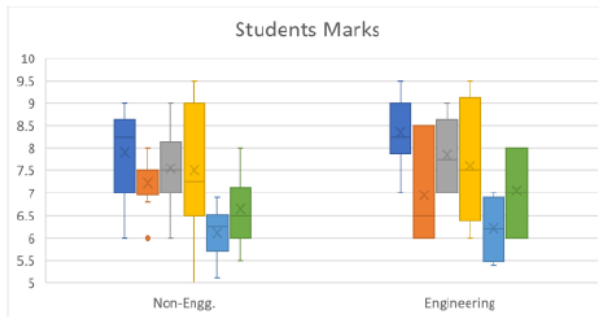


Student	F1	F2	F3	F4	F5	F6
Non-Engg.	8.5	7	7	7	6.5	8
Non-Engg.	8.5	8	7	9	6.6	6.5
Non-Engg.	9	7	9	9.5	6.9	7
Non-Engg.	8.5	7.5	8	7.5	5.8	7.5
Non-Engg.	7	7.5	7.5	6.5	5.8	6.5
Non-Engg.	6	7.5	7.5	5	5.1	5.5
Non-Engg.	9	7.5	8	8	6.5	7
Non-Engg.	7.5	7.5	7	6.5	6	6.5
Non-Engg.	7	6.8	6	9	6.5	6
Non-Engg.	8	6	8.5	7	5.4	6
Engineering	9.5	8.5	8.5	9.5	6.8	8
Engineering	7	6	8	7	5.4	6
Engineering	8.5	6	7	6.5	5.4	6
Engineering	7.5	6	7	6	5.5	6
Engineering	8	6	7.5	6.5	5.9	7.5
Engineering	8	7	7	6	5.8	7
Engineering	9	8.5	9	9	6.9	8
Engineering	9	7	9	9.5	6.9	7
Engineering	8	6	7	8	7	8
Engineering	9	8.5	8.5	8	6.5	7

Sample Size	20	20	20	20	20	20
Max	9.5	8.5	9	9.5	7	8
Min	6	6	6	5	5.1	5.5
median	8.25	7	7.5	7.25	6.25	7
Mean	8.125	7.09	7.7	7.55	6.16	6.9
Standard Deviator	0.9014	0.885	0.8491	1.36	0.62	0.8
Standard Error	0.2016	0.198	0.1899	0.3	0.14	0.2



Anova: Two-Factor With Replication

SUMMARY	F1	F2	F3	F4	F5	F6	Total
<i>Non-Engg.</i>							
Count	10	10	10	10	10	10	60
Sum	79	72.3	75.5	75	61.1	66.5	429.4
Average	7.9	7.23	7.55	7.5	6.11	6.65	7.15666667
Variance	0.98888889	0.306777778	0.747222222	1.944444444	0.338777778	0.558333333	1.115039548
<i>Engineering</i>							
Count	10	10	10	10	10	10	60
Sum	83.5	69.5	78.5	76	62.1	70.5	440.1
Average	8.35	6.95	7.85	7.6	6.21	7.05	7.335
Variance	0.61388889	1.302777778	0.725	1.933333333	0.454333333	0.691666667	1.357567797
<i>Total</i>							
Count	20	20	20	20	20	20	20
Sum	162.5	141.8	154	151	123.2	137	137
Average	8.125	7.09	7.7	7.55	6.16	6.85	6.85
Variance	0.8125	0.783052632	0.721052632	1.839473684	0.378315789	0.634210526	0.634210526

