

22S:101:1 Biostatistics Fall 2003

Place and time: 22 SH, MWF 12:30pm – 1:20pm.

Prerequisite: 22M:1.

Required Textbook: Principles of Biostatistics, by Marcello Pagano and Kimberlee Gauvreau, Duxbury Press.

Instructor: Jian Huang, Ph.D.

Associate Professor

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University of Iowa

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Class notes can be found at www.stat.uiowa.edu/~jian

Office hours: Monday and Wednesday: 2:30-4:00pm or by appointment.

Departmental executive officer: James D. Broffitt

241 SH, Phone: 335-0712, E-mail: james-broffitt@uiowa.edu

A list of private tutors is maintained in 241 SH.

Information for students with disabilities: I would like to hear from anyone who has a disability which may require some modification of the seating, testing or other class requirements so that appropriate arrangements may be made. Please see me after class or during my office hours.

University policies regarding academic misconduct can be found at

http://www.clas.uiowa.edu/students/academic_handbook

About the course: This is a course on basic ideas of summarizing, presenting and analyzing data from biological and health sciences. I hope to cover the topics outlined below. However, I may not be able to cover all of these topics, in particular, Part 6, due to time constraints.

1. Data Presentation [Chapters 2 and 3]
 - 1.1 Types of data
 - 1.2 Tables and Graphs
 - 1.3 Numerical summary
2. Probability and Sampling Distributions [Chapters 6, 7, and 8]
 - 2.1 Probability, conditional probability, diagnostic test, ROC curve, prevalence, relative risk, odds ratio
 - 2.2 Most often used distributions: binomial, Poisson, normal
 - 2.3 Sampling distribution of the mean, χ^2 , t, and F distributions.
3. Basics of Statistical Inference [Chapters 9, 10, 11, 12, and 14]
 - 3.1 Point estimation, confidence interval
 - 3.2 Hypothesis testing, comparison of means and proportions
 - 3.3 Analysis of Variance: One-way and two-way ANOVA
 - 3.4 Sample size calculation
4. Correlation and Regression [Chapters 17, 18, and 19]

- 5.1 Pearson's correlation coefficient
 - 5.2 Simple linear regression
 - 5.3 Multiple regression
5. Contingency Tables [Chapters 15 and 16]
- 4.1 2×2 tables
 - 4.2 $r \times c$ tables
 - 4.3 Multiple 2×2 tables
6. Other Topics (if time permits) [Chapters 13, 20, and 21]
- 6.1 Nonparametric methods
 - 6.2 Logistic regression
 - 6.3 Survival analysis

Homework: *Please hand in homeworks on time.* There will be a set of homeworks every week. Homeworks will be assigned on Fridays and due the following Friday at the beginning of the class. No late homeworks will be accepted. You are encouraged to discuss homework problems with other students. Of course, what you hand in must ultimately be your own work. You are also welcome to discuss homework problems with me during my office hours or by appointment. Please keep in mind that doing homeworks is very important for understanding what we cover in class.

Computer Lab: Some of the homework problems require the use of the computer. I will hold computer lab hours to help with those homeworks.

Quizzes and Exams: There will be five short quizzes (15 to 20 minutes), two midterms, and a final examination. The final examination will be comprehensive. In all the quizzes and midterm examinations, **2** scrib sheets, a calculator and the statistical tables in the back of the text are allowed. In the final examination, **5** scrib sheets, a calculator and the statistical tables in the back of the text are allowed.

Project: You will be asked to analyze a data set and to write a short report about your analysis. Detailed instructions about the project will be given on October 22, 2003.

Grading: Homework: 10%. Quizzes: 10%. Project: 10 %. Midterms: 35%. Final: 35%.

The course grade will be determined by the weighted total score. Plus/minus grading will be used. No curves will be set. Scale runs like the following (and I may adjust it a little): A (85-100), B (70-85), C (50-70), D (35-50).

Important Dates

- Sep. 3 (Wed): Quiz # 1
- Sep. 17 (Wed): Quiz # 2
- Oct. 1 (Wed): Midterm #1
- Oct. 15 (Wed): Quiz # 3
- Oct. 29 (Wed): Quiz # 4
- Nov. 12 (Wed): Midterm # 2
- Dec. 3 (Wed): Quiz # 5
- Dec. 15 (Mon): Final, 7:00 – 9:00pm.**