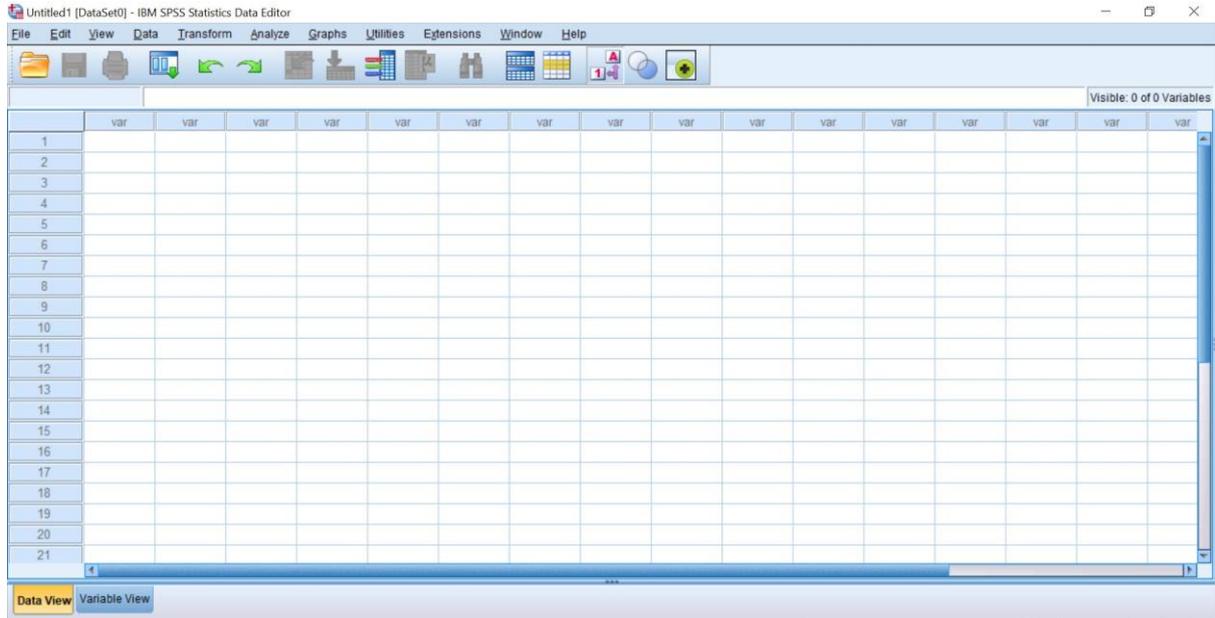
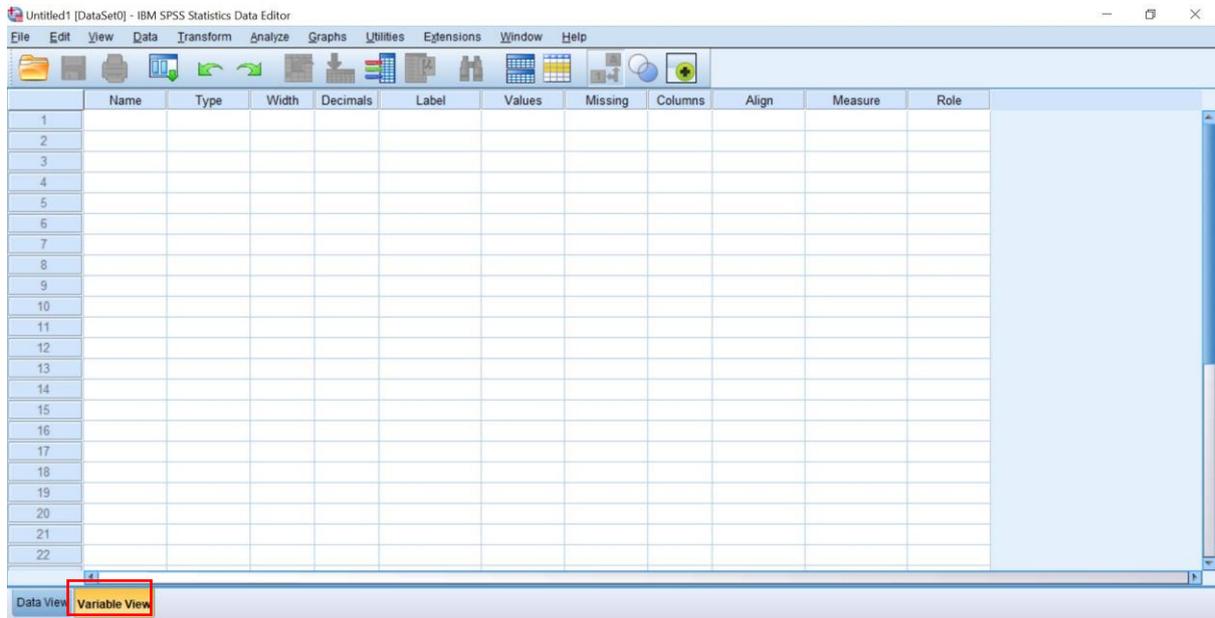


