PORTFOLIO MANAGEMENT PRAXIS UNDER REAL MARKET CONSTRAINTS (AP1051)

--COURSE DESCRIPTION--

After an introductory review of the techniques most commonly used to evaluate investment portfolios and investment managers, this course will, through a combination of lectures, readings, short case studies and exercises, try to enable students: to understand the trading techniques of few important portfolio managers; to test, when applicable, simplified versions of these techniques on basic portfolios under real market constraints; to manage basic portfolios of Stocks & ETFs as well as basic derivatives portfolios of Credit & Debit Spreads using time-tested value, momentum and covered options algorithms; to manage the risk of an investment portfolio using market breadth-based algorithms; to learn the main techniques used to evaluate the historical performance of trading systems, and to create a general portfolio management strategy adapted to the risk and return requirements of the user by incorporating the principles learned in the course, which will be back-tested against historical data to objectively evaluate its performance. Ideally the participant will have some exposure to basic equity valuation methods, basic portfolio optimization methods and basic bond and derivative pricing methods (like the ones discussed in “Financial Engineering I & II”), even though we'll cover these topics if required by the participants in order to make our course as self-contained as possible.

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COURSE STRUCTURE AND CONTENT

This course consists of four themes, each one discussed in several weekly sessions:

- **First Theme**: review of the relation between risk and return and its applications to basic portfolio and manager evaluation
- **Second Theme**: cases about the philosophy and the techniques of some of the great traders and investors of our time
- **Third Theme**: design and implementation of [arbitrage-based] trading algorithms, [value and momentum-based] trading algorithms, [market breadth-based] risk management algorithms and advanced [algorithm-performance] evaluation methods
- **Fourth Theme**: design, back-testing and progressive upgrading of a robust [portfolio management strategy] adapted to the risk & return requirements of the user

LEARNING OUTCOMES

By the end of the course the students should be able to demonstrate that they:

- Reviewed and mastered through practice the techniques most commonly used to evaluate investment portfolios and investment managers
- Understood the trading and investing techniques of some of the most important portfolio managers and are able to apply simplified (working) versions of these techniques to basic portfolios in real time and subject to real market constraints
• Are able to manage basic equities market portfolios (Stocks & ETFs) in real time using the value and momentum algorithms designed by the course instructors for that purpose
• Are able to manage basic derivatives portfolios (of credit & debit spreads and some of their combinations) using the algorithms designed by the course instructors for that purpose
• Are able to manage the risk of a basic portfolio using the market breadth-based algorithms designed by the course instructors for that purpose
• Learned through practice how to apply some useful techniques to the evaluation of the historical performance of a trading or a portfolio management system.
• Were able to create an upgradeable portfolio management strategy based on the techniques learned in the course, to test the protocol against historical data and to understand the theoretical reasons supporting its structure and performance

SESSION 1

SESSION 1, PART 1: REVIEWING THE BASICS OF PORTFOLIO AND MANAGER EVALUATION.

Revisiting Basic Portfolio and Manager Evaluation

TOPICS OF DISCUSSION:

• The Treynor, Sharpe, Sortino and other ratios reflecting investment’s risk v.s. return
• How to use the ratios
• The Jensen, Fama & French, and other “versions” of Alpha
• More basic ways of evaluating portfolios and managers
• When and how to use each of these evaluation tools
• How these tools can be used to complement each other
• Worked Examples
• Applications

READINGS:

• Measuring Portfolio Performance: Sharpe, Alpha, or the Geometric Mean? Moshe Levy, Hebrew University of Jerusalem - Jerusalem School of Business Administration, September 2016
• US Sector Rotation with Five-Factor Fama-French Alphas, G Sarwar University of Greenwich - Business School, Cesario Mateus, University of Greenwich Business School, Natasa Todorovic, City University London - Sir John Cass Business School, November 2016
• On the Holy Grail of 'Upside Participation and Downside Protection', Edward E. Qian, PanAgora Asset Management, December 2014
• How Do Short Selling Costs and Restrictions Affect the Profitability of Stock Anomalies? Filip Bekjarovski, Amundi Asset Management, November 2017

CASES:

• “Benjamin Graham and Joel Greenblatt: Value Investing and The Magic Formula”
• “Warren Buffet: Improving on Graham through Common Sense”
SESSION 1, PART 2: REVIEWING THE BASIC METHODS OF PORTFOLIO AND MANAGER EVALUATION.

What is Performance Attribution Analysis?