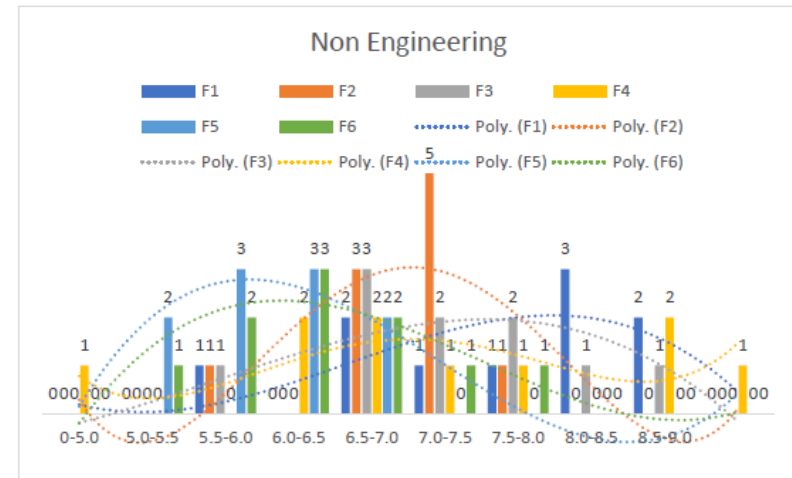
ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Sample	0.954083333	1	0.954083333	1.079539859	0.301121068	3.929011718
Columns	48.63441667	5	9.726883333	11.00591311	1.40562E-08	2.298430813
Interaction	1.800416667	5	0.360083333	0.407432241	0.842740832	2.298430813
Within	95.449	108	0.883787037			
Total	146.8379167	119				

The Anova results Exactly Matched with Matlab Calculations

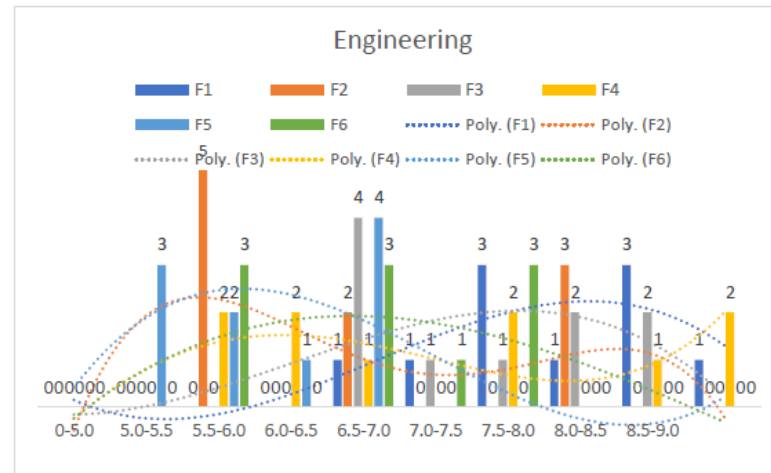
Student	F1	F2	F3	F4	F5	F6
Non-Engg.	8.5	7	7	7	6.5	8
Non-Engg.	8.5	8	7	9	6.6	6.5
Non-Engg.	9	7	9	9.5	6.9	7
Non-Engg.	8.5	7.5	8	7.5	5.8	7.5
Non-Engg.	7	7.5	7.5	6.5	5.8	6.5
Non-Engg.	6	7.5	7.5	5	5.1	5.5
Non-Engg.	9	7.5	8	8	6.5	7
Non-Engg.	7.5	7.5	7	6.5	6	6.5
Non-Engg.	7	6.8	6	9	6.5	6
Non-Engg.	8	6	8.5	7	5.4	6
Sample Size	10	10	10	10	10	10
Max	9	8	9	9.5	6.9	8
Min	6	6	6	5	5.1	5.5
median	8.25	7.5	7.5	7.25	6.25	6.5
Mean	7.9	7.23	7.55	7.5	6.11	6.65
Standard Deviation	0.994429	0.553875	0.86442	1.394433	0.582046	0.747217
Standard Error	0.314466	0.175151	0.273354	0.440959	0.184059	0.236291
Xbar -Negative	7.283647	6.886705	7.014227	6.635721	5.749244	6.18687
Xbar-Positive	8.516353	7.573295	8.085773	8.364279	6.470756	7.11313

