

**University of Arkansas for Medical Sciences  
Fay W. Boozman College of Public Health  
Department: Biostatistics  
Semester: Fall 2009**

**Course Information**

Course number: PBHL 5013  
Course name: Biostatistics I  
Meeting time: Tuesday, 5:30-8:30 pm  
Meeting place: Ed II, Room 8/121  
Web site: [www.uams.edu/biostat/williams](http://www.uams.edu/biostat/williams)

**Instructor Information**

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**Course Description**

This course is designed to give students an overview of statistical methods. Some of the topics include descriptive statistics, basic probability, tests of hypothesis, sample size calculation, power of tests, frequency cross-tabulations, correlation, non-parametric methods, regression, randomization, and analysis of variance.

**Prerequisites**

None.

Course Objectives

1. Describe selected inferential statistical procedures. (Maps to Departmental Objectives 1 and 3)
2. Choose and perform appropriate statistical procedures for a given data set. (Maps to Departmental Objectives 1, 3 and 4)
3. Identify assumptions and limitations of selected inferential statistical procedures. (Maps to Departmental Objectives 1, 3 and 4)

4. Obtain proficiency with statistical calculations with tools such as calculators and / or selected statistical software packages. (Maps to Departmental Objectives 3 and 4)

### **Biostatistics Departmental Objectives**

1. Evaluate the research question(s) and recommend the appropriate experimental design and statistical analysis techniques. Grounded in the basics of statistical theory, the student will determine the types of data needed (discrete or continuous), the best way to acquire the data (sampling and sample design), the most appropriate analysis techniques (classical inference, nonparametric, and/or statistical modeling) and the best way to report results (tables, graphs, and appropriate statistics).
2. Determine the best way to collect and store data. With a fundamental knowledge of data management techniques, students will be able to work with all types of data including the large and intricate federal and state databases often used by public health researchers.
3. Perform basic data analysis and modeling. A concentration in biostatistics provides the student with skills to do descriptive and inferential analysis and the ability to work with Masters and Ph.D. biostatisticians on more complex analysis projects.
4. Assist with the technical programming required. Students will have hands on experience with popular statistical programs such as SAS and SPSS and be able to use them in future projects. More importantly, students in the program will have the statistical foundation to provide full time programmers with the algorithms needed for more complex design and analysis projects.
5. Apply their skills and experience as health policy analysts, researchers and statisticians in academic, consulting, clinical, industrial and public sector careers.

### **Required Course Materials**

*Required textbook:*

Mendenhall, Beaver (2008). Introduction to Probability and Statistics 13<sup>th</sup> ed.

ISBN 978-0495389538

Earlier editions of the book are not recommended.

### **Assignments and Grading**

The student's grade will result from the weighted average of the three exams. Exam 1 counts 30%; exam 2 counts 30%; and the final counts 40%.

## **Grading Policies**

Testing materials will be weighted (using the formula above) and the final grade will be assigned as follows:

92-100 A  
80-91 B  
70-79 C  
60-69 D  
<60 F

**Additionally, the percentages above must be obtained to guarantee the particular grade. Rounding up to the nearest integer is not guaranteed.**

## **College of Public Health Policies**

### *Attendance*

Students are expected to be diligent in the pursuit of their studies and in their class attendance. Students have the responsibility of making arrangements satisfactory to the instructor regarding all absences. Such arrangements should be made prior to the absence if possible. Policies of making up work missed as a result of absence are at the discretion of the instructor, and students should inform themselves at the beginning of each semester concerning the policies of their instructors.

### *Students with a disability*

It is the policy of the UAMS College of Public Health to accommodate students with disabilities pursuant to federal law, state law, and the University's commitment to equal educational opportunities. Any student with a documented disability who needs accommodation should request to meet with the course instructor or the Associate Dean for Student and Academic Affairs no later than within the first 14 days (two weeks) following the first class meeting to develop an accommodation plan. Any student with a documented disability who determines later in the semester to seek accommodation or who develops a disability during the semester, should refer to the procedures outlined in the college catalogue. Failure to follow these procedures may be construed as a waiver of your rights under the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990.

*Plagiarism:* Plagiarism is defined as adopting, appropriating for one's own use and/or incorporating in one's own work, without acknowledgement, passages, tables, photographs, models, figures, and illustrations from the writings or works of others; presenting parts of passages of other's writing as products of one's own mind. Any student who plagiarizes may be subject to receiving a zero on the written work and may be dismissed from the College of Public Health.

The College of Public Health subscribes to a web-based plagiarism detection and prevention system that is used by colleges and universities nationwide. The system

works by scanning the student's document and matching the document against databases of texts, journals, electronic and web sources (including web sites that distribute or sell pre-written essays or term papers). Course instructors may, at their discretion, submit students' written work to the plagiarism detection system for the purpose of evaluating whether students have plagiarized. *If the instructor of a CPH course opts to use the plagiarism detection system, he or she will inform students of this, and will instruct students about how to submit their written work to the system.*

**Course Schedule (subject to change)**

**CLASS SCHEDULE**

<b><u>DATE</u></b>	<b><u>TOPIC</u></b>
Class Meeting 1, Aug 19	Chap 1,2,3 Graphs and Descriptive Stats
Class Meeting 2, Aug 26	Chap 3,4 Probability and Probability Distributions.
Class Meeting 3, Sept 2	Review
Class Meeting 4, Sept 9	Chap 5 Binomial and Poisson Distributions.
Class Meeting 5, Sept 16	Chap 6 Normal Distribution.
Class Meeting 6, Sept 23	Chap 7 Sampling Distributions.
<b>Class Meeting 7, Sept 30</b>	<b>EXAM 1</b>
Class Meeting 8, Oct 7	Chap 8 Large Sample Estimation
Class Meeting 9, Oct 14	Chap 9 Large Sample Hypothesis Testing
Class Meeting 10, Oct 21	Chap 9,10 Small Sample Inference
Class Meeting 11, Oct 28	Chap 10,11 Analysis of Variance
<b>Class Meeting 12, Nov 4</b>	<b>EXAM 2</b>
Class Meeting 13, Nov 11	<b>Holiday. No Class.</b>
Nov 19	<b>Last day to drop a Fall course</b>
Class Meeting 14, Nov 18	Chap 12 Regression
Class Meeting 15, Nov 25	Chap 14 Categorical Data
Class Meeting 16, Dec 2	Logistic and Odds Ratio Estimation
Class Meeting 17, Dec 9	Chapter 15 Nonparametric Methods Survival Analysis

**Class Meeting 18, Dec 16**

**FINAL EXAM**