MECO 6315
Wednesday Night
Spring 2007

Instructor:

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Office Hours:

MA 3.208 Mondays and Wednesdays 5:00 – 6:45
Otherwise by Appointment

Text:

Statistical Models, Davison, Cambridge University Press 2003.

Student Learning Objectives/Outcomes:

1) **Be familiar with the characteristics of Probability Distributions used in Business Research**
2) **Be able to apply Multiple Methods of Estimation to obtain estimates of Distribution Parameters based on Empirical Data**
3) **Be able to obtain intervals on Parameter Estimates**
4) **Be able to fit both Linear and Non-linear Regression Models**
5) **Be able to fit models to discrete data**
6) **Be able to fit models with non-normal and correlated errors**

Grades:

Course grade is based on the weighted average of weekly assignments. There is no final exam or midterm exams.

Computing:

Weekly assignments will typically require some use of computer facilities. You should be familiar with some package which can do statistical computation.

Examples are SAS, MATHEMATICA, SYSSTAT, etc. No one package is mandated for use in the course.

Tentative Class Schedule

	Meeting Days
	Spring 2007
Week	
1	January 10, 2007
2	January 17, 2007
3	January 24, 2007
4	January 31, 2007
5	February 7, 2007
6	February 14, 2007
7	February 21, 2007
8	February 28, 2007
	March 7, 2007
	(Spring Break)
9	March 14, 2007
10	March 21, 2007
11	March 28, 2007
12	April 4, 2007
13	April 11, 2007
14	April 18, 2007
15	April 25, 2007

Topics

(Topics will be covered in the order shown below)

	Topics: (In Order)		Text Section
I	Models for Data:		
	Properties of Distributions		Chapter 2
		Moments	
		Characteristic Functions	
		Cumulant Function	
	Common Distributions		various
		Normal, χ^2,t,F,exponential,	
		gamma, beta,uniform	
		binomial, poisson, hypergeometric,	
	Families of Distributions		various
		Pearson	Not
		Burr	all
		Richards and Johnson	in
		Exteme Value	text
		Exponential Family	
		Stable	
	Special Distributions		various
		Weibull	Not
		Logistic	all
		Multivariate Normal	in
		Dirichlet	text
II	Simulation and Numerical Integration:		
	Generating random variables		3.3
	Acceptance Method		
	Numerical Integration (moments, percentiles)		
	Gibb's Sampler		
III	Point Estimation:		Chapters
	Method of Moments		4 and 11
	Jack Knife		
	Delta Method		
	Maximum Likelihood		
	Sufficiency		
	Factorization Theorem		
	Asymptotics		
	Consistency		
	Bias MVUE BLUE		
	Efficiency		
	Cramer-Rao Lower Bound		
	Bayes		
	Minimum Mean Square		
	Loss Function		

						Text Section
IV	Hypothesis Tests:					
		Likelihood Ratio				Chapter 7
		Power				and 11
		Bayesian				
V	Estimation Interval:					Chapter 7
		Confidence Interval				
		Bayes				
		Credible Region				
		Union Intersection Principle				
		Bootstrapping				
VI	Statistical Models Continuous:					Chapter 8
		Linear Regression				
		Step-wise Regression				
		Non-linear Regression				Chapter 10
		Exponential Family				
		ANOVA (Fixed, Random and Mixed)				Chapter 9
		Survival Curves				5.4
		Time Series				6.4
VII	Statistical Models Discrete:					
		Poisson Regression				10.5
		Logistic Regression				10.4
		Geralized Least Squares				10.3
		Log-linear Models				
VIII	Multivariate Models (If time available)					
		Discriminant Analysis				Not
		MANOVA				in
		Multivariate Regression				Text