TOPICS OF DISCUSSION:

- Going beyond Alpha
- Ways to determine a Portfolio Manager's abilities to pick Securities V.S. selecting Sectors based on the comparison of his performance with the performance of a Benchmark
- Defining and Calculating the Allocation and the Selection Effect
- The True Meaning of Performance Attribution Analysis
- Using the Automatized Performance Attribution Analysis as a subtle Portfolio Rebalancing Tool
- Worked Examples
- Applications

READINGS:

- The Trinity Portfolio: A Long-Term Investing Framework Engineered for Simplicity, Safety, and Outperformance, CQR, Issue 9, June 2016, Mebane Faber, Cambria Investment Management

CASE:

- “Phil Fischer And T. Rowe Price: Distinguishing Growth From Value”

SESSION 2

SESSION 2, PART 1: REVIEWING MODERN PORTFOLIO THEORY.

Revisiting risk, return, the market line and the CAPM model

TOPICS OF DISCUSSION:

- The Concepts of Risk, Return and the Market Line (Review),
- The CAPM Model (Review)
- Introduction to Fama, French and the Momentum Anomaly
- Worked Examples
- Applications
READINGS:


CASE:

- “Harry Markowitz: a Ph.D. dissertation and Modern Portfolio Theory”

SESSION 2, PART 2: REVIEWING MODERN PORTFOLIO THEORY: LOOKING AT MARKOWITZ FROM A DIFFERENT PERSPECTIVE.

Markowitz Theory as seen by Wouter, Butler and Kipnis, authors of the prize winning paper “Markowitz and Momentum, a Golden Combination”.

TOPICS TO BE DISCUSSED:

- The CAPM Model and the Market Momentum Anomaly
- In depth analysis of the hybrid model presented in the paper: "Markowitz and Momentum, a Golden Combination"
- Building a robust equities portfolio based on combining Minimum Variance and Market Momentum
- Worked Examples
- Applications

READINGS:


CASE:

- “John Bogle: Vanguard and the Invention of the Index Fund”
SESSION 3

SESSION 3, PART 1: USING FUNDAMENTAL ANALYSIS TO BUILD AND MANAGE EQUITY PORTFOLIOS

Implementing a robust Equity Portfolio Management Strategy by using the Altman, Piotrovski and Beneish scores, the regression channel and a sound risk-management strategy

TOPICS TO BE DISCUSSED:

• How to use the Fundamental Analysis Principles integrated in the Piotroski, Altman and Beneish scores to manage a Stock Portfolio
• How to implement the strategy with resources freely available in the net
• Trading the portfolio assets using multiple time frame statistical arbitrage
• Managing the portfolio’s risk using a regime-based strategy
• Hedging the portfolio’s risk by selling options on the SPY

READINGS:

• Piotroski (2000) Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers
• Beneish (1999) The Detection of Earnings Manipulation
• Altman (2000) Predicting Financial Distress of Companies
  https://pdfs.semanticscholar.org/3a40/ad1e6e88fc05ae19564fbd90bcca48acc1d1.pdf
• Bond University ePublications@bond Information Technology papers Bond Business School 10-28-2004 Applying Fundamental Analysis and Neural Networks in the Australian Stockmarket Bruce J. Vanstone Bond University, bruce_vanstone@bond.edu.au Gavin Finnie Bond University, Gavin_Finnie@bond.edu.au Clarence Tan Bond University, Clarence_Tan@bond.edu.au

CASE:

• “Peter Lynch: Fidelity and the Saga of the Magellan Fund”

PRAXIS:

Implementing an Effective Value-Based Trading System For Stocks

Students implement in the trading platform screener a “stocks portfolio [value optimization function]” based on the 3 scores built on financial ratios discussed in class. Note: by this moment students should have pre-
programmed the Altman, the Piotroski and the Beneish scores required to build the function to be used in this activity.

