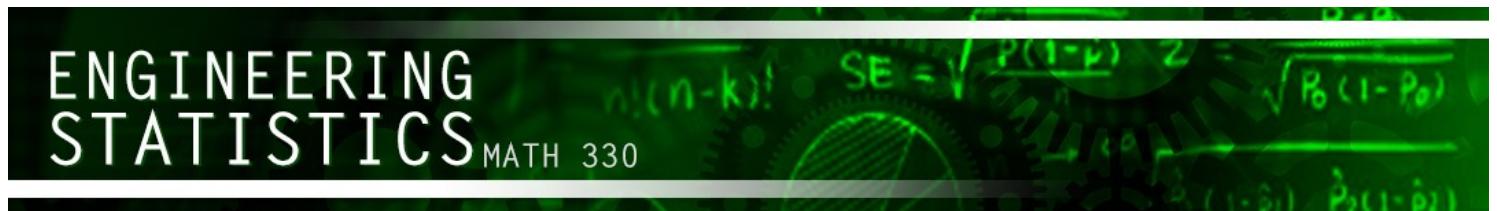


L11 HW

- Due Feb 21 at 11:59pm
- Points 14
- Questions 14
- Time Limit None
- Allowed Attempts 3

Instructions



You get two attempts on all homework quizzes.

In all quizzes and homeworks in this course, round your answers to **THREE DECIMAL** places unless otherwise indicated.

[Take the Quiz Again](#)

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	16 minutes	14 out of 14

! Answers will be shown after your last attempt

Score for this attempt: 14 out of 14

Submitted Feb 20 at 1:09pm

This attempt took 16 minutes.



A new process for producing a type of novolac resin is supposed to have a mean cycle time of 3.5 hours per batch. Ten batches are selected at random and their cycle times, in hours, were recorded in the file:

[CycleTimes.xlsx](#) (<https://byui.instructure.com/courses/398828/files/159316540/download?wrap=1>)

(https://byui.instructure.com/courses/398828/files/159316540/download?download_frd=1). The engineers

tried to determine if the mean cycle time is greater than 3.5 hours. **Use this information to answer all parts.**



Question 1

1 / 1 pts

Part 1: What is their null and alternative hypothesis?

- $H_0 : \mu = 3.5$ vs. $H_a : \mu \neq 3.5$
- $H_0 : \mu = 3.5$ vs. $H_a : \mu < 3.5$
- $H_0 : \mu < 3.5$ vs. $H_a : \mu > 3.5$
- $H_0 : \mu = 3.5$ vs. $H_a : \mu > 3.5$



Question 2

1 / 1 pts

Part 2: What is the value of the test statistic?

1.203



Question 3

1 / 1 pts

Part 3: What is the degrees of freedom?

9



Question 4

1 / 1 pts

Part 4: What is the distribution of the test statistic?

- Normal
- Binomial
- Exponential
- T



Question 5

1 / 1 pts

Part 5: What is the p-value of the above test?

0.13



Question 6

1 / 1 pts

Part 6: What is your conclusion at the 0.05 significance level?

- The novolac resin definitely does not have a mean cycle time greater than 3.5 hours per batch.

- The novolac resin definitely has a mean cycle time equal 3.5 hours per batch.
- There is sufficient evidence to conclude that the novolac resin has a mean cycle time that is greater than 3.5 hours.



There is insufficient evidence to conclude that the novolac resin has a mean cycle time that is greater than 3.5 hours.

- There is sufficient evidence to conclude that the novolac resin has a mean cycle time that is equal to 3.5 hours.
- There is insufficient evidence to conclude that the novolac resin has a mean cycle time that is equal to 3.5 hours.



As part of the quality-control program for a catalyst manufacturing line, the raw materials (alumina and a binder) are tested for purity. The process requires that the purity of the alumina be equal to 95%. To determine if that is the case, a random sample from a recent shipment of alumina yielded the following results (in percent) found in the file: [Alumina.xlsx](#)

(<https://byui.instructure.com/courses/398828/files/159316486/download?wrap=1>) ↓

(https://byui.instructure.com/courses/398828/files/159316486/download?download_frd=1). Use this information for all the parts.



Question 7

1 / 1 pts

Part 1: What is the value of the test statistic?

-2.806



Question 8

1 / 1 pts

Part 2: What is the p-value for the test?

0.023



Question 9

1 / 1 pts

Part 3: What is your conclusion at the 0.05 significance level?

- There is sufficient evidence to conclude that the purity of the alumina is not 95%.
- There is insufficient evidence to conclude that the purity of the alumina is not 95%.
- There is sufficient evidence to conclude that the purity of the alumina is equal to 95%.
- There is insufficient evidence to conclude that the purity of the alumina is equal to 95%.



Question 10

1 / 1 pts

Part 4: Without looking at the QQ plot, are the requirements satisfied here?

- Yes, it is a simple random sample and that is all we need.

- Yes, we rejected the null hypothesis, so that satisfies the requirements.
- No, the data is not a random sample.
- No, the histogram looks like it is right skewed, so the data is not normal.
- No, the histogram looks like it is left skewed, so the data is not normal.



Question 11

1 / 1 pts

Part 5: Find a 99% Confidence interval for the mean purity of alumina.

Enter the lower bound:

89.876



Question 12

1 / 1 pts

Input the upper bound:

95.457



Question 13

1 / 1 pts

Part 6: What is the margin of error in the confidence interval you found above?

2.791



Question 14

1 / 1 pts

Part 7: Suppose you decide to improve your results and go out to collect more data. You collect 10 more observations on the purity of alumina. When you compute a 99% confidence interval again, what would happen to each of the following?

Margin of error

would decrease



Width of the confidence interval

would decrease



Quiz Score: 14 out of 14

