


# Syllabus

**To-Do Date: Mar 1 at 11:59pm**

 <p><b>POINT LOMA</b> NAZARENE UNIVERSITY</p>	<p><b>Department of Mathematical, Computer, and Information Sciences</b></p> <p>MTH 2003 Introduction to Statistics</p> <p>3 Units</p>
<p>Spring 2021 March 1 - June 11</p>	

<b>Section:</b>	<b>Instructor:</b>	<b>Email:</b>	<b>Phone:</b>	<b>Office Hours:</b>
<b>Sec 1:</b> MW, 1:00-2:15, LBRT 201	Robert Compton, Ph.D.	rcompton@pointloma.edu	619.849.2219	Posted in Canvas
<b>Sec 2:</b> MF, 1:00-2:15, LBRT 201	Robert Compton, Ph.D.	rcompton@pointloma.edu	619.849.2219	Posted in Canvas
<b>Sec 3:</b> TTh 4:00-5:15, LBRT 201	Professor Kyle Havens	kylehavens@pointloma.edu	619.990.4714	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.

### 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*, 8<sup>th</sup> ed. by Moore, Notz and Fligner
2. Access to Sapling, 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):
  - o Excel
    - There are many websites selling many flavors of Excel. For instance, you could search Google for “Buy Excel Home” and click the Shopping bar at the top of the page.
  - o R
    - <http://cran.r-project.org/bin/windows/base/> [\(http://cran.r-project.org/bin/windows/base/\)](http://cran.r-project.org/bin/windows/base/) (free)
    - <http://cran.r-project.org/bin/macosx/> [\(http://cran.r-project.org/bin/macosx/\)](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 in
Video 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
<b>Total Hours</b>		<b>122.5</b>

## ASSESSMENT AND GRADING

### Graded Components

- **Notes and Videos:** Each section will have videos to watch and you must take notes. Your notes will be submitted in Canvas to provide evidence you are keeping up. 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.
- **Weekly Participation:** Attendance at the weekly in person class is required. In these class meetings, we will work on to work on activities and problems. If you participate in 90% or more of the class meetings, you will receive full credit. If you participate in 80% to 90% of the class meetings, you will receive half credit. If do not participate in more than 20% of the class meetings, then you will receive no participation credit.

In the event that our in person class is prohibited from meeting in person in a given week, there will be a scheduled Zoom to work on activities and problems. We understand that in some cases you will not be able to attend, in this case, please watch the video of the session and

submit at least one problem discussed during the Zoom in the Canvas discussion to have your attendance counted.

- **Online Homework:** This homework will be completed in Sapling, available through the online access key. Your goal is to score above 50% on each online homework. If you score above 50% for 90% of the online homework sets, then you will receive full credit. If you score above 50% for 80% to 90% of the online homework sets, you will receive half credit. If do not score above 50% for more than 20% of the online homework sets, then you will receive no online homework credit.
- **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 Friday 11-Jun-2021 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.

<b>Grading Distribution</b>	<b>Percent</b>
Two Examinations at 17.5% each	35
Final Exam	30
Lab Final Examination	6
Labs	9
Online Homework	2.5
Written Homework	12.5
Videos Notes	2.5
Participation	2.5
<b>Total</b>	<b>100</b>

### 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>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]	[82.5-87.5)	[72.5-77.5)	[62.5-67.5)	[0.0-60.0)
<b>-</b>	[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) (<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**

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. ([DRC@pointloma.edu](mailto:DRC@pointloma.edu) (<mailto:DRC@pointloma.edu>) or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

## **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) (<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.

## **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) [\\_\(https://www.pointloma.edu/offices/spiritual-development\)\\_](https://www.pointloma.edu/offices/spiritual-development).



