BIOS 780: Theory & Methods for Survival Analysis

PREREQUISITES: BIOS 761, BIOS 758, or permission of the instructor

LECTURE HOURS & PLACE
Tuesday and Thursday 3:30-4:45 PM
MC 1305
No class on August 29, 2013
Make up class on Friday, September 13: 11am-12:15pm

INSTRUCTOR: Jianwen Cai, Ph.D, Professor and Vice Chair
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Office Hours: Tuesday 4:45 – 5:15 PM
Thursday 4:45 – 5:15 PM

ASSISTANT: Yu Deng
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Office Hours: Friday 1:00 - 2:00 PM (MC 2304, except Oct 11)

DESCRIPTION & OBJECTIVES: This is an advanced course in survival analysis which provides a comprehensive introduction to survival analysis methods. This course intends to verse students in the techniques necessary to understand and carry out methods research in survival analysis. Lectures study the large-sample properties of estimators based on one-sample, k-sample and partial likelihood inference, with proofs based on counting process and Martingale theory. Students will be exposed to several current research topics, such as multivariate failure times data, non-proportional hazards models, and joint modeling. The objectives of the course are to understand methods commonly used in survival analysis and to learn methods and techniques which pertain to more complex data structures and models.

TEXT BOOKS:

COMPUTING SOFTWARE: SAS, R

REFERENCE BOOKS:
COURSEWORK: % Grade

Homeworks 40
Midterm Exam (November 7, 2013) 30
Data Analysis Project (due in class on December 3, 2013) 30

Topics to be covered:

1. Introduction and review
2. One-sample estimators
3. Competing risks
4. Counting processes and Martingale theory
5. Two-sample tests
6. Proportional hazards regression
7. Multivariate failure times
8. Additive hazards regression
9. Accelerated failure time models
10. Semiparametric transformation models
11. Joint models