

Stat 1401, Introductory Statistics

Fall 2020

Instructor: Dr. Carlos Almada
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Office hours: On TR 8:00-9:15 am.

Lecture Format: Welcome to the FALL 2020 offering of STAT 1401, Elementary Statistics, originally scheduled to meet at 8:00-9:15 am on TR. The instructional format of this class has changed since you registered for the course and it is now set to be 100% online.

I will carefully record detailed lectures that will be available to you in CougarView. The lectures will be in PowerPoint, and PDF, format and will present concepts and examples step by step. I will lecture over the PowerPoints but you will also have the version without sound. You will work on the lectures on your own and then, at the scheduled time for the class on TR we will have live office hours. These hours will be used to answer any questions you may have and to solve more problems on the board. I have a whiteboard in my home office large enough where I can show detailed computations and solutions. These office hours will be recorded and be available for you to download if you desire, which means that you are not required to attend the virtual meetings.

Course Description: This course begins with descriptive statistics: organizing, summarizing, and illustrating data using graphs and measurements such as mean and standard deviation. Then it continues with a study of the basic rules of probability and probability distributions, with special attention to binomial (discrete) and normal (continuous) probability distributions. The third part of this course turns to inferential statistics, covering the basics of hypothesis testing. The various simple tests such as z-test, and t-test are studied. The useful simple linear regression and correlation are also introduced as the last part of this course.

Most of the material will be presented in a manner consistent with the presentations in the text. Students are expected to read and study the examples and related material in the text and to work on the assigned problems sets. Similar

problems will be used as examples during the lectures as preparation for the exams.

Course Objectives: At the completion of this course, you should understand the basic concepts commonly used in statistics, be able to find the statistical measurements of the data and display the data in efficient graphic ways, be able to solve practical probability problems, and be able to conduct various hypothesis tests and draw meaningful conclusions. More specifically, you should be able to

- select and use appropriate statistical analyses to obtain useful information from data.
- determine the aspects of a question, if any, for which statistics can provide relevant information.
- communicate knowledge using standard statistical language and also interpret it in non-technical language.
- interpret ideas of population versus sample, random variables, and techniques of descriptive statistics including frequency distributions, histograms, stem and leaf plots, boxplots, and scatterplots.
- calculate and interpret measures of central tendency and dispersion, including mean, median, standard deviation, and quartiles.
- apply the 68-95-99.7 rule to normal distributions and use the normal tables and/or graphing calculators to answer questions about the proportion of scores in a certain range or find various percentiles.
- use the basic ideas of probability and apply them to statistics.
- use the sampling distributions of sample proportions and sample means to answer appropriate questions.
- estimate single means, difference of two means, single proportions and difference of two proportions using confidence intervals. Interpret the results.
- demonstrate skills in hypothesis testing for means and proportions, for single populations and comparison of two populations.
- analyze relationships between two quantitative variables using correlation and linear regression. Analyze residual plots and determine how to handle outliers and influential points.

Quantitative reasoning and mathematics will be characterized by logic, critical evaluation, analysis, synthesis; and verbal, numeric, graphical and symbolic problem-solving as demonstrated by the

- ability to use appropriate technology in the evaluation, analysis and synthesis of information in problem solving situations.
- ability to express and manipulate mathematical information, concepts and thoughts in verbal, numeric, graphical and symbolic form while solving a variety of problems.
- ability to extract quantitative data from a given situation, translate and evaluate the data, make logical deductions and arrive at reasonable conclusions.

Textbook: *Introductory Statistics*, at

https://saylordotorg.github.io/text_introductory-statistics/index.html Although this book covers the material for the course in exactly the same order, I will not base the lectures on it because I wrote the lectures before I found the book when it became available free of charge on the web. You should find it useful because you can see the same topics with just different examples. Sometimes reading the same thing with different wording helps understanding and retaining definitions and examples more efficiently.

Text Sections Covered: Text material tentatively scheduled to be covered includes sections from chapters 1 through 10. There is one lecture per chapter.

Chapter 1: Introduction

Chapter 2-3: Descriptive Statistics

Chapter 4: Basic Concepts of Probability

Chapter 6: Discrete Random Variables

Chapter 6: Continuous Random Variables and Sampling Distributions

Chapter 7: Estimation

Chapter 8: Testing Hypotheses

Chapter 10: Correlation and Regression

Graphing Calculator: TI - 83/84 or TI-83/84 Plus required. If you do not have such a calculator, you may be able to rent one from the Math Department for the semester. For more information, visit the Math Office in University Hall, Room 238.

Grading: Course scores will be based on a weighted average of short quizzes, three in-class tests, and a comprehensive final exam according to the following weights:

Short quizzes	20 %
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3 Tests (20 % each)	60 %
Final Exam (comprehensive)	20 %

Use the following formula to compute your score:

$$\text{Score} = 0.20(Q + T1 + T2 + T3 + \text{final})$$

Letter grades will be based upon the following score ranges:

A: 90-100 B: 80-89 C: 70-79 D: 60-69

Text Exercises: Text problems have been assigned for your practice and classroom discussion. It is your responsibility to use them to assess your understanding of the material covered in class. I will not collect the assigned problems, but your participation in class discussions will be considered when I assign the grade for class participation. I strongly encourage you to work on the problems in groups. I suggest that you work on the problems by yourself first, making a note of anything giving you trouble; then meet with your group and work through the remaining problems together; and finally write up the solutions by yourself.