Steps for data analysis using SPSS for BSc students

Step one: Open the SPSS program



Step 2: go to variable view



Step 5: go to ANALYZE.... GENERAL LINEAR MODER.....UNIVARIATE

The screenshot shows the IBM SPSS Statistics Data Editor with a dataset named '13: Chlorophylla'. The data is displayed in a table with columns for Treatment, Replications, Plant height, Fruit weight, and Chlorophylla. The Univariate dialog box is open, showing the following settings:

- Dependent Variable: Chlorophylla
- Fixed Factor(s): Treatments
- Random Factor(s):
- Covariate(s):
- WLS Weight:

The dialog box also includes buttons for Model..., Contrasts..., Plots..., Post Hoc..., EM Means..., Save..., Options..., and Bootstrap.

	Treatment	Replications	Plant height	Fruit weight	Chlorophylla
1	T1	R1	34.00	12.00	53
2	T1	R2	31.00	15.00	47
3	T1	R3	28.00	14.00	44
4	T2	R1	19.00	9.00	32
5	T2	R2	18.00	8.00	38
6	T2	R3	23.00	10.00	33
7	T3	R1	45.00	22.00	46
8	T3	R2	52.00	23.00	39
9	T3	R3	40.00	27.00	55
10	T4	R1	31.00	18.00	26
11	T4	R2	35.00	23.00	28
12	T4	R3	32.00	26.00	31

Step 6: place your treatments and treatments in the dependent and fixed factor boxes

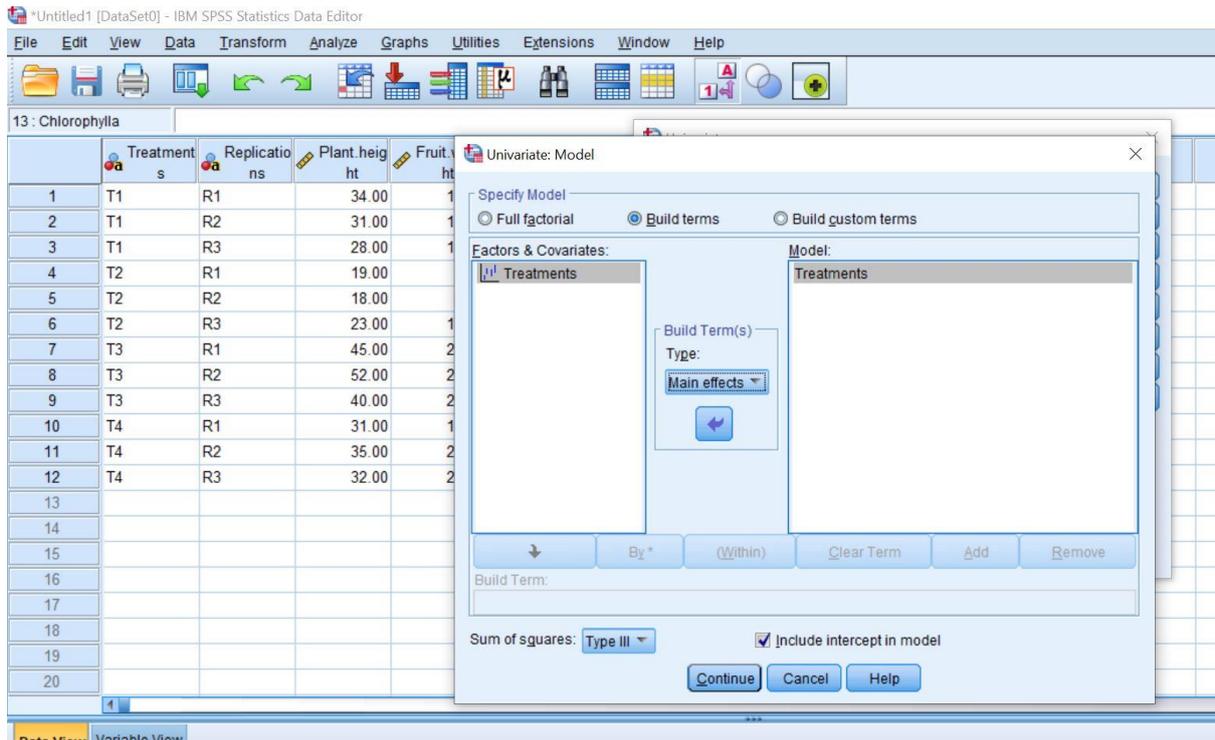
The screenshot shows the IBM SPSS Statistics Data Editor with the same dataset '13: Chlorophylla'. The Univariate dialog box is open, showing the following settings:

