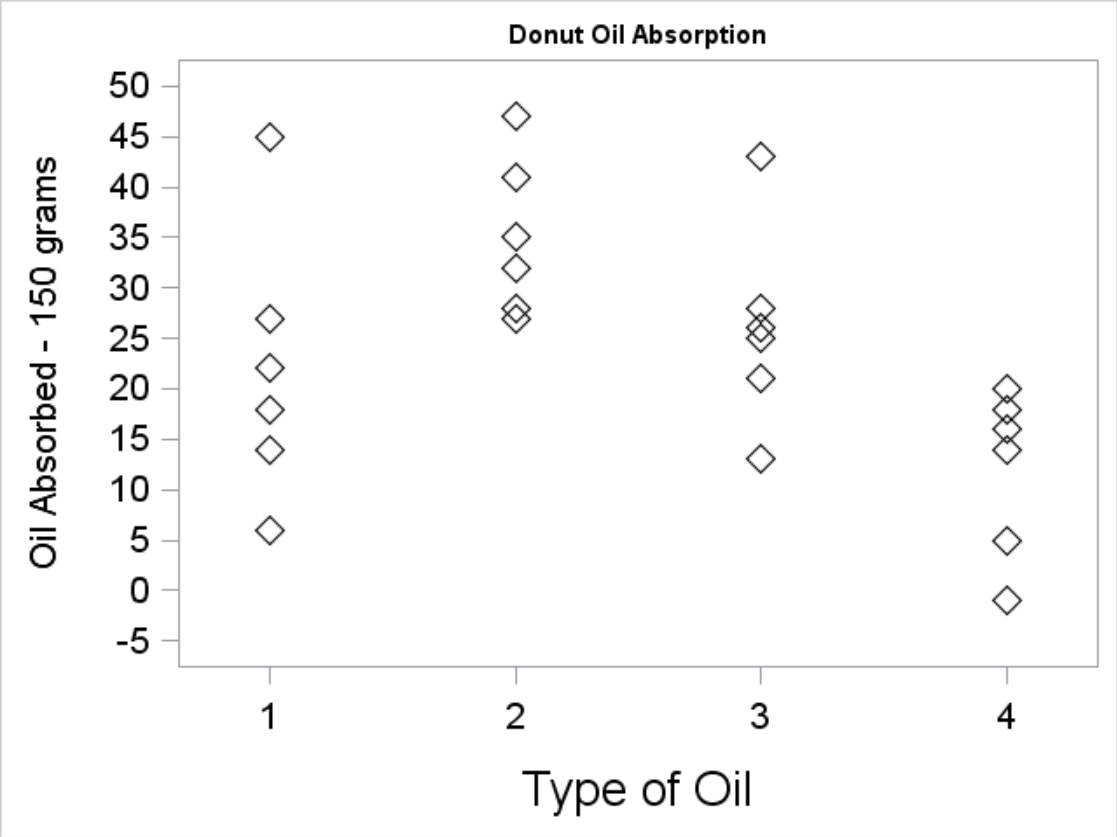
Stat 500 **Lab 6 Solutions**

1. Here is the side-by-side scatter to describe the differences between the treatment groups.



The distribution of the values are very similar in the spread, while the mean response seem to be largest for group 2 and smallest for group 4.

2. From the SAS output, find the full ANOVA table. Give the F-test for the equality of the three means, including the null and alternative hypotheses, test statistic, p-value, decision and conclusion.

Here is the ANOVA Table.

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	1636.5	545.5	5.41	0.0069
Error	20	2018	100.9		
Corrected Total	23	3654.5			

The null and alternative hypotheses are:

$$H_o: \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_a: \text{at least one } \mu_i \text{ is different}, i = 1, 2, 3, 4$$

The test statistic is F = 5.41 with p-value =0.0069. Since the p-value is so small, we will reject the null hypothesis and conclude there is sufficient evidence that the absorbed oil is different for at least one type of oil than the others