SESSION 3, PART 2: DESCRIBING BASIC (MARKET BREADTH) RISK SAFEGUARDS FOR STOCK PORTFOLIO PROTECTION: INTRODUCING OPTIONS ON INDEXES FOR STOCK PORTFOLIO HEDGING

Building a robust [Market-Breadth Based] Risk Management System and hedging a stock portfolio with index derivatives

TOPICS TO BE DISCUSSED:

- Creating a basic [Double-Filter], [Regime-Based] Risk-Management Exclusion Criterion
- Defining the First Filter: (acceptance dependent on exceeding an optimal S.M.A.)
- Defining the Second Filter: (acceptance dependent on exceeding the Treasury Bill yearly return)
- Creating an Advanced [Regime-Based] “Flotation Line” Filter to upgrade the Double Filter.
- Worked Example
- Applications

READINGS:

- Fang, Jiali and Qin, Yafeng and Jacobsen, Ben, Technical Market Indicators: An Overview (June 12, 2014). Available at SSRN: https://ssrn.com/abstract=2449344 or http://dx.doi.org/10.2139/ssrn.2449344

CASE:

- “Jesse Livermore And James Chanos: the profitable art of predicting Market Crashes”

PRAXIS:

Managing and mitigating the risk of an Investment Portfolio:

- Students set up the trading platform as a data-feed provider, programming into the platform screener their own version of the “regime-based portfolio [risk minimization function]” discussed in class; select the “safe” assets to be included in the portfolio, according to the “regime-based portfolio risk minimization function” programmed in the screener to finally back-test (on the provided historical data) the performance of each asset filtered with the “risk minimization function”, and compare the volatility of each one with the volatility of its unfiltered version to decide if investing is pertinent or not.
SESSION 4

IN SESSION 4 WE’LL BE USING MARKET MOMENTUM TO BUILD ETF PORTFOLIOS AND MANAGING THEIR RISK WITH A REGIME-BASED CASH FILTER

Robust ETF Portfolio Management Strategies based on Relative (Rotational) Momentum

TOPICS TO BE DISCUSSED:

• What is Absolute Momentum?
• How is it used by traders?
• What is Relative (Rotational) Momentum?
• How is it used by traders?
• How to use “Relative Rotational Momentum” to build and manage an ETF portfolio?
• How to implement the strategy with resources freely available in the net?

READINGS:

• Sarwar, G and Mateus, Cesario and Todorovic, Natasa, US Sector Rotation with Five-Factor Fama-French Alphas (June 16, 2017). Available at SSRN: https://ssrn.com/abstract=2987819
• Roncalli, Thierry, Keep Up the Momentum (December 7, 2017). Available at SSRN: https://ssrn.com/abstract=3083921
• Hurst, Brian and Ooi, Yao Hua and Pedersen, Lasse Heje, A Century of Evidence on Trend-Following Investing (June 27, 2017). Available at SSRN: https://ssrn.com/abstract=2993026 or http://dx.doi.org/10.2139/ssrn.2993026
• Ross, Adrienne and Moskowitz, Tobias J. and Israel, Ronen and Serban, Laura, Implementing Momentum: What Have We Learned? (December 1, 2017). Available at SSRN: https://ssrn.com/abstract=3081165 or http://dx.doi.org/10.2139/ssrn.3081165

CASE:

• “James Simmons: Math, Cryptography and the legendary Renaissance Fund”

PRAXIS:

Implementing an effective Rotational Momentum Trading System for ETFs:

• Students implement in the trading platform screener the “ETFs effective portfolio [momentum optimization function]”. Note: by this moment students should have pre-programmed the rotational momentum algorithm required for this activity.
SESSION 5

IN SESSION 5 WE’LL USE STATISTICAL ARBITRAGE TO BUILD AND MANAGE CURRENCY PAIRS, FIAT CURRENCY AND CRYPTOCURRENCY PORTFOLIOS MANAGING ITS RISK THROUGH A MARKET BREADTH “FLOTATION LINE” FILTER.

Implementing a mechanical Portfolio Management Strategy based on Statistical Arbitrage programmable in Python.

TOPICS TO BE DISCUSSED:

• Statistical concepts review
• Mean reversion and statistical arbitrage
• Description of the strategy
• Manual implementation of the strategy
• Brief introduction to Python tools
• Programming basic trading indicators in Python
• Automatizing the strategy
• Programming the Statistical Arbitrage Strategy in Python
• Implementing it with freely accessible resources
• Applications of the strategy to different families of pairs
• Back-testing the system against historical data
• Worked Examples
• Applications

READINGS:


CASE:

• “Bill Gross and Jeffrey Gundlach: the Bond Masters”

PRAXIS:

Trading High-Cap U.S. stocks with the Regression Channel in multiple time frames:

• Students set up the trading platform screener to select large capitalization stocks that have shown steady increase in their “cash flow from operations” during the last 5 years. Students will paper-trade
these stocks using the multiple time frame regression channel which has been pre-programmed by them as needed to be used in this exercise.

