Biology 408, Advanced Biometry — Course Information, Fall 2009

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Office Hours: Tues 11:00 AM-12:00 PM or by appointment

Texts: Zar, J. H. 2010. *Biostatistical Analysis, 5th edition,* Prentice Hall.

Prerequisites: BIOL 300 or equivalent

Objectives:
- Become familiar with advanced methods of statistical analysis
- Understand theory underlying various statistical methods
- Know which analyses are appropriate for different experimental designs
- Conduct a variety of statistical analyses using computer software
- Correctly interpret the results of various statistical procedures

Assessment: Exams, homework problems, and lab assignments will be used to evaluate your understanding of statistical concepts and your ability to apply statistical analyses to experimental data.

Attendance: You are expected attend all lectures and labs. A written medical excuse is required to miss an exam. All lab assignments must be completed before the next week's lab.

Cheating: You are expected to abide by the University's Academic Honesty Policy, which can be found at http://www.calstatela.edu/academic/senate/handbook/ch5a.htm. Students who violate this policy will be subject to disciplinary action, and may receive a failing grade in the course for a single violation.

Miscellaneous: A scientific calculator is *required*. **A calculator is needed for exams.** You should also obtain a USB drive for saving your lab assignments. **You are responsible for backing up your work.**

Lecture Schedule

Dates	Topic	Reading
Sept 28, 30	Descriptive statistics; skewness; kurtosis	§ 3.1–3.5, 4.1–4.7, 6.5
Oct 5, 7	Hypothesis testing	§ 6.3, 7.7
Oct 12, 14	One Factor ANOVA	§ 10.1, 10.6, 11.1
Oct 19, 21	Two Factor ANOVA	§ 12.1, 12.4
Oct 26	Multifactor & nested experiments	§ 14.1, 15.1, 15.2
Oct 28	Linear regression analysis	§ 17.1–17.3
Nov 2	Multiple & polynomial regression	§ 20.1–20.3, 20.14, 21.1
Nov 4	Midterm (100 points)	
Nov 9, 16, 18	Multivariate general linear models	§ 16.1–16.4
Nov 23, 25	Contingency tables; log-linear models	§ 23.1, 23.3, 23.7, 23.8, 24.16
Nov 30, Dec 2	Nonparametric statistics	§ 8.10, 8.11, 9.5, 10.4

Final Exam: Monday, December 7, 4:30–7:00 PM. The final exam is comprehensive.

Grading:

Midterm	100 points
Four homework assignments (25 points each)	100 points
Nine lab assignments (10 points each)	90 points
Two Web QnA assignments (5 points each)	10 points
Final exam	200 points
TOTAL	500 points

Grading is based on the +/– system. Your letter grade will be computed from your total number of points as follows:

A	467–500 points	***A–***	450–466 points	***B+***	434–449 points
B	417–433 points	***B–***	400–416 points	***C+***	384–399 points
C	367–383 points	***C–***	350–366 points	***D+***	334–349 points
D	317–333 points	***D–***	300–316 points	***F***	0–299 points

Be aware that a ***C***– contributes a 1.7 to your GPA. The lower bounds for these letter grades may be adjusted downward if "scaling" is warranted; however, the entire class will subject to the same letter grade bounds.

Exam Format: Closed book. Computation and short answer questions. You will be permitted to prepare and use one sheet of formulae or notes during the exam.

Homework: There will be four homework assignments. They must be done individually. In some cases you will be required to use the computer to complete your assignment. **Late homework assignments receive no credit.** Each assignment is worth 25 points. Due dates will be given in lecture.

Web QnA: This is an on-line question/answer/comment system. Each student will receive a different question. Answers must be entered by the deadline. The instructor will comment on each answer. All students can read the questions, answers, and comments. Due dates will be given in lecture when the questions are assigned.

Laboratory: The laboratories will be held in the computer classroom in BIOL 236. Each laboratory will have a computer-based assignment. All assignments must be completed and submitted to the instructor through WebCT before the beginning of the next week's lab. **Late lab assignments receive no credit.**

Laboratory Schedule

Dates	Topic
September 30	Introduction to SPSS
October 7	Correlation; manipulating data; syntax files
October 14	Fishing for *P*-values
October 21	Factorial ANOVA
October 28	Discriminant analysis; principal component analysis
November 4	Linear and nonlinear regression
November 11	*Veteran's Day Holiday*
November 18	Multivariate general linear models
November 25	Log-linear models
December 2	Nonparametric statistics