- Dependent Variable: Plant height
- Fixed Factor(s): Replications
- Random Factor(s):
- Covariate(s):
- WLS Weight:

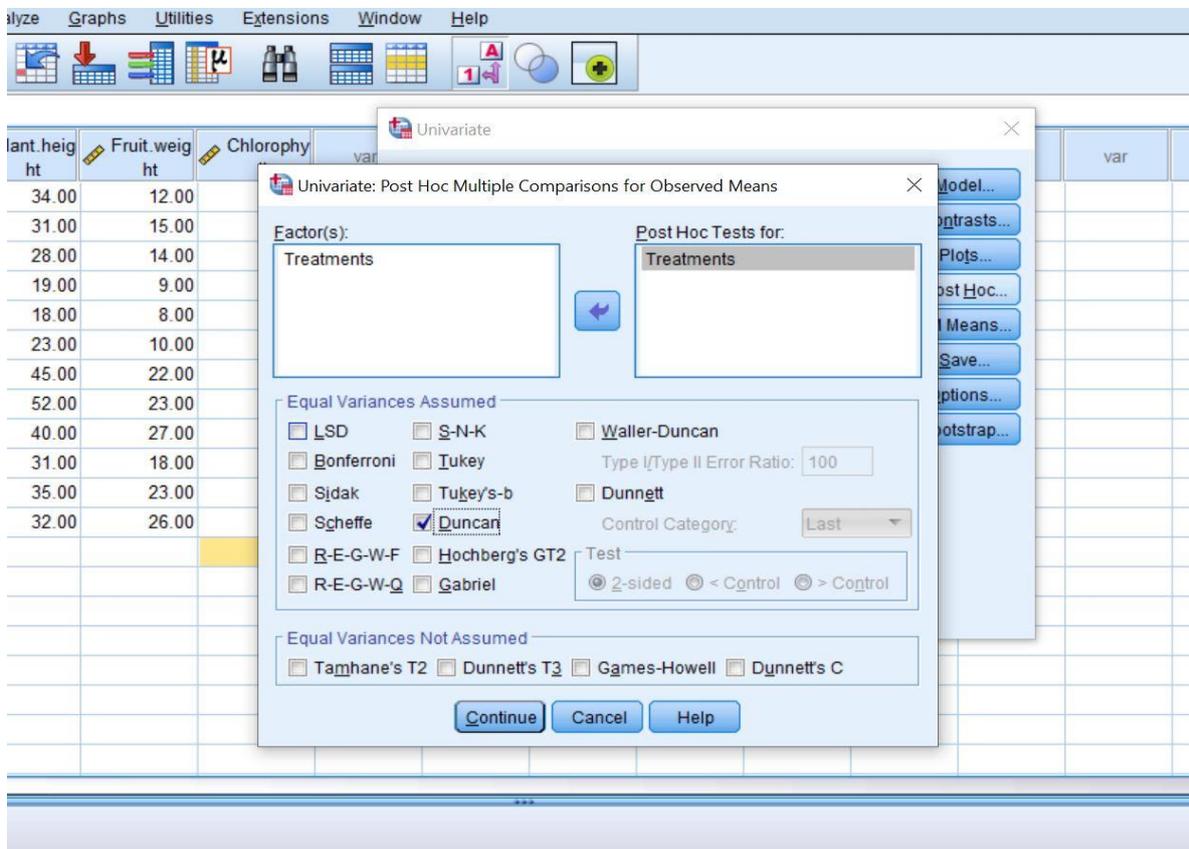
The dialog box also includes buttons for Model..., Contrasts..., Plots..., Post Hoc..., EM Means..., Save..., Options..., and Bootstrap.

