



Point Loma Nazarene University, Fall 2024

Introduction to Statistics

Department of Mathematical, Information, and Computer Science – School of STEM

Instructor: Kyle Havens	Course: Math 2003	Section: 4	Units: 3
Office: Rohr Science 210	Days: Monday, Wednesday, and Friday	Classroom: LS 202	
Email: kylehavens@pointloma.edu	Achieve: achieve.macmillanlearning.com	Time: 7:25am – 8:20am	

PLNU Mission – Teach, Shape, 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 statistics for the general student. Description of sample data, probability theory, theoretical frequency distributions, sampling, estimation, and hypothesis testing. Not applicable toward a major in mathematics.

Required Materials:

1. Achieve Access Code – *The Basic Practices of Statistics*, 9th Edition by Moore et al. (ISBN: 9781319344634)
 - Physical Textbook is Optional – *The Basic Practices of Statistics*, 9th Edition by Moore, Notz and Fligner (ISBN: 9781319244378)
2. Access to a computer and internet suitable to use the statistical software:
 - Microsoft Excel – Can be downloaded for free using your PLNU account, see Canvas for instructions.
3. Graphing Calculator (TI-84+ recommended, TI-83+ adequate)

Course Description: A first course in statistics for the general student. Description of sample data, probability theory, theoretical frequency distributions, sampling, estimation, and hypothesis testing. Not applicable toward a major in mathematics.

Office Hours: My office is in Rohr Science room 210. I have open office hours at the following times:
Monday and Wednesday: 1:00 pm – 2:15 pm, Tuesday and Thursday: 7:30 am – 10:00 am, Friday: 8:45 am – 9:45 am.

Student Learning Outcomes:

1. Students will be able to apply their technical knowledge to solve problems.
2. Students will be able to compute measures of central tendency for data.
3. Students will be able to compute measures of dispersion for data.
4. Students will be able to use statistical methods to test hypotheses.
5. 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.

Class Performance: Your final grade in my class will be calculated by the following system.

28%	Final Exam	Cumulative. You must get a “D” on the final exam to pass.
35%	Exam Average	The average score of your two in-class exams.
10%	Labs	Use Excel or R to statistically analyze large data sets.
5%	Lab Final	A short in-person lab final using Excel or R.
10%	Written Homework	Traditional written homework from the textbook.
5%	Online Homework	Assigned online using Achieve for each chapter.
7%	Class Activities	Based on participation in group activities and attendance.

Letter Grade: The letter grade you receive is based on the previously described weighted grading system. The grade you receive at the end of the semester will be the grade you earned based on the grading system. All requests for an opportunity to improve your grade due to personal circumstances will be denied. Borderline grades may be rounded up if student has good attendance.

[92%,100%]: A	[82%,88%): B	[70%,78%): C
[90%,92%): A-	[80%,82%): B-	[68%,70%): C-
[88%,90%): B+	[78%,80%): C+	[60%,68%): D

Final Exam: The final exam is cumulative and will be held at the following time in the liberty station conference room:

Monday, December 16th from 7:30am to 10:00am

Final Exam: 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.

Online Homework: Homework problems will be assigned regularly and posted online using Achieve. It is your responsibility to keep up with the online homework. Every chapter covered in class will have online homework problems. You will have approximately one week to finish the homework after that section is covered. Online homework may be completed late (up until the respective exam) subject to a 10% penalty. I recommend you solve all online homework in a written journal so that, if you get stuck, you can seek help from your professor, your classmates, or a tutor without needing a computer or internet connection.

Written Homework: The homework is designed to allow you to grasp the concepts of statistics; it is not an end in itself. The homework problems will be taken from the textbook and hand written on paper. There may also be other in-class activities that are completed as homework. Please be sure that any written homework is stapled together and the problems are in order. Homework will be scored on a combination of completeness and correctness. A random selection (the same for each student) of problems will be graded on any homework assignment. I encourage you to help one another with homework, but directly copying another student's homework assignment is considered plagiarism and will not be tolerated. Up to two written homework assignments may be turned in late (up until the exam) subject to a 10% penalty.

