DEPARTMENT: Biostatistics and Bioinformatics

COURSE NUMBER: 709   SECTION NUMBER: 000   SEMESTER: Spring

CREDIT HOURS: 2

COURSE TITLE: Generalized Linear Models

INSTRUCTOR NAME Qi Long

INSTRUCTOR CONTACT INFORMATION

EMAIL: qlong@emory.edu

PHONE: (404)712-9975

SCHOOL ADDRESS OR MAILBOX LOCATION: RSPH RM 322

OFFICE HOURS: Wednesday, 3:00-4:00 pm

BRIEF COURSE DESCRIPTION

In this course, we will first review the basics of generalized linear models (GLM) including maximum likelihood estimation and inference. We will then examine extensions to generalized linear models, which include the quasi-likelihood method, generalized estimation equations (GEE) and generalized linear mixed models (GLMM) for analyzing correlated data, and methods for missing data and measurement error problems.

LIST SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES

School:

• Use analytic reasoning and quantitative methods to address questions in public health and population-based research

Department:

• Perform the appropriate statistical analyses of study data
• Use computer statistical software for both data management and data analyses
• Assist in the interpretation of study results
• Interpret statistical results of biomedical studies effectively
• Adhere to guidelines of responsible research
• Adhere to guidelines of responsible research
• Assist in the development of new statistical methods as needed to address public health or medical problems
• Apply existing statistical theory and methods to a broad range of medical or public health problems
• Conduct appropriate statistical analyses for a broad range of applications
• Communicate the results of statistical studies both orally and in writing to senior statisticians and other investigators
• Apply new and existing statistical theory and methods as needed to address public health or medical problems
• Communicate the results of statistical studies both orally and in writing to senior statisticians and other investigators
LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES
Upon completing this course, students are expected to be able to
1) understand the general framework of generalized linear models (GLM) and the theoretical results for maximum likelihood estimation and inference for GLM.
2) use GLM to analyze continuous and discrete outcome data.
3) understand and use the statistical methods for repeated measure data including GEE and GLMM.
4) understand basic concepts for missing data including missing-data pattern and mechanisms, and extensions of GLM for missing data problems.
5) communicate statistical methods and data analysis results both orally and in writing.

EVALUATION
Grading Policy:
- Participation @ 10%
- Homework @ 30% (about 6 homework assignments)
- Mid-term project @ 20%
- Final project and oral presentation @ 40%

Grades:
(90; 100]: A
(75; 90]: B
(59; 75]: C
+/- grades will be given accordingly.

ACADEMIC HONOR CODE
The RSPH requires that all material submitted by a student in fulfilling his or her academic course of study must be the original work of the student.