

Math 2, Statistics
Fall 2017
TTh 11:20pm-1:25pm
Section Number: 2808

Instructor: Benjamin Holt

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Phone: 588-5087 (Email is a much more effective option for getting in touch with me.)

Office Hours: TTh 1:30pm-2:30pm in Sequoia 109; MW 4:30pm-5:30pm in Sequoia 102

Textbook: The Basic Practice of Statistics, 7th Edition by David S Moore ISBN: 978-1464142536

Course Description. Prerequisite: Completion of MATH 104 with at least a C or P, or placement through the assessment process. Hours per term: 72 lecture. Statistics is the study of how to collect, organize, analyze, interpret, and communicate information from data. This course will cover descriptive statistics, normal distributions, correlation and regression, probability, sampling distributions, inference about quantitative and categorical variables, and inference about relationships. Not repeatable. MJC equivalent: (MATH 134) Transfer: (CSU/UC)(IGETC: 2A)(CSU-GE: B4)

The *Approximate* Daily Structure of this Course: Students must come PREPARED. By *prepared* I mean two things:

- 1) Each student must read the chapter the day BEFORE it is covered in class.
- 2) Each student must be prepared to work with others and present problems in class.

Lecture: 40-60 minutes. Since you are already prepared by the time you walk into class, lectures will be brief and will only supplement your knowledge.

Small Break: 5 minutes.

Group Work: 20-30 minutes. Separate into random groups of about 3 to 5 people. Each group will have a problem to present to the class. Problems will come from the homework assignment which will be due at the next meeting.

Problem Presentation: 20-30 minutes. A group member will be randomly chosen from each group to present the group problem at the board and we will do this for as many problems as we possibly can.

The Student Learning Outcomes: Students who are successful in this course will have mastered the following:

1. Analyze distributions numerically and graphically.
2. Apply appropriate inference procedures and interpret results.
3. Interpret results from correlation and regression.

The next series of items will be used to assess student success in achieving these outcomes.

Online Quizzes: For every chapter in the textbook, there is an online quiz. Every quiz will consist of 10 multiple-choice questions drawn randomly from a set of questions corresponding to a chapter in the textbook. To pass the quiz you must get a grade of at least 80%. You may attempt the quiz as many times as you like. Each quiz is completed online. Go to holt.blue/Math_2/quizzes.html and follow the instructions for completing and submitting your quiz for credit. There are two rules you must follow when submitting online quizzes:

- 1) You may submit a quiz for a chapter at any time AFTER we cover the chapter, but BEFORE the next exam. I will not accept a quiz at any other time.
- 2) You may submit ONE online quiz on any given date.

If you send me more than one quiz on a given date, I will enter into my gradebook the quiz which is displayed first in my inbox. You will then need to redo the quiz I did not enter. So please follow Rule 2) above.

Your quiz grade is the total number of quizzes you complete divided by the total number of quizzes.

Homework: Every classtime you will have a homework assignment. You may access these assignments on our course website at holt.blue/Math_2/homework.html

Your homework grade is determined by 2 criteria:

1. **Quality of Writing** (10 points). The exercises in our textbook emphasize your ability to communicate the conclusions which you make from data, not the ability to do calculations. A final, numerical answer, while important, is by itself meaningless and practically useless without context and understanding as to what that number means. When you do exercises, you must provide this context and interpretation for your reader. As such, the quality and clarity of your writing is of paramount importance. If you perform the wrong statistical test, or make a mistake in your reasoning, good writing gives your readers a means of isolating and correcting flawed reasoning or a bad calculation. Give me well-written, meaningful, and complete sentences which outline your reasoning and conclusions.

2. **Correctness** (10 points). Part of our job when someone wants us do statistics for them is to draw conclusions which bear some resemblance to reality. That is to say that the right answer is also important. Although, you should be able to do some calculations by hand, the vast majority of the calculations for this course will be made by statistical software. So getting “the right answer” has more to do with the correctness of your reasoning and the methods you choose rather than crunching numbers.

The homework assignments for each chapter are due on the first meeting of the following week. So, for example, Chapters 1 & 2 are due on Tuesday, September 5th. Similarly, Chapters 3 & 4 are due on Tuesday, September 12th. Please turn in each chapter separately.

