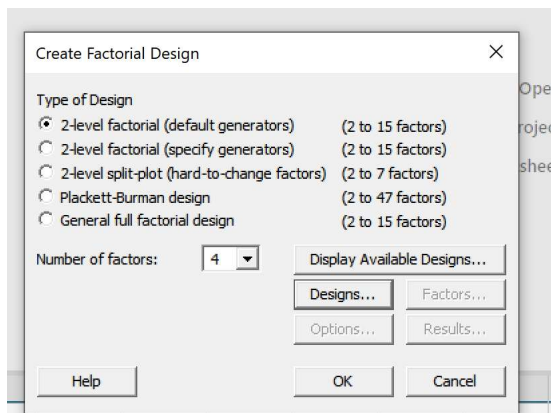
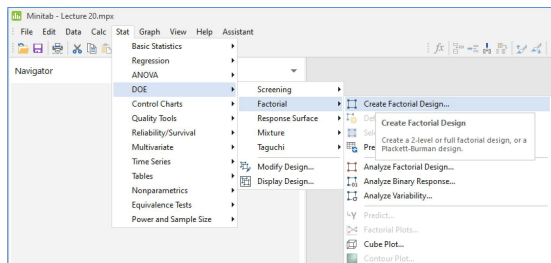
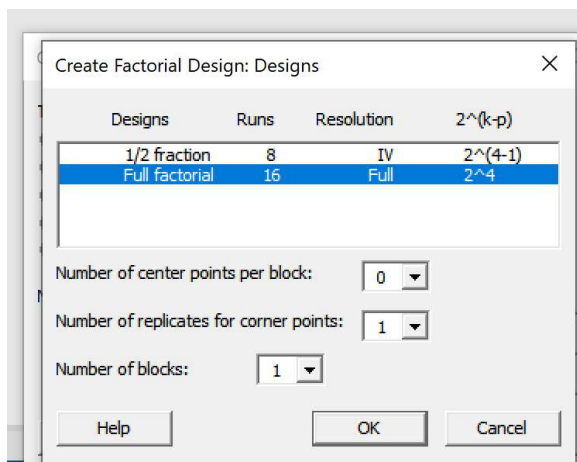


Can follow along with the single replicate example in class

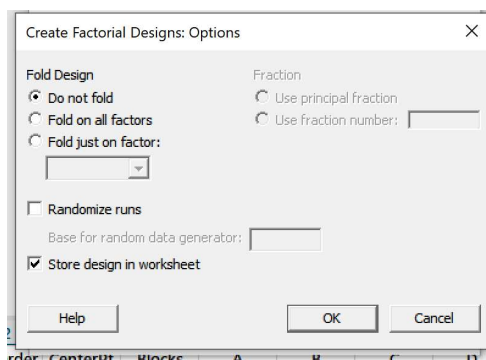
In Minitab, let's first do the problem without the center points :



(2-level factorial – 4 factors – select designs)



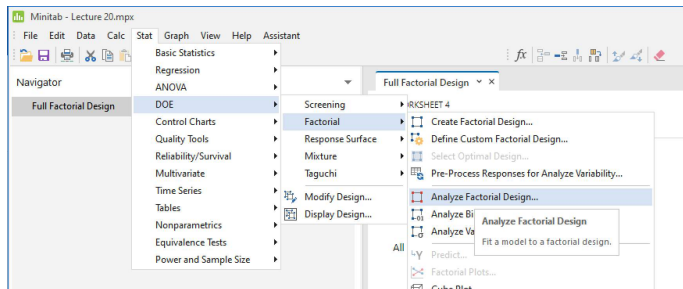
(Select full, 0 center points, 1 replicate, 1 block)



