

MTH 392: Mathematical Probability (2.0 units)**Time & Location: T& Th 1:30-2:35 RS14**

Instructor: Dr. Catherine Crockett
Office: RS 226
email: catherinecrockett@pointloma.edu
Office phone: 619-849-2723

Office Hours: MW 1-3 and T&TH 9-11 or by appointment.
 *These are the hours I am definitely available. However, you are welcomed to come by my office any time and if I am free, I will help you. If you want to reserve a time, email me to make an appointment.

Textbook: *Modern Mathematical Statistics with Applications*, Jay L. Devore and Kenneth N. Berk

Prerequisite: Mathematics 382.

Course Description/objectives:

A first course in probability for students with sophisticated mathematics exposure. Topics include axioms of probability, random variables, discrete and continuous distributions, mathematical expectation and limit theorems.

Course Learning Objective:

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:

Calculate: A scientific calculator is recommended.

Grading: Your grade for the course is based on:

Homework	25%
Mid- Term	35%
Cumulative Final Exam	40%
Total	100%

The grading scale for the course is:

	A	B	C	D
+		(87,90)	(77,80)	(67,70)
	[92,100]	[82,87]	[72,77]	[62,67]
-	[90,92)	[80,82)	[70,72)	[60,62)

Anything below 60% is an F.

Homework: You will be assigned individual homework most days. You may work on the homework in groups, but each person is responsible for turning in their own write up of the solution to the problems.

Examinations: There will be one Mid-Quad Exam. There will be a Final Exam. The Final Exam will consist of a take-home portion and in-class portion. Neither examination shall be missed without an official excuse. A deduction of $2^{(n-1)} \times 10\%$ 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). **Final Exam: Tuesday, May 3rd, 1:30-4:00**

Other factors that affect grades are

Questions on written assignments, quizzes, and exams: Written assignments and test/exam 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.

University Mission:

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department Mission:

The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

Attendance:

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

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 as approved in writing by the Provost for specific students participating in certain university-sanctioned activities. Excused absences still count toward the 10%-20% limits, but allow students to make up work, quizzes, or tests missed as a result of a university-sanctioned activity. Activities of a unique nature, such as labs or other activities identified clearly on the syllabus, cannot be made up except in rare instances when instructors have given advanced, written approval for doing so. Whenever the number of accumulated absences in a class, for any cause, exceeds ten (10) percent of the total number of class meetings, the faculty member should send an e-mail to the student and the Vice Provost for Academic Administration (VPAA) warning of attendance jeopardy. If more than twenty (20) percent of the total number of class meetings is reported as missed, the faculty member or VPAA may initiate the student's de-enrollment from the course without further advanced notice to 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 consistent with university policy in the Grading section of the catalog. There are no refunds for courses where a de-enrollment was processed. For more details see the PLNU catalog:

http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Class_Attendance

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.

Academic Accommodations:

While all students are expected to meet the minimum academic standards for completion of their courses as established by the instructors, students with special needs may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Students can also reach the Disability Resource Center by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. Once the student files documentation, the Disability Resource Center contacts the student's instructors and provides 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, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with special needs and guarantees all qualified students equal access to the benefits of PLNU programs and activities. For more details see the PLNU catalog:

http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Accommodations

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. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose. Violations of academic honesty include cheating, plagiarism, falsification, aiding academic dishonesty, and malicious interference. The details of PLNU's meaning of each of these words can be found in the PLNU catalog at:

http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Honesty

A student remains responsible for the academic honesty of work submitted in PLNU courses and the consequences of academic dishonesty beyond receipt of the final grade in the class and beyond the awarding of the diploma. Ignorance of these catalog policies will not be considered a valid excuse or defense. Students may not withdraw from a course as a response to a consequence.

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

(http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Honesty).

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.

Copyright Protected Materials:

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

Credit Hour: In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 2.0 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Week	Tuesday	Thursday
1	1/12 No class	1/14 2.1: Sample spaces & Events
2	1/19 2.1: Sample spaces & Events 2.2: Axioms, Interpretations & Properties of probability	1/21 2.3: Counting Techniques
3	1/26 2.4: Conditional Probabilities	1/28 2.4: Conditional Probabilities
4	2/2 2.5: Independence	2/4 3.1: Random Variables
5	2/9 3.2: Probability Distributions for Discrete Random Variables	2/11 3.3: Expected Values of Discrete Random Variables
6	2/16 3.4: Moments and moment generating functions	2/18 3.5: The Binomial Probability Distribution
7	2/23 3.6: Hypergeometric & Negative Binomial Distributions	2/25 3.7: The Poisson Probability Distribution
8	3/1 Review	3/3 Exam
Spring Break 3-7 to 3-11		
9	3/15 4.1: Probability Functions and Cumulative Distribution Functions	3/17 4.1: Probability Functions and Cumulative Distribution Functions 4.2: Expected Values and Moment Generating Functions
10	3/22 4.2: Expected Values and Moment Generating Functions	3/24 Easter Break No class
11	3/29 4.3: The Normal Distribution	3/31 4.4: The Gamma Distribution & Its Relatives
12	4/5 4.4: The Gamma Distribution & Its Relatives	4/7 4.5: Other Continuous Distributions
13	4/12 4.6: Probability Plots	4/14 5.1: Jointly Distributed Random Variables
14	4/19 5.2: Expected Values, Covariance, and Correlation	4/21 5.3: Conditional Distributions
15	4/26 Proof of CLT	4/28 Review
16 Final Exam week	5/3 Final Exam 1:30 to 4:00	5/5