STA 5166 Statistics in Applications I FALL SEMESTER 2006

Instructor:	Xu-Feng Niu
Office:	210B OSB 644-4008
Class Hours:	12:30 pm - 1:45 pm MW
Office Hours:	2:00 pm - 3:00 pm MW
Text:	Box, G. E., Hunter, W. G. and Hunter, J. S (2005), Statistics
	for Experimenters, John Wiley and Sons, Inc.

Course Objectives: Statistics is an applied science whose focus is upon the collection, analysis and interpretation of data. Statistics is also a mathematically-based theoretical science in which the theory necessary to carry out data analysis is developed. This course will focus on the design of experiments which is the most valuable aspect of statistical method. Frequently conclusions are easily drawn from a well-designed experiment, even when rather elementary methods of analysis are employed. Conversely, even with the most sophisticated statistical analysis can not salvage a badly designed experiment. The topics of this course will include comparison of two and more means, random sampling, randomization and blocking with paired comparisons, statistical inference for means, variance, proportions and frequencies, and two-way factorial designs and Latin square design.

The course will use the "R" and/or "Splus" as the statistical computing packages. Introductory documents for the Statistics Department's network of Sun computers will be made available. Each student should have a good calculator. A computer account will be provided on the statistical department Sun system.

Prerequisites:

MAC 3312 or consent of the instructor

Course Grade:

Weights		Grading	Scale
Homework	30%	90-100	А
Midterm	30%	80-90	В
Final	40%	70-80	\mathbf{C}
		60-70	D
		Below 60	F

Homework:

Please do your homework on standard size paper $(8.5 \times 11 \text{in})$. If there is more than one page, staple the pages together. In data analysis problems, do not turn in reams of computer output. Include only those parts of the output which are most relevant for a final report. Tell in clear English the purpose of each step of the analysis, and tell what the plot or statistic shows.

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Tentative Syllabus

Topic	Source An Introduction to R R Data Import/Export R Language Definition (Chapters 1-6)		
Introduction to the R/Splus language R Online Manuals:			
Splus Online Manuals:	Programm Guide to S	Programmers Guide (Chapters 1-6) Guide to Statistics Volume I	
Introduction of Applied Statistics	BHH C	Ch. 1.	
Some Basic Probability and Statistical Concepts	BHH C	Ch. 2.	
Comparing Two Entities: Reference Distributions, Tests, and Confidence Intervals	ВНН С	Ch. 3	
Comparing a Number of Entities: Randomized Blocks, and Latin Squares	ВНН С	Ch. 4	
Factorial Designs at Two Levels	BHH C	Ch. 5	
Fractional Factorial Designs	BHH C	Ch. 6	
Factorial Designs and Data Transformation	BHH C	Ch. 8	
Multiple Sources fo Variation	BHH C	Ch. 9	