

## STAT 457 - APPLIED CATEGORICAL DATA ANALYSIS

**Instructor:** D.G. Bonett

**Prerequisites:** Stat 401(or equivalent), working knowledge of SAS or SPSS

**Readings:** Agresti (1996) *An Introduction to Categorical Data Analysis*.  
Fleiss, Levin, & Paik, (2003) *Statistical Methods for Rates and Proportions*.  
Stokes, Davis, & Koch. (2000) *Categorical Data Analysis Using the SAS System*.

### **Part I** (weeks 1 - 5)

Binomial distribution; approximate and exact tests and confidence intervals for population proportion; sample size requirements; 2x2 contingency tables; multinomial and product-binomial distributions; tests and confidence intervals for odds ratio, difference in population proportions, and marginal proportions; measures of association for 2x2 tables; one-way multinomial tables; RxC multinomial; test of independence; test of symmetry and marginal homogeneity; partitioning tables and residual analysis; symmetric and asymmetric measures of association for ordered and unordered RxC tables and measures of agreement. *1<sup>st</sup> Midterm Examination*

### **Part II** (weeks 6 - 9)

Three-way contingency tables; linear and log-linear contrasts of multinomial proportions; multinomial log-linear models; goodness-of-fit tests; analysis of residuals; analyzing sets of RxC tables; analysis of binomial proportions in one-factor, two-factor, and three-factor experiments. *2<sup>nd</sup> Midterm Examination*

### **Part III** (weeks 10 - 15)

Logistic and probit models; parameter interpretation; models with categorical predictors; models with quantitative predictors; models with interaction effects; ordinal logistic regression models; conditional logistic regression models; generalized linear models; generalized estimating equations; Poisson regression model.

***Final Comprehensive Examination*** (during finals week)

---

A total of 100 points may be earned on each examination and a total of 25 points may be earned on each of the four data analysis projects. Examinations are closed-book/notes.