Class interval(lower Included -Upper Excluded)		F1	F2	F3	F4	F5	F6
0							
5	0-5.0	0	0	0	1	0	0
5.5	5.0-5.5	0	0	0	0	2	1
6	5.5-6.0	1	1	1	0	3	2
6.5	6.0-6.5	0	0	0	2	3	3
7	6.5-7.0	2	3	3	2	2	2
7.5	7.0-7.5	1	5	2	1	0	1
8	7.5-8.0	1	1	2	1	0	1
8.5	8.0-8.5	3	0	1	0	0	0
9	8.5-9.0	2	0	1	2	0	0
9.5	9.5+	0	0	0	1	0	0
		0	0	0	0	0	0



Student	F1	F2	F3	F4	F5	F6
Engineering	9.5	8.5	8.5	9.5	6.8	8
Engineering	7	6	8	7	5.4	6
Engineering	8.5	6	7	6.5	5.4	6
Engineering	7.5	6	7	6	5.5	6
Engineering	8	6	7.5	6.5	5.9	7.5
Engineering	8	7	7	6	5.8	7
Engineering	9	8.5	9	9	6.9	8
Engineering	9	7	9	9.5	6.9	7
Engineering	8	6	7	8	7	8
Engineering	9	8.5	8.5	8	6.5	7
Sample Size	10	10	10	10	10	10
Max	9.5	8.5	9	9.5	7	8
Min	7	6	7	6	5.4	6
Median	8.25	6.5	7.75	7.5	6.2	7
Mean	8.35	6.95	7.85	7.6	6.21	7.05
Standard Devial	0.78351	1.14139	0.85147	1.39044	0.67404	0.83166
Standard Errc	0.24777	0.36094	0.26926	0.4397	0.21315	0.263
Xbar -Negative	7.86438	6.24256	7.32225	6.73819	5.79222	6.53453
Xbar-Positive	8.83562	7.65744	8.37775	8.46181	6.62778	7.56547

Class interval(lower Included -Upper Excluded)		F1	F2	F3	F4	F5	F6
0	0	0	0	0	0	0	0
5	0-5.0	0	0	0	0	0	0
5.5	5.0-5.5	0	0	0	0	3	0
6	5.5-6.0	0	5	0	2	2	3
6.5	6.0-6.5	0	0	0	2	1	0
7	6.5-7.0	1	2	4	1	4	3
7.5	7.0-7.5	1	0	1	0	0	1
8	7.5-8.0	3	0	1	2	0	3
8.5	8.0-8.5	1	3	2	0	0	0
9	8.5-9.0	3	0	2	1	0	0
9.5	9.5+	1	0	0	2	0	0
0	0	0	0	0	0	0	0