Semester Exams: There will be three semester exams over the course of the term covering material up to each exam. Every exam will consist of 4 online quiz questions (5 points each) and 4 homework style problems (20 points each) drawn randomly from our test question bank. Every exam you take in this class will generated from

`holt.blue/Math_2/exam.html`

and there you may generate as many practice exams as you like.

If for reasons beyond your control (you must submit proof¹) you will be absent on the day of an exam, you must let me know BEFORE THE EXAM so we can discuss options. If you can't provide proof or you didn't let me know before the exam, you forfeit the opportunity to take the exam for full credit. Unjustified make-up exams are worth 80% of full credit (a reduction of 2 full letter grades). All make-up exams must be taken BEFORE the next exam.

Final Exam: The final exam is cumulative. That is, it will cover all the material discussed over the entire course.

The final exam will follow the same format as the semester exam (4 quiz questions and 4 homework style questions randomly drawn from the entire test bank). The final exam will given ONLY on the day that is scheduled by the college: **Tuesday, December 12, 11:00am-1:00pm.**

Important Note: Although we will use technology on homework and in class, any technology (besides TI graphing calculators) including mobile phones or otherwise, is not allowed on exams. (**Note:** The TI-84 is HIGHLY recommended.)

¹Doctor's note, death certificate, etc. Notes from parents are not accepted.

Group Project: You will be responsible for participating in a group project. For this project you will, as a group,

1. collect data
2. do analysis on your data
3. draw conclusions from your data
4. present your work to the class

I will randomly assign everyone in the class to a group of no more than four people. As this is an exceedingly important part of this course, your group project is accordingly weighted at 15% of your course grade.

Part I: The Proposal. Your group must first determine what you want to study. When you decide, you will consult with me. If I approve your project, your group will begin working on your project proposal. In your proposal you will outline:

1. a precise and concise statement of the question your group wants to answer or the problem you wish to solve
2. the type of data you intend to collect
3. how you intend to collect the data (this should include a budget of each group member's time)
4. the methods you will use to analyze your data

The rough draft your your proposal is due on Thursday, October 5th. I will likely ask you to make several changes and give you suggestions for how to proceed. When I hand your rough draft back to your group, you will then begin collecting data. You must also then write the final draft of your proposal which is due on Tuesday, October 17th.

Part II: The Report. In your report you will include the following sections:

1. an introduction which clearly explains the question your group wanted to answer to a reader who knows nothing about the problem.
2. how you collected your data (this should include assumptions you had to make and/or problems which occurred when collecting data)
3. your analysis
4. your conclusions

Your report must also have a title page with a project title and the names of each group member. The report must also be typewritten and all graphs and accompanying figures must be made electronically with a statistical software program. All mathematical notation should also be typewritten.

Part III: The Presentation. Your group will make a presentation to the class of the work you will have done. Each group member must be responsible for some part of the presentation. (That is, presenting a major part of the report such as the general problem, the analysis, etc.). Your presentation must not exceed 20 minutes.

Some Words about Your Project: You should take pride in this project. If you do an excellent job on your report, there will be many rewards apart from a good grade. A good project is something you can reference in a resume or CV which offers tangible evidence that you are capable of thinking in novel ways and are able to communicate quantitative ideas. These are exceedingly important skills that future employers look upon favorably. Therefore, I expect that you will take this project seriously.

You may find examples group projects on our course website:

holt.blue/Math_2/Resources/example_projects.html

Course Grade: Your course grade is determined by the following items and their associated weights:

Online Quizzes		10%
Homework	1 assignment for every chapter covered in class	15%
Group Project	Project Proposal & Project Report	15%
Exam 1		15%
Exam 2		15%
Exam 3		15%
Final Exam (Cumulative):		15%

Your final course grade is determined by the formula

$$10 \left(\frac{\# \text{ Quizzes Passed}}{\text{Total } \# \text{ Quizzes}} \right) + 15 \left(\frac{\text{HW Pts Earned}}{\text{Total HW Pts}} \right) + 15 \left(\frac{\text{Group Project Pts}}{100} \right) + 60 \left(\frac{\text{Exam Pts Earned}}{400} \right)$$

The letter grade equivalents to the above course grade are:

$90 \leq \text{Course Grade} < 100$	A
$80 \leq \text{Course Grade} < 90$	B
$70 \leq \text{Course Grade} < 80$	C
$60 \leq \text{Course Grade} < 70$	D
Course Grade < 60	F

Canvas Course Management System: Your grades for each graded item will be posted on Canvas. Only you will be able to access your grades. This will allow you to not only assess your grade as the semester progresses, it will also allow you to check that I have entered your scores correctly in my grade book.

