STAT 4300/5300: State Space Models

Fall Semester 2006

Instructor: J. Mills Flemming
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Lectures: Tuesday and Thursday 11:35-12:55
Room: Chase 319
Office Hours: Tuesday and Thursday 1:30-2:30

Course Description: This course will introduce state space models offering a unified approach to a wide range of models and techniques including ARIMA and latent variable models. Filtering, smoothing and forecasting will be discussed along with missing observations and parameter estimation. Students are required to apply the methods learned to datasets of current interest. MATLAB will be used throughout the course.

Method of Evaluation:	Assignments	20%
	In-Class Presentation	10%
	Midterm	25%
	Final Exam	45%
	(Note: There will be no supplemental exam)	

Grading Scheme:	A+	90 and above
	A	85 up to but not including 90
	A-	80 up to but not including 85
	B+	75 up to but not including 80
	B	70 up to but not including 75
	B-	65 up to but not including 70
	C+	60 up to but not including 65
	C	55 up to but not including 60
	C-	50 up to but not including 55
	D	47 up to but not including 50
	F	below 47

Assignments: There will be 4 assignments that will provide students the opportunity to use the techniques discussed in class to analyze data sets. Assignments will require computations using MATLAB. Late assignments will not be accepted.

Students with Disabilities: Students with disabilities are encouraged to register as quickly as possible at the Student Accessibility Services if they want to receive academic accommodations. To do so please phone 494-2836, e-mail access@dal.ca , drop in at the Killam, G28 or visit www.studentaccessibility.dal.ca.

Week		
1: Sept 7th		Course Outline and Introduction
2: Sept 12th, 14th	Local Level Model	Local Level Model
3: Sept 19th, 21st	Linear Gaussian State Space Models	Linear Gaussian State Space Models, A#1 Due
4: Sept 26th, 28th	Filtering, Smoothing and Forecasting	Filtering, Smoothing and Forecasting
5: Oct 3rd, 5th	Computational Aspects	Computational Aspects
6: Oct 10th, 12th	Computational Aspects	Computational Aspects, A#2 Due
7: Oct 17th, 19th	Examples	Midterm Exam (in class)
8: Oct 24th, 26th	Maximum Likelihood Estimation	Maximum Likelihood Estimation
9: Oct 31st, Nov 2nd	Non-Gaussian and Nonlinear State Space Models	Non-Gaussian and Nonlinear State Space Models, A#3 Due
10: Nov 7th, 9th	Importance Sampling	Importance Sampling
11: Nov 14th, 16th	Special Topics	Special Topics
12: Nov 21st, 23rd	Examples	Examples [A#4 Due]
13: Nov 28th, 30th	Review	Final Exam (in class)