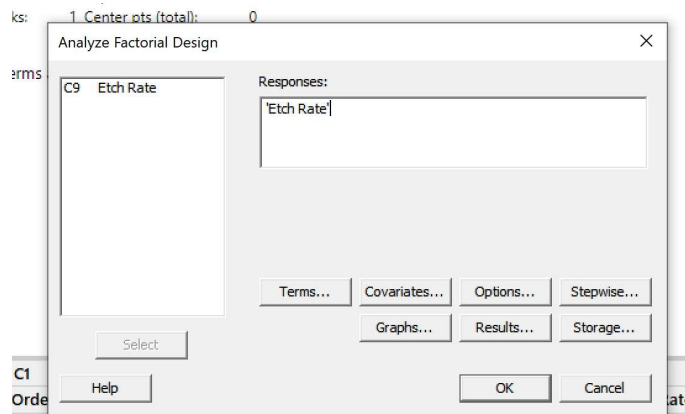
(select options – then unclick randomize runs)

C8	C9	C
D	Etch Rate	
-1	550	
-1	669	
-1	604	
-1	650	
-1	633	
-1	642	
-1	601	
-1	635	
1	1037	
1	749	

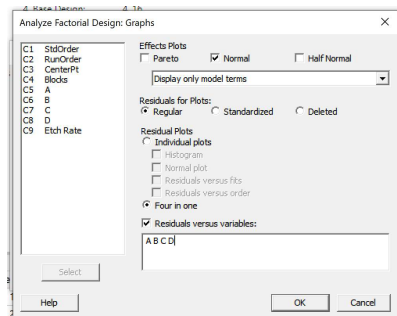
(add your response data)



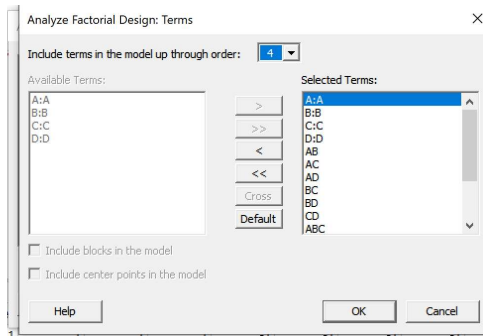
Analyze factorial



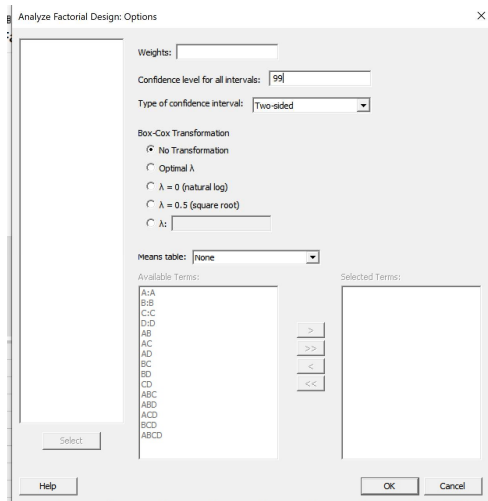
enter the response by double clicking



(for 1 replicate, click graphs and select normal instead of pareto for effects plots, if you wish, plot the residuals vs the factor levels as well as the 4 in 1 residual plot)



(in the terms tab make sure all terms are there for now)

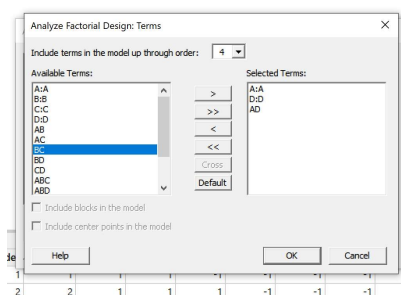


(in the options tab, you can select the confidence level)

