

## SPRING 2014 : STAT - 1 , Section 10.

### HANDOUT - CHAPTER 8 CONFIDENCE INTERVALS FOR ONE POPULATION MEAN

- Read Chapter Objectives. *Point Estimate* (Definition 8.1) and *Confidence Interval* (CI , Definition 8.2) and their interpretation (Example 8.3) set the basis for the first introduction to inference techniques.
- Procedure 8.1 (p.330) describes the method to find a CI for  $\mu$  (a population mean) when  $\sigma$  is known; carefully note the assumptions under which this procedure should be applied. Interpretation of the CI is essential. Go over Key facts 8.1 and 8.2 (p.331), Example 8.4, and Key fact 8.3.

TRY 8.13, 8.15, 8.17, 8.19, 8.21, 8.31, 8.35, 8.37.

- In 8.3, The *Margin of Error E for the Estimate of  $\mu$*  (Definition 8.3), its connection to precision and  $n$  (Key fact 8.4) are discussed after which Formula 8.1 (p.339) is derived for Sample size needed to estimate  $\mu$ . Example 8.7 (p.340) shows how to use the formula.

TRY 8.51, 8.53, 8.55, 8.57, 8.61, 8.63, 8.65.

- A CI for  $\mu$  (a population mean) when  $\sigma$  is unknown uses the *Student's  $t$ -distribution*. Key Fact 8.5 defines the Studentized version of the sample mean and the basic properties of the  $t$ -curve are given in Key fact 8.6. Example 8.8 shows the use of Table IV. Procedure 8.2 (p.346) lays out the  $t$ -interval procedure for estimating  $\mu$  when  $\sigma$  is unknown. Assumptions are always important! Examples 8.9 (resp. 8.10) shows how to (resp. how not to) apply the  $t$ -interval procedure.

TRY 8.73, 8.75, 8.77, 8.81, 8.83, 8.85, 8.93, 8.95, 8.97, 8.101.

- Follow the Chapter in review (p. 353–354). TRY Review Problems (p.354–356): 2, 7, 9, 13, 19.
- Study the exciting biography of Gosset.