

**BIOM 301**  
**Fall 2003**  
**Biostatistics I**

Instructor: Larry Douglass  
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Hours: Tu 1:00-1:45 and Th 3:15-4:00

Assistants: Erin Hoerl and Raul Medina

Course Objectives:

1. To develop a basic vocabulary of statistical terms.
2. To recognize the usefulness and limitations of statistics.
3. To introduce concepts and techniques needed to describe, and analyze biological data.
4. To discuss the principles of designing research studies.

Course materials:

Required: - M. L. Samuels and Jeffrey A. Witmer, Statistics for the Life Sciences, 3<sup>rd</sup> Ed., 2003, Prentice Hall.  
- Lecture notes to be distributed in lecture.

Grading:

Homework/Quizzes	25%	
Exam I	25%	Oct. 7
Exam II	25%	Nov. 11
Final Exam	25%	Dec. 18, 10:30-12:30

The overall letter grade for the course is computed using percentages as follows:

$90\% \leq A$  ,     $80\% \leq B < 90\%$  ,     $70\% \leq C < 80\%$  ,     $60\% \leq D < 70\%$  ,     $F < 60\%$

Students may earn a higher grade than their semester average would indicate by demonstrating a greater level of understanding on the comprehensive portion of the final exam, if all assigned work has been completed. Homework/Quiz scores may be adjusted to

account for differences in difficulty and grading.

Discussion sections:

All assignments are to be handed in before time and date due. Late homework will not be graded. One homework/quiz grade will be dropped from final calculations. If you are missing an assignment that is the one that is dropped. All other missing or late homework/quizzes will receive a grade of 0.

Lecture topics:

Reading assignments (Chapters are from Samuels and Witmer) are given below. You should read the assignment and review the lecture notes before lecture and then study the materials after lecture.

<u>Lectrues</u>	<u>Topic</u>	<u>Reading Assignment</u>
1	Class policies and Intro to Biometrics	Chapter 1
2-3	Describing Data	Chapter 2
4-5	Probability	Chapter 3: sections 1-7
6	The Binomial Distribution	Chapter 3: sections 8-9
7	The Normal Distribution	Chapter 4
8	Exam I	
9	Sampling Distributions	Chapter 5
10	Standard Errors	Chapter 6: sections 1-2
11-12	Confidence Interval Estimation	Chapter 6: sections 3-7
13	Introduction to Hypothesis Testing	
14-15	Two-sample t-test	Chapter 7: sections 1-7, 9-10, 12
16	Sample size and power	Chapter 7: section 8
17	Exam II	
18-20	Experimental and Sampling Design	Chapter 8
21	Paired t-test	Chapter 9: sections 9.1-9.3, 9.6-9.7
22	Non-parametric alternatives	Chapter 7, section 11 and Chapter 9, sections 4-5
23	Goodness of fit test	Chapter 10, section 1
24	Contingency table analysis	Chapter 10, sections 2-5
25-27	Linear Regression	Chapter 12, sections 1-4
28	Correlation	Chapter 12, sections 5-8