Syllabus

To-Do Date: Jan 31 at 11:59pm

19 02 POINT LOMA NAZARENE UNIVERSITY	**Department of Mathematical, Computer, and Information Sciences** MTH 2003 Introduction to Statistics 3 Units
Spring 2022 January 11th-May 6th	

Section:	Instructor:	Email:	Phone:	Office Hours:
Sec 3: TR, 4:00-5:15, LBRT 201	Greg Crow, Ph.D.	gcrow@pointloma.edu	619.849.2604	Posted in 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.

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. 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.

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.

Prerequisite: Mathematics 0099 (or equivalent)

COURSE 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.

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

1. Textbook: *The Basic Practice of Statistics,* 9th ed. by Moore, Notz and Fligner
2. Access to Achieve, available through the online access key
3. A cheap calculator other than your phone, tablet, pad, or computer (with at least a square root key)
4. Laptop or access to a computer with Java enabled in the web browser
5. Statistical Software (there are many options for purchase locations, here are examples):
   - Excel
     - You are entitled to free use of Excel while at PLNU **How To install Excel for Free Through PLNU.pdf (https://canvas.pointloma.edu/courses/60943/files/5113521?wrap=1) (https://canvas.pointloma.edu/courses/60943/files/5113521/download?download_frd=1)**
   - R
     - **http://cran.r-project.org/bin/windows/base/ (http://cran.r-project.org/bin/windows/base/)** (free)
     - **http://cran.r-project.org/bin/macosx/ (http://cran.r-project.org/bin/macosx/)** (free)

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.)

Distribution of Student Learning Hours

Category		Time Expectation ir
Lecture Notes & Activities	(10 at 1 hr. each)	10
Reading Assignments	(10 at 2 hours each)	20
Online Homework	(10 at 1 hours each)	10
Written Homework	(10 at 3 hours each)	30
Weekly Participation	(15 at 1.25 hours each)	18.75
Labs	(11 at 2.5 hours each)	27.5
Lab Final Examination		1.25
Two Examinations	(2 at 1.25 hours each)	2.5
Final Examination		2.5
Total Hours		**122.5**

ASSESSMENT AND GRADING

Graded Components

- **Notes and Videos**: Every week there are some notes recorded from our online classes last year. Feel free to look at them to help understand any concepts you are having trouble with.
- **Weekly Classwork:** Attendance at the Monday and Wednesday in person class is required. In these class meetings, we will work on to work on activities and problems. Some classwork may be graded, and some you will get full credit just for attempting.
- **Online Homework**: This homework will be completed in Achieve, available through the online access key. You will have multiple attempts to complete each problem. I suggest you start before Friday and use our homework class day for any problems you are having trouble solving.
- **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 activities that are completed as homework. Each homework set will usually be due one week from when it is assigned. Please see the schedule below. Late homework will not be accepted without prior consent or a well-documented emergency beyond your control. Up to a maximum of one homework assignment will be accepted up to 3 days late provided that consent is received from the professor before it is due. Written homework that is

submitted late without prior consent will be recorded with a score of zero. The lowest homework score will be dropped prior to computing the final course grade.

In the event that our in person class is prohibited from meeting in person in a given week, please scan or photograph the pages, and upload the file to Canvas as a .pdf, .jpg, .jpeg, .png, or .docx (but not Google Docs). If you take a photograph with your phone, then please turn off the setting for *Live Photos* or *Motion Photo* prior to taking the picture. If you use Google Docs, please export to a .pdf and upload that file.

- **Labs: The labs are due at the scheduled dates and times, and are submitted ONLY in Word, Excel, or .pdf format in Canvas (e.g. Google Docs and Apple Numbers are not permitted).** Up to a maximum of one Lab assignment will be accepted up to 3 days late provided that consent is received from the professor before it is due. Lab assignments that are submitted late without prior consent will be recorded with a score of zero.
- **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 prior consent or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. The examination schedule is included in the daily schedule. This instructor does not intend to accept excuses such as poor communication with parents, benefactors, surf team sponsors and/or travel agents.

