MTH203 (3 units) Introduction to Statistics

Sec 1: TTh   2:30-3:45   LBRT 202
Sec 2: TTh   4:00-5:15   LBRT 202
Sec 3: MW   1:00-2:15   LBRT 202

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Office Hours:	Posted in Canvas	Posted in Canvas
Textbook:	*The Basic Practice of Statistics,* 8th ed. by Moore, Notz and Fligner *Note that you must purchase access to Sapling Plus	ISBN: 978-1-319-21323-7 (online access only) ISBN: 978-1-319-21624-5 (access card and loose leaf print)
Statistical Software:	Excel, R, or SPSS	

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.

Required Materials

- A cheap calculator other than your phone, tablet, pad, or computer (with at least a square root key)
- Laptop or access to a computer with Java enabled in the web browser
- Statistical Software (there are many options for purchase locations, here are examples):
  - 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.
  - R
    - http://cran.r-project.org/bin/windows/base/ (free)
    - http://cran.r-project.org/bin/macosx/ (free)
  - 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 at the top of the page.

Course Format

Mathematics is learned by doing. 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 the statistical computing packages, including Excel, R, or SPSS, 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.

Grade components.

- **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).
- **Homework**: Written problems are assigned in Canvas and due at the very beginning of class on scheduled dates. There may also be some additional activities that are completed as part of a homework assignment.

  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

Late work will not be accepted without prior consent or a well-documented emergency. 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. Homework assignments that are submitted late without prior consent will be recorded with a score of zero. If more than half of the homework assignments are submitted on time, then the lowest homework score will be dropped from the calculations of the homework grade.

- **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.

Grading Distribution	Percent
Two Examinations at 17.5% each	35
Final Exam	30
Lab Final Examination	6
Labs	9
Written Homework	10
Online Homework	10
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 Exam 1, Exam 2, or the Final Exam in order to pass the class. That is, a score of 60% must be achieved on one of the Exams, 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)	(77.5, 80)	(67.5, 70)
	[92.5, 100]	[82.5, 87.5]	[72.5, 77.5]	[62.5, 67.5]
-	[90, 92.5)	[80, 82.5)	[70, 72.5)	[60, 62.5)

Attendance **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. Here is the university's stated policy on attendance:

> 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 https://catalog.pointloma.edu/content.php?catoid=35&navoid=2136#Class_Attendance in the Undergraduate Academic Catalog.

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:
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 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.

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 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.

Component	Total Hours
In-Class and Final	27.25
Reading (2 per week)	30
Labs (4 at 1 hr. each outside of class)	4
Written Homework (2 per week)	30
Online Homework (2 per week)	30
Total	**131.25**

Point Loma Nazarene 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.

Final Exam: 4:30-7:00 PM Wednesday May 1st, 2019
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.

TTh-Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1/6/19	1/7/19	1/8/19	1/9/19	1/10/19	1/11/19	1/12/19
				Intro Lab 1		
1/13/19	1/14/19	1/15/19	1/16/19	1/17/19	1/18/19	1/19/19
		Open Lab Begin OHW 1		Ch. 1 Picturing Data Ch. 2 Describing Data with Numbers		Due: OHW 1: Ch 1 & 2 Lab 1
1/20/19	1/21/19	1/22/19	1/23/19	1/24/19	1/25/19	1/26/19
	MLK Day No Classes	Begin OHW 2		Ch. 4 Correlation Ch. 5 Regression Ch. 6 Two-way tables Due: WHW 1: Ch 1 & 2		Due: OHW 2: Ch 4, 5 & 6
1/27/19	1/28/19	1/29/19	1/30/19	1/31/19	2/1/19	2/2/19
		Open Lab Begin OHW 3		Ch. 8 Sampling Ch. 9 Experiments Lab 2 Due: WHW 2: Ch 5 & 6		Due: OHW 3: Ch 8 & 9
2/3/19	2/4/19	2/5/19	2/6/19	2/7/19	2/8/19	2/9/19
		Open Lab Begin OHW 4		Ch. 3 Normal Distribution Due: WHW 3: Ch 8 & 9		Due: OHW 4: Ch 3 Lab 2
2/10/19	2/11/19	2/12/19	2/13/19	2/14/19	2/15/19	2/16/19
		Review		**Exam 1** Due: WHW 4: Ch 3		
2/17/19	2/18/19	2/19/19	2/20/19	2/21/19	2/22/19	2/23/19
		Open Lab Begin OHW 5		Ch. 15 Sampling Distributions Ch. 16 Confidence Intervals		Due: OHW 5: Ch 15 &16
2/24/19	2/25/19	2/26/19	2/27/19	2/28/19	3/1/19	3/2/19
		Open Lab Begin OHW 6		Ch. 17 Hypothesis Tests Ch. 18 Inference in Practice Due: WHW 5: Ch 15 & 16		Due: OHW 6: Ch17 & 18
3/3/19	3/4/19	3/5/19	3/6/19	3/7/19	3/8/19	3/9/19
			Spring Break			

