

## Biology 300, Biometrics — Course Information, Fall 2011

- Instructors:** Dr. Robert Desharnais, ASCB 323D, (323) 343-2056, [rdeshar@calstatela.edu](mailto:rdeshar@calstatela.edu)
- Office Hours:** Tuesdays 10:30 AM–12:00 PM or by appointment.
- Textbook:** Glover, T., and Mitchell, K. 2008. *An Introduction to Biostatistics, Second Edition*, Waveland Press, Inc., Long Grove, Illinois.
- Lab Manual:** There is no lab manual for purchase. The weekly lab activities and assignments will be posted on Blackboard.
- Prerequisites:** Grade of C or better in BIOL 100C and MATH 103 or 105 or 104B
- Objectives:** The primary objective of this course is to provide a foundation for understanding and applying simple statistical methods. By the end of this course you should be able to interpret the meaning of many of the statistical analyses that appear in the scientific literature and to conduct an appropriate statistical analysis of data from a variety of experimental situations. A secondary objective is to learn how spreadsheets can be used in the sciences.
- 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. Practice problems will be provided.
- Attendance:** You must attend all lectures and labs. A written medical excuse is required to miss an exam. All lab assignments must be received before the next week's lab.
- Honesty:** Students are expected to read and abide by the University's Academic Honesty Policy, which can be found at [www.calstatela.edu/academic/senate/handbook/ch5a.htm](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.
- Disabilities:** Reasonable accommodation will be provided to any student registered with the Office of Students with Disabilities and who requests needed accommodation.
- Miscellaneous:** A scientific calculator that does square roots, logarithms, and powers is required and is needed for exams. You will also need a USB flash drive. You are responsible for backing up your own work.

### Lecture Schedule

Dates	Topic	Reading
Sep 26, 28	Types of data; descriptive statistics; grouped data	§1.1–1.6
Oct 3, 5	Discrete and continuous probability distributions	§2.1–2.4, 3.1–3.6
Oct 10, 12	Estimation; central limit theorem; confidence intervals	§4.1–4.3, 4.5
Oct 17	Hypothesis testing	§5.1–5.3
Oct 19, 24	Student's <i>t</i> -tests	§7.2, 7.4
Oct 26	Exam I (100 points)	
Oct 31, Nov 2	Chi-square tests; contingency tables	§11.3, 11.4
Nov 7, 9	One factor analysis of variance (ANOVA)	§8.1
Nov 14, 16, 21	Two factor ANOVA; interaction	§9.2
Nov 23	Exam II (100 points)	
Nov 28, 30	Regression and correlation	§10.1, 10.2

**Final Exam:** Monday, December 5, 1:30 PM–4:00 PM. Final exam is comprehensive.

<i>Grading:</i>	Two exams (100 points each)	200 points
	Five homework assignments (20 points each)	100 points
	Nine lab assignments (10 points each)	90 points
	Three Web QnA assignments (5 points each)	15 points
	Final exam	<u>200 points</u>
	TOTAL	605 points

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

<b>A</b>	560–605 points	<b>A–</b>	540–559 points	<b>B+</b>	520–539 points
<b>B</b>	500–519 points	<b>B–</b>	480–499 points	<b>C+</b>	460–479 points
<b>C</b>	440–459 points	<b>C–</b>	420–439 points	<b>D+</b>	400–419 points
<b>D</b>	380–399 points	<b>D–</b>	360–379 points	<b>F</b>	0–359 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.

*Exam Format:* Closed book. Part I (30%) is based on multiple choice questions. Part II (70%) is based on problem solving. You may prepare and use one sheet of formulas and statistical tables during Part II of the exam. **Make-up exams will not be allowed without prior permission of the instructor.**

*Homework:* There will be a total of five homework assignments. Assignments must be done individually. Show all your calculations. **Late homework assignments will not be accepted without prior permission of the instructor.** Due dates are given in lecture and posted on *Blackboard*.

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

*Laboratory:* The laboratory portion of this course will be held in a computer classroom. Each laboratory will have a computer-based assignment. All assignments must be completed and submitted to the instructor by *Blackboard* electronic mail before the beginning of the next week’s lab. **Late lab assignments will not be accepted without prior permission of the instructor.**

### Laboratory Schedule

Dates	Topic
September 26, 28	No lab; self-register for <i>Blackboard</i>
October 3, 5	Simple descriptive statistics
October 10, 12	Discrete probability distributions
October 17, 19	Normal distribution; central limit theorem
October 24, 26	Hypothesis testing, Student’s t-tests
October 31, November 2	Introduction to SPSS
November 7, 9	Chi-square tests; contingency tables
November 14, 16	One and two-factor ANOVA
November 21, 23	More on SPSS
November 28, 30	Regression and correlation analyses