Final Exam: Scheduled on Monday, May 2, 2022 from 7:30-10:00 am. 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 Distribution	Percent
Two Examinations at 17.5% each	35
Final Exam	30
Lab Final Examination	3
Labs	12

Online Homework	5
Written Homework	10
Classwork	5
Total	**100**

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

Standard Grade Scale Based on Percentages					
	A	**B**	**C**	**D**	**F**
+		[87.5-90.0)	[77.5-80.0)	[67.5-70.0)	
	[92.5-100]	[82.5-87.5)	[72.5-77.5)	[62.5-67.5)	[0.0-60.0)
–	[90.0-92.5)	[80.0-82.5)	[70.0-72.5)	[60.0-62.5)	

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. We understand that life happens, if you contact your instructor prior to the due date of the assignment you may request one extension as indicated above. 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 (http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278)** 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 (https://mail.google.com/mail/?view=cm&fs=1&tf=1&to=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.

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 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 (http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278)** for further information about 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.

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 (https://www.pointloma.edu/offices/office-institutional-effectiveness-research/disclosures)** to view which states allow online (distance education) outside of California.

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 (https://www.pointloma.edu/offices/spiritual-development)**.

Spring 2022 MTH2003 Calendar

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
January	9	10	11 Monday Schedule – No Class	12	13 *Introduction* *Ch. 1 & 2* *Lab Assigned* 0-*Introduction Lab**	14	15 Purchase Textbook (with Achieve Access Code) Load Statistics Software (Excel or R)
	16	17 **Martin Luther King Jr. Day**	18 *Reading* 1: Picturing Dist. with Graphs 2: Describing Dist. with Numbers Online HW: Ch. 1 & 2 (1st Try) Open Lab *Lab* ***Due****:* 0-*Introduction Lab**	19	20 Activities 1: Picturing Distributions with Graphs 2: Describing Distributions with Numbers Introduction Ch. 4, 5 & 6 HW Assigned Ch. 1 & 2 (Written) *Lab Assigned* 1-*Summarizing Data*	21	22 Online **Due**: Ch. 1 & 2 (2nd Try)
	23	24	25 Reading 4: Scatterplots and Correlation 5: Regression Analysis 6: Two-way Tables Open Lab Online HW Ch. 4. 5 & 6 (1st Try)	26	27 Activities 4: Scatterplots and Correlation 5: Regression Analysis 6: Two-way Tables Introduction Ch. 8 & 9 HW Assigned Ch. 4. 5 & 6 (Written) *Lab Assigned* *2-Relationships Between Two Variables* Written HW **Due**: Ch. 1 & 2	28	29 Online **Due**: Ch. 4, 5 & 6 (2nd Try) *Lab* ***Due****:* 1-*Summarizing Data*
	30	31	1 Reading 8: Producing Data: Sampling 9: Producing Data: Experiments Open Lab Online HW Ch. 8 & 9 (1st Try) **Spiritual Renewal Week**	2 **Spiritual Renewal Week**	3 Activities 8: Producing Data: Sampling 9: Producing Data: Experiments Introduction Ch. 3 HW Assigned Ch. 8 & 9 (Written) *Lab Assigned* *3-Gathering Data* Written HW **Due**: Ch. 4, 5 & 6	4 **Spiritual Renewal Week**	5 Online **Due**: Ch. 8 & 9 (2nd Try) *Lab* ***Due****:* *2-Relationships Between Two Variables*
February	6	7	8 Reading 3: The Normal Distributions Open Lab Online HW Ch. 3 (1st Try)	9	10 Activities 3: The Normal Distributions HW Assigned Ch. 3 (Written) **Review for the Exam** Written HW **Due**: Ch. 8 & 9	11	12 Online **Due**: Ch. 3 (2nd Try) *Lab* ***Due****:* *3-Gathering Data*
	13	14	15 Introduction Ch. 15 & 16 **Review for Exam**	16 4	17 **Exam 1** *Lab Assigned* *4-Normal Distributions* Written HW **Due**: Ch. 3	18	19
	20	21	22 Reading 15: Sampling Distributions 16: Confidence Intervals: The Basics Open Lab Online HW Ch. 15 & 16 (1st Try)	23	24 **Exam 1 Returned** Activities 15: Sampling Distributions 16: Confidence Intervals: The Basics HW Assigned Ch. 15 & 16 (Written) *Lab Assigned* *5-Sampling Distributions*	25	26 Online **Due**: Ch. 15 & 16 (2nd Try) *Lab* ***Due****:* *4-Normal Distributions*
	27	28	1 Reading 17: Tests of Significance: The Basics 18: Inference in Practice Open Lab Online HW Ch. 17 & 18 (1st Try)	2	3 Activities 17: Tests of Significance: The Basics 18: Inference in Practice HW Assigned Ch. 17 & 18 (Written) *Lab Assigned* *6-Confidence Intervals* Written HW **Due**: Ch. 15 & 16	4	5 Online **Due**: Ch. 17 & 18 (2nd Try) *Lab* ***Due****:* *5-Sampling Distributions*