Extra Help: If you need additional assistance, don't hesitate to drop by and see me during my office hours on TTh 1:30pm-2:30pm in Sequoia 109, and MW 4:30pm-5:30pm in Sequoia 102

The math lab is also an exceedingly valuable resource and you should pay them a visit in Sequoia 121. For even more help, I also encourage you to use the academic achievement center on the 2nd floor of Tamarack. There you can receive a wealth of valuable services including one-on-one tutoring and help with overall academic success.

Students with Disabilities: Persons who wish to request disability-related accommodations should contact the Disabled Student Programs and Services (DSPS) at 588-5130 or visiting them in Manzanita 216. I am happy to work with DSPS and students to help provide any reasonable accommodations. For more details visit

<http://www.gocolumbia.edu/dsps/default.php>

If You're Ever Feeling Down or Anxious: The Health Services Office on campus (in Pinyon) has licensed counselors offering free, private and confidential counseling appointments to registered students. They are available Monday thru Thursday. Go to the Health Services Office (in Pinyon) or call 588-5204 to set up an appointment.

Academic Honesty: Academic dishonesty, including cheating/plagiarism on exams, quizzes and homework is a serious offense and will not be dealt with lightly. College policies regarding this matter will be strictly enforced. If you have further questions, ask your advisor for assistance. Students are responsible for knowing policy regarding academic honesty.

Classroom Conduct: While it is true that this course is highly interactive and your participation is highly encouraged and is a key part of this course, it is explicitly forbidden to converse with other students when it is not appropriate. These situations include, but are not limited to, when I am lecturing and when students are presenting solutions to the class. Audible communication is disruptive and distracting not only myself, but to your fellow students as well. Please respect the time and money your fellow students have invested in this class.

The policies outlined in this syllabus are subject to change with prior notice.

Course Schedule

Day	Chapter	Topic	Due
T 8/29	Syllabus & 1	Syllabus; Picturing Distributions with Graphs	
Th 8/31	2	Describing Distributions with Numbers	
T 9/5	3	The Normal Distributions	
Th 9/7	4	Scatterplots and Correlation	
T 9/12	5	Regression	
Th 9/14	8	Producing Data: Sampling	
T 9/19		Review for Exam I	
Th 9/21		Exam I (Chapters 1-5)	
T 9/26	9	Producing Data: Experiments	
Th 9/28	12	Introducing Probability	
T 10/3	15	Sampling Distributions	
Th 10/5	16	Confidence Intervals: The Basics	Project Proposal Rough Draft
T 10/10	17	Tests of Significance: The Basics	
Th 10/12	18	Inference in Practice	
T 10/17	20	Inference about a Population Mean	Project Proposal Final Draft
Th 10/19		Review for Exam II	
T 10/24		Exam II (Chapters 8,9,12,15,16,17)	
Th 10/26	21	Two-Sample Problems	
T 10/31	22	Inference about a Population Proportion	
Th 11/2	23	Comparing Two Proportions	
T 11/7	25	The Chi-Square Test	
Th 11/9		Review for Exam III	
T 11/14		Exam III (Chapters 18,20,21,22)	
Th 11/16	27	Analysis of Variance: Comparing Several Means	Project Report Rough Draft
T 11/21		Final Project and Presentation Consultations	
Th 11/23		Thanksgiving Holiday	
T 11/28		Project Presentations: Day 1	
Th 11/30		Project Presentations: Day 2	
T 12/5		Exam III, Round 2 (Chapters 20,21,22)	Project Report Final Draft
Th 12/7		Course Review	
T 12/12		Final Exam (Ch.20,21,22,23,25,27) 11:00am-1:00pm	