



POINT LOMA
NAZARENE UNIVERSITY



Syllabus for Mathematical Statistics—Fall 2012

Instructor:

[Greg Crow](#)

RS 220

849-2604

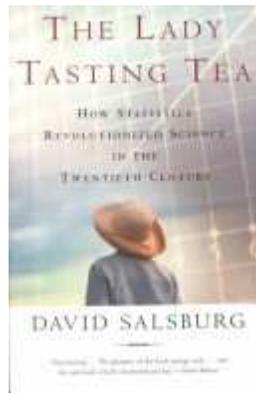
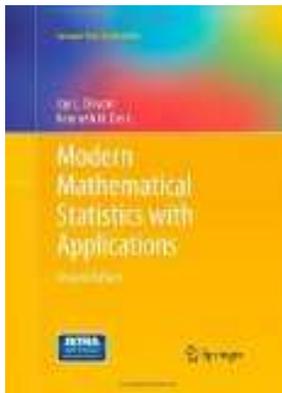
Class meetings:

RS 13

TR 1:30-2:20

Texts:

Modern Mathematical Statistics with Applications Jay L. Devore & Kenneth N. Berk—Springer; 2nd ed. 2012 edition



The Lady Tasting Tea: How Statistics Revolutionized Science in the Twentieth Century David Salsburg— W.H. Freeman/Owl Books 2001

Table of Contents:

Course Description
Course Goals
Required Materials
Course Philosophy
Grading Policies
Attendance Policy
Class Enrollment
Classroom Attire
Academic
Accommodations
Academic Honesty
The Final
Examination

Course Description

MTH 382 (2) Mathematical Statistics

A first course in descriptive and inferential statistics for students with sophisticated mathematics exposure. Topics include applied work in experimental design, sampling distributions, point estimation and hypothesis testing supported by the use of statistical software. In addition, the theoretical basis for these techniques is explored.

Prerequisite: Mathematics 274

Learning Outcomes

- Students will be able to apply their mathematical knowledge to solve problems.
- Students will be able to use technology to solve problems.
- Students will collaborate effectively in teams.

Required Materials

- Calculator: A scientific calculator is recommended (in the \$15 to \$25 range).

Comment

We will try and avoid the following pitfall:

At the beginning college level, visualization is a big part of understanding. Consequently, students who are operating with few mental pictures are not really learning mathematics. Their calculus consists of a vast series of algorithms and a complicated cataloging system which tells them which procedure is used when. The effort put into this kind of teaching and learning is largely wasted: memorized algorithms are soon forgotten and, worse still, **such courses perpetuate the idea that math involves doing calculations rather than thinking** [emphasis added].

(by Deborah Hughes Hallet in *Visualization and Calculus Reform*, in the collection *Visualization in Teaching and Learning Mathematics*, edited by Zimmerman and Cunningham (MAA notes \#19))

Examinations

There will one Mid-Quad Exam. There will be a Final Exam. The Final Exam will consist of a take-home portion and in-class portion. The take-home portion will include essay questions and Maple, Excel, or SPSS lab work. Neither examination shall be missed without an official excuse. A deduction of $2^{(n-1)} \cdot 10\%$ will be deducted for each hour "n" that the final exam is late (n=1 if the exam is turned in one hour after it is due).

GRADING POLICIES

Grading Distribution

Essays	100 points
Homework	200 points
Mid-Term Exam	300 points
Final Exam	400 points
Total	1000 points

Grading scale. Grades are based on the number of points accumulated throughout the course. Approximate minimal percentages required to obtain a given grade are:

Grading Scale in percentages

	A	B	C	D
+		(87.5, 90)	(77.5, 80)	(67.5, 70)
	[92.5, 100]	[82.5, 87.5]	[72.5, 77.5]	[62.5, 67.5]
-	[90, 92.5)	[80, 82.5)	[70, 72.5)	[60, 62.5)

Grade components.

The grade components are homework (text exercises), tests (class and laboratory), and the final examination.

- **Late work.** A written assignment or computer assignment is late if it is not received at the beginning of class on the due date. Late work need not be accepted. Work accepted late may be assessed a penalty.
- **Accuracy of solutions.** Written assignments and examination questions and problems must be formulated carefully in terms of words and symbols used in the course. Credit is determined by the degree to which answers and solutions respond to the specific question or problem stated. Maximize your credit by learning the language and symbols of the course.
- **Written Assignments.** Collected assignments must be prepared in a style suitable for grading. The following guidelines are used to determine credit:
 - the organization must be easy to follow

- the work must be legible
- complete solutions must be written for problems (not just answers); answers must be clearly marked
- use complete sentences to answer questions
- **Electronic Assignments.** Assignments sent in as attachments must be prepared in a style suitable for grading. The following guidelines are used to determine credit:
 - the organization must be easy to follow
 - the formatting must enhance the organization
 - complete solutions must be written for problems (not just answers); answers must be clearly indicated
 - use complete sentences to answer questions
- **Examinations and the Final Examination.** Examinations and the Final Examination will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class.

No examination shall be missed without prior consent or a well documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well documented emergency beyond your control.

