Course Syllabus—Spring 2014
BUFN764: Quantitative Investment Strategy (Sections 0501, DC01, DC51)

Course Instructor:	Russ Wermers
Background:	MBA and PhD Finance, University of California, Los Angeles
	Specialize in Research on the Performance and Trading Strategies of Mutual Funds, Pension Funds, and Hedge Funds; worked for Goldman Sachs Asset Management in Quantitative Equity Strategies Div.
Classroom:	**College Park:** VMH 1518 **DC51 (Tuesday mornings):** C1 **DC01 (Tuesday evenings):** C1
Class Time:	Monday/Wednesday 8:30am-10:20 (College Park); Tuesday 9:25am-1:00pm (DC51); Tuesday 6:25pm-10:00 (DC01)
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Office Hours:	**Monday/Wednesday in College Park: 5:00-6:00 pm (in VMH 4467)**. Also, by appointment
	Tuesday in DC: 1-2 p.m. and 5:15-6:00 p.m. (in the common area). Also, by appointment

Overall Course Objective:

Provides an introduction to quantitative techniques of selecting equities, as used commonly among long-short equity hedge funds and other quantitative equity asset management companies. Statistical factor models are developed to locate stocks with higher expected returns, based on the observable characteristics of the stocks. Implementation issues, including statistical estimation, backtesting and portfolio construction, are covered, as is performance evaluation and attribution. Specifically, my objective is to provide masters-level instruction in the following topics, both in theory and in practice. We will also use Harvard, Insead, and/or Darden cases as well as financial markets data to apply some of the lessons.

1. **QEPM Models:** A general coverage of the most widely used models, both theory and practice. Optimal construction of portfolios with these models
2. **QEPM Factors:** A general coverage of the types of factors used in QEPM models
3. **Implementing and Backtesting QEPM Models:** Good practices in applying the models to maximize QEPM profitability (alpha)
4. **QEPM with Bayesian Models:** Using prior beliefs in conjunction with data in models
5. **Performance Evaluation and Attribution:** The latest and best models to evaluate the performance of QEPM strategies

Grade Weighting:	
Matlab Exercises and Cases	40%
Matlab Portfolio Backtesting Project	30%
Quizzes	30%

Textbooks: *Required:* Chincarini and Kim (**CK**), **Quantitative Equity Portfolio Management**, c2006

Required: Fischer and Wermers (FW), Performance Evaluation and Attribution of Security Portfolios, 2012, Chapters 1 and 3. Each chapter is available for purchase for $10 from Amazon (click on the below links):

Chapter 1
Chapter 3

Required: There are four cases. You can purchase these here:
Cases #1, 2, and 4: Purchase at:
To order the cases, go to **https://cb.hbsp.harvard.edu/cbmp/access/5589935**
You will need to register and then you can follow the instructions to purchase the cases.
Case #3: Purchase at:
http://www.insead.edu/facultyresearch/research/details_cases.cfm?id=15099

Optional (but very useful for coverage of regression methods and other statistics and math applied to portfolio analysis): DeFusco, McLeavey, Pinto, and Runkle, **Quantitative Investment Analysis,** c2007

Optional: Wilmott, Paul, *Frequently Asked Questions in Quantitative Finance*, 2009
Background (Optional): Elton, Gruber, Brown, and Goetzmann, ***Modern Portfolio Theory and Investment Analysis*** or Bodie, Kane, and Marcus, ***Investments, or similar investment theory textbook***

Suggested: A useful Q&A site is located at http://quant.stackexchange.com/. You should keep up with the Wall Street Journal, as it pertains to quantitative portfolio management

Code of Academic Integrity: The University of Maryland, College Park has a nationally recognized *Code of Academic Integrity*, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the *Code of Academic Integrity* or the Student Honor Council, please visit http://www.shc.umd.edu. All acts of academic dishonesty will be dealt with in accordance with the provisions of this code.

Important Note: **Any student with special needs should bring this to the attention of the instructor as soon as possible, but not later than the second week of class.**

ELMS site for this course: Many course materials can be accessed through the course's ELMS page. **Please check this site frequently, as new announcements and course documents are added constantly.** Access to ELMS is available via **http://ELMS.umd.edu**

Cases: We will cover some Harvard cases during the semester. For each case, I will hand out some questions that will guide your reading and understanding of the case. For some cases, I will supply some data to further your understanding of the case. **Each student will be responsible for submitting answers to assigned case questions on the day that the case is discussed. You should fill out the question sheet with a word processor, not handwritten answers.**

Labs: To gain experience with using Matlab to solve real portfolio problems, you will be assigned to complete several real portfolio problems that involve downloading and working with financial information, and with writing some code in Matlab. I will hand out questions for you to address with the data. **Each person is responsible for completing the lab assignments—no copying of others' work!**

Class Participation: In borderline grade cases, your grade may depend on your contribution in class. Please do not miss class, and please make sure to prepare for each class by completing the readings and assignments beforehand.

Homework: Homework assignments will not be turned in. However, I urge you to read each textbook chapter before it is covered in class, and that you do the homework to solidify your understanding. I recommend some self-discipline in trying the homework before appealing to the solutions manual. *Your performance on exams will depend on you faithfully keeping abreast of the reading and homework assignments.*

Attendance: Attendance is not always mandatory, but is crucial for understanding the material. Everything covered in the lectures is fair game for exams or quizzes. Bill Higgins of the Biology Department at UMD found that students who attended class regularly scored 15% higher on exams than students who missed class more frequently. I recommend attending every session, with the exception, of course, of important appointments (such as a job interview in NY or an illness or a family problem). I reserve the right to take
attendance and   assign a small point value to attendance if necessary.

