Washington University

Olin School of Business

Finance 532B — Prof. Guofu Zhou
Data Analysis for Investments — Fall-B, 2019

Course Syllabus

Olin's Pillars of Excellence:

Values-based and Data driven; Global; Experiential; Entrepreneurship.
Students will: 1) embody a values-based and data-driven ethos in their approach to all business situations; 2) understand the global opportunities and challenges facing businesses; 3) engage with business issues through the application of experiential knowledge, in addition to the rigorous technical skills acquired in the classroom; 4) pursue world-changing initiatives with an entrepreneurial and innovative mindset and skillset.

Honor Code and Code of Conduct:

This course will be conducted under the Code of Conduct and Code of Academic Integrity. Students are expected know them (some are attached at the end).

Description:

The objective is to obtain an in-depth understanding of some of the major empirical issues in investments. Based on recent advances, students are required to learn the facts, theories and the associated statistical tools to analyze financial data with *Matlab*, and with optional tutorial and codes in *R* and *Python*. The topics include portfolio optimization, factor models, factor investing, Bayesian and shrinkage estimations for expected returns and covariances, principal analysis, predictability, big data tools, asset allocation, stock screening, performance evaluation, anomalies, limits to arbitrage, behavioral finance, and Black-Litterman model.

Texts (highly recommended) :

a). Chincarini and Kim, 2006, *Quantitative Equity Portfolio Management*, MGH.

b). Grinold and Kahn, 2000 and 2019, *Active Portfolio Management* and *Advances in Active Portfolio Management*, McGraw-Hill.

c). X. Zhou and S. Jain, 2014, *Active Equity Management*.

d). Litterman, et al, 2003, *Modern Investment Management*, Wiley.

Other Books:

Bodie, Kane, and Marcus, *Investments*; Meucci, *Risk and Asset Allocation* (more theories); Campbell, Lo and MacKinlay, *The econometrics of financial markets* (quant methods). Alexander, *Market Models: A Guide to Financial Data Analysis* (risk est).

Readings:

(a) Required: Lecture notes, text chapters, articles and other reading assignments.

(b) Suggested: Daily reading of *Investor's Business Daily* and *The Wall $treet Journal*.

Office Hours:

10:00 – 11:00 on TT days, SH 207; Phone: (314) 935–6384; *e*-mail: zhou@wustl.edu

Grading:

Homeworks (Matlab computations, etc), worth 15%, will be assigned and graded by P/F. The final is worth 75% and the class participation 10%.

Olin's Code of Conduct as it relates to Academic Matters:

It is a *Student Academic Violations* if

a) *Plagiarize* – You commit plagiarism by taking someone else's ideas, words or other types of product and presenting them as your own. You can avoid plagiarism by using proper methods of documentation and acknowledgement.

b) *Cheat on Examination* – You must not receive or provide any unauthorized assistance on an examination. During an examination you may use only material authorized by the faculty.

c) Copy or collaborate on assignments without permission - It is dishonest to collaborate with others when completing graded assignments or tests, performing laboratory experiments, writing and/or documenting computer programs, writing papers or reports and completing problem sets without permission.

d) Fabricate or falsify data or records - It is dishonest to fabricate or falsify data in laboratory experiments, research papers, reports or other circumstances.

e) Engage in other forms of deceit or dishonesty that violate the spirit of the Code.

Olin's Code of Conduct as it relates to Professional Behavior:

Olin students are expected to conduct themselves at all times in a professional manner, which includes, but is not limited to, the following classroom expectations:

a) Attendance: students who must miss a session for any reason should make every effort to notify the instructor prior to the class.

b) Punctuality: students are expected to arrive prior to the start of the class, and display their name cards at all times.

c) Distractions: no Exiting and Entering (except an urgent need or prior arrangements made with the professor); no Laptop, PDA, etc.

For more specific responsibilities, guidelines and procedures regarding academic integrity, see *Integrity Matters: Olin Business School Code of Conduct*.

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Day Classes

[MW 10:00–11:20 or 11:30AM – 12:50, SH 122; or 4:00–5:20, SH 108]

Date (Day)	Topics	Readings (Chs of BKM, 10th ed and cases)
10/21 (M)	Intro and Matlab	Ch 1–4
10/23 (W)	Properties of Stock Returns	
10/28 (M)	Mean-variance Asset Allocation	Ch 5–8, *Harvard case*
10/30 (W)	Robust Asset Allocation	
11/04 (M)	Factor Models 1: Known Factors	Ch 9–10, *DFA Case*
11/06 (W)	Factor Models 2: Latent Factors	
11/11 (M)	Predictability	Ch 24–28
11/13 (W)	Big Data	
11/18 (M)	Anomalies and Behavior Finance	*Numeric Case*
11/20 (W)	Moments, ML and Shrinkage Estimation	
11/26 (M)	Thanksgiving Break	
11/28 (W)	Thanksgiving Break	
12/02 (M)	Bayesian Estimation	
12/04 (W)	Black-Litterman Allocation **Due**: project outline	
12/09 (M)	**Final Exam** 9:00–11:30PM, SH 110, 112, 113	

⋆ ⋆ All students enrolled in Olin school course work are subject to the ⋆ ⋆
⋆ ⋆ ⋆ student instituted and managed Honor Code regarding academic integrity ⋆ ⋆ ⋆

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Evening Classes

[Wed: 6:15 – 9:15PM, SH 105]

Date (Day)	Topics	Readings (Chs of BKM, 10th ed and cases)
10/23 (W)	Intro and Matab Properties of Stock Returns	CH 1–4
10/30 (W)	Mean-variance Asset Allocation Robust Asset Allocation	Ch 5–8, *Harvard Case*
11/06 (W)	Factor Models 1: Known Factors Factor Models 2: Latent Factors	Ch 9–10, *DFA Case*
11/13 (W)	Predictability Big Data	Ch 24–28
11/20 (W)	Anomalies and Behavior Finance Moments, ML and Shrinkage Estimation	*Numeric Case*
11/27 (W)	Thanksgiving Break Thanksgiving Break	
12/04 (W)	Bayesian Estimation Black-Litterman Allocation **Due**: project outline	
12/11 (W)	**Final Exam** 6:15 – 8:45PM, SH 105	

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