COURSE DESCRIPTION & OBJECTIVES

This course is designed for medical researchers with non-biostatistics majors. The course will focus on the basic concepts of survival (time-to-event) data analysis. The course objectives are to:

- recognize when it is necessary to account for time in the analysis of yes/no outcomes, and learn to appropriately summarize time-to-event data;
- understand different types of censoring, and learn to estimate and interpret survival characteristics;
- compare survival rates in different groups;
- assess the relationship of risk factors and survival times using the Cox regression model, and assess the appropriateness and adequacy of the model;
- understand issues in the design, analysis, and interpretation of studies involving time-dependent covariates;
- develop analytic skills through the analysis of data sets taken from the fields of medicine and public health; and
- develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.

MEETING TIMES & LOCATION

Every Spring Term

CREDITS

1 credits (8 contact hours/week for 4 weeks)

PRE-REQUISITE

CLRES 2021: Regression and ANOVA or equivalent course
CLRES 2022: Logistic Regression or equivalent course

GRADING

Letter grade based on

- 40% Homework assignments
- 40% Take-home final project
- 20% Class participation

TEXTBOOK
Required

Optional

REFERENCES


COMPUTING PACKAGE

STATA

LECTURE OUTLINE

Lecture 1 Person-time data (I) – Rosner: Chapter 14.1-14.4
Lecture 2 Person-time data (II); Time-to-event data – Rosner: Chapter 14.5-14.7; Kleinbaum: Chapter 1
Lecture 3 Nonparametric Analysis (I) – Kleinbaum: Chapter 2
Lecture 4 Nonparametric Analysis (II) – Kleinbaum: Chapter 2 (continue)
Lecture 5 Cox proportional hazards model (I) – Kleinbaum: Chapters 3, 4, and 6
Lecture 6 Cox proportional hazards model (II) – Kleinbaum: Chapter 5
Lecture 7 Other survival regression models – Kleinbaum: Chapters 7 and 8
Lecture 8 Course review

PROBLEM SETS

We will have 2-3 homework assignments. The homework assignments are essential in learning the concepts of survival analysis. Trainees are encouraged to discuss and work together about difficult problems, but all trainees must write their own solutions.

FINAL PROJECT

Trainees must work on the final project independently. Discussion, consulting, or working with other people are not permitted.

OTHER LINKS

- Institute of Clinical Research Education
- University of Pittsburgh