Class Participation: You will be considered actively involved if you come to class each day prepared to discuss all of the assigned homework.

Short Quizzes: During the semester, I will give a total of 9 or 10 short quizzes on days already announced on the schedule for the course. The short quizzes will usually be given at the end of class. Generally, I will allow 10-15 minutes for each quiz. Quiz problems will be based on the homework assignments covered during the previous week. Absolutely no makeup quizzes will be given.

Tests: Three in-class tests will be given during the semester; the date for each particular test will be announced in class at least a week in advance and this is clear from the following outline: Test 1 will include the material covered in class for chapters 1, 2, and 3. Test 2 will include what is covered in class for chapters 4 and 5. Test 3 is based on chapter 6 only. The meeting before the test will be dedicated to just reviewing for the test. Therefore, review days will be right after the end of chapters 3, 5, and 6 which gives you a week notice for the test. Absolutely no

makeup tests will be given; please refer to the absentee policy below for more information. All in class tests and quizzes are open book, open notes.

Final Exam: The final exam will be *comprehensive* and is required of all students. Expect the problems to resemble assigned homework, quizzes, and tests exercises.

Cheating and Plagiarism: Any student caught cheating or committing plagiarism will be subject to disciplinary action. In this course, disciplinary actions will include assignment of an "F" for the course grade, and possibly other actions consistent with the policies of the university.

Academic Center for Tutoring - Fall 2020: The ACT at CSU offers free tutoring for all enrolled CSU students in a variety of courses as well as in writing and resume/cover letter preparation. Tutors can also help students with online learning. For safety in the fall 2020, all ACT services will be offered online. An appointment is required. More information is available on the ACT website: <https://act.columbusstate.edu/> . If you have questions you can email act@columbusstate.edu or call 706-507-8646. If you cannot participate online and need a face to face appointment, contact the ACT.

Attendance and Absences: We will use the quizzes and tests to monitor the attendance. Students with three (3) or more absences will be dismissed from the course without any additional warning and assigned the grade of "WF".

No makeup tests will be given. If I am contacted prior to missing an exam AND proper documentation for the absence is provided (e.g. letter from doctor or chaplain), then the score on the final exam will be used to replace the missing test score. This rule will apply only once. If you miss a second test, then a zero will be the score assigned for that particular test. In the event that a student misses a test without my approval, a zero will be assigned for that test score.

Academic Withdrawal: Any course dropped after the corresponding deadline becomes a part of your academic record. In this case a grade of "WF" will be assigned. The student is responsible for completing the withdrawal request and submitting it to the Registrar's Office.

Course web page: Any modifications to the course policies and/or course syllabus will be announced on the course web page. You are expected to check the web page

at least once per week. If you miss a class day, you should take special care to check the course web page and check with me as soon as possible in case you missed an assignment or an announcement.

Emotional and Mental Health: Your emotional and mental health is very important and can affect your ability to meet your academic responsibility. Part- and full-time students have free access to mental health counseling through the [CSU Counseling Center](#). If you begin to experience any sort of emotional concerns such as anxiety, depression, or significant life events that are negatively impacting you, please seek help at the counseling center as quickly as possible. Please know that you will find a friendly "virtual" face for your appointments. Hours of operation are 8:00AM to 8:00PM Monday and Tuesday and 8:00AM to 5:00PM Wednesday through Friday. You can call to set up an appointment: 706-507-8740. If you are in crisis during non-business hours, please call the Georgia Crisis Line: 1-800-715-4225.

Respectful Conduct: I aim to treat all student with respect and fairness. Since I expect the same consideration, please observe the following courtesies:

Arrive for class on time. Late class arrivals are disruptive and inconsiderate; moreover, they may be regarded as absences. Students who frequently arrive late may be asked not to return to class.

Stay for the entire class. If you must leave early, do so without causing a disruption. Sit near the exit and inform me in advance if you must leave.

Silence pagers and cell phones. Use of cell phones in the class room will not be permitted; you should not bring one into the classroom unless the ringer is turned OFF. If you carry a pager, it must be set on silent mode or left outside of the classroom. If your cell phone rings during class or if I see you are checking it for messages or texting, 5 points will be deducted from the score of your next test. This rule will apply at every occurrence of this event.

Students who fail to behave courteously may be asked not to return to class.

Students with Disabilities: If you have a documented disability as described by the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973, Section 504, you may be eligible to receive accommodations to assist in

programmatic and/or physical accessibility. We recommend that you contact the Office of Disability Services at <http://disability.columbusstate.edu/> . You can also contact as soon as possible

Lauren A. Jones J.D., Director/Title IX Compliance Coordinator
Center for Accommodation and Access
Schuster Student Success Center - Room 221 Columbus State University
706-507-8755
FAX: 706-507-8758

It is then your responsibility to contact and meet with the instructor in formulating a reasonable accommodation plan and provide support in developing appropriate accommodations for your disability. Course requirements will not be waived but accommodations may be made to assist you to meet the requirements. Technical support may also be available to meet your specific needs.