

# Lecture Tests

## Exercise 16-1

Information:  $n_i = 34$ ,  $\bar{x}_i = 6.35$ ,  $sd_i = 5.03$   
 $n_s = 66$ ,  $\bar{x}_s = 7.49$ ,  $sd_s = 5.77$

Question: Is there a difference...

Solution: Two-Sample-t-Test independent samples

1)  $H_0: \mu_i = \mu_s$

$H_A: \mu_i \neq \mu_s$

$\alpha = 0.05$  (5%)

2) t-distribution,  $DF = n_1 + n_2 - 2 = 98$

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s_{\bar{x}_1, \bar{x}_2}}$$

3)  $t_{crit} = \pm 1.984$

$$4) s_{\bar{x}_i, \bar{x}_s} = \sqrt{\left[ \frac{(34-1) \cdot 5.03^2 + (66-1) \cdot 5.77^2}{34+66-2} \right] \left[ \frac{34+66}{34 \cdot 66} \right]}$$

$$= \sqrt{\left[ \frac{2598.968}{98} \right] \left[ \frac{100}{2244} \right]} = 1.1628$$

$$t = \frac{6.35 - 7.49}{1.1628} = -0.976$$

5) Do not reject  $H_0$ ...