# FINANCIAL TRADING AND APPLICATIONS
*FALL, 2009*

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## COURSE OBJECTIVES

This course examines financial tools, theory, and technology. We first review and discuss statistical tools and theories in financial markets. We then use these tools and theories to construct trading strategies and to value financial instruments in the equity, option, and fixed income markets. We conclude by discussing approaches for evaluating performance of these and other strategies. Throughout the course we consider the challenges of using financial tools, theories, and models in practice. Classes are interactive and make extensive use of Excel, FactSet, Bloomberg, @Risk, and other resources available in the trading room. The course pedagogy is lectures, in-class assignments, and trading simulations.

## REQUIRED READING

Course packet of readings that is available at the book store.

## OTHER READINGS

Additional readings will be available via electronic reserves and Angel.
The Wall Street Journal (*Strongly Recommended*)
Financial Modeling, Simon Benninga, 3rd Edition, MIT Press. (*Good reference for activities using Visual Basic and Excel.* On reserve.)

## PREREQUISITES

You are expected to be comfortable with:
(1) Financial markets
(2) The basics of futures and options
(3) Basic statistics
(4) Time value of money calculations
(5) Excel
If not, you should review these.

## EVALUATION

Your course grade will be computed as:

| | |
|---|---|
| Exams (4) | 70% |
| Trading Projects | 20% |
| Class Discussion | 10% |

## READINGS

The readings support the topics covered in the class discussion. Occasionally the readings will be academic papers that might have sections extending beyond the scope of this course. Your goal should be to understand the basic questions the paper investigates, the methodology used to investigate these questions, and the key findings from this investigation. In general you can get a working understanding of these issues by focusing on the paper's abstract, introduction, and conclusion. We will sometimes follow-up these papers with a similar analysis of our own.

## EXAMS

There will be four exams based on the material that we discuss in class. The exams will test your ability to apply concepts and skills in a variety of settings. Each exam will be comprehensive up to the point of the exam. Exams will be given in Excel in the trading room. A breakdown of weighting of each exam and tentative exam dates is provided in the course schedule.

## CLASS DISCUSSION AND ATTENDANCE

It is critical that you regularly contribute to the class discussion. Both the quality and the quantity of your comments and questions are important determinants of this grade. If you rarely attend class, it will be impossible for you to get full credit in this area. Additionally, <u>unexcused absences on days in which we have speakers will detract from your class discussion grade.</u>

*Bonus Points to class discussion grade*
Although FIN 414 does not offer big bonus checks, you will get the chance to earn bonus points for your class discussion grade. Throughout the semester there will be opportunities for you to earn bonus points. Therefore, if you earn full credit for your class discussion grade and earn bonus points, your grade on the class discussion can be more than 100%. Bonus point opportunities will be announced in class. Some include participating in out-of-class trading competitions, putting together short class presentations about new Excel applications, and attending out-of-class lectures from visiting industry professionals.

## TRADING PROJECTS

*Hedge Fund Start-up*
By Monday, **August 31** you will need to have selected two other students with whom you will be managing a hedge fund. During the following few weeks your fund will be given a practice account that uses the portfolio management software. Your goal during this time is to become comfortable with the software and with the markets you will be trading. Your most important goal will be to develop an investment strategy that your fund believes will be successful. It is important that your fund focuses on developing a strategy rather than just becoming purely a random stock picker.

On Monday, **September 21**, each fund will turn in a *short report* (not to exceed three pages) to the class– a group of potential investors – that describes the strategy your fund will follow and any other relevant information. These reports will be posted on Angel for the class to review. You should view this report as a chance to pitch your fund to new investors. Well written reports with creative and well thought out ideas will very likely attract the greatest interest from potential investors.

*Fund of Funds*
After reading the reports, you (i.e., every student for themselves) will allocate a $1,000,000 portfolio to the funds that they believe will perform best during the remainder of the semester. The amount allocated to each fund is completely up to you, although no more than 30% (i.e., $300,000) can be allocated to any one fund (including your own). You can also short a fund if you do not believe a fund's strategy will be successful, although your total allocation can not exceed 1,000,000 (i.e., shorting a fund ties up capital the same as buying a fund). *Allocation decisions* for your fund of funds must be turned in by 5pm (EST) on Friday, **September 25**. You will hold this allocation until the end of the semester.

*Hedge Fund Management*

Starting with the opening bell on Monday, **September 28** each fund's account will be set to $10,000,000 and *hedge funds will go live*. Your fund is then expected to begin managing a portfolio that follows the strategy described in your report. In addition to positions that your fund's strategy selects, you will be required to allocate a portion of your portfolio to several strategies that we discuss in class (e.g., merger arbitrage, pairs trading, and option trading.) These assigned strategies will be given in class. All trading will be done using real time prices. Your *fund will close* on at 4pm (EST) on Wednesday, **December 2**.

*Fund Performance and Final Report*

During the final week of class, your fund will make a presentation to the class. Each member of the fund is expected to present and will be graded individually. Your fund will also turn in a written report that summarizes the performance of your fund and provides an outlook for the future. You should view this final report as both a report to investors as well as a chance to pitch your fund to new investors. *Presentations* will be made in class on Monday, **December 7** and Wednesday, **December 9**. *Reports are due* during *finals week*, day and time will be announced.

*Breakdown of points for the trading project grade*

| Trading Activity | points | Type of Activity |
|---|---|---|
| Ranking of your Hedge Fund | 10[1] | Group |
| Ranking of your Fund of Funds | 10[1] | Individual |
| Fund pitch report | 10[2] | Group |
| Final Presentation and Report | 20[3] | Group |

[1] Hedge Fund performance will be ranked on a risk adjusted basis using returns from September 28 to December 2. The top ranked fund gets the full 10 points. The other funds get a percentage of 10 points based on their performance relative to the top performer. For example, a fund with a performance that is only 60% of the top performer will receive 6 points (60%*10). Fund of Funds performance will be ranked using a similar approach.

