

# Syllabus



**Department of Mathematical, Information and Computer Sciences**

MTH3063—Calculus Based Statistics with R

3 Units (MWF, 11:00-11:55am, Rohr Science Hall 395)

Fall 2023 | August 28 – December 15

**Instructor: Carlson Triebold**

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**Office: RS 228**  
**Hours: Posted in Canvas**

**Final Exam: Friday, 12/15, 10:30am**

**PLNU Mission**  
**To Teach ~ To Shape ~ To Send**

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 is an expression of faith. Being of Wesleyan heritage, we strive 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.

**COURSE DESCRIPTION**

A first course in descriptive and inferential statistics for general students who have taken calculus. Topics include experimental design, sampling and sampling distributions, estimation and hypothesis testing. This course also provides a basic introduction to statistical analysis in the statistical software package R. Not applicable toward a major in mathematics.

**COURSE LEARNING OUTCOMES**

1. Students will be able to compute measures of central tendency for data.
2. Students will be able to compute measures of dispersion for data.
3. Students will be able to use statistical methods to make inferences from data.
4. Students will be able to apply their technical knowledge to solve problems.

**REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES**

1. *The Practice of Statistics in the Life Sciences*, 4<sup>th</sup> Edition by Baldi & Moore (ISBN: 9781319013370)

**COURSE CREDIT HOUR INFORMATION**

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 3-unit class delivered over fifteen weeks. Specific details about how the class meets the credit hour requirement can be

provided upon request. (Based on 37.5 hours of student engagement per credit hour.)

## ASSESSMENT AND GRADING

### Graded Components

- **Homework:** Homework problems will be assigned regularly and posted on Canvas. A homework assignment is late if it is not submitted at the beginning of class on the due date. Please check regularly to ensure that you are keeping up with the homework. Late homework will not be accepted. Your lowest two homework scores will be dropped.
- **Labs:** The labs are due at the scheduled dates and times, and are submitted ONLY in Word or PDF format in Canvas. Late lab assignments will not be accepted. Your lowest lab assignment score will be dropped.
- **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 a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without a well-documented emergency beyond your control.
- **Late work will not be accepted.** Homework assignments that are submitted late will be recorded with a score of zero. During the course, you may find that you are unable to submit homework on time due to a personal situation (for example, a personal or family illness, accident, business trip, etc.). For this reason, if more than half of the homework assignments are submitted on time, then the lowest two homework scores will be dropped from the calculations of the homework grade. There are not exceptions to this policy so please use your dropped assignments wisely.

Grading Distribution	Percent
Two Exams (at 17.5% Each)	35
Final Exam	30
Written Homework	15
Labs	10
Lab Final Exam	5

Attendance and Participation	5
Total	100

**FINAL EXAM:**

**Date and Time:** Friday, December 15, 2023 from 10:30am-1:00pm

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. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. 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 consider changing the exam date and time for that particular student.

**Grading Scale**

Grades are based on the number of points accumulated throughout the course with the following exception. A student must pass at least one of Examination 1, Examination 2, or the Final Examination in order to pass the class. That is, a score of 60% must be achieved on one of the Examinations, or else the final grade will be an F regardless of all other point totals. Approximate minimal percentages required to obtain a given grade are:

<b>Standard Grade Scale Based on Percentages</b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>
<b>+</b>		[87.5- 90.0)	[77.5-80.0)	[67.5-70.0)	
	[92.5 -100.0]	[82.5-87.5)	[72.5-77.5)	[62.5 -67.5)	[0-60)
<b>-</b>	[90.0-92.5)	[80.0-82.5)	[70.0-72.5)	[60.0-62.5)	

## **FINAL EXAMINATION POLICY**

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Class Schedules](#) site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

## **STATE AUTHORIZATION**

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

## **INCOMPLETES AND LATE ASSIGNMENTS**

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

## **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.

## **PLNU COPYRIGHT POLICY**

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.

## **PLNU ACADEMIC HONESTY POLICY**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. 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. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

## **PLNU ACADEMIC ACCOMMODATIONS POLICY**

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center ([EAC@pointloma.edu](mailto:EAC@pointloma.edu) or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

## **SEXUAL MISCONDUCT AND DISCRIMINATION**

Point Loma Nazarene University faculty are committed to helping create a safe learning environment for all students. If you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available through the Title IX Office at [pointloma.edu/Title-IX](http://pointloma.edu/Title-IX). Please be aware that under Title IX of the Education Amendments of 1972, it is required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at [counselingservices@pointloma.edu](mailto:counselingservices@pointloma.edu) or find a list of campus pastors at [pointloma.edu/title-ix](http://pointloma.edu/title-ix)

## **PLNU ATTENDANCE AND PARTICIPATION POLICY**

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 class sessions is considered essential to optimum academic achievement. If the student is

absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an “F” grade.

## **SPIRITUAL CARE**

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If students have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the [Office of Spiritual Life and Formation](#).

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Week		Monday	Wednesday	Friday
September	1	28 Introduction Install R, RStudio	30 Ch 1: Picturing Distributions with Graphs	1 Lab 1 Loading Data
	2	4 Labor Day	6 Ch 2: Describing Quantitative Distributions with Numbers	8 Lab 1 Open Lab
	3	11 Ch 3: Scatterplots and Correlation	13 Ch 4: Regression	15 Lab 2 Basic Data Manipulations
	4	18 Ch 5: Two-Way Tables	20 Ch 6: Samples and Observational Studies	22 Lab 2 Open Lab
	5	25 Ch 7: Designing Experiments	27 Ch 9: Essential Probability Rules	29 Lab 3 Descriptives and Basic Graphs
October	6	2 Ch 10: Independence and Conditional Probabilities	4 Ch 11: The Normal Distributions	6 Lab 3 Open Lab
	7	9 Review for Exam I	11 Exam I	13 Lab 4 Correlation and Regression
	8	16 Ch 13: Sampling Distributions	18 Ch 14: Introduction to Inference	20 Fall Break
	9	23 Ch 14: Introduction to Inference	25 Ch 15: Inference in Practice	27 Lab 4 Open Lab
	10	30 Ch 15: Inference in Practice	1 Ch 17: Inference About a Population Mean	3 Lab 5 Is This Data Normal?
November	11	6 Ch 18: Comparing Two Means	8 Ch 24: One-Way Analysis of Variance	10 Lab 5 Open Lab
	12	13 Ch 19: Inference About a Population Proportion	15 Review for Exam II	17 Lab 6 Central Limit Theorem
	13	20 Exam II	22 Thanksgiving Break	24
	14	27 Ch 20: Comparing Two Proportions	29 Ch 22: The Chi-Square Test for Two-Way Tables	1 Lab 7 Confidence Intervals and Hypothesis Tests
December	15	4 Review for Final Exam	6 Lab Final distributed Review for Final Exam	8 Lab 7 Open Lab
	16	11	13	15 Final Exam 10:30am-1:00pm (Lab Final due at 10:30am)