Labs/Lab Final: The labs are due at the scheduled dates and times, and must be submitted using either Word, Excel, or PDF format in Canvas (e.g. Google Docs and Apple Numbers are not accepted). Labs are **individual assignments**. Collaboration between students is encouraged but copying the lab reports of others is not tolerated. You should be using your own words, your own spreadsheet, and your own screenshots, even if you are working together. If you submit the same workbooks or have the same write-ups as another student you will get a zero and may face repercussions with academic affairs. Up to one lab assignment will be accepted late with a 10% penalty. The lab final will occur the last week of class and will be short test of your Excel comprehension. Please bring your laptop on that day.

Exams: There will be a total of two normal exams roughly every six weeks of the semester. One 8.5"x11" page of notes will be allowed on each exam. Graphing calculators are allowed on the exam. No make-up exams are allowed without prior consent. Contact me **before** missing an exam if you have a critical emergency. If you do not inform me that you will be missing an exam beforehand, you will get a zero on that exam. Exams are weighted equally at 17.5% of your total grade. If you have good attendance throughout the semester (no more than one unexcused absence), I will adjust the weighted scale of the exams in your favor, 22.5% for the highest exam and 12.5% for the lowest. Practice exam questions will be posted on Canvas in advance of the exam designed to help you identify topics that you need to study further.

Class Activities and Participation: Mathematics requires active participation. Participation means: asking questions, taking notes, making conjectures and checking them, providing solutions to problems, and sharing ideas with classmates. During class time we collectively will participate in the same way. I will act as the expert facilitator during class time, with a mixture of lecture, group problem solving, and integrated discussion. You will receive points for each class attended by using the sign-in sheet. Each class we will work on a class activity directly related to the chapters of study. You are to work on them in your groups and submit them to Canvas by the last day of lecture on the subject. These may be fully graded or you may get credit for completion, depending on the activity.

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.

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 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this course, students will spend an 115 estimated total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules. Specific details about how the class meets the credit hour is provided below.

PLNU Attendance Policy: 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.

- **Online Courses:** These are courses with class meetings where all instruction and interaction is fully online.
- **Synchronous Courses:** At least one class meeting takes place at a designated time.
- **Asynchronous Courses:** All class meetings are asynchronous.
- **Hybrid Courses:** These are courses with class meetings that take place both in the classroom and online synchronously and/or asynchronously.
- **In-Person Courses:** These are courses that meet in person with the instructor and students in a physical classroom setting. With approval by the area dean, this may include up to 25% of qualified class interactions through a Learning Management System (such as Canvas).

In some courses, a portion of the credit hour content will be delivered asynchronously and attendance will be determined by submitting the assignments by the posted due dates. See [Academic Policies](#) in the Undergraduate Academic Catalog.

Content Warning: I acknowledge that each of you comes to PLNU with your own unique life experiences. This contributes to the way you perceive various types of information. In statistics, all of the class content, including that which may be intellectually or emotionally challenging, has been intentionally curated to achieve the learning goals for this course. The decision to include such material is not taken lightly. These topics include experimental design, analysis of trends, inference, and multiple comparisons. If you encounter a topic that is intellectually challenging for you, it can manifest in feelings of discomfort and upset. In response, I encourage you to come talk to me or your friends or family about it. Class topics are discussed for the sole purpose of expanding your intellectual engagement in the area of mathematics, and I will support you throughout your learning in this course.

Trigger Warning: I acknowledge that each of you comes to PLNU with your own unique life experiences. This contributes to the way you perceive several types of information. In statistics, we will cover a variety of topics, some of which you may find triggering. These topics include experimental design, analysis of trends, inference, and multiple comparisons. Each time this topic appears in a reading or unit, it is marked on the syllabus. The experience of being triggered versus intellectually challenged are different. The main difference is that an individual must have experienced trauma to experience being triggered, whereas an intellectual challenge has nothing to do with trauma. If you are a trauma survivor and encounter a topic in this class that is triggering for you, you may feel overwhelmed or panicked and find it difficult to concentrate. In response, I encourage you to take the necessary steps for your emotional safety. This may include leaving class while the topic is discussed or talking to a therapist at the Counseling Center. Should you choose to sit out on discussion of a certain topic, know that you are still responsible for the material; but we can discuss if there are other methods for accessing that material, and for assessing your learning on that material. Class topics are discussed for the sole purpose of expanding your intellectual engagement in the area of mathematics, and I will support you throughout your learning in this course.

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 the [Office of Spiritual Development](#).

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.

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.

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. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

Academic Accommodations: 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 (EAC@pointloma.edu 619-849-2486). 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 allowed accommodations. The EAC makes accommodations available to professors at the student's request.