	Treatment	Replications	Plant height	Fruit weight	Chlorophylla
1	T1	R1	34.00	12.00	53
2	T1	R2	31.00	15.00	47
3	T1	R3	28.00	14.00	44
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5	T2	R2	18.00	8.00	38
6	T2	R3	23.00	10.00	33
7	T3	R1	45.00	22.00	46
8	T3	R2	52.00	23.00	39
9	T3	R3	40.00	27.00	55
10	T4	R1	31.00	18.00	26
11	T4	R2	35.00	23.00	28
12	T4	R3	32.00	26.00	31

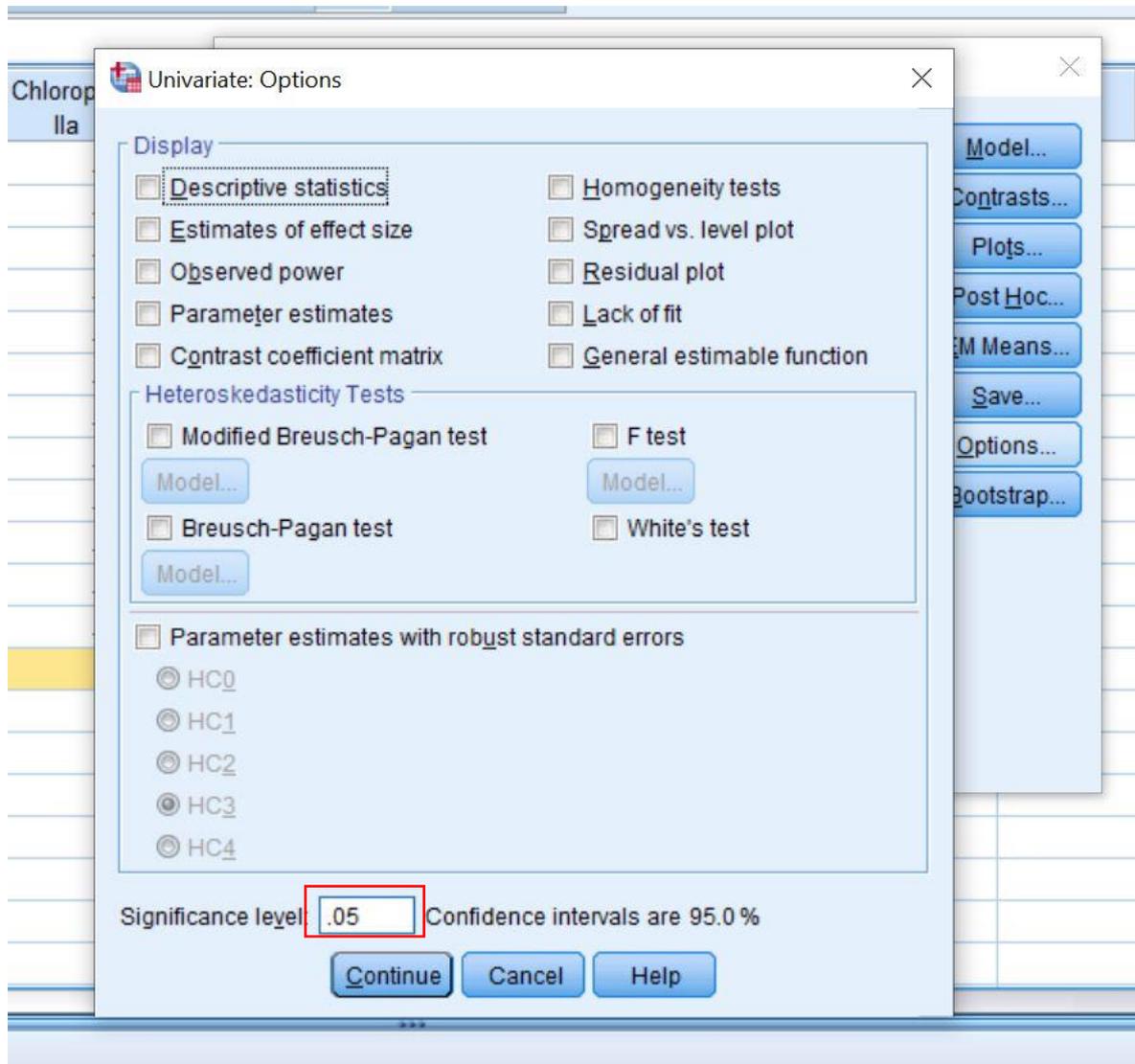
Step 7: in the MODEL tap place the treatments in the right section and choose main effect



Step 8: go to Post Hoc test choose DUNCAN test



Step 9: in the OPTION window, choose $p \geq 0.05$ if your work was in the field, choose $p \geq 0.01$ if your work was in the lab, press CONTINUE then OK.



