DEPARTMENT: Biostatistics and Bioinformatics
COURSE NUMBER: 722     SECTION NUMBER: 1     SEMESTER: 2011F
CREDIT HOURS: 2
COURSE TITLE: Advanced Survival Analysis

INSTRUCTOR NAME
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OFFICE HOURS
By appointment

BRIEF COURSE DESCRIPTION
This course provides an introduction and motivation for the analysis of censored survival data, building on counting processes and martingale concepts. The focus is on nonparametric survival distribution estimators, weighted log-rank test statistics, and semiparametric proportional hazards regression methods. Additional special topics are also presented, including accelerated failure time model, semiparametric linear transformation models, multivariate failure time data, and models accommodating evolving covariate-effects.

LIST SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES
Perform the appropriate statistical analyses of study data
Apply existing statistical theory and methods to a broad range of medical or public health problems
Develop new statistical theory and methods to address a broad range of complex medical or public health problems
Conduct complex statistical analyses for a broad range of applications
LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES

Understand the theory of counting processes and martingales, and how they are related to survival methodology.

Study finite- and large-sample properties of classical survival analysis methods, including the Nelson-Aalen estimator, Kaplan-Meier estimator, weighted log-rank test, and Cox regression.

Learn latest developments in survival analysis, including the accelerated failure time model, semiparametric linear transformation models, semiparametric approaches to multivariate failure time data, and models accommodating evolving covariate-effects.

Use and develop statistical software for data analysis.

EVALUATION

Homework, 70%; Course project, 30%

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.