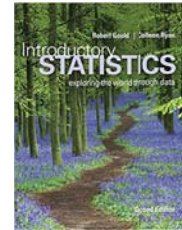# MTH203 (3 units) Introduction to Statistics

Sec 1: TTh   2:30-3:45   LBRT 201
Sec 2: TTh   4:00-5:15   LBRT 201
Sec 3: MW   1:00-2:15   LBRT 201
Sec 4: MW   2:30-3:45   LBRT 201

Instructors:	Ryan Botts, Ph.D.	Greg Crow, Ph.D.
Email:	rbotts@pointloma.edu	gcrow@pointloma.edu
Phone:	619.849.2968	619.849.2604
Office:	RS228	RS220
Office Hours:	Posted in Canvas	Posted in Canvas
Textbook:	*Introductory Statistics,* 2nd Edition by Robert N. Gould and Colleen N. Ryan	
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:
    o the organization must be easy to follow
    o the work must be legible
    o complete solutions must be written for problems (not just answers); answers must be clearly marked
    o 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 20% each	40
Final Exam	25
Lab Final Examination	8
Labs	12
Written Homework	15
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 http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#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:
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. 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

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 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.

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 becomes an expression of faith. Being of Wesleyan heritage, we aspire 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: 7:30-10:00 AM Friday May 4th, 2018
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.

Spring 2018   MW Calendar

	Sunday	Monday	Tuesday	Wednesday	Thurs.	Friday	Saturday
January		1	2	3	4	5	6
	7	8 New Student Orientation	9 Ch. 1: Intro. to Data (Monday Schedule)	10 Ch. 1: Introduction to Data	11	12	13
	14	15 **Martin Luther King Jr. Day (No Classes)**	16	17 Ch. 2: Picturing Variation with Graphs	18	19	20
	21	22 *Ch. 1 Homework Due* *Lab 1**	23	24 *Ch. 2 Homework Due* Ch. 3: Numerical Summaries of Center and Variation	25	26	27 *Lab 1 Due*
	28	29 Ch. 3: Numerical Summaries of Center and Variation	30 **Spiritual Renewal Week**	31 Ch. 4: Regression Analysis: Exploring Association Between Variables	1	2	3
February	4	5 *Ch. 3 Homework Due* Ch. 4: Regression Analysis: Exploring Association Between Variables	6	7 *Lab 2**	8	9	10
	11	12 *Ch. 4 Homework Due* Ch. 6: Modeling Random Events: The Normal Model	13	14 Ch. 6: Modeling Randon Events: The Normal Model	15	16	17 *Lab 2 Due*
	18	19 Review and Catch Up	20	21 *Ch. 6 Homework Due* **Exam 1**	22	23	24
	25	26 Ch. 7: Survey Sampling and Inference (Central Limit Thm, CI's-Proportions)	27	28 Ch. 7: Survey Sampling and Inference (Central Limit Thm, CI's-Proportions)	1	2	3
March	4	5 **Spring**	6 —————	7 **Break**	8 ————— ——	9 **Week**	10
	11	12 *Ch. 7 Part I Homework Due* Ch. 7: Survey Sampling and Inference (Central Limit Theorem, CI's-Proportions)	13	14 Ch. 8: Hypothesis Testing for Population Proportions	15	16	17
	18	19 *Ch. 7 Part II Homework Due* Ch. 8: Hypothesis Testing for Population Proportions	20	21 Ch. 9: Inferring Population Means (Central Limit Theorem, CI's, HT-Means)	22	23	24
	25	26 *Ch. 8 Homework Due* Ch. 9: Inferring Population Means *Lab 3**	27	28 Ch. 11: Multiple Comparisons and Analysis of Variance	29 Easter Recess	30 Easter Recess	31
April	1 **Easter**	2 **Easter Recess**	3	4 *Ch. 9 Homework Due* Ch. 11: Multiple Comparisons and Analysis of Variance	5	6	7 *Lab 3 Due*
	8	9 Review and Catch Up	10	11 *Ch. 11 Homework Due* **Exam 2**	12	13	14
	15	16 Ch. 10: Associations Between Categorical Variables (Chi-Square Test)	17	18 *Lab 4**	19	20	21
	22	23 *Ch. 10 Homework Due* Lab Final Exam*	24	25 Review	26	27	28 *Lab 4 Due*
	29	30	1	2	3	4 **Final Exam 7:30-10 am**	5

* Laptops with statistics software required

Point Loma Nazarene University

Spring 2018

TTh Calendar

	Sunday	Monday	Tuesday	Wed.	Thursday	Friday	Saturday
January		1	2	3	4	5	6
	7	8 New Student Orientation	9	10	11 Ch. 1: Intro. to Data	12	13
	14	15 **MLK Jr. Day (No Classes)**	16 Ch. 1: Introduction to Data	17	18 Ch. 2: Picturing Variation with Graphs	19	20
	21	22	23 Ch. 1 Homework Due Lab 1*	24	25 Ch. 2 Homework Due Ch. 3: Numerical Summaries of Center and Variation	26	27 Lab 1 Due
	28	29 **Spiritual Renewal Week**	30 Ch. 3: Numerical Summaries of Center and Variation	31	1 Ch. 4: Regression Analysis: Exploring Association Between Variables	2	3
February	4	5	6 Ch. 3 Homework Due Ch. 4: Regression Analysis: Exploring Association Between Variables	7	8 Lab 2*	9	10
	11	12	13 Ch. 4 Homework Due Ch. 6: Modeling Random Events: The Normal Model	14	15 Ch. 6: Modeling Randon Events: The Normal Model	16	17 Lab 2 Due
	18	19	20 Review and Catch Up	21	22 Ch. 6 Homework Due **Exam 1**	23	24
	25	26	27 Ch. 7: Survey Sampling and Inference (Central Limit Theorem, CI's-Proportions)	28	1 Ch. 7: Survey Sampling and Inference (Central Limit Theorem, CI's-Proportions)	2	3
March	4	5 **Spring**	6 —————	7 **Break**	8 —————	9 **Week**	10
	11	12	13 Ch. 7 Part I Homework Due Ch. 7: Survey Sampling and Inference (Central Limit Theorem, CI's-Proportions)	14	15 Ch. 8: Hypothesis Testing for Population Proportions	16	17
	18	19	20 Ch. 7 Part II Homework Due Ch. 8: Hypothesis Testing for Population Proportions	21	22 Ch. 9: Inferring Population Means (Central Limit Theorem, CI's, HT-Means)	23	24
	25	26	27 Ch. 8 Homework Due Ch. 9: Inferring Population Means Lab 3*	28	29 Easter Recess	30 Easter Recess	31
April	1 **Easter**	2 **Easter Recess**	3 Ch. 11: Multiple Comparisons and Analysis of Variance	4	5 Ch. 9 Homework Due Ch. 11: Multiple Comparisons and Analysis of Variance	6	7 Lab 3 Due
	8	9	10 Review and Catch Up	11	12 Ch. 11 Homework Due **Exam 2**	13	14
	15	16	17 Ch. 10: Associations Between Categorical Variables (Chi-Square Test)	18	19 Lab 4*	20	21
	22	23	24 Ch. 10 Homework Due Lab Final Exam*	25	26 Review	27	28 Lab 4 Due
	29	30	1	2	3	4 **Final Exam 7:30-10 am**	5

* Laptops with statistics software required