Applied Times Series Analysis (0382)

Course Syllabus

Instructor	Office	E-mail	Telephone
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Lectures: Tuesday 8:55-11:45, providing one three-hour lecture, from *week 2 to 13*, spring of 2013, i.e. the second semester of the 2012-1013 academic year.

Location: 4305. **Office Hours**: by appointment.

You can download documents about lecture notes, assignments and SAS codes for related programs via visiting teaching web site of SUFE.

References:

[**1**] Cryer, J.D. and Chan, K.S. (2008) *Time Series Analysis with Applications in R, 2nd edition.* Springer. [CC]

[**2**] *SAS/STAT 9.1 User's guide, Volume 1-6*, SAS Publishing, 2004. It is available for you to get sas documents or commands online via visiting web site at http://support.sas.com/onlinedoc/913/docMainpage.jsp.

[**3**] Brockwell, P. and Davis, R. (2002) *Introduction to Time Series and Forecasting, 2nd edition.* Springer. [BD]

[**4**] Shumway, R. and Stoker, D. (2006). *Time Series Analysis and its Applications, with R Exam- ples, 3rd edition.* Springer. [SS]

[**5**] Yaffee, R.A. and McGee, M. (1999). *Introduction to Time Series Analysis and Forecasting with Applications of SAS and SPSS.* Academic Press, INC. 1999.

Course objective: The purpose of this course is to introduce you to the analysis of time series data. This course requires a strong familiarity with statistical methods such as regression and analysis of variance (topics covered in linear model) and additional knowledge of probability and mathematical statistics will help tremendously.

We will cover Chapters 1-10 in CC. Whether Chapters 11 can be covered in this course relies on our time. In particular, we will discuss models for stationary and non-stationary time series, analysis of trends, model specification, parameter estimation, model diagnostics, forecasting future observations, seasonal time series models and intervention analysis if our course time is available. After completing this course, you should be comfortable with modeling and forecasting time series data.

Teaching pattern: The course is taught at an intermediate statistical level. The emphasis is on understanding and applying time series concepts and techniques, rather than proving theorems. Computer literacy is essential. We recommend using SAS, a general-purpose statistical package available on PCs and Unix Workstations, to write your code for problems in notes and projects, but students are free to use other software packages such as R or Stata.

Homework Assignments: There will be a homework assignments for each chapter during the semester. Computer code and output should be included if necessary. Working together on homework problems is permitted and encouraged, but each student should write up his/her solutions independently of others (this will help greatly). Naturally, cheating on exams is an extremely serious offense and will be dealt with accordingly.

Project: Each of you will be assigned a time series data set to analyze, model, and forecast the series using methods learned in this course. Your analysis will be written up in a final report with abstract, body, conclusions, and appendices. Further information about the project will be disseminated later.

Exam Schedule: We will have one cumulative final exam after the course is over.

Grade Breakdown: Your course grade will be determined by homework (20 percent), the project (20 percent), and the final examination (60 percent).

My expectations for you:

- Attend every class and be on time.
- Read appropriate sections of the text/notes before class.
- Treat homework and projects very seriously and independently.
- Write computer code for your homework and projects very seriously if necessary.