

Stat 401, Section F: Preparation guide for Exam 1

- You should bring only a calculator and pen/pencil to the exam
- You will be given a clean formula sheet and a t-table
- The exam will cover Chapters 1-4, Homeworks 1-5, and lecture materials through 9/24. This includes:
 - Experimental and observation studies; random samples and population inference; experimental and observational units
 - Exploratory data summaries and plots
 - Sampling and population distributions; estimating a population mean, a population standard deviation, and a sampling distribution standard deviation (SE)
 - Hypotheses, t-tests, p-values, and interpreting results for 1 sample, matched pair samples, and 2 independent samples
 - Confidence intervals for 1 sample, matched pair samples, and 2 independent samples
 - Assumptions for t-tests, and effects of violating t-test assumptions
 - Log-transformations and interpretation of results
 - Hypotheses, tests, p-values and interpreting results for distribution-free (nonparametric) alternatives to t-tests
 - Rationales for choosing different tests
- You will need to know how to calculate quantities using the formulas and how to use a t-table
- You will need to know how to use **R** and SAS output to obtain answers to specific questions
- You will need to engage higher level thinking, e.g., in which you discern which test to use and why, and translate your statistical estimates and test outcomes into conclusions about the scientific problem
- It is possible that some of the concepts will be tested via T/F or multiple choice