

University of Rhode Island

Department of Computer Science and Statistics BPS 411/PHP411/STA411/STA412, Biostatistics II, Fall 2014

Instructor:	Natallia V. Katenka
Office Location:	Tyler Hall 247
Email:	nkatenka@cs.uri.edu
Office Hours:	TR 2-4pm or by appointment
Class Days/Time:	TR 9:30-10:45am
Classroom:	Washburn Hall 111
Prerequisites:	STA 307, 308 or permission of instructor
Graduate Assistant:	Michael Piserchia (Tyler Hall 132)
-- Office hours:	MW 3-4pm
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Required Text/Reading:	<i>Introductory Applied Biostatistics</i> , by D'Agostino et al. (Duxbury) ISBN-10: 053442399X ISBN-13: 978-0534423995 . Additional Course Material will be posted on SAKAI!
Software	SAS (Statistical Analysis System) will be used in this class. SAS is available at the URI library. Online SAS on Demand is also available for URI students.

Assignments and Grading Policy

Homework	20% [~10 HWs]
Group Project	10% [2-3 people]
Midterm	30% [in class]
Final Exam	40% [take home]

Disability Accommodations and Opportunities

Please contact me if you require special accommodations due to learning disabilities. **Confirmation is required.** As part of this process, please be in touch with Disability Services for Students Office at 330 Memorial Union, 401-874-2098.

Course Description

In this course, you will gain knowledge and experience on statistical analysis with applications to health related studies and beyond. Main topics will include review of two-sample inference for population means and population proportion, chi-square tests, risk estimation and effect measures, introduction to least squares and maximum likelihood estimation, ANOVA and multiple comparison procedures, linear and logistic regression, introduction to nonparametric tests, and survival analysis. As a part of the class, you will work in groups and participate in a full design application-oriented study of your choice. You will also have an opportunity to learn statistical computing techniques using SAS.

Course Goals

- To develop statistical ability to think critically about numerical information
- To learn and be able to apply several important statistical concepts
- To recognize their common usage and limitations
- To be able to analyze various problems related to health data
- To recognize and appreciate the importance of collaborative group work
- To learn statistical computing techniques using SAS

Classroom Protocol

- **Attendance is mandatory!** Each unexcused absence = **-0.5%** of your final grade. Please don't be late for a class.
- Lecture notes will be posted on SAKAI. Please print/download them in advance. There will be times designed to be interactive. Take advantage and participate!
- **Group projects** will be assigned to give you experience in applying what you learn in the course. Please be active. At the end of the course, you will be expected to present the results of the project and write a final report.
- **Homework** will be assigned weekly. **No late homework will be accepted!** If you know before hand you won't be in class, I advise you to scan your homework and send it to me (and your TA) by email in pdf or Word format.
- You are encouraged to work with your fellow students on homework and in studying. **Copying from someone is STRICTLY prohibited.**
- **Cell Phones:** no cell phone talking/texting/browsing during class.
- **Calculator:** It is recommended that you have a calculator to use for the class and during exams. **Cell phones, iPods, iPads, iPods, mp3 players, etc. are not permitted during exams.**

Course Outline and Reading Assignment

Week	Topics, Readings, Assignments
1	Categorical Data Analysis: Inference about One and Two Population Proportions; Chi-Square Test of Goodness of Fit and Test of Independence (CHAPTER 7).
2	Categorical Data Analysis: Comparing Risks in Two Populations, Effect Measures, and Test of Homogeneity (CHAPTER 8).
3	Numerical Data Analysis: Inference about Two Population Means: Paired Test, Test for Difference in Means, Test for Homogeneity of Variances, Power and Sample Size Computation (CHAPTER 5-6).
4	Numerical Data Analysis: Inference about More than Two Population Means, One Ways Analysis of Variances (ANOVA), Treatment Effects, Multiple Comparisons (CHAPTER 9).
5	Numerical Data Analysis: Inference about More than Two Population Means: Repeated Measures ANOVA, Two-way ANOVA (CHAPTER 9).
6	Chapter 6-9 Reviews, MIDTERM.
7	Numerical Data Analysis: Introduction to Least Squares and Maximum Likelihood Estimation (LECTURE NOTES).
8	Numerical Data Analysis: Correlation Analysis, Simple Linear Regression, Inference for Regression Coefficients, Multiple Regression Analysis, Model Inference, and Multicollinearity (CHAPTER 10).
9	Categorical/Numerical Data Analysis: Logistic Regression Analysis (CHAPTER 11).
10	Numerical Data Analysis: Introduction to Nonparametric Analysis: Sign Test, Wilcoxon Rank Test, Kruskal-Wallis Test (CHAPTER 12).
11	Numerical Data Analysis: Introduction to Survival Analysis (CHAPTER 13+LECTURE NOTES).
12	Chapter 10-13 Reviews.
13	GROUP PROJECT PRESENTATIONS.
Final Exam	Take home. Due on Monday, December 8.