SESSION 6

IN SESSION 6 WE'LL EXPLORE USING NEURAL NETWORKS IN TRADING

• Demystifying neural networks.
• Understanding the intuitive ideas behind them
• Understanding their underlying math structure
• Learning about their evolution from regression to the perceptron
• Mistakes commonly seen in the use of NN's in Finance/Trading
• Understanding how to use these tools for basic forecasting and basic classification tasks in finance.
• Data pre-processing techniques, feature extraction: (i) Through technical indicators: MACD, AMX-DMI, RSI, SAR, HURST exponent, regime indicators etc. (ii) Using fundamental indicators: Put Call implied volatility spread, Piotroski, Altman and Beneish scores, variations in cash flow from operations.
• “Machine learning based” stock price forecasting: watching a NN predicting Stock Prices

READINGS:

• Taylor (2017) Neural Networks, a visual introduction Stages1-5
• Muller (2017) Introduction to Machine Learning with Python. Ch. 2

PRAXIS:

Homework discussion.

SESSION 7

IN SESSION 7 WE'LL TOUCH SOME USEFUL METHODS OF MODEL EVALUATION AND IMPROVEMENT.

TOPICS OF DISCUSSION:

A smart idea underlying the “Horse race-type” tests:

• White’s Reality Check Test for Data Snooping (Examples)
• Timmerman & Pessaran Test (Examples)
SESSION 8

SESSION 8, PART 1: LESSONS FROM LONG TERM CAPITAL MANAGEMENT; DISCUSSION OF THE NOVA PROGRAM AND REVIEWING THE FUTURES ARBITRAGE TRADING TECHNIQUE USED BY THE LTCM TEAM.

How to use arbitrage convergence to build Futures Portfolios

TOPICS TO BE DISCUSSED:

- Review/intro to Futures Contracts
- Review/intro to the principles of Futures Arbitrage
- Analysis of the main F.A. “Market Neutral” techniques used by LTCM to manage the Fund’s portfolio
- Applying the LTCM Futures Arbitrage techniques to the construction of a simple portfolio
- Understanding the risks of the portfolio
- Historical testing of the portfolio
- Worked Examples
- Applications

READINGS:

  https://www.researchgate.net/publication/2550469_Data-Snooping_Technical_Trading_Rule_Performance_and_the_Bootstrap
  https://amstat.tandfonline.com/doi/abs/10.1198/073500104000000640#.WuRq54jOWM8
SESSION 8, PART 2: LESSONS FROM LONG TERM CAPITAL MANAGEMENT:
EXPLAINING THE IMPORTANCE OF MANAGING RISK.

Assessing the need for risk management

TOPICS TO BE DISCUSSED:

- Antecedents of the LTCM fund
- Methodology of operation
- Chronology of market events
- Effects of events on LTCM
- Rescue operation
- Final results
- Lessons to be learned in risk management

READINGS:


CASE:

- “Nick Leeson: Baring’s wunderkind”.

PRAXIS:
• Cont. of previous week assignment.

SESSION 9

IN SESSION 9 WE’LL BE INTRODUCING AND SHOWING HOW TO TRADE BULLISH CREDIT SPREADS, BEARISH CREDIT SPREADS AND IRON CONDORS, AND POINTING OUT THEIR ADVANTAGES AND DISADVANTAGES

Setting up and using a Trading Platform options screener to select and trade simple derivative structures: (i) 10% “in the money” Covered Calls and Covered Puts on [the SPX and other selected indexes] as well as [Large Cap stocks], (ii) Bull and Bear Credit and Debit Spreads satisfying [the corresponding time-decay requirements discussed in class], by using the [Multiple Time Frame Regression Channel] to determine an optimal entry according to the estimated [movement potential] of the underlying asset.

TOPICS TO BE DISCUSSED:

• A brief introduction to Options And Derivatives: demystifying Derivative Products
• Derivatives Trading Technique I: buying covered Puts and Calls 10% “In The Money”, entering the trade according to the [directional movement potential] of the Underlying Asset
• Defining and demystifying Bullish and Bearish Credit Spreads
• Derivatives Trading Technique II: selecting Bullish or Bearish Credit Spreads according to the [Directional Movement Potential] of the Underlying Asset and the [Potential Time-Decay] implicit in the length of the derivatives contract.
• Defining and demystifying Bullish and Bearish Debit Spreads
• Derivatives Trading Technique III: Selecting Bullish or Bearish Debit Spreads according to the [Directional Movement Potential] of the Underlying Asset and the [Potential Time-Decay] implicit in the length of the derivatives contract
• Defining, demystifying, explaining the advantages and the risks of trading the “Iron Condor”
• Worked Examples
• Applications

READINGS:

CASE:

1. “Bankers Trust versus Procter & Gamble: who is lying now?”

