Introduction to Statistics

Point Loma Nazarene University, Fall 2022

Instructor: Kyle Havens	**Course:** Math 2003	**Sections:** 2 and 3	**Units:** 3
Office: Rohr Science 276	**Classroom:** LS 201	**Time s2:** 1-2:15pm	**Time s3:** 4-5:15pm
Email: kylehavens@pointloma.edu	**Days:** Tuesday/Thursday	**Achieve:** achieve.macmillanlearning.com	

Required Materials:

1. Achieve Access Code – *The Basic Practices of Statistics*, 9th Edition by Moore et al. (ISBN: 9781319344634)
   O. Physical Textbook is Optional – *The Basic Practices of Statistics*, 9th Edition by Moore, Notz and Fligner (ISBN: 9781319244378)
2. Access to a computer with java enabled web browser and a suitable statistical software, either:
   - Microsoft Excel – Can be downloaded for free using your PLNU email, see Canvas for instructions.
   - R – Can be downloaded for free, see Canvas for link.
3. Graphing Calculator (TI-84+ recommended, TI-83+ adequate, CAS calculators are not allowed)

Prerequisite: Math 099 (Algebra) or equivalent.

Welcome Message: I look forward to spending the semester learning statistics with you. You will be amazed at how easy some concepts are to understand, and equally amazed at how challenging some problems are to solve. Over the semester, you will experience a range of feelings, including: success and failure; challenge and boredom; accomplishment and frustration. Please know that your fellow classmates and I will be here to help you through it. Also, persistence and hard work mean a lot more in this class than "intelligence." Put in time and effort and you will succeed. Skip class and homework and you will struggle.

University 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.

Office Hours: Monday/Wednesday: 7:30-8:15am @ RS276, before s2 and after s3 Tuesday/Thursday @ LS201.

Class Schedule: See the last page of this document.

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.

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.

Participation: Mathematics requires active participation. Participation means: asking questions, making conjectures and checking them, providing solutions to problems, 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.

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

30%	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%	Online Homework	Assigned online using Achieve for each chapter.
10%	Written Classwork/HW	Traditional homework from the textbook or assigned in class.
15%	Labs and Lab Final	Use Excel or R to statistically analyze large data sets.

Letter Grade: The letter grade you receive will be based on your total score from the above system.

Above 92%: A	82-87%: B	70-77%: C
90-91%: A-	80-81%: B-	68-69%: C-
88-89%: B+	78-79%: C+	60-67%: D

The grade you receive at the end of the semester will be the grade you earned based on the above 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 the student has good attendance (no more than one unexcused absence).

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

Wednesday, December 14th from 7:30am to 10:00pm

Final Exam: 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.

Online Homework: Homework problems will be assigned regularly and posted online using Achieve. It is your responsibility to keep up with the homework. Every chapter covered in class will have associated problems assigned online. You will always have approximately one week from the class date to finish the homework from that section. 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.

Written Homework/Classwork: 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. Similarly, late work is accepted subject to a 10% penalty per week.

Labs: 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** with a collaborative component. Working together is encouraged but copying the lab reports of others is not tolerated. Up to a maximum of one lab assignment will be accepted late with a 10% penalty per week provided that consent is received from the professor before it is due. If you do not get approval for a late lab you will get a zero on that lab.

Exams: There will be a total of two normal exams every six weeks of the semester. No notes/books are allowed on exams. Graphing calculators are allowed on the exam, but CAS calculators are not. Certain formulas may be provided on the exam and others will need to be memorized. No make-up exams are allowed without express consent. Contact me **before** missing 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.

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 is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies for further information about class attendance.

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. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

Asynchronous Attendance/Participation Definition: Some days we will have an online lab instead of in-person class. A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

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Use of Technology: In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements; please refer to the Technology and System Requirements information. Additionally, students are required to have headphone speakers, microphone, or webcams compatible with their computer available to use. Please note that any course with online proctored exams require a computer with a camera (tablets are not compatible) to complete exams online. Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

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.

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.

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.

Academic Honesty: 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.

Academic Accommodations: 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 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.

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 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 estimated 115 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

Sources of Help:

1. Professor. If you have questions, email me, ask in class, or come to my office hours.
2. Other classmates. Form study groups and work together.
3. Tutoring. Available in Rohr Science or through the Tutoring Center. Their hours will be on Canvas.
4. Online resources. Posted on Canvas, or find them yourself via YouTube, Khan Academy, etc.
5. Practice exams. Look at them ahead of time and use them to gauge your understanding.

Syllabus is Subject to Change: This syllabus and schedule are subject to change due to unforeseen circumstances. If you are absent from class, it is your responsibility to check any announcements made while you were absent.

Course Schedule: Changes may occur due to unforeseen circumstances.

Week of	*Tuesday*	*Thursday*
8/29/2022	*No Class* Abnormal First Week	**Course Introduction and Begin Chapter 1**
9/5/2022	**Chapter 1 and 2** - Picturing Distributions with Graphs	**Chapters 2 and 4** - Describing Distributions with Numbers/Scatterplots
9/12/2022	**Chapter 4 and 5** - Regression, Correlation, and Two Way Tables	*Open Lab Day*
9/19/2022	**Chapters 8 and 9** - Sampling and Experiments	**Chapter 3** - The Normal Distribution
9/26/2022	**Chapter 3** - The Normal Distribution	**Chapters 1-6, 8-9** Review for Exam #1
10/3/2022	***Exam #1***	**Chapter 15** - Sampling Distributions
10/10/2022	**Chapter 3 and 16** - The Basics of Confidence Intervals	**Chapter 16** - Confidence Intervals and Z-Procedures
10/17/2022	**Chapter 17** - The Basics of Significance Tests	*No Class* Fall Break
10/24/2022	**Chapter 18 and 20** - Inference In Practice and T-Distributions	*Open Lab Day*
10/31/2022	**Chapter 20** - T-Tests and T-Intervals	**Chapter 21** - Comparing Two Means (2-sample T-procedures)
11/7/2022	**Chapter 27** - Comparing Multiple Means (ANOVA)	Chapters 15-18, 20-21 Review for Exam #2
11/14/2022	***Exam #2***	**Chapter 22** - Inference About a Population Proportion
11/21/2022	**Chapter 22** - Proportions By Z-Procedures	*No Class* Thanksgiving
11/28/2022	**Chapter 23** - Two Sample Comparison of Proportions	*Open Lab Day*
12/5/2022	**Chapter 25** - The Chi-Square Test	Review for Final Cumulative
12/12/2022	***Final Exam (12/14)*** **Wednesday**, 7:30am-10am	*Finals Week*