Lab Session #12

TWO SAMPLE HYPOTHESES (EQUAL AND UNEQUAL VARIANCES)

Problem:

A researcher is interested in testing if female students at a West coast university average more credit hours per semester than males. The researcher randomly samples 65 females and 65 males with the following results:

$\text{x-bar}_{\text{males}} = 13.75$, $s_{\text{males}} = 2.1$

$\text{x-bar}_{\text{females}} = 14.89$, $s_{\text{females}} = 2.3$

Use this information to answer the following questions (assume population variances are equal).

Question 1

State the null and alternative hypotheses for this problem.

Question 2

Calculate the value of the test statistic? What are the correct degrees of freedom?

Question 3

What is the p-value?

Question 4

What is your conclusion at a significance level of 0.05?

Question 5

An East coast university has two buildings where distance education proctored exams take place. These testing centers shouldn't influence the grades on exams. A researcher is interested in testing if students at the new testing center (testing center 2) average different grades on exams than the students who go to the older testing center (testing center 1). The researcher randomly samples 81 students from testing center 1 and 95 students from testing center 2 with the following results:

$\text{x-bar}_1 = 74.62$, $s_1 = 10.4$

$\text{x-bar}_2 = 81.23$, $s_2 = 11.8$

Assume that the variances between these two populations are different. Perform the hypothesis test at a significance level of 0.05.