

Math 680B: Advanced Biostatistical Methods (Spring/2010)

Class Meetings: Monday and Wednesday 2:00 PM - 3:15 PM

February 15, March 1st, and April 12 (no classes due to the Furlough Program)

Instructor: Dr. Kung-Jong Lui, GMCS-509

Office Hours: Monday and Wednesday 10:00 AM-11:00 AM and 1:00 PM - 2:00 PM.

Textbook: J. L Fleiss (1986). The Design and Analysis of Clinical Experiments, New York: John Wiley and Sons.

Course Grade: Grades are given on the basis of

1. Homework assignments account for 25%,
2. Midterm 25%
3. A Final Exam, 50%.

Course Contents:

1. *Reliability of Measurements* -- consequences of unreliability, the control of unreliability by replication, and the interexaminer reliability study.
2. *Simple Linear Regression* -- inferences about the slope, the Intercept, and the estimation of input from output by using Fieller's Theorem.
3. *The Parallel Groups Design* -- analysis of variance, multiple comparison, equality of variance, normality, transformation, Wilcoxon rank sum test, Kruskal-Wallis rank sum test, and ridit analysis for ordered categorical data.
4. *Blocking and Stratification to Control for Prognostic variables* -- randomized blocks design, Wilcoxon signed rank test, Friedman rank sum test, missing values, analysis of variance, and multicenter studies.
5. *Analysis of Covariance* -- measurement of change, nonparallel regression lines, and more complicated designs.
6. *Repeated Measurements Studies* -- Analysis of variance for repeated measurements, the multivariate analysis of repeated measurements, and multiple comparisons involving time.
7. *Crossover Studies* -- The analyses of crossover study when the responses are and are not normally distributed.
8. Others Research Topics