[2] The fund pitch is the report you will turn in on September 21 describing your investment strategy. Half of your fund pitch grade will be based on the allocations made to your fund by the class. The fund receiving the highest overall allocation receives the full 5 points. The other funds get a percentage of 5 points based on the allocations made to their fund relative the fund with the best performance. For example, assume that the fund with greatest allocation by the class receives a total $6,000,000. This fund receives the full 5 points. A fund with only a $3,000,000 allocation (50% of the top fund) will receive 2.5 points. The other half of the fund pitch grade will be based on the instructor's evaluation of the report.

[3] The final report should be roughly ten pages. It should begin with a letter summarizing performance during the semester that includes several performance benchmarks (e.g., total return, Sharpe ratio, alpha). Both the presentation and report should include a summary of the fund's style and objectives and a how you selected your strategy. They should also include a discussion of the market environment during the trading period and any events that had an important impact on your fund's returns. They should conclude with an outlook for the strategy you selected along with a discussion of alternative strategies that you might consider. The presentation and report will be graded based on the quality of the analysis, the creativity of the strategy, and quality of presentation (e.g., be well prepared for the presentation and make sure the report is well written). The grading of the presentation and report is completely independent of the performance of your fund.

## PLAGIARISM

Reference <u>all</u> resources used in completing any assignment. Any work that is not entirely your own should be explicitly noted. If you fail to properly reference your work, your course grade can be reduced to a zero.

## A FRIENDLY REMINDER OF THE SMEAL HONOR CODE AND WORDS FROM WARREN

*We, the Smeal College of Business Community, aspire to the highest ethical standards and will hold each other accountable to them. We will not engage in any action that is improper or that creates the appearance of impropriety in our academic lives, and we intend to hold to this standard in our future careers.*

*"It takes 20 years to build a reputation and five minutes to ruin it. If you think about that, you'll do things differently."* – Warren Buffet

# APPLIED FINANCIAL DECISION MAKING
*FALL, 2009*

## THE SCHEDULE

The expected path of the course is shown below. The realized path will likely vary from that expected. A more detailed schedule with suggested readings and real time updates will be available on Angel.

| Date | Day | Topic | What we will be discussing |
|------|-----|-------|----------------------------|
| 24-Aug | Monday | Probability & Statistics for Finance | Review of returns |
| 26-Aug | Wednesday | Probability & Statistics for Finance | Understanding the distribution of returns |
| 31-Aug | Monday | **Speaker: Chris Thomas** | FactSet, Norwalk, CT |
| 2-Sep | Wednesday | Probability & Statistics for Finance | The lognormal distribution. Intro to VBA |
| 7-Sep | Monday | LABOR DAY | NO CLASS |
| 9-Sep | Wednesday | Probability & Statistics for Finance | Expected value and more on the lognormal |
| 14-Sep | Monday | Probability & Statistics for Finance | Multivariate statistics |
| 16-Sep | Wednesday | **Exam 1** | 20%[*] of exam grade |
| 21-Sep | Monday | Value at Risk | Intro to Value at Risk (VaR) |
| 23-Sep | Wednesday | Value at Risk | Issues in computing and interpreting VaR |
| 28-Sep | Monday | Trading Strategies: Equities | Merger arbitrage |
| 30-Sep | Wednesday | Trading Strategies: Equities | Pair trading |
| 5-Oct | Monday | Trading Strategies: Equities | Factor based strategies |
| 7-Oct | Wednesday | **Exam 2** | 25%[**] of exam grade |
| 12-Oct | Monday | Trading Strategies: Options | Black Scholes model |
| 14-Oct | Wednesday | Trading Strategies: Options | Understanding the Greeks of Black Scholes |
| 19-Oct | Monday | **Speaker: Harris London** | Heights Capital Mgmt., Bala Cynwyd, PA |
| 21-Oct | Wednesday | Trading Strategies: Options | Option positions and arbitrage strategies |
| 26-Oct | Monday | Volatility | Methods for forecasting volatility |
| 28-Oct | Wednesday | Trading Strategies: Fixed Income | Credit default swaps |
| 2-Nov | Monday | Trading Strategies: Fixed Income | Term structure models |
| 4-Nov | Wednesday | **Exam 3** | 27.5% of exam grade |
| 9-Nov | Monday | **Speaker: Scott Nichols** | Rotella Capital Mgmt., Chicago, IL |
| 11-Nov | Wednesday | Performance Evaluation | Measures of performance |
| 16-Nov | Monday | Performance Evaluation | Issues in measuring performance |
| 18-Nov | Wednesday | Performance Evaluation | Attribution and style analysis |
| 23-Nov | Monday | THANKSGIVING | NO CLASS |
| 25-Nov | Wednesday | THANKSGIVING | NO CLASS |
| 30-Nov | Monday | Performance Evaluation | Summarizing performance (and the class) |
| 2-Dec | Wednesday | **Exam 4** | 27.5% of exam grade |
| 7-Dec | Monday | FUND PRESENTATIONS | Analysis of fund performance |
| 9-Dec | Wednesday | FUND PRESENTATIONS | Analysis of fund performance |

[*]If the average of your last two exams exceeds that of your first exam, your first exam gets a weight of 15% and the last two exams get weights of 30% each.

[**]If the average of your last two exams exceeds that of your second exam, your second exam gets a weight of 20% and the last two get an additional 2.5% (i.e., weights up to 32.5% each.)