	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	28 NSO	1 Purchase Textbook Load Statistics Software (Excel or R) <i>Introduction Ch. 1 &amp; 2</i> <i>Lab Assigned 0-Introduction Lab*</i>	2	3 Purchase Textbook Load Statistics Software (Excel or R) <i>Introduction Ch. 1 &amp; 2</i> <i>Lab Assigned 0-Introduction Lab*</i>	4	5	6 <i>Reading &amp; Videos 1: Picturing Dist. with Graphs 2: Describing Dist. with Numbers</i> Online HW Due: Ch. 1 & 2 (1 <sup>st</sup> Try) <i>Lab Due: 0-Introduction Lab*</i>
March	7	8 Activities 1: Picturing Distributions with Graphs 2: Describing Distributions with Numbers <i>Introduction Ch. 4, 5 &amp; 6</i> HW Assigned Ch. 1 & 2 (Written) <i>Lab Assigned 1-Summarizing Data</i> Video Notes Due: Ch. 1, 2 Monday and Wednesday	9	10 Activities 1: Picturing Distributions with Graphs 2: Describing Distributions with Numbers <i>Introduction Ch. 4, 5 &amp; 6</i>  HW Assigned Ch. 1 & 2 (Written) <i>Lab Assigned 1-Summarizing Data</i>	11	12	13 <i>Reading &amp; Videos 4: Scatterplots and Correlation 5: Regression Analysis 6: Two-way Tables</i> Online HW Ch. 4, 5 & 6 (1 <sup>st</sup> Try)  Online Due: Ch. 1 & 2 (2nd Try)
	14	15 Activities 4: Scatterplots and Correlation 5: Regression 6: Two-Way tables <i>Introduction Ch. 8 &amp; 9</i> HW Assigned Ch. 4, 5 & 6 (Written) <i>Lab Assigned 2-Relationships Between Two Variables</i> Written HW Due: Ch. 1 & 2 Video Notes Due: Ch. 4, 5, 6 Monday and Wednesday	16	17 Activities 4: Scatterplots and Correlation 5: Regression 6: Two-Way tables <i>Introduction Ch. 8 &amp; 9</i> HW Assigned Ch. 4, 5 & 6 (Written) <i>Lab Assigned 2-Relationships Between Two Variables</i>  Written HW Due: Ch. 1 & 2	18	19	20 <i>Reading &amp; Videos 8: Producing Data: Sampling 9: Producing Data: Experiments</i> Online HW Ch. 8 & 9 (1 <sup>st</sup> Try)  Online Due: Ch. 4, 5 & 6 (2nd Try) <i>Lab Due: 1-Summarizing Data</i>
	21	22 Activities 8: Producing Data: Sampling 9: Producing Data: Experiments <i>Introduction Ch. 3</i> HW Assigned Ch. 8 & 9 (Written) <i>Lab Assigned 3-Gathering Data</i> Written HW Due: Ch. 4, 5 & 6 Video Notes Due: Ch. 8, 9 Monday and Wednesday	23	24 Activities 8: Producing Data: Sampling 9: Producing Data: Experiments <i>Introduction Ch. 3</i> HW Assigned Ch. 8 & 9 (Written) <i>Lab Assigned 3-Gathering Data</i>  Written HW Due: Ch. 4, 5 & 6	25	26	27 <i>Reading &amp; Videos 3: The Normal Distributions</i> Online HW Ch. 3 (1 <sup>st</sup> Try)  Online Due: Ch. 8 & 9 (2nd Try) <i>Lab Due: 2-Relationships Between Two Variables</i>
	28	29 (Monday and Wednesday on Zoom) Activities 3: The Normal Distributions HW Assigned Ch. 3 (Written) <b>Review for the Exam</b> Written HW Due: Ch. 8 & 9 Video Notes Due: Ch. 3 Monday and Wednesday	30	31 <b>Spiritual Renewal Week</b>   Mental Health Day	1	2	3 <b>Good Friday</b> Videos <b>Review for the Final Exam</b>  Online Due: Ch. 3 (2nd Try)
April	4 Easter	5 <b>Exam I</b> <i>Lab Assigned 4-Normal Distributions</i> Written HW Due: Ch. 3	6	7 <b>Exam I</b> <i>Lab Assigned 4-Normal Distributions</i> Written HW Due: Ch. 3	8	9	10 <i>Reading &amp; Videos 15: Sampling Distributions 16: Confidence Intervals: The Basics</i> Online HW 15 & 16 (1 <sup>st</sup> Try) <i>Lab Due: 3-Gathering Data</i>
	11	12 Activities 15: Sampling Distributions 16: Confidence Intervals: The Basics HW Assigned Ch. 15 & 16 (Written) <i>Lab Assigned 5-Sampling Distributions</i> Video Notes Due: Ch. 15, 16 Monday and Wednesday	13	14 Activities 15: Sampling Distributions 16: Confidence Intervals: The Basics  HW Assigned Ch. 15 & 16 (Written) <i>Lab Assigned 5-Sampling Distributions</i>	15	16	17 <i>Reading &amp; Videos 17: Tests of Significance: The Basics 18: Inference in Practice</i> Online HW 17 & 18 (1 <sup>st</sup> Try) Online Due: Ch. 15 & 16 (2nd Try) <i>Lab Due: 4-Normal Distributions</i>

