STATISTICS 4540  
TIME SERIES II

List of Topics

1. The nature of time series; stationary and nonstationary time series.

2. Time domain methods: autocorrelation and partial autocorrelation functions; ARMA models; invertibility; Box-Jenkins approach for identifying and estimating time series.

3. Frequency domain methods: Background on Fourier series; power spectrum, and its relationship to the autocorrelation function; spectral representation theorem.

4. Advanced topics: State-space models and KalmanFilter; analysis of bivariate series; Bayesian methods and dynamic models.


Marks:  
Assignments 25%  
Midterm Exam 30%  
Project 35%  
Presentation 10%

Calendar Description: 4540 Time Series II examines the analysis of time series in the time domain and is an introduction to frequency domain analysis. Topics covered include integrated ARMA processes, seasonal time series models, intervention analysis and outlier detection, transfer function models, time series regression and GARCH models, vector time series models, state space models and the Kalman Filter. Spectral decomposition of a time series is introduced. Emphasis is on applications and examples with a statistical software package.  
Prerequisites: Statistics 3411 and 3540.

Offered: Occasionally