BIOS 662, Fall 2017

1. Description

662 INTERMEDIATE STATISTICAL METHODS (4). Pre- or corequisites, BIOS 511, 550, or equivalents. Principles of study design, descriptive statistics, and sampling from finite and infinite populations, with particular attention to inferences about location and scale for one, two, or k sample situations. Both distribution-free and parametric approaches are considered. Gaussian, binomial, and Poisson models, one-way and two-way contingency tables; regression analysis, survival analysis and survey sampling methods are covered.

2. Instructor

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3. Course schedule

Meeting times:
Monday and Wednesdays: 11:15am-1:10pm., Rosenau Hall, room 228

First class: August 23, 2016
Last class: December 6, 2017

No class:
Labor Day, Fall break, and Thanksgiving Day

The midterm is in class exam (10/18, right before the fall break) and final will be in-class exams 12 PM on 12/12/17 (to be verified).

4. Web site

Course material will be posted to the Sakai Web site (http://sakai.unc.edu/).

5. Text

Biostatistics: A Methodology for the Health Sciences, Second Edition. Van Belle, Fisher, Heagerty, Lumley. Wiley, New Jersey (2004).

The text is available for download in PDF form at:

http://onlinelibrary.wiley.com/book/10.1002/0471602396

6. Software

SAS documentation: http://support.sas.com/documentation/index.html

R resources: http://www.r-project.org/
(If using Windows, consider Tinn-R – http://nbcgib.uesc.br/lec/software/editores/tinn-r/en)

LaTeX resources: http://www.latex-project.org/
(If using Windows, consider TeXnicCenter – http://www.texniccenter.org/
or proTeXt – http://www.tug.org/protext/)

7. Overheads

Copies of the overhead slides used in class will be placed on the Sakai Web site. I will try to ensure that slides for a particular class are up early enough so that students who wish to do so can download or print them and bring them to class.

Acknowledgement: I am indebted to David Cooper, Ph.D., the previous instructor for this class, for providing me with his overheads. I have customized them for my own use and take full responsibility for any errors.

8. Grading

Homework will count 20% towards the final grade and the two exams will count 40% each.

9. Honor Code

As a student at UNC-Chapel Hill, you are bound by the university's honor code, which can be viewed at http://instrument.unc.edu. It is your responsibility to learn about and abide by the code.

In all written assignments, students should work independently. If you have questions about the application of the honor code, you can ask me. Instructors are required to report suspected violations of the honor code to the Honor Court where sanctions can include receiving a zero for the assignment, failing the course and/or suspension from the university.

10. Diversity and Inclusion

We – the Gillings School of Global Public Health, the Department of Biostatistics and I – welcome, value and learn from individual differences and perspectives.

11. Topics

The following is a list of topics in tentative order. The chapter references in the *Readings* column are to the prescribed text.

Topics	Readings
Study designs	Chapters 1-2
Introduction to R	–
Descriptive statistics	Chapter 3
Random number generation	–
Statistical inference: Populations and samples	Chapter 4
Point and interval estimation	Chapter 4.6, 4.8
Hypothesis testing	Chapter 4.6
One sample tests	Chapter 5.1-5.5; 8.3-8.5
Two sample tests	Chapter 5.6-5.7; 8.6;8.9
Counting data	Chapter 6
Categorical data	Chapter 7
Regression and correlation	Chapter 9.1-9.3
One-way ANOVA	Chapter 10.1-10.2
Multiple comparisons	Chapter 12.1-12.3
Sample size and power	–
Cluster randomized studies	–
Rates and proportions	Chapter 15
Time to event data	Chapter 16.1-16.7
Survey sampling	–