\* Laptops with statistics software required (Excel or R)

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
April	18	19 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 Video Notes Due: Ch. 17, 18 Monday and Wednesday)	20	21 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	22	23	24 Reading & Videos 20: Inference About a Population Mean Online HW 20 (1 <sup>st</sup> Try) Online Due: Ch. 17 & 18 (2nd Try) Lab Due: 5-Sampling Distributions
	25	26 Activities 20: Inference About a Population Mean HW Assigned Ch. 20 (Written) Lab Assigned 7-Tests of Significance Written HW Due: Ch. 17 & 18 Video Notes Due: Ch. 20 Monday and Wednesday)	27	28 Activities 20: Inference About a Population Mean HW Assigned Ch. 20 (Written) Lab Assigned 7-Tests of Significance Written HW Due: Ch. 17 & 18	29	30	1 Reading & Videos 21: Comparing Two Means 27: One-Way Analysis of Variance: Comparing Several Means Online HW 21 and 27 (1 <sup>st</sup> Try) Online Due: Ch. 20 (2nd Try) Lab Due: 6-Confidence Intervals
May	2	3 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 Video Notes Due: Ch. 21, 27 Monday and Wednesday)	4	5          Mental Health Day	6	7 Last Drops	8 Videos Review for the Exam       Online Due: Ch. 21 & 27 (2nd Try) Lab Due: 7-Tests of Significance
	9	10       <b>Exam II</b> Lab Assigned 9-Two Sample Hyp. Tests & ANOVA Written HW Due: Ch. 21 & 27	11	12       <b>Exam II</b> Lab Assigned 9-Two Sample Hyp. Tests & ANOVA Written HW Due: Ch. 21 & 27	13	14	15 Reading & Videos 22: Inference About a Pop. Proportion 23: Comparing Two Proportions Online HW 22 and 23 (1 <sup>st</sup> Try) Lab Due: 8-Conf. Intervals & Hypothesis Tests
	16	17 Activities 22: Inference About a Pop. Proportion 23: Comparing Two Proportions HW Assigned Ch. 22 & 23 (Written) Lab Assigned 10-HT's, CI's, and $\chi^2$ for Proportions Written HW Due: Ch. 21 & 27 Video Notes Due: Ch. 22, 23 Monday and Wednesday)	18	19 Activities 22: Inference About a Pop. Proportion 23: Comparing Two Proportions HW Assigned Ch. 22 & 23 (Written) Lab Assigned 10-HT's, CI's, and $\chi^2$ for Proportions Written HW Due: Ch. 21 & 27	20	21	22 Reading & Videos 25: Two Categorical Variables: The Chi-Square Test Online HW 25 (1 <sup>st</sup> Try) Online Due: Ch. 22 & 23 (2nd Try) Lab Due: 9-Two Sample Hyp. Tests & ANOVA
	23	24 Activities 25: Two Categorical Variables: The Chi-Square Test HW Assigned Ch. 25 (Written) Written HW Due: Ch. 22 & 23 Video Notes Due: Ch. 25 Monday and Wednesday)	25	26 Activities 25: Two Categorical Variables: The Chi-Square Test HW Assigned Ch. 25 (Written) Written HW Due: Ch. 22 & 23	27	28	29       Online Due: Ch. 25 (2nd Try) Lab Due: 10-HT's, CI's, and $\chi^2$ for Proportions
	30	31       <b>Review for the Final Exam</b> Written HW Due: Ch. 25	1	2       <b>Review for the Final Exam</b> Written HW Due: Ch. 25	3	4	5 Videos Review for the Final Exam
	6	7	8	9       7:30 AM Liberty Station Main Room	10	11 <b>Final Exam</b>	12 Commencement