 Final Presentations.** |
| **26** | **12/12/17** | **Presentations** |  | Osman Nalbantoglu | **Final Reports II**  Final presentations based on prior reports.  Executive summary of 6 slides, 10 minutes.  Hand in full pdf of prior reports with executive summary cover.  **Groups 4, 5, & 6 Final Presentations.** |

The instructor reserves the right to modify and/or change the course syllabus as needed during the course.