School of STEM: Department of Mathematical, Information and Computer Sciences

MTH4053—Advanced Applied Statistics

3 Units

Fall 2026

MWF 7:25 – 8:20am

Rohr Science 365

Final Exam: Monday, 12/14, 7:30 – 10:00am

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Office Location and Office Hours: Rohr Science 228, times posted on Canvas

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

This course is a continuation of MTH 3083 including the topics of random sampling and experimental design, sampling distributions, methods of estimation and the properties of estimators, least square estimates of parameter, linear regression, hypothesis testing, and confidence intervals, testing of

models, data analysis and appropriateness of models. Topics are supported by the use of statistical software.

Program and Course Learning Outcomes

1. Students will be able to apply their mathematical knowledge to solve problems.
2. Students will be able to use technology to solve problems.
3. Students will be able to understand and create arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats.

Required Texts and Recommended Study Resources

Students are responsible for having the required course textbooks prior to the first day of class.

All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

1. *Modern Mathematical Statistics with Applications*, 3rd edition by Devore, Berk & Carlton
2. A cheap calculator other than your phone, tablet, or computer (with at least a square root key)
3. Laptop or access to a computer
4. R & RStudio

Assessment and Grading

Grading distribution:

- Two Exams (at 20% each): 40%
- Final Project: 30%
- Homework: 25%
- Attendance and Participation: 5%

Grades will be based on the following:

- **Homework:** Homework problems will be assigned regularly and posted on Canvas. Please check regularly to ensure that you are keeping up with the homework. Late homework will not be accepted. Your lowest homework score will be dropped.
- **Exams and the Final Project:** Exams and the Final Project will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class. No exam or presentation shall be missed without a well-documented emergency beyond your control. A score of zero will be assigned for an exam 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, your lowest homework score will be dropped. There are no exceptions to this policy, so please use your dropped assignments wisely.

Grades are based on the number of points accumulated throughout the course with the following exception. A student must pass the Final Project to pass the class. That is, a score of 60% must be achieved on the Final Project, or else the final grade will be an F regardless of all other point totals.

Grade Scale Based on Percentages

A	B	C	D	F
A [92.5-100]	B+ [87.5-90)	C+ [77.5-80)	D+ [67.5-70)	F [0-60)
A- [90-92.5)	B [82.5-87.5)	C [72.5-77.5)	D [62.5-67.5)	
	B- [80-82.5)	C- [70-72.5)	D- [60-62.5)	

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 Traditional Undergraduate Records: Final Exam 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.

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.

Artificial Intelligence (AI) Policy

Though not recommended, you are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, GrammarlyGo, Perplexity, etc) to generate ideas, but you are not allowed to use AI tools to generate content (text, video, audio, images) that will end up in any work submitted to be graded for this course. Any violation of this policy in this course is subject to an academic honesty violation. If you have any doubts about using AI, please gain permission from the instructor.

PLNU Academic Accommodations Policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center, by email or phone at 619-849-2533. Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines approved accommodations. Professors are able to view a student's approved accommodations through Accommodate.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their approved accommodations in that particular course. Accommodations are not retroactive; as such, clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability-related need should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. In accordance with ADA, accommodations cannot constitute a fundamental alteration to course outcomes; therefore, planning ahead is vital in establishing appropriate accommodations for equal access to this course. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC eligibility process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

LomaBooks Instructions for Students

This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your **LomaBooks** materials.

Additional Course Information

Additional PLNU policies and practices that apply to this course can be found at the following link: https://docs.google.com/document/d/1SoL5YMfCv_5cobhBwrDjbcZJzNKKTCfM/edit?amp;ouid=104297418648613020764&rtpof=true&sd=true

Fall 2026 **MTH 4053 Calendar**

	Week	Monday	Wednesday	Friday
	1	31 Review	2 Review	4 Review
September	2	7 Labor Day	9 Section 10.5	11 Section 10.6
	3	14 Section 11.1	16 Section 11.2	18 Catch up day
	4	21 Section 11.3	23 Section 11.4	25 Section 11.5
	5	28 Section 12.1	30 Section 12.2	2 Catch up day
October	6	5 Section 12.3	7 Exam 1	9 Section 12.4
	7	12 Section 12.5	14 Section 12.6	16 Section 12.7
	8	19 Section 12.9	21 Section 12.10	23 Fall Break
	9	26 Team projects day	28 Section 13.1	30 Catch up day
November	10	2 Team projects day	4 Section 13.2	6 Team projects day
	11	9 Team projects day	11 Section 15.1	13 Catch up day
	12	16 Team projects day	18 Section 15.2	20 Team projects day
	13	23 Exam 2	25 Thanksgiving Break	27
	14	30 Team projects day	2 Team projects day	4 Team projects day
December	15	7 Team projects day	9 Team projects day	11 Team projects day
	16	14 Final Presentations 7:30-10:00am	16	18