



Linn-Benton

Community College

Introduction to Statistics Math 243 – Winter 2020 Jeff Crabill, Instructor

TR 9:00 – 10:50 WOH-128

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Student Hours: MWF 12:00 – 12:50
CRN: 32980 (also by appt.)

Materials: Introductory Statistics OpenStax. Text is free and open source, or you can purchase a hard bound copy if you wish.

Overview:

Statistics might be defined as the science of numerical reasoning from data. Its purpose is to aid people in making decisions based on the analysis of numerical information. Data and numerical arguments abound not only in science and social science disciplines but also in almost every field of academic inquiry. Moreover, most people encounter statistical reasoning in everyday life. It is therefore exceedingly appropriate and important for all liberally educated citizens to undertake study of fundamental principles and methods of statistics.

Course Principles:

The following principles, written by the authors of another statistics text (Rossman and Chance), guide my teaching of this course and may help you to understand what I think the course is about:

1. **Statistics is not number-crunching.** We are going to let the calculator or computer do all that for us. Your job will be to learn to construct the statistical arguments to make your case. Focus on concepts and present your results in a format for general public consumption. *Let the software do the heavy lifting.*
2. **Statistics involves the analysis of genuine data.** We will use data sets from all areas of academia. Feel free to find your own as well.
3. **Statistics is not algebra.** One must approach the study of data and statistics thinking about big ideas and concepts. *Let the software do the heavy lifting and calculation.*
4. **Understanding results from investigation and discovery.** I firmly believe in the process of exploration and discovery. This course provides a unique opportunity in mathematics for investigation and discovery.



Course Goals:

My primary goals for this course are to help you to develop the following:

- the ability to **apply and interpret** the results of a variety of **statistical techniques**, including both exploratory and inferential methods;
- an **understanding** of many of the **fundamental ideas of statistics**, such as variability, distribution, association, causation, sampling, experimentation, confidence, and significance;
- a **critical perspective** with which to **analyze and assess statistical arguments** such as one encounters in the popular press as well as in scholarly publications.



Prerequisites:

1. High school algebra skills (using formulas, creating graphs, reading tables)
2. Familiarity with a spreadsheet (e.g. MS Excel)
3. Willingness to challenge yourself and your assumptions

Grading:

Your grade will be weighted as follows and calculated as a **weighted average** of your scores in each category.

| | |
|-----------------------|-----|
| Assessments | 30% |
| Showing Understanding | 50% |
| Final Assessment | 20% |

Grades will be given on the standard scale of percentage of total points:

| | |
|-----------|---|
| 90 – 100% | A |
| 80 – 89% | B |
| 70 – 79% | C |
| 60 – 69% | D |
| <59% | F |

Upon completion of Math 243, *Introduction to Statistics*, students will be able to:

1. Collect, organize, analyze, and interpret data.
2. Interpret and calculate basic probabilities.
3. Create appropriate designs of observational studies and experiments to address issues in a variety of fields including healthcare, biology, agriculture, psychology, and physics.
4. Apply inferential statistics methods to address issues in a variety of fields.

Course Website:

Our course will make use of the LMS at www.schoolology.com. Please see your instructor for the access code to the course online. You should have received an email in your student account with the information you'll need.



Course Content:

This is a traditional one-term sophomore-level course in introductory statistics. We will cover the following major topics. Chapters are from the OpenStax text.

- I. **Variability** (Approx five weeks)
 - a. Sampling and Data (Chap 1)
 - b. Descriptive Statistics (Chap 2)
 - c. Probability (Chap 3)
 - d. Distributions (Chap 3 & 4)
 - e. Central Limit Theorem – key topic – (Chap 7)
- II. **Making Decisions with Data** (Approx 2.5 weeks)
 - a. Confidence Intervals (Chap 8)
 - b. Hypothesis Testing (Chap 9)
- III. **Using More Variables** (Approx 2.5 weeks)
 - a. Linear Regression and Correlation (Chap 12)
 - b. ANOVA (Chap 13)