Step 10: You will need POST HOC TESTS (TABLE)

Corrected Total 1108.667 11
 a. R Squared = .898 (Adjusted R Squared = .859)

Post Hoc Tests

Treatments

Homogeneous Subsets

Plant.height				
Duncan ^{a,b}				
Treatments	N	Subset		
		1	2	3
T2	3	20.0000		
T1	3		31.0000	
T4	3		32.6667	
T3	3			45.6667
Sig.		1.000	.602	1.000

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = 14.167.
 a. Uses Harmonic Mean Sample Size = 3.000.
 b. Alpha = .05.

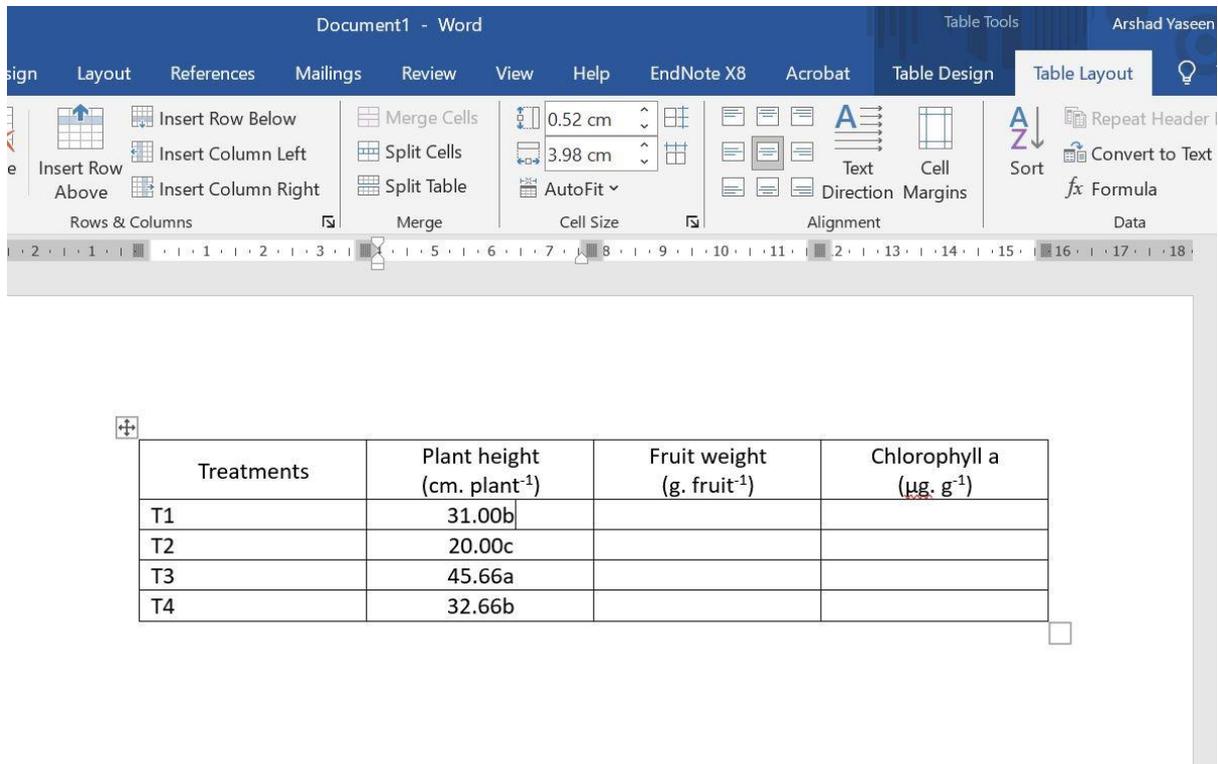
Step 11: each collum in the post hoc table receive a different symbol or letter

Homogeneous Subsets

Plant.height				
Duncan ^{a,b}				
Treatments	N	Subset		
		1	2	3
T2	3	20.0000		
T1	3		31.0000	
T4	3		32.6667	
T3	3			45.6667
Sig.		1.000	.602	1.000

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = 14.167.
 a. Uses Harmonic Mean Sample Size = 3.000.
 b. Alpha = .05.

Step 12: open word document and create a table for your research then arrange the results in the table



The screenshot shows the Microsoft Word interface with the Table Tools ribbon active. The Table Layout tab is selected, displaying various options for table manipulation. Below the ribbon, a table is visible with the following data:

Treatments	Plant height (cm. plant ⁻¹)	Fruit weight (g. fruit ⁻¹)	Chlorophyll a (µg. g ⁻¹)
T1	31.00b		
T2	20.00c		
T3	45.66a		
T4	32.66b		