PRAXIS:

Trading weekly option spreads (Covered Calls, Covered Puts, Bear Calls, Bull Puts, Iron Condors) on the SPX and on some volatile Large Cap stocks:

- Students set up the trading platform options screener to paper-trade simple derivative structures, looking for: (i) 10% “in the money” Covered Calls and Covered Puts on [the SPX and other selected indexes and Large Cap Stocks] (ii) Bull and Bear Debit and Credit Spreads that satisfy [the time-decay requirements discussed in class], using the multiple time frame regression channel to determine the right moment of entry according to the expected movement of the underlying assets.

SESSION 10

IN SESSION 10 WE’LL DISCUSS THE GUIDELINES TO BUILD AN “ALL-INCLUSIVE” PORTFOLIO MANAGEMENT STRATEGY THAT COULD SERVE THE PARTICIPANT’S NEEDS.

How to build a portfolio management strategy that: (i) Incorporates the general portfolio management principles learnt in the course (ii) It is adapted to the user's risk and return requirements and (iii) Can evolve in time through the upgrading of its basic components.

TOPICS TO BE DISCUSSED:

- Historical review of the development of the portfolio management techniques taught in the course
- Conceiving the Portfolio Management Strategy as a scalable, upgradeable and adaptable structure based on value, momentum, sound diversification and sound risk management methodologies learned in the course.
- Progressively upgrading the Value aspect of the Portfolio Management Strategy
- Progressively upgrading the Momentum aspect of the Portfolio Management Strategy
- Progressively upgrading the Risk-Management aspect of the Portfolio Management Strategy
- Worked Example
- Applications

READINGS:
• A Trading Approach to Testing for Predictability. Stanislav Anatolyev. New Economic School, Moscow, 117418, Russia (sanatoly@nes.ru). Alexander Gerko. Deutsche Bank, Moscow, 127051, Russia

CASE:
• “A. W. Jones: the first Hedge Fund”

PRAXIS:
• Cont. of previous week assignment.

SESSION 11, SESSION 12
STUDENT PRESENTATIONS

COURSE GRADING

The components of the final course grade will be weighted as follows:

Due on Session 3: Quiz on [basic Portfolio and Manager Evaluation (and other basic quantitative) methods] ................................................................. 10%

Team homework descriptions (all software will be provided to students) ................................................................................................................. 60 %
Due on Session 5: Homework 1 on Stock portfolio construction and management (Selecting a high value stock portfolio based on increasing cash-flow from operations, consistently high Piotroski score and consistently low Altman & Beneish scores; managing it using statistical arbitrage; managing the risk of a stock portfolio using a basic market breadth filter).

Due on Session 7: Homework 2 on ETF portfolio construction and management (Selecting an ETF portfolio pool based on the maximization of its ‘Sharpe Ratio’ as a function of the ETF’s ‘lookback’ and ‘holding’ periods; managing it using sector rotation with dual relative momentum; managing the portfolio risk using a regime-based cash filter).

Due on Session 9: Homework 3 on pairs and currencies portfolio construction and management (Selecting a portfolio of co-integrated ETF pairs, a portfolio of USD denominated currencies and a portfolio of cryptocurrency; managing the selected portfolios; managing the portfolios risk using an improved market breadth filter).

Due on Session 11: Homework 4 on options and derivatives trading (Setting-up the Think-Or-Swim trading platform and reading the options data; trading bullish and bearish credit spreads; exiting bullish credit spreads, bearish credit spreads and iron condors)

Due by the end of the Reading Period: An Individual final paper on the aspect of the team presentation developed by each student

Note: all topics and deadlines are subject to changes.

HOMEWORKS DESCRIPTION:

BASICS OF STOCK PORTFOLIO CONSTRUCTION AND MANAGEMENT (I)

Exercise 1a (5 %):

Selecting a high value stock portfolio based on increasing cash-flow from operations, consistently high Piotroski score and consistently low Altman & Beneish scores.

- Access the data provided
- Make your stock selection based in the indicated parameters
- Put together a stock portfolio with these stocks
Exercise 1b (5%):
Managing a stock portfolio using statistical arbitrage: methodology, back-testing, paper-trading and performance tracking report.

