

## Week 4 Post-Lab

### BIOE 320 Systems Physiology Laboratory

A student, curious about the differences in alpha wave RMS amplitude between eyes closed and eyes open, conducted an experiment using EEG equipment. First, they recorded the alpha wave RMS amplitude in 8 of their classmates, asking them to keep their eyes closed. Then, they recorded the alpha wave RMS amplitude in another 8 of their classmates, asking them to keep their eyes open. The resulting data can be found [here](#). Conduct the necessary statistical test to determine if there is a difference between the eyes open and eyes closed states.

1. State the appropriate statistical test to be performed.
2. State an appropriate  $\alpha$  value, i.e. the acceptable Type I error rate, you would like to use.
3. Calculate the test statistic based on the data and the statistical test you have chosen. Show all work.
4. Based on your calculated test statistic and selected  $\alpha$  value, make a statistical conclusion.
5. List two possible ways the student could improve upon their experimental design to increase the statistical power of their findings.