NATIONAL UNIVERSITY OF SINGAPORE
Department of Finance

FIN4111: Research Methods in Finance

Semester 1, 2014/2015

Instructor: **DR. LEE Hon Sing**
Office: **MRB BIZ1 7-75**
Telephone: **6516-5665**
E-mail: **honsing@nus.edu.sg**
Consultation Hrs: By appointment through email

Course Objective

This course aims to prepare the student for academic research work in the area of finance by introducing the contemporary research methods. Academic research work differs from some industry research work in the higher emphasis on sound scientific basis. This allows the scientific theories to be verifiable, falsifiable and repeatable. This course would also compliment the needs of the Honors year research project by familiarizing the student with using the financial database and statistical software. Students shall be exposed to published and important finance research papers as well.

Motivation

With the increasing sophistication in financial instrument and practices, it is important to learn the scientific way to establish new finance theories. Some practitioners base their theories on situational and non-objective evidence that led to mis-priced models and error-prone applications. Their theories may seem to work perfectly for a certain period of time, but proves to be false beyond the period of mere coincidence. When the theories no longer work, they may lead to losses for the company or bank, and they may even trigger an economy wide crisis.

It is therefore important to learn how to adequately verify a new finance theory. Empirical data need to be obtained and treated in the correct way, and the appropriate statistical analysis be conducted accurately. Objective and justified inference and deductions can then be obtained from the research. Such scientific methodology is no longer necessary only for academic research, but necessary for industry professionals in the area of regulation, setting fiscal and monetary policies, risk management, portfolio optimization and even corporate finance.

Learning Outcome

By the end of the course, students shall:
• learn some of the commonly used statistical analysis used in finance research
• know of some important finance papers often cited in finance research
• be familiar with handling some of the commonly used database in finance research

Mode of Teaching

The course will be delivered as a series of 13 three-hour sessions in a computer lab. In each session, the student will go through each statistical analysis method hands-on with the computer as they are covered

in class. The WRDS database and the SAS statistical software will be covered. The class would have a WRDS user account to access the database. Each computer needs to have
1) Internet access
2) SSH Secure Shell and FTP.

Flipped Classroom

The course will be delivered using the flipped classroom methodology. In the flipped classroom methodology, students are to learn their "lectures" at home and do their "homework" in class. This is detailed in the following points:
1) Students shall watch the videos and learn the lesson <u>before</u> the class session.
2) Each student will take an individual closed-book quiz at the start of each class.
3) Students will do worksheets in groups. The worksheets will cover the material of that week.

Advantages
1) Students can understand the lecture at their own time and pace.
2) Students have closer coaching by the instructor during class.
3) Students are trained in doing group work.
4) Students learn to take responsibility for their own learning, and develop the skills for life long learning.

Pre-requisite

ST1131A Introduction to Statistics, or DSC2008 Business Analytics (or equivalent)
FIN3101 Corporate Finance
FIN3102 Investment Analysis

References

There is no main text, the following are used as supporting references:

Richard A. DeFusco, Dennis W. McLeavey, Jerald E. Pinto, David E. Runkle, Mark J. Anson, Quantitative Investment Analysis, Wiley, 2nd edition, (ISBN: 978-0470052204)

Wooldridge, Jeffrey M., Introductory Econometrics: A Modern Approach, 4th edition, South-Western College Pub, 2008 (ISBN: 978-0324660548)

Lora D. Delwiche, Susan J. Slaughter, The Little SAS Book: A Primer, 4th Edition, by SAS Publishing, 2008 (ISBN: 978-1599947259)

Campbell, John Y., Lo, Andrew W., and MacKinlay, A.Craig., The Econometrics of Financial Markets, Princeton University Press, 1996 (ISBN: 978-0691043012)

Geoff Der, Brian S. Everitt, A Handbook of Statistical Analyses using SAS, 3rd edition, Chapman and Hall, 2008 (ISBN: 978-1584887843)

Vivek Ajmani, Applied Econometrics Using the SAS System, Wiley, 2009, (ISBN: 978-0470129494)

John C. Brocklebank, David A. Dickey, SAS for Forecasting Time Series, 2nd Edition, Wiley-SAS, 2003, (ISBN: 978-0471395669)

Assessment

This is a 100% CA course. The weight distribution for different components is as follows:

Mid-Term	30
Final Quiz	30
Project & Presentation	30
Class Participation	10
Total	**100**

Mid-Term Quiz

Date: October 1, 2014 (In Class)
The mid-term quiz will be a 2 hour close-book quiz. It will be held during class hours. Students are to make sure that they are available to sit for the mid-term.

Final Quiz

Date: November 12, 2014 (In Class)
The final quiz will be a 2-hour close-book quiz. It will be held during class hours. Students are to make sure that they are available to sit for the mid-term.

Group Project

Groups of four or five students each will be formed on the first week. Topic will be assigned during the course.

Other points to note

- **Attendance**: Since this is a 100% CA course, students must not miss more than 2 classes (not including absence due to medical (accompanied by medical certificates) or compassionate reasons). Violators will be heavily penalized or may even fail the entire module.
- **CA Attendance**: Students who miss any CA component will receive zero marks for that particular component. Absentees due to medical (accompanied by medical certificates) or compassionate reasons may be given a substitute form of assessment.
- Students are encouraged to always feedback to the instructor comments and suggestions that may help the class to learn better.
- Students are to check the IVLE weekly for announcements.
- Please use the forum in IVLE exclusively for students' discussions
- Please use NUS e-mail for e-mail communications

Tentative Lesson Schedule:

Lesson	Week Starting	Topic and Activity
1	Aug 11	• Introduction to Research • The WRDS Database

2	Aug 18	• Basic Statistics • ANOVA
3	Aug 25	• Simple and Multiple Regression 1
4	Sep 1	• Simple and Multiple Regression 2 • Panel Data
5	Sep 8	• Logit and Probit Regressions
6	Sep 15	• Event Studies
	Sep 22	**Recess Week**
7	Sep 29	**Quiz 1 (2 hr)**
8	Oct 6	• Instrumental Variables Granger Causality
9	Oct 13	• Factor Analysis, Principal Components
10	Oct 20	• Unit Root Test, ARIMA
11	Oct 27	• ARCH/GARCH
12	Nov 3	• Cointegration • Vector Autoregression
13	Nov 10	**Quiz 2 (2 hrs)**