

MIDTERM 2 (INSTRUCTIONS AND PRACTICE PROBLEMS)

COLTON GRAINGER (MATH 2510-001)

1. TIME AND DATE

Midterm 2 will be offered **8:00am to 8:50am on Wednesday November 20, 2019** in Muenzinger E064. **Please arrive by 7:55am** to give yourself plenty of time (e.g., the full 50 minutes) for the actual exam. Colton will be proctoring this exam.

2. GROUND RULES

For this midterm, **you are allowed a personal calculator** (and you will need it!).

The midterm is closed book, closed note, and closed internet, excepting that **I will allow you to keep one half page of handwritten notes** (e.g., the front and back half of an 8.5 by 11 inch sheet of letter paper) on your desk during the midterm.

You do not need to bring your own scratch paper. I will supply blank scratch paper if you request it.

I expect you to legibly write your answers directly on the exam. When you are asked for a short answer, **I expect you to write in clear, grammatically correct, English sentences**. Please provide answers that include both **mathematical reasoning** and the **explicit name and argument**¹ of any relevant calculator function you used. (If you don't like this requirement, think of it like so: writing down your reasoning is a "safety" measure to guarantee that you'll at least receive partial credit on any problem.)

You will not need to successfully answer every midterm question to obtain an A in this class, but **you should try to write down what you know about each problem even if you cannot solve it**.

3. HOW TO PASS THIS MIDTERM

Do what you can. I suggest that you review and **revise your own notes**.

What material will be examined?

Expect to be tested on *Understandable Statistics*, Chapters 7 (confidence intervals) and 8 (hypothesis testing). Chapter 6 (normal distributions) is essential for both the construction of confidence intervals and hypothesis testing, so you might want to review this material as well.²

To get warmed up for the timed midterm, **try working out a few practice problems** (attached) by hand. Word problems are for math students what scales and arpeggios are for music students. Your goals in *reading* a word problem should be to *quickly* and *accurately* identify

1. what is *known*,
2. what is *unknown*,
3. what you *want to find*, and
4. any *mathematical relationships* between the known and unknown quantities.

Your goals in actually *solving* a word problem should be

1. to *prepare* the relevant mathematical information (see steps 1–4 for reading a word problem),
2. to *check* that your chosen statistical model is appropriate,
3. to *compute* the relevant statistics, and then
4. to *conclude* with an argument supporting your answer to the original problem.

Date: 2019-11-10.

¹In both computer science and mathematics, the *argument of a function* is that function's "input".

²Yes, you should review the basics facts about normal distributions, even though they were already examined during midterm 1, okay? Recall that **your final exam will be cumulative**, so it would behoove you to use studying for midterm 2 as an opportunity to master Chapters 6–8.

4. QUESTIONS FOR COLTON

If you have questions about any of these practice problems, please take a picture of this QR code and **vote for solutions you want to see**. I plan to spend class on Monday, November 18 to work out solutions (by hand and with the TI-84) based on your votes.



FIGURE 1. Voting link for solutions to midterm 2 practice problems: shoot me!

You can also email me a question or arrange office hours with me via

<https://go.oncehub.com/coltongrainger>.

Good luck on this exam, and have fun studying!