The examination schedule is included in the daily schedule. This instructor does not intend to accept excuses such as poor communication with parents, benefactors, surf team sponsors and/or travel agents.

Attendance Policy

After you miss the equivalent of 10% of the classes and labs, you will be warned of impending de-enrollment. If you miss the equivalent of 20% of the classes, you may be de-enrolled or given a course grade of "F" for the semester. Tardiness may result in being marked absent.

Attendance is expected at each class section. In the event of an absence you are responsible for the material covered in class and the assignments given that day. See the Point Loma Nazarene University Catalog for a statement of the university's policy with respect to attendance:

Regular and punctual attendance at all classes in which a student is registered is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements to be met. There are no allowed or excused absences except when absences are necessitated by certain university-sponsored activities and are approved in writing by the Provost. Whenever the number of accumulated absences in a class, for any cause, exceeds ten percent of the total number of class meetings, the faculty member has the option of filing a written report to the Vice Provost for Academic Administration which may result in de-enrollment, pending any resolution of the excessive absences between the faculty member and the student. ... If the date of de-enrollment is past the last date to withdraw from a class, the student will be assigned a grade of W or WF (no grade). There are no refunds for courses where a de-enrollment was processed. (See the Catalog for full text)

Class Enrollment

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

Classroom Attire

All students are expected to dress in ways that make the classroom a place where all students are comfortable and can work efficiently. Distracting attire is not permitted in the classroom. For example, attire associated with the "rush" activities of fraternities and sororities simply causes too many distractions in the classroom. If you choose to "rush" one of the fraternities or sororities, please make sure the "rush" officials know that "rush" attire will not be allowed in this classroom.

Academic Accommodations

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation during the first two weeks of the semester with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files the documentation, the Disability Resource Center will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the University in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990 (ADA), and ADA amendments Act of 2008, all of which prohibit discrimination against students with disabilities and guarantees all qualified students equal access to and benefits of PLNU programs and activities.

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

Academic Honesty

The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Academic honesty and integrity are strong values among faculty and students alike. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose.

Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. Such acts include plagiarism, copying of class assignments, and copying or other fraudulent behavior on examinations. For more details on PLNU's policy go to: <http://www.pointloma.edu/experience/academics/catalogs/undergraduate-catalog/point-loma-education/academic-policies>

A student who is caught cheating on any item of work will receive a zero on that item and may receive an "F" for the semester. See the PLNU Catalog for a further explanation of the PLNU procedures for academic dishonesty.

Final Exam: Date and Time

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. Only in the case that a student is required to take three exams during the same day of finals week is an instructor authorized to change the exam date and time for that particular student.

The Final Exam is a Comprehensive Examination.

	S	T	W	T	F	S	
	26	27	28 No Class (Monday Schedule)	29	30 Introduction Section 1.1 and 1.2 Populations and Samples Pictorial and Tabular Methods in Descriptive Statistics	31	1
September	2	3 Labor Day	4 Section 1.3 Measures of Location	5	6 Section 1.4 Measures of Variability	7	8
	9	10	11 Section 2.1 Samples Spaces and Events	12	13 Section 3.1 Random Variables	14	15
	16	17	18 Section 4.3 The Normal Distribution	19	20 Section 6.1 Statistics and Their Distributions	21	22
	23	24	25 Section 6.2 The Distribution of the Sample Mean Spiritual Renewal Week	26	27 Section 7.1 General Concepts Spiritual Renewal Week	28	29
	30	1	2 Section 7.2 Methods of Point Estimation	3	4 Section 8.1 Basic Properties of Confidence Intervals	5	6
October	7	8	9 Section 8.2 Large-Sample Confidence Intervals for a Population Mean and Proportion	10	11 Section 8.3 Intervals Based on a Normal Population Distribution	12	13
	14	15	16 Review	17	18 Exam	19 Fall Break	20
	21	22	23 Section 9.1 Hypothesis and Test Procedures	24	25 Section 9.2 Tests About a Population Mean	26	27
	28	29	30 Section 9.3 Tests Concerning a Population Proportion	31	1 Sections 9.4 and 9.5 <i>P</i> -Values Some Comments on Selecting a Test Procedure	2	3
November	4	5	6 Section 10.1 <i>z</i> Tests and Confidence Intervals for a Difference Between Two Population Means	7	8 Section 10.2 The Two-Sample <i>t</i> Test and Confidence Intervals	9	10
	11	12	13 Section 10.3 Analysis of Paired Data	14	15 Sections 10.4 Inferences About Two Population Proportions	16	17 Homecoming
	18	19	20 Sections 11.1 and 11.2 Single-Factor ANOVA Multiple Comparisons in ANOVA	21	22 Thanksgiving Day	23	24
	25	26	27 Sections 12.5 and 12.1 Correlation The Simple Linear and Logistic Regressions Models	28	29 Sections 12.2 and 12.3 Estimating Model Parameters Inferences About Regression Coefficient B_1	30	1
December	2	3	4 General Comments on Control Charts Control Charts for Process Location	5	6 Take-Home Final Distributed Review	7 Classes End	8
	9	10	11	12	13 Take-Home Final Due Final Exam 1:00-3:00	14	15