

# MTH203 (3 units) Introduction to Statistics

<b>Sec 1: W</b>	<b>1:00-2:15</b>	<b>Help Lab: M</b>	<b>1:00-2:15</b>	<b>LBRT 201</b>
<b>Sec 2: F</b>	<b>1:00-2:15</b>	<b>Help Lab: M</b>	<b>1:00-2:15</b>	<b>LBRT 201</b>
<b>Sec 3: Th</b>	<b>7:30-8:45</b>	<b>Help Lab: T</b>	<b>7:30-8:45</b>	<b>LBRT 207</b>

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Office Hours:	Posted in Canvas	Posted in Canvas

Online Materials: Statistical Reasoning from Acrobatiq (Through Canvas, \$50)  
Statistical Software: SPSS, Excel, or R

## University Mission:

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.

## Catalog Description

MTH 203 (3 Units) Introduction to Statistics

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 099 (or equivalent).

## Learning Outcomes

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

## Course Format

Mathematics is learned by doing. This course has intentionally been designed in a hybrid format so that more class time can be spent doing Statistics. A significant portion of the course (~50%) will be completed online either in the open working sessions or on your own. This allows for more self-paced work. You are encouraged to work with each other, however, you are responsible for the material and simply copying answers will be to your detriment. This course also aims to introduce a statistical computing package (SPSS, R, or Excel) as a problem solving tool. Thus you will be required to install the software on your own computer and bring it to class during the assigned sessions.

**Required Materials**

- A cheap calculator (with at least a square root key) that is not your phone, tablet, pad, or computer
  - Laptop or access to a computer with Java enabled in the web browser
  - Statistical Software (there are many options for purchase locations):
    - SPSS
      - There are many websites selling many flavors of SPSS. For instance you could search Google for “Buy SPSS Base Grad pack” and click the Shopping bar near the top of the page.
    - 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 near the top of the page. At the bottom of the Canvas landing page there is a [Link to instructions on downloading a free copy of Excel](#).
    - R
      - <http://cran.r-project.org/bin/windows/base/> (free)
      - <http://cran.r-project.org/bin/macosx/> (free)
- The bottom of the Canvas landing page has a [Link to instructions for downloading R](#).

**Grade Components**

Grade Components	Percent
Two Examinations at 20% each	40
Final Exam	30
Labs	10
Written Homework	10
Online Checkpoints	10
Total	100

- **Online Checkpoints and Modules:** You will be working in the online course materials provided by Acrobatiq®. Prior to our in class activities you will be required to complete the assigned checkpoints. You will have two attempts on the checkpoints and the best score will be recorded. A checkpoint will not count if it is not completed by the due date. The lowest two Checkpoint scores will be dropped prior to computing the final course grade.
- **Labs:** The labs will be submitted in Canvas and are due at the scheduled times, usually the end of the week of the lab.
- **Homework:** Written problems are assigned in Canvas and due the first day of class following the in class activity on the Module. There may also be other activities that are completed as homework. Late homework will not be accepted without prior consent or a well-documented emergency beyond your control. The lowest homework score will be dropped prior to computing the final course grade.

Collected assignments must be prepared in a style suitable for grading. The following guidelines are used to determine credit:

- the organization must be easy to follow
- the work must be legible
- complete solutions must be written for problems (not just answers); answers must be clearly marked
- use complete sentences to answer questions

**Examinations and the Final Examination:**

There will be two Mid-Semester Examinations and a comprehensive Final Examination. Both Mid-Semester 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. The examination schedule is included in the daily schedule. The instructor will not accept excuses such as poor communication with parents, benefactors, surf team sponsors and/or travel agents. No examination shall be missed without prior consent or a well-documented emergency beyond your control. In such cases, all make-up exams will occur at 8:30 am on the Saturday between classes and Final Exam week. 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 Lab Final Examination will be included as 1/6th of the Final Examination score.

**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:

Grading Scale in percentages	A	B	C	D
+		(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]
-	[90.0, 92.5]	[80.0, 82.5]	[70.0, 72.5]	[60.0, 62.5]

**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 [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class\\_Attendance](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class_Attendance) in the Undergraduate Academic Catalog.

Because this course is a hybrid course, attendance will be calculated as follows:

Face-to-face portion of the class: You must be present on time for the full class for you to be considered present in the face to face meeting.

Online portion of the class: You are expected to work on material online every week. In order to earn credit for being “present” in the online portion of the class each week you must complete at least one online homework assignment or exam review assignment (for test weeks) before the due date/time for that week.

If you miss 10% of the class, you will receive a warning. If you miss 20% of the class, you will be automatically de-enrolled.

**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.

**Academic Accommodations:**

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at [DRC@pointloma.edu](mailto:DRC@pointloma.edu). See [Disability Resource Center](#) for additional information. For more details see the PLNU catalog: [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic Accommodations](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Accommodations)

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

**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 [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic Honesty](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Honesty) for definitions of kinds of academic dishonesty and for further policy information.

**Copyright Protected Materials**

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.

**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. Specific details about how the class meets the credit hour requirements can be provided upon request.

**Final Exam: 7:30-10:00 am Wednesday December 14<sup>th</sup>, 2016**

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.

**The Final Exam is a Comprehensive Examination.**

Week Start Date	Prior to Class		In class	After Class
	Online Modules	Online Checkpoints	Activities By Module	Written Homework
1 8/28/2016	None	None	Introduction 1, 2, 3: Read	Load Statistical Software on Your Laptop
2 9/4/2016	4: Examining Distributions	26, 40	4: Activities 5: Introduction	HW 1
3 9/11/2016	5, 7: Examining Relationships, Sampling	54, 71	5, 7: Activities	HW 2 Regression Activity
4 9/18/2016	8, 10: Designing Studies, Probabilities	79, 89, 94	8, 10: Activities Introduction to Random Variables and z <i>Lab: Summarizing Data*</i>	HW 3
5 9/25/2016	11: Random Variables	123	11: Activities	HW 4
6 10/2/2016	<b>Exam 1</b>			
7 10/9/2016			Lab: <i>Regression and Scatterplots*</i>	
8 10/16/2016	12: Sampling Distributions	128, 132	12: Activity 14, 15, & 16: Introduction	HW 5
9 10/23/2016	14, 15, & 16: Introduction to Inference, C.I.'s	155	14, 15, & 16: Activities 17: Introduction	HW 6
10 10/30/2016	17: Hypothesis Testing	161, 175	17: Activity	HW 7
11 11/6/2016	17: Hypothesis Testing	184, 185, 187	17: Inference Practice <i>Lab: Hypothesis Tests and Confidence Intervals*</i>	HW 8
12 11/13/2016	18: Inference for Relationships (C-Q)	200, 209 217, 218	18: Activity <i>Lab: Hypothesis Tests for C-Q*</i> Exam Review	HW 9
13 11/27/2016	<b>Exam 2</b>			
14 12/4/2016	19: Inference for Relationships (C-C)	228	19: Chi-squared	Lab Final Project Assigned
16 Final	Sections 1-3 Common Final <b>7:30 AM Wednesday 14-Dec-2016</b> LSCC Main Room			

\* Laptops with statistics software required