ANALYSIS OF TIME SERIES - MATH DI 02

CRN 19684

Fall 2008

Instructor: Rachel Dunwell

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Office Hours: MWF 1pm – 2pm and 3pm – 5pm, by appointment or just call in.
Textbooks:

"The Analysis of Time Series: Theory and Practice", C Chatfield. Halsten Press.

"Time Series Analysis, with Applications in R", J D Cryer, K-S Chan. Springer.

Course Description: Time series arise whenever data is collected sequentially. The statistical tools for analyzing such data allow the detection of underlying trends and the ability to predict future events within confidence intervals.

Course Content:

Descriptive techniques: Time plots, Transformations, Filtering, Differencing, Autocorrelation, Correlogram, Tests for randomness.

Probability models: Stochastic processes, Stationary processes including purely random, moving average, autoregressive processes, general linear processes.

Estimation: Interpreting the correlogram, ergodic theorems, fitting an autoregressive process, fitting a moveing average process, parameter estimation, residual analysis.

Forecasting: Univariate procedures, Multivariate procedures, Prediction theory.

Grade

The final grade will be made up of three components: Communication (30%), scope and depth of work conducted (30%) and the quality of the examples worked (40%).

The communication grade will be made up of oral and written communication. The oral communication will be graded using the rubric that is used for math senior seminar

presentations on a summary presentation that the student will give towards the end of the semester. The written communication will be graded using the written communication rubric used in math senior seminar on an activity report that the student will complete by the end of the semester.

All examples worked on by the student and included in the report or in the oral presentation will be treated as homework assignments and a weighted average will be calculated. The examples will be weighted by the instructor as 0.5, 1, 1.5 or 2 depending on their difficulty and originality. An example that is similar to one worked in the text with minor modifications, will be weighted 0.5. An example taken from the exercise section of the text will be weighted 1. An example suggested as an exercise by a source other than the main text will be weighted as 1.5. An example that is original to the student will be weighted as 2.

If the student studies all the suggested material at the depth indicated by the main text then 30% will be awarded. The student may substitute sections of the main text with topics from other sources and still receive 30%. If the student fails to complete all the planned work then the grade will be reduced proportionately.

The grade scale:

<60	60-62	63-66	67-69	70-72	73-76	77-79	80-82	83-86	87-89	90-92	93-100
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A