Exams: These two non-cumulative exams will cover all material covered in class or lab sessions. The best preparation is to attend all classes, to do all the reading and homework assignments with care, and to fully prepare and participate in the lab sessions.

Please note: If you have an official university conflict during an exam day, then please notify me the week before the exam. An early exam will be arranged for you. If you encounter an unforeseen event (that can be documented) that prevents you from taking the exam (such as becoming ill, or experiencing a death in the family), then let's talk about your options as soon as it becomes practical for you to do so. Makeup exams are very difficult to administer in a fair manner, so my general policy is "no makeup exam." However, let's talk about other options only if an emergency happens.
Please also note: Be on time for the exam, as it is not possible to extend an exam beyond normal class hours.

Week:Date	Topic	Reading Assignment	Homework

Part I: Introduction to QEPM

1: Mar24/26	The Power of QEPM	CK Chapter 1	*Ch1: all end-of-chapter problems*
(Mar25)	The Fundamentals of QEPM	CK Chapter 2	*Ch2: all end-of-chapter problems*
	Basic QEPM Models	CK Chapter 3	*Ch3: all*

Exercise #1: **Matrix Math Operations with Matlab (not submitted)**
Exercise #2: **Simple Data Handling with Matlab (due in one week)**
Reading #1: *The Blow-Up*
Reading #2: *The Numbers Speak for Themselves*
Reading #3: *Goldman Gurus Strike It Rich*
Reading #4: *FAJ Article on Stock Anomalies*
Reading #5: *Mining Fool's Gold*
Reading #5.1: *Does Anne Hathaway News Drive Berkshire Hathaway's Stock?*
Reading #5.2: *Stupid Data Miner Tricks: Overfitting the S&P 500*

Part II: Portfolio Construction and Maintenance

2:Mar31/Apr2 *Case #1: Grantham, Mayo, Van Otterloo, & Co., 2001* **(Answers to Assigned Questions Due)**

(Apr1)	Factors and Factor Choice	CK Chapter 4	*Ch4: all*

Exercise #3: **Correlation Analysis with Matlab (due in one week)**
Reading #6: *Evaluating Quantitative Managers*
Reading #7: *The Active vs. Passive Debate: Perspectives of an Active Quant*
Reading #7.1: *Buying Top Mutual Fund Picks Can Make You Money*
Reading #7.2: *The Accual Anomaly*
Reading #7.3: *Going, going, gone? The demise of the accruals anomaly*
Reading #7.4: *The Cross-Sectional Profitability of Technical Analysis*
Reading #7.5: *Quants in Need of a Makeover*
Reading #7.6: *Investor Attention, Salience, ...*
Reading #7.7: *Why Do Individual Investors Exhibit Biases?*

3:Apr7/9	*Quiz #1*		
(Apr8)	Fundamental Factor Models	CK Chapter 6,	
		Prof. Wermers note	*Ch6: all*

Exercise #5: **Multivariate Regression Analysis with Matlab (due in one week)**
Reading #8: *Factor-Based Approach to Equity Portfolio Management*
Review of Linear Statistical Models   *Reading #9:* *Quantitative. Investment Analysis*, Chapter 9
                                          Reading #9.5: *Matrix Algebra and the Linear Model (Judge*
                                              Book Chapter)
Reading #10: Jegadeesh, Kim, Krische, and Lee (2002)
Reading #11: Portfolio Selection (Harry Markowitz)

4:Apr14/16 *__Case #2: Martingale Asset Management LP in 2008__* **(Answers to Assigned Questions Due)**
(Apr15) Bayesian Alpha   CK Chapter 14   *Ch14:all*
The Black-Litterman Model

__Exercise #6:__ **Implementing a Multi-Year Backtest with Matlab (due in one week)**
Reading #12: Role Call: Quantitative Investment Management—North America
Reading #13: The Adaptive Markets Hypothesis
Reading #13.5: Warning: Physics Envy May Be Hazardous to Your Wealth!
Reading #15: A Step-by-Step Guide to the Black-Litterman Model (Idzorek)
Reading #16: The Intuition Behind Black-Litterman Model Portfolios (He and Litterman)

Part III: Performance Evaluation and Attribution

5:Apr21/23 *__Quiz #2__*
(Apr22) *__Case #3: Aronson+Johnson+Ortiz__* **(Answers to Assigned Questions Due)**
Returns-Based Performance Measures   FW Chapter 3   *Ch3:all*

__Exercise #7:__ **Implementing a Panel Regression Model (due in one week)**

6:Apr28/30 *__Case #4: UBS Global Asset Management__* **(Answers to Assigned Questions Due)**
(Apr 29) *__Begin QEPM Backtesting Project__*
Reading #14: Evaluating a News-Aware Quantitative Trader
Reading #17: Current Trends in Quant Investing

7:May5/7 *__Quiz #3__*
(May6) Help on Backtesting Projects

Presentation of Backtesting Projects

1. **College Park:**   **May 12th (normal class time)**

2. **DC Tuesday:**   **May 13th (normal class time)**