Aspects of the Course Grade

- I. Assessments (30%)
 - a. Weekly in-class short quizzes and short essays
 - b. One midterm exam (during week 5) – 15% of the grade overall. Students will need a spreadsheet on a laptop/tablet, as well as a 3x5 card.
 - c. Various miscellaneous assessments as needed during the term. You'll see a variety of assessments during the term – informal, formal, group, individual.
- II. Showing Understanding (50%)
 - a. These may feel like more “typical homework” assignments. Problems usually drawn from the book or others you're asked to do over the course of the term.
 - b. Must be submitted online in a PDF file. Handwritten work is acceptable – use a scanner or an app like CamScanner to create the PDF to upload. **Follow submission instructions on the assignment page on schoology.com.**
 - c. During the term, we will also be running experiments and simulations in class.
 - d. Each one will have a short reflection, so follow those instructions carefully and submit online in PDF form.
- III. Final Assessment (20%)
 - a. This will feel like a traditional final exam in class during the scheduled final exam time during week 11.
 - b. The test will require the use of a spreadsheet, so you will need a laptop, as well as a 3x5 card. Laptops can be borrowed from the Library as needed.

Students must be aware that the course grade is spread out over many different types of assessments, activities, reflections, and experiments. One must actively participate in all aspects of the course. Please see the instructor throughout the term when you have questions!

Course Policies:

1. If you cannot attend the day of the announced midterm and you miss the exam, you must make arrangements ahead of time with the instructor. If that does not occur, then your final exam grade will be used for BOTH exams.
2. Exams will not be returned to students. Students are expected to review all assessments in detail with their instructor individually, so plan to spend some time chatting in my office!
3. Absolutely no late assignments are accepted. **To avoid late work, students should submit the partially-completed work by the due date and time.**
4. Electronic assignments on schoology will have the option to use a “Late Pass” that will extend your due date. Use them on your electronically-scored assignments only. Please note that they are only available immediately after the due date. Otherwise, assignments are always open for students to review at their convenience.
5. Incompletes are given solely at the instructor’s discretion only to students who are passing otherwise and who have verifiable extraordinary extenuating circumstances legitimately preventing the completion of the course. Incompletes are given only when students have finished at least 75% of the course material. Students who have finished less should withdraw from the course prior to the 7th week withdrawal deadline.
6. The instructor reserves the right to modify this syllabus at any time. Changes will be announced in class.
7. Any policy or procedure not directly addressed in this syllabus document shall be at the sole and complete discretion of the instructor. By enrolling in this course, you agree to abide by the decisions of the instructor.

LBCC Email:

You are responsible for all communications sent to your LBCC email account. You are required to use your LBCC provided email account for all email communications at the College. You may access your LBCC student email account through Student Email. If you choose not to use the college supplied email, make sure those messages get forwarded to the email account of your choice.

Academic Honesty:

I assume that you are ethical and honest. However, if there is an incident of academic dishonesty (cheating), you will receive a score of zero for that test/assignment and the incident will be reported to the college administration for possible further disciplinary action. If there is a second offense, you will receive a grade of F for the course and the incident will be reported to the college administration with a recommendation for disciplinary action.

Special Circumstances:

Students who have any emergency medical information the instructor should know of, who need special arrangements in the event of evacuation, or students with documented disabilities who may need accommodations, should **make an appointment with the instructor as early as possible, no later than the first week of the term.**

Request for Special Needs or Accommodations

LBCC is committed to inclusiveness and equal access to higher education. If you have approved accommodations through the Center for Accessibility Resources (CFAR) and would like to use your accommodations in the class, please talk to your instructor as soon as possible to discuss your needs. If you believe you may need accommodations but are not yet registered with CFAR, please visit the [CFAR Website](#) for steps on how to apply for services or call [\(541\) 917-4789](#).

LBCC Comprehensive Statement of Nondiscrimination

LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender, gender identity, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws. For further information see Board Policy P1015 in our [Board Policies and Administrative Rules](#). Title II, IX, & Section 504: Scott Rolen, CC-108, 541-917-4425; Lynne Cox, T-107B, 541-917-4806, LBCC, Albany, Oregon. To report: linnbenton-advocate.symplicity.com/public_report

Basic Needs Statement

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Roadrunner Resource Center for support (resources@linnbenton.edu , or visit us on the web www.linnbenton.edu/RRC under Student Support for Current Students). Our office can help students get connected to resources to help. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to provide any resources that they may possess.