3/10/19	3/11/19	3/12/19	3/13/19	3/14/19	3/15/19	3/16/19
		Open Lab Begin OHW 7		Ch. 20 Inference About a Mean Due: WHW 6: Ch 17 & 18		Due: OHW 7: Ch 20
3/17/19	3/18/19	3/19/19	3/20/19	3/21/19	3/22/19	3/23/19
		Open Lab Begin OHW 8		Ch. 21 Comparing Two Means Ch. 27 Inference About Several Means Lab 3 Due: WHW 7: Ch 20		Due: OHW 8: Ch 21 & 27
3/24/19	3/25/19	3/26/19	3/27/19	3/28/19	3/29/19	3/30/19
		Open Lab Begin OHW 9		Ch. 22 Inference About a Proportion Ch. 23 Comparing Two Proportions Due: WHW 8: Ch 21 & 22		Due: OHW 9: Ch 22 & 23 Lab 3
3/31/19	4/1/19	4/2/19	4/3/19	4/4/19	4/5/19	4/6/19
		Open Lab		**Exam 2** Due: WHW 9: Ch 22 & 23		
4/7/19	4/8/19	4/9/19	4/10/19	4/11/19	4/12/19	4/13/19
		Open Lab Begin OHW 10		Ch. 25 Chi-Square Lab 4		Due: OHW 10: Ch 25
4/14/19	4/15/19	4/16/19	4/17/19	4/18/19	4/19/19	4/20/19
		Open Lab		Easter Recess		
4/21/19	4/22/19	4/23/19	4/24/19	4/25/19	4/26/19	4/27/19
		Open Lab Review		**Lab FinalDue: WHW 10: Ch 25** **Lab 4**		
4/28/19	4/29/19	4/30/19	5/1/19	5/2/19	5/3/19	5/4/19
			Final Exam 4:30-7:00			

MW-Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1/6/19	1/7/19	1/8/19	1/9/19	1/10/19	1/11/19	1/12/19
	On Tuesday		Intro Lab 1			
1/13/19	1/14/19	1/15/19	1/16/19	1/17/19	1/18/19	1/19/19
	Open Lab Begin OHW 1		Ch. 1 Picturing Data Ch. 2 Describing Data with Numbers			Due: OHW 1: Ch 1 & 2 Lab 1
1/20/19	1/21/19	1/22/19	1/23/19	1/24/19	1/25/19	1/26/19
	MLK Day No Classes Begin OHW 2		Ch. 4 Correlation Ch. 5 Regression Ch. 6 Two-way tables Due: WHW 1: Ch 1 & 2			Due: OHW 2: Ch 4, 5 & 6
1/27/19	1/28/19	1/29/19	1/30/19	1/31/19	2/1/19	2/2/19
	Open Lab Begin OHW 3		Ch. 8 Sampling Ch. 9 Experiments Lab 2 Due: WHW 2: Ch 5 & 6			Due: OHW 3: Ch 8 & 9
2/3/19	2/4/19	2/5/19	2/6/19	2/7/19	2/8/19	2/9/19
	Open Lab Begin OHW 4		Ch. 3 Normal Distribution Due: WHW 3: Ch 8 & 9			Due: OHW 4: Ch 3 Lab 2
2/10/19	2/11/19	2/12/19	2/13/19	2/14/19	2/15/19	2/16/19
	Review		**Exam 1** Due: WHW 4: Ch 3			
2/17/19	2/18/19	2/19/19	2/20/19	2/21/19	2/22/19	2/23/19
	Open Lab Begin OHW 5		Ch. 15 Sampling Distributions Ch. 16 Confidence Intervals			Due: OHW 5: Ch 15 &16
2/24/19	2/25/19	2/26/19	2/27/19	2/28/19	3/1/19	3/2/19
	Open Lab Begin OHW 6		Ch. 17 Hypothesis Tests Ch. 18 Inference in Practice Due: WHW 5: Ch 15 & 16			Due: OHW 6: Ch17 & 18

3/3/19	3/4/19	3/5/19	3/6/19	3/7/19	3/8/19	3/9/19
	Spring Break					
3/10/19	3/11/19	3/12/19	3/13/19	3/14/19	3/15/19	3/16/19
	Open Lab Begin OHW 7		Ch. 20 Inference About a Mean Due: WHW 6: Ch 17 & 18			Due: OHW 7: Ch 20
3/17/19	3/18/19	3/19/19	3/20/19	3/21/19	3/22/19	3/23/19
	Open LabBegin OHW 8		Ch. 21 Comparing Two MeansCh. 27 Inference About Several MeansLab 3Due: WHW 7: Ch 20			Due:OHW 8: Ch 21 & 27
3/24/19	3/25/19	3/26/19	3/27/19	3/28/19	3/29/19	3/30/19
	Open Lab Begin OHW 9		Ch. 22 Inference About a Proportion Ch. 23 Comparing Two Proportions Due: WHW 8: Ch 21 & 22			Due: OHW 9: Ch 22 & 23 Lab 3
3/31/19	4/1/19	4/2/19	4/3/19	4/4/19	4/5/19	4/6/19
	Open Lab		**Exam 2** Due: WHW 9: Ch 22 & 23			
4/7/19	4/8/19	4/9/19	4/10/19	4/11/19	4/12/19	4/13/19
	Open Lab Begin OHW 10		Ch. 25 Chi-Square Lab 4			Due: OHW 10: Ch 25
4/14/19	4/15/19	4/16/19	4/17/19	4/18/19	4/19/19	4/20/19
	Open Lab		Review	Easter Recess		
4/21/19	4/22/19	4/23/19	4/24/19	4/25/19	4/26/19	4/27/19
			Lab Final **Due: WHW 10: Ch 25** **Lab 4**			
4/28/19	4/29/19	4/30/19	5/1/19	5/2/19	5/3/19	5/4/19
			Final Exam 4:30-7:00PM			