Time Series Analysis
Course Outline
Summer 2011

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The study of the sequence of data points measured at successive times enables us to often either to understand the underlying theory of the data points (where did they come from what generated them), or to make forecasts (predictions). **Time series *prediction*** is the use of a model to predict future events based on known past events: to predict future data points before they are measured.

The objective of the course is to provide students to learn time series modelling in theory and practice. The course will start with reviewing the fundamental concepts in regression analysis. Autocorrelation function, Linear Stationary models: General linear process, Autoregressive, Moving averages, ARMA processes, Non-stationary models: Autoregressive Integrated Moving Average and Integrated Moving Average processes, Forecasting: Minimum Mean Square Error Forecast, updating forecasts, Stochastic Model building: Model identification, Model estimation (maximum likelihood estimation), Model diagnostic checking, Seasonal models, Spectral analysis and filtering, Vector Autoregressive Models, and cointegration will be covered.

Course Schedule

Lecture	Topics	Chapters to be covered
Day 1	**Introduction, classical Time series**	1-4
Day 2	**Stochastic Time series**	4
Day 3	**Forecasting, Integrated models, unit root**	5-6
Day 4	**Multiplicative seasonal models, ARCH (m)**	7-8
Day 5	**Vector Autoregressive Models and Cointegration**	8-9

Teaching Methods:

 Presentation of teaching materials include introduction of the theoretical base with illustrative examples and exercises solved in the class. Tutorials enhance the application of the theory and the interpretation of the results. Application to data set by using Software Eviews will be presented during PC Pool sessions. Students are **strongly** recommended to participate lectures and tutorials.

Grading:

Final Exam (75%) : A comprehensive 90 min. final exam will be given. The test will be in-class and closed-book exam. If you miss the final exam, you will be treated according to the regulations of the University. Students are required to pass at least 50% of the final examination.

Assignments (25%): A group of two students will submit one set opf assignment given during the teaching period. The deadline of all assignments are due to the Final Examination (August 4, 1011, 14:00 h)