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. Accommodations are not retroactive so 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 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. 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 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 special accommodations.

Use of "Artificial Intelligence:" 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. If you have any doubts about using AI, please gain permission from the instructor.

PLNU Recording Notification: In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel. Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

Language of Belonging: Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice free. Inclusive/Bias-free language is the standard outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality. If you (or someone you know) have experienced a bias incident regarding language, you can find more information on reporting and resources at www.pointloma.edu/bias.

Sexual Misconduct and Discrimination: In support of a safe learning environment, 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 accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are 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 or find a list of campus pastors at pointloma.edu/title-ix. If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias.

Course Schedule: This course syllabus and schedule are subject to change due to unforeseen circumstances.

<u>Week of</u>	<u>Monday</u>	<u>Wednesday</u>	<u>Friday</u>
9/2/2024	<i>NO CLASS</i> <i>Labor Day</i>	Course Intro and Ch.1 <i>Begin Class Activity Ch1-2</i>	Ch1-2: Picturing Distributions <i>Continue Class Activity Ch1-2</i>
9/9/2024	Ch1-2: Lab Day <i>Work on Lab 1</i>	Ch2: Describing Distributions <i>Continue Class Activity Ch1-2</i>	Ch2-4: Types of Data <i>Finish Class Activity Ch1-2</i>
9/16/2024	Ch2: Lab Day <i>Work on Lab 2</i>	Ch4-5: Scatterplots <i>Begin Class Activity Ch4-6</i>	<i>NO CLASS</i> <i>Professor Out Of Town</i>
9/23/2024	Ch5: Regression <i>Continue Class Activity Ch4-6</i>	Ch5-6: Correlation, Two-Way <i>Finish Class Activity Ch4-6</i>	Ch4-6: Lab Day <i>Work on Lab 3</i>
9/30/2024	<i>Online Ch8-9 Lectures</i> <i>Watch Videos</i>	Ch8-9: Sampling <i>Finish Class Activity Ch8-9</i>	Ch3: The Normal Distribution <i>Begin Class Activity Ch3</i>
10/7/2024	Ch3: The Normal Distribution <i>Finish Class Activity Ch3</i>	Ch3: Lab Day <i>Work on Lab 4</i>	<i>OPTIONAL</i> <i>Office Hours</i>
10/14/2024	Exam #1	Ch15-16: Intro to Inference <i>Begin Class Activity Ch15-16</i>	Ch15-16: Confidence Intervals <i>Finish Class Activity Ch15-16</i>
10/21/2024	Ch15-16: Lab Day <i>Work on Lab 5</i>	Ch17: Significance Tests <i>Begin Class Activity Ch17</i>	<i>NO CLASS</i> <i>Fall Break</i>
10/28/2024	Ch17: Significance Tests <i>Finish Class Activity Ch17</i>	Ch17: Lab Day <i>Work on Lab 6</i>	Ch18-20: Inference in Practice <i>Begin Class Activity Ch18-20</i>
11/4/2024	Ch20: T-Distributions <i>Continue Class Activity Ch18-20</i>	Ch20: T-Intervals and Tests <i>Finish Class Activity Ch18-20</i>	Ch20: Lab Day <i>Work on Lab 7</i>
11/11/2024	Ch21: Comparing Two Means <i>Begin Class Activity Ch21</i>	Ch15-21: Review <i>Finish Class Activity Ch21</i>	<i>OPTIONAL</i> <i>Office Hours</i>
11/18/2024	Exam #2	Ch22: Proportions & Inference <i>Begin Class Activity Ch22-23</i>	Ch22: Proportions via Z-Test <i>Continue Class Activity Ch22-23</i>
11/25/2024	<i>OPTIONAL</i> <i>Office Hours</i>	<i>NO CLASS</i> <i>Thanksgiving Break</i>	
12/2/2024	Ch22-23: Two Sample Prop <i>Finish Class Activity Ch22-23</i>	Ch22-23: Lab Day <i>Work on Lab 8</i>	Ch25-27: ANOVA, Chi-Square <i>Begin Class Activity Ch25-27</i>
12/9/2024	Lab Final	Ch25-27: Lab Day <i>Work on Lab 9</i>	Review and Recap <i>Finish Activity and Lab</i>
12/16/2024	Final Exam Monday 12/16 @ 7:30-10am	<i>NO CLASS</i> <i>Finals Week</i>	