Syllabus

STAT 679-0001 Advanced Statistical Methods (Generalized Linear Models)
Northern Illinois University Spring, 2015

Instructor: Duchwan Ryu
Office: 361E                Office Hours: MW 10-11 (feel free to ‘drop in’)
Phone: 815-753-6858         E-mail: dryu@niu.edu

Class: MW 3:30 pm - 4:45 pm at DuSable Hall 410


References:

Course Description: General discussion of statistical models and data analysis when the response does not follow a normal distribution, including binary, ordinal and nominal responses covers general frameworks for handling non-normal responses, including generalized linear models (GLMs) and generalized estimating equations (GEEs). Specific methods to be covered include logistic regression, Poisson regression and diagnostics.

In-depth coverage of statistical models and methods when responses do not follow the normal distribution and are not independent of each other includes, but not limited to, analysis of clustered and longitudinal data, repeated measures analysis for normal data, mixed effects regression models, generalized linear mixed models, and generalized non-linear mixed models.
**Intended Learning Outcomes:** (i) Understanding the estimation for generalized linear model; (ii) Enabling to use SAS to analyze non-normal data and (iii) Analyzing the correlated non-normal data with SAS.

**Assessment:**

- **Homework:** Light homework will be assigned on every other Wednesday.
- **Exams:** There will be mid-term and final exams.
- **Grade:** The course grade A, A-, B+, B, B-, C+, C, C-, D and F will be based on Homework (30%), Mid-term (%30) and Final (%40).

**Course Resources:** Course website on Blackboard will be noticed.

**Course Policies:** No late penalty for homework.

**Accessibility:** Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

**Academic Integrity:** Policies on Academic Integrity, Attendance and and Accessibility statement is available at http://www.niu.edu/stat/courses/pdfs/Accessibility_Statement.pdf.
Proposed Course Schedule:

Weeks 1 : Generalized Linear Models
Weeks 2 : Generalized Estimating Equations
Weeks 3-4 : Logistic Regression / Logit Models
Weeks 5-6 : Poisson Regression
Weeks 7 : Diagnostics and Model Checking
Weeks 8 : Mid-term
Weeks 9-10 : Mixed-Effects Regression Models for Normal Outcomes
Weeks 11 : Mixed-Effects Regression Models for Binary Outcomes
Weeks 12 : Mixed-Effects Regression Models for Ordinal Outcomes
Weeks 13 : Mixed-Effects Regression Models for Nominal Data
Weeks 14 : Mixed-Effects Regression Models for Counts
Weeks 15 : Final (May 4th)