

Homework 8
MTH 3240, Spring 2020

Due Thursday, Apr. 28

Reading: *Environmental Statistics*:

- Chapter 11 (but Subsections 11.2.18 and 11.2.19 and Section 11.6 are **optional**)

Problems: Please do the following problems from the Problems sections of *Environmental Statistics*:

Chapter in <i>Environmental Statistics</i>	Problems
Ch. 11	11.1, 11.2, 11.3, 11.4, 11.5* (skip parts <i>a</i> and <i>g</i>), 11.6* (skip parts <i>a</i> and <i>i</i>), 11.8* (skip parts <i>a</i> and <i>i</i>)

* For **Problems 11.5, 11.6, and 11.8**, you can use the `aov()` function in R.

First, you'll need to create *data frames* containing the data in R.

One way to do this is to use `read.table()` to read the data from the text file **Ch11Pr5Data.txt** (or **Ch11Pr6Data.txt** or **Ch11Pr8Data.txt**) into R. After saving the text file on your computer from the course website, you can type something like this:

```
> my.data <- read.table(file.choose(), header = TRUE)
```

and then select the file interactively.

Another way is to use the `data.frame()` function, for example by typing something like this:

```
> period <- c("Before", "Before", "Before", "Before", "Before",  
             "Before", "After", "After", "After", "After",  
             "After", "After")  
> marsh <- c("MillCreek", "MillCreek", "MillCreek", "Control",  
            "Control", "Control", "MillCreek", "MillCreek",  
            "MillCreek", "Control", "Control", "Control")  
> height <- c(254, 300, 284, 64, 80, 282, 210, 151, 154, 179,  
             300, 306)  
> my.data <- data.frame(Period = period, Marsh = marsh,
```

```
Height = height)
```

Once you've created the *data frame*, you can carry out the **two-factor ANOVA** by typing:

```
> my.anova <- aov(Height ~ Period + Marsh + Period:Marsh,  
                 data = my.data)  
> summary(my.anova)
```

(You should **include** the **interaction effect** in all of your models, as above.)