STAT 2132: Applied Statistical Methods II

Spring 2016

Summary: This course is the second semester of a two semester sequence in applied statistics. It explores popular statistical methodologies with the goal of understanding how to choose, apply, and interpret appropriate statistical designs and analyses. This second semester will roughly follow Chapters 13-25 of Kutner, Nachtsheim, Netter & Li and cover topics such as non-linear regression, generalized linear models (GLM), design and analysis of single-factor and multi-factor studies, random and mixed effects models, nested designs, repeated measures, and correlated data. The corresponding sections of Littell, Stroup, & Freund will also be followed. The texts will be supplemented by course notes and other material to emphasize particular topics of interest.

Instructor: Kehui Chen, Department of Statistics, WWPH 1808, khchen@pitt.edu.

Teaching assistant: Zhang Zhang, Department of Statistics, zhz46@pitt.edu

Leture Time and Place: MW 2:00 - 3:15pm, CL 208B

Office Hours: Kehui Chen, Tuesday 1:00 - 3:00 pm, WWPH 1808; Zhang Zhang TBA

Required Texts: Applied Linear Statistical Models, 5^{th} edition and SAS for Linear Models, 4^{th} edition

Course Components: The final grade will be computed from homework (30%), the midterm (35%), and the final (35%).

- Homework: Homework assignments will be assigned approximately weekly. They consist of problems from the text, supplemental problems, and case studies. You must do all homework problems on your own, although you may discuss the problems with other students. Assignments must be turned in on time for credit.
- Midterm: There will be one open book midterm during class on Wednesday, February 24, which covers non-linear regression and GLMs.
- Final: The final will be given during class on Monday, April 25. It is open book and covers materials after the midterm.

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[1] If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both me and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412)228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Tentative Course Schedule:

Date	Topic	Chapters	What is due
Jan. 6	Introduction & Nonlinear regr	V13.1-13.2	
11	Inference, diagnostics & examples	V13.3-13.5	
13	Logistic regression	V14.1-14.3	
18	Martin Luther King's day		
19			Add/Drop period ends
20	Estimation and tests about reg. parameters	V14.4-14.5	1st homework due
25	C.I. & examples	V14.5, 14.9	
27	Pearson and deviance goodness of fit	V14.7	2nd homework due
Feb. 1	Hosmer-Lemeshow goodness of fit & graphics	V14.7-14.8	
3	Prediction	V14.10	
8	Multinomial regression	V14.11-14.12	3rd homework due
10	Poisson regression	V14.13	
15	Over-dispersion and model building	V14.13	4th homework due
17	GLM	V14.14	
22	Intro. to experimental designs and obs. studies	Ch15	5th homework due
24	Midterm covering Ch13, 14		
29	One-way ANOVA	V16.1-16.8	
Mar. 2	Nonpar. tests and power for one-factor studies	V16.9-16.11	
6-13	Spring Recess		
14	More on power and diagnostics	Ch 18	
16	Analysis of factor level means	V17.1-17.3,17.8	6th homework due
16			Last day for monitored withdraw
21	Multiple comparisons	V17.4-17.7	
23	Two-way balanced ANOVA	Ch 19	
28	Other 2-factor ANOVA models	Ch 20, 21	7th homework due
30	ANCOVA	Ch 22	
Apr. 4	Unbalanced 2-way ANOVA	Ch 23	8th homework due
6	One random effect model	V25.1	
11	Two-way mixed effects ANOVA	V25.2-25.4	9th homework due
13	Two-way random effects ANOVA	V25.2-25.4	
18	Unbalanced mixed/random effects ANOVA	V25.7	10th homework due
20	No Class		
25	Final covering Ch 16-25		