STAT 8620 — Categorical Data Analysis and Generalized Linear Models
Course Syllabus* – Fall 2012

Instructor: Dan Hall
Office Hours: T,Th:2:00pm–3:00pm, and by appointment
Office: Room 218, Statistics Building **Phone:** 542-3302
E-mail: danhall@uga.edu

Teaching Assistant: Xijue Tan
Office Hours: Thursdays, 5:00–6:00pm in rm 307 & Mondays, 1:00–2:00pm in rm 260.
Office: Room 260
E-mail: buddist@uga.edu

Lecture Hours: T,Th, Period 4 (12:30–1:45), Statistics Bldg., Room 303

Prerequisites: STAT 8260, and either STAT 6820 or STAT 6520

Required Texts:

Agresti, A. (2002). *Categorical Data Analysis, 2nd ed.* Wiley.

Reserved Texts:

Dobson, A.J. and Barnett, A (2002). *An Introduction to Generalized Linear Models, 2nd ed.* Chapman & Hall/CRC Press.

McCullagh, P. and Nelder, J.A (1989). *Generalized Linear Models, 2nd ed.*

Aitkin, M., Francis, B., Hinde, J., and Darnell, R. (2009). *Statistical Modelling in R*

Cameron, A.C., and Trivedi, P.K. (1998). *Regression Analysis of Count Data.*

Collett, D. (2003). *Modelling Binary Data, 2nd ed..*

- In addition, the required text will be placed on reserve.

(OVER)

* Note that the course syllabus is a general plan for the course; deviations from the syllabus may be necessary and will be announced by the instructor.

E-mail:

I will utilize e-mail to contact you fairly often. Therefore **it is important that you provide me with a correct e-mail address and that you check your e-mail regularly.** I encourage you to contact me via e-mail if you have a simple question that does not require an office hours visit.

Web Page:

I will post copies of homework and lab assignments, homework and lab solutions, lecture notes, this syllabus, etc. on the internet. The address (url) for this material is http://www.stat.uga.edu/∼dhall/STAT8620.html. I will hand out all material in class, but if you miss something, check the web page before asking me if I have extra copies. I will continuously update the web page throughout the term, so check back often.

Evaluation:

Grades will be based on (5 or 6) homeworks, a midterm and a final. Both exams will probably have a take-home component and, possibly, an in-class component as well. You are encouraged to work together on homeworks but **NOT** on exams.

Homeworks are due in class or by 4:30PM on the announced due date, and may be turned in in class, slipped under my office door, or by electronic submission via e-mail to me (not the TA) at danhall@uga.edu. Please do not leave assignments to be turned in in my mailbox, which is not secure. No late homeworks will be accepted unless you have received an extension from me in advance of the due date.

Course Topics:

Generally speaking, this course is about categorical data analysis and generalized linear models. Specific topics include:

- Introduction to discrete response data
- Description and inference in two- and three-way contingency tables
- Review of classical linear models
- Theory of generalized linear models (GLMs)
- Fitting methods and algorithms
- Profile, conditional, marginal and full likelihood methods
- Analysis of deviance and GLM diagnostics
- Asymptotic Tests (likelihood ratio, Wald, score tests)
- Types of GLMs including applications to
  - binary data
  - categorical data (including ordinal data)
  - counts
  - (maybe) survival data
- Exact inference in contingency tables and logistic regression
- Handling over/underdispersion
- Quasi-likelihood and estimating equations

(OVER)

Attendance:

You are graduate students. I expect you to be mature enough to come to class regularly without me formally *requiring* it or taking attendance. If you have to miss class for one reason or another, you need not inform me, but of course you are still responsible for the material you missed in class, including any announcements regarding course business.

Academic Honesty:

All academic work must meet the standards contained in the UGA Academic Honesty policy, "A Culture of Honesty". Students are responsible for informing themselves about those standards before performing any academic work. The link to more detailed information about academic honesty can be found at:
http://www.uga.edu/ovpi/honesty/acadhon.htm