

Final Exam Study Guide

Final is on **Thursday, February 13, from 2-4:30 pm (plan to stay until 4:45)**

We will review from 12-2pm, so attendance is optional (but encouraged)

- There will be some **true/false** questions to test your conceptual understanding.
- There will be some **fill-in** the blank questions to test your understanding of terminology and important facts.
- There will be some **multiple-choice** for quick(er) response questions
 - some MC you don't need to show work,
 - but on some of them you DO need to show work to get credit (read instructions carefully!)
- There will be **longer problems with multiple parts that are free-response** (just like the worksheets). You need to show all your work to receive credit.
- The final exam will focus more on Chapters 9 and 10 (study Exam 4 and see the tests that were asked--I'll put problems on final from those that we covered in class but didn't test on in Exam 4)
- **However, the final exam is cumulative (chapter 1 through 12 will be covered)!**

The length will be **about 7 pages**. (Note: our 80 minute in-class exams were ~5 pages)

It is worth 25% of your grade.

The Final exam will replace your lowest test grade! So study hard and kick butt! :-)

You're allowed a one-page cheat sheet—but—**WARNING**—It must be a **GCS** and you must follow the rules I mentioned in class. See also the Exam 4 study guide which details these requirements.

TOPICS TO REVIEW

DESCRIPTIVE STATS (Chs: 1, 2, 3)

- be able to find all measures of center (mean, median, mode, midrange) and variation (standard deviation, variance)
- be able to identify **outliers** using the mean and standard deviation
- Quartiles
- **z scores**
- Be able to create a box plot – box-whisker plot
- **Study Exam 1 study guide and the Exam 1 solutions I posted**

PROBABILITY and DISTRIBUTIONS (Ch 4, 5, 6)

Be able to **calculate Probability** in various situations: one selection, many selections:

- **Set notation**: sample space, event, etc
- Venn Diagrams and probability notation (like $P(A)$)

- OR problems
- AND problems
- NOT problems
- “at least one” problems
- conditional probability
- checking for independence
- checking to see if two events are mutually exclusive
- Study Exam 2 study guide and the Exam 2 solutions I posted

Be able to calculate and solve problems involving DISTRIBUTIONS:

- uniform distribution
- binomial distribution: requirements and notation and applications
 - Be able to write the “requirements”: there’s four conditions (put this on your cheat sheet!)
- normal distribution: when to use, how to compute, draw curve and shade regions
- Sampling distributions: important! when to use and (when making many selections and not one)
 - Study test 2, 3 questions -- this is important so I’ll put more Qs on this
- Central Limit Theorem: important! Study the theory of this from worksheets
 - Study test 2, 3 questions -- this is important so I’ll put more Qs on this
- Student’s t-distribution: know when to use (remember: Mr. T is mean!)
- Study Exam 2 and 3 study guide and the Exam 2 and 3 solutions I posted

INFERENCEAL STATS (Ch 7, 8, 9, 10)

There are CONFIDENCE INTERVALS from chapters 7, 8 questions regarding:

- Proportion -- one or two proportions
- Means (sigma unknown) -- one or two means
 - One mean
 - Two means (independent samples)
 - Two means (dependent samples/Matched-Pairs)
- Study Exam 3 study guide and the Exam 3 solutions I posted

There will be HYPOTHESIS TESTS from chapters 8, 9, 10. These may include:

- Proportion -- one or two proportions
- Means (sigma unknown) -- one or two means
 - One mean
 - Two means (independent samples)
 - Two means (dependent samples/Matched-Pairs)
 - Correlation
- Study Exam 4!!!!

CORRELATION and REGRESSION (Ch 10)

- Know terminology: explanatory variable (independent variable) vs response variable (dependent variable)
- you need to be able to determine if there is **linear correlation** (or nonlinear) and visually inspect the strength: strong, moderate, weak, no correlation
- know what the **meaning of r** is, the range of acceptable values r can take
- find the equation of the **line of best fit/regression line** (round the coefficients to three sig figs) using your calculator
- know the interpretation of **y-intercept** (b_0 or a) and **slope** (b_1 or b)
 - Be able to write sentences about the meaning of these
- know whether you should use the regression line to **predict** y given x using **OR** the average
 - When correlation is a good model (moderate or strong correlation), use the regression line to predict y -values
 - When the correlation is not a good model, simply use the average $\bar{y}$ of the data values of y .