

# Stat 305 C - Final Topic Outline

The final exam is comprehensive, so all topics from Exam 1 and Exam 2 are also relevant. The following topics will be emphasized.

1. Random intervals
2. One-sample inference (confidence intervals and hypothesis testing) on the mean (Ch. 6.1, 6.2)
  - under each of the following conditions:
    - i) When  $n \geq 25$  and  $\sigma^2$  is known.
    - ii) When  $n \geq 25$  and  $\sigma^2$  is unknown.
    - iii) When  $n < 25$  and  $\sigma^2$  is unknown.
  - All the above using:
    - i) Confidence intervals
    - ii) Critical values & p-values
    - iii) Prediction intervals
3. Inference for paired data under all the conditions in pt 2. (Ch. 6.3)
4. Inference for 2-sample data under all the conditions in pt 2 for each sample (Ch. 6.3)
5. Inference for simple linear regression (Ch. 9.1)
  - Confidence intervals and hypothesis testing on  $\beta_0$  and  $\beta_1$
  - How to estimate  $\sigma$
  - Inference for the mean response  $\mu_{y|x}$
6. Inference for simple multiple regression (Ch. 9.2)
  - Confidence intervals and hypothesis testing on  $\beta_0, \dots, \beta_{p-1}$
  - How to estimate  $\sigma$
  - Inference for the mean response  $\mu_{y|\mathbf{x}}$