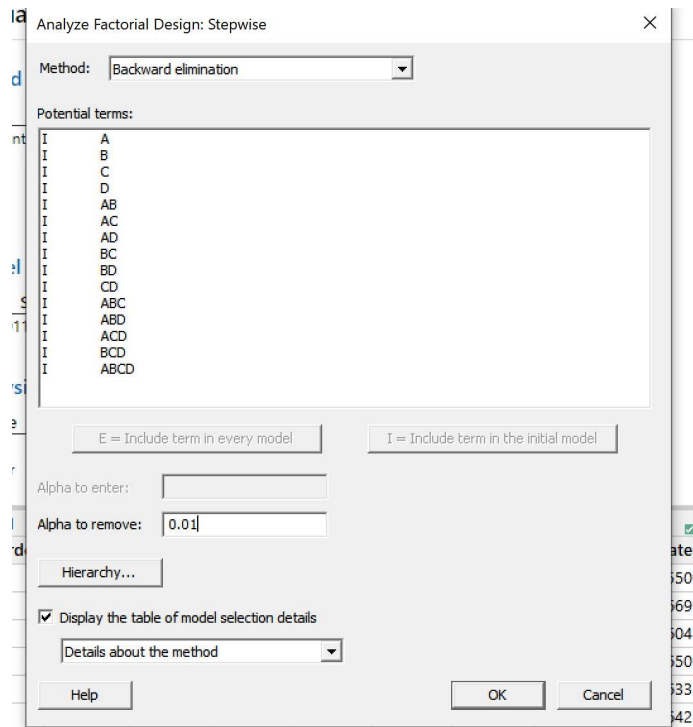
Note that when you do it this way, you can't complete the F-test, but you can get sum of squares

Also note that you can see the significant effects on the normal probability plot

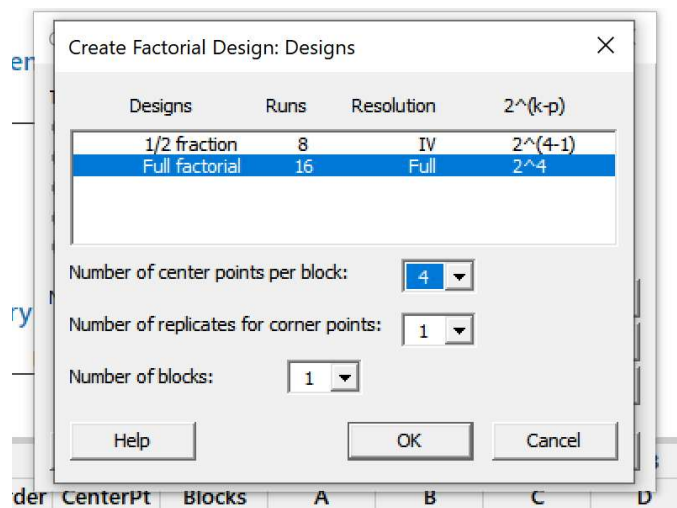
Now if we re-run that analysis with just the terms that we think are significant, you can complete ANOVA because it will use the other terms as an estimate of error



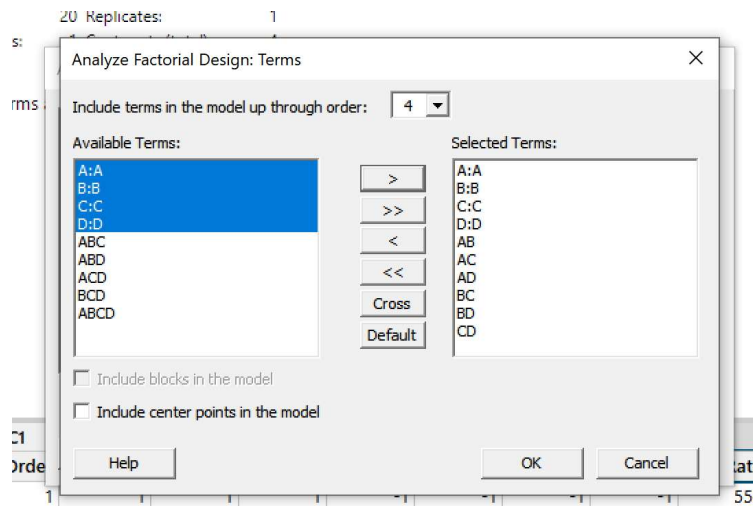
You will get the same answer if you use the Stepwise function in the analysis. Select backward elimination and select alpha and then run.



Now, if we add center points to the design select the number from a dropdown menu:



Then add your response data as before. But now, when you analyze, you will go into the Terms menu,



And only select the main effects and second order interactions. And UNCHECK the include center points in the design.

Notice also that the other terms SS are divided by residual error to get the F statistics. And if you reduce your model terms to only those that are significant (either by hand or the stepwise function) – those too will be added to the residual error.