

## 1 Lecturer: Dr. Shelton Peiris (Carslaw Room 819)

## 2 Objectives:

Establish some advanced methods of modelling and analysing of time series data. A particular attention is given to the theoretical development of various methods related to the following advanced topics:

## 3 Course Outline:

- (i) Review of Linear Time Series Models and their Properties.
- (ii) An Introduction to Spectral Analysis of Time Series.
- (iii) Generalised AR and MA Models and Applications.
- (iv) Analysis and Applications of Long Memory Time Series.
- (v) Analysis of Financial Time Series (ARCH, GARCH and related Models).
- (vi) Autoregressive Conditional Duration, ACD Models.

## 4 Assumed Knowledge: STAT3903 or Equivalent

## 5 Method of Teaching and Learning:

**Lectures: 2 lectures a week**

### Assessments:

3 Assignments	- 15%
1 Technical Report*	- 10%
November Examination	- 75%

*\*Note: This report must include the analysis of a real time series (data set) using standard time series techniques. Application of a suitable computer package is essential in your report.*

## 6 References:

- (a) Time Series: Theory and Methods, BROCKWELL, P.J. & DAVIS, R.A. (Springer-Verlag - 1991).
- (b) Time Series Analysis: Forecasting and Control, BOX, G.E.P. & JENKINS, G.M. (Holden-Day - 1976).
- (c) Spectral Analysis and Time Series. PRIESTLEY, M.B. (Academic Press - 1981).
- (d) The Analysis of Financial Time Series, Tsay, R.S. (John Wiley - 2001).
- (e) Modelling Financial Time Series with SPlus, Zivot, E. and Wang, J. (Springer, New York - 2003).
- (f) The Statistical Analysis of Time Series, ANDERSON, T.W. (John Wiley - 1971).