- Explain how statistical arbitrage could be used to manage the portfolio
- For each asset, calibrate the regression channel on the training dataset
- Back-test the portfolio on the testing dataset
- Try to improve the program you’re using according to the given guidelines
- Back-test the improved program

Exercise 1c (5%):
Managing the risk of a stock portfolio using a basic market breadth filter: methodology, back-testing, paper-trading and performance tracking report.

- Explain how the market breadth risk filter could be used to manage the portfolio’s risk
- Incorporate the basic market breadth risk filter into the trading program
- For each asset, calibrate the filter on the training dataset
- Back-test the portfolio with the filter added on the testing dataset
- Try to improve the program you’re using according to the given guidelines
- Back-test the improved program

BASICS OF ETF PORTFOLIO CONSTRUCTION AND MANAGEMENT (2)

Exercise 2a (5%):
Selecting an etf portfolio pool based on the maximization of its ‘sharpe ratio’ as a function of the etf’s ‘lookback’ and ‘holding’ periods

- Access the data provided
- Make your etf selections based in the optimization of the indicated parameters
- Build a rotation pool with these etfs

Exercise 2b (5%):
Managing an etf portfolio using sector rotation based on dual relative momentum: methodology description, back-testing, paper-trading and performance tracking report.

- Explain how sector rotation based on momentum could be used to manage an etf portfolio
- Calibrate the trading program provided on the training dataset
- Back-test the trading program provided on the testing dataset
- Try to improve the program provided according to the given guidelines
- Back-test the improved program

Exercise 2c (5%):
Managing the etf portfolio risk using a regime-based cash filter: methodology description, back-testing, paper-trading and performance tracking

- Explain how a regime-based cash filter could be used to manage the risk of an etf portfolio
- Calibrate the trading program provided on the training dataset
- Back-test the trading program provided on the testing dataset
- Try to improve the program provided according to the given guidelines
- Back-test the improved program

PAIRS AND CURRENCIES PORTFOLIO CONSTRUCTION AND MANAGEMENT (3)
Exercise 3a (5%):

Selecting a portfolio of co-integrated etf pairs, a portfolio of usd denominated currencies and a portfolio of cryptocurrencies: methodology description, back-testing, paper-trading and performance tracking report.

• Access the data provided
• Make the asset selection for each portfolio based on the optimal calibration of the provided trading program on the training dataset of each asset
• Build the portfolios

Exercise 3b (5%):

Managing the selected portfolios: methodology description, back-testing, paper-trading and performance tracking report.

• Explain how would you manage the portfolios that you have selected
• In each case, after calibrating the trading program on the training dataset, back-test each one of the portfolios on the testing dataset
• Try to improve the trading programs provided according to the given guidelines
• Back-test the improved programs

Exercise 3c (5%):

Managing the portfolios risk using an improved market breadth filter: methodology description, back-testing, paper-trading and performance tracking report.

• Explain how the improved market breadth filter could be used to manage the portfolios risk
• Incorporate the improved market breadth risk filter into the trading program
• For each asset, calibrate the filter on the training dataset
• Back-test the portfolio with the filter added on the testing dataset
• Try to improve the program you’re using according to the given guidelines
• Back-test the improved program

BASICS OF OPTIONS AND DERIVATIVES TRADING (4)

Exercise 4a (5%):

Setting-up of the think-or-swim trading platform and learning how to read the options data:

• Set-up the platform and the indicators
• Select the best available bullish spread on the spy according to the strategy guidelines
• Select the best available bearish spread on the spy according to the strategy guidelines

Exercise 4b (5%):

Learning how to trade bullish and bearish credit spreads (also, why to avoid trading naked puts and naked calls), and the dangers of trading iron condors

• Start paper-trading the selected bullish spread on the spy
• Start paper-trading the selected bearish spread on the spy
• Start paper-trading the iron condor defined by the spreads
• Track and report the weekly performance

Exercise 4c (5%):

Learning how to exit bullish credit spreads, bearish credit spreads and iron condors

• Exit the selected bullish spread on the spy
• Exit the selected bearish spread on the spy
• Exit the iron condor defined by the spreads
• Report the final balance on the strategies

NOTE: ALL THE TOPICS MENTIONED AND THE DATES PROPOSED ARE GUIDELINES AND ALL ARE SUBJECT TO CHANGE.