Spring 2022 — MTH2003 Calendar

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
March	6	7	8 **Spring Break Week**	9	10 **Spring Break Week**	11	12
	13	14	15 Reading 20: Inference About a Population Mean Open Lab Online HW Ch. 20 (1st Try)	16	17 Activities 20: Inference About a Population Mean HW Assigned Ch. 20 (Written) *Lab Assigned* *7-Tests of Significance* Written HW **Due**: Ch. 17 & 18	18	19 Online **Due**: Ch. 20 (2nd Try) *Lab* ***Due***: *6-Confidence Intervals*
	20	21	22 Reading 21: Comparing Two Means 27: One-Way Analysis of Variance: Comparing Several Means Open Lab Online HW 21 and 27 (1st Try)	23	24 Activities 21: Comparing Two Means 27: One-Way Analysis of Variance: Comparing Several Means HW Assigned Ch. 21 & 27 (Written) *Lab Assigned* *8-Conf. Intervals & Hypothesis Tests* Written HW **Due**: Ch. 20	25 Last Day to Drop	26 Online **Due**: Ch. 21 & 27 (2nd Try) *Lab* ***Due***: *7-Tests of Significance*
	27	28	29 Reading 22: Inference About a Pop. Proportion 23: Comparing Two Proportions Open Lab Online HW 22 and 23 (1st Try)	30	31 Activities 22: Inference About a Pop. Proportion 23: Comparing Two Proportions HW Assigned Ch. 22 & 23 (Written) *Lab Assigned* *9-Two Sample Hyp. Tests & ANOVA* Written HW **Due**: Ch. 21 & 27	1	2 Online **Due**: Ch. 22 & 23 (2nd Try) *Lab* ***Due***: *8-Conf. Intervals & Hypothesis Tests*
April	3	4	5 **Review for the Exam**	6	7 **Exam 2** *Lab Assigned* *10-HT's, CI's, and χ^2 for Proportions*	8	9
	10	11	12 Reading 25: Two Categorical Variables: The Chi-Square Test Open Lab Online HW 25 (1st Try)	13	14 **Easter Recess**	15	16 *Lab* ***Due***: *9-Two Sample Hyp. Tests & ANOVA*
	17 **Easter**	18	19 Open Lab	20	21 **Exam 2 Returned** Activities 25: Two Categorical Variables: The Chi-Square Test HW Assigned Ch. 25 (Written) Written HW **Due**: Ch. 22 & 23	22	23 Online **Due**: Ch. 25 (2nd Try) *Lab* ***Due***: *10-HT's, CI's, and χ^2 for Proportions*
	24	25	26 **Review for the Final Exam**	27	28 **Lab Final Exam** Written HW **Due**: Ch. 25	29	30
May	1	2	3 Monday **Final Exam** **7:30-10:00 am** Largest Room (Middle of LSCC)	4	5	6	7