Group	Score	Group Mean	Mean	GM - M	Squares Between Score - GM	Squares Within	Count Groups	Count Observations
1	8.5	7.9	7.157	0.743333	0.552544444	0.36	6	60
1	8.5	7.9	7.157	0.743333	0.552544444	0.36	6	60
1	9	7.9	7.157	0.743333	0.552544444	1.1	6	60
1	8.5	7.9	7.157	0.743333	0.552544444	0.6	6	60
1	7	7.9	7.157	0.743333	0.552544444	-0.9	6	60
1	6	7.9	7.157	0.743333	0.552544444	-1.9	6	60
1	9	7.9	7.157	0.743333	0.552544444	1.1	6	60
1	7.5	7.9	7.157	0.743333	0.552544444	-0.4	6	60
1	7	7.9	7.157	0.743333	0.552544444	-0.9	6	60
1	8	7.9	7.157	0.743333	0.552544444	0.1	6	60
2	7	7.23	7.157	0.073333	0.005377778	-0.23	6	60
2	8	7.23	7.157	0.073333	0.005377778	0.77	6	60
2	7	7.23	7.157	0.073333	0.005377778	-0.23	6	60
2	7.5	7.23	7.157	0.073333	0.005377778	0.27	6	60
2	7.5	7.23	7.157	0.073333	0.005377778	0.27	6	60
2	7.5	7.23	7.157	0.073333	0.005377778	0.27	6	60
2	6.8	7.23	7.157	0.073333	0.005377778	-0.43	6	60
2	6	7.23	7.157	0.073333	0.005377778	-1.23	6	60
2	8.5	7.55	7.157	0.393333	0.154711111	0.95	6	60
3	7	7.55	7.157	0.393333	0.154711111	-0.55	6	60
3	7	7.55	7.157	0.393333	0.154711111	-0.55	6	60
3	9	7.55	7.157	0.393333	0.154711111	1.45	6	60
3	8	7.55	7.157	0.393333	0.154711111	0.45	6	60
3	7.5	7.55	7.157	0.393333	0.154711111	-0.05	6	60
3	7.5	7.55	7.157	0.393333	0.154711111	-0.05	6	60
3	8	7.55	7.157	0.393333	0.154711111	0.45	6	60
3	7	7.55	7.157	0.393333	0.154711111	-0.55	6	60
3	6	7.55	7.157	0.393333	0.154711111	-1.55	6	60
4	7	7.5	7.157	0.343333	0.117877778	-0.5	6	60
4	9	7.5	7.157	0.343333	0.117877778	1.5	6	60
4	9.5	7.5	7.157	0.343333	0.117877778	2	6	60
4	7.5	7.5	7.157	0.343333	0.117877778	0	6	60
4	6.5	7.5	7.157	0.343333	0.117877778	-1	6	60
4	5	7.5	7.157	0.343333	0.117877778	-2.5	6	60
4	8	7.5	7.157	0.343333	0.117877778	0.5	6	60
4	6.5	7.5	7.157	0.343333	0.117877778	-1	6	60
4	9	7.5	7.157	0.343333	0.117877778	1.5	6	60
4	7	7.5	7.157	0.343333	0.117877778	-0.5	6	60
5	6.5	6.11	7.157	-1.04667	1.095511111	0.39	6	60
5	6.6	6.11	7.157	-1.04667	1.095511111	0.49	6	60
5	6.9	6.11	7.157	-1.04667	1.095511111	0.79	6	60
5	5.8	6.11	7.157	-1.04667	1.095511111	-0.31	6	60
5	5.8	6.11	7.157	-1.04667	1.095511111	-0.31	6	60
5	5.1	6.11	7.157	-1.04667	1.095511111	-1.01	6	60
5	6.5	6.11	7.157	-1.04667	1.095511111	0.39	6	60
5	6	6.11	7.157	-1.04667	1.095511111	-0.11	6	60
5	6.5	6.11	7.157	-1.04667	1.095511111	0.39	6	60
5	5.4	6.11	7.157	-1.04667	1.095511111	-0.71	6	60
6	8	6.65	7.157	-0.50667	0.256711111	1.35	6	60
6	6.5	6.65	7.157	-0.50667	0.256711111	-0.15	6	60
6	7	6.65	7.157	-0.50667	0.256711111	0.35	6	60
6	7.5	6.65	7.157	-0.50667	0.256711111	0.85	6	60
6	6.5	6.65	7.157	-0.50667	0.256711111	-0.15	6	60
6	5.5	6.65	7.157	-0.50667	0.256711111	-1.15	6	60
6	7	6.65	7.157	-0.50667	0.256711111	0.35	6	60
6	6.5	6.65	7.157	-0.50667	0.256711111	-0.15	6	60
6	6	6.65	7.157	-0.50667	0.256711111	-0.65	6	60
6	6	6.65	7.157	-0.50667	0.256711111	-0.65	6	60
					21.82733333	43.96	6	60

ANOVA TABLE

SS Between	21.82733333
DF Between	5
MS Between	4.365466667
SS Within	43.96
DF Within	54
MS Within	0.81
F	5.36
Statistical Significance: P	0.0004
Effect Size: Eta Squared	0.33

Student	F1	F2	F3	F4	F5	F6
Non-Engg.	8.5	7	7	7	6.5	8
Non-Engg.	8.5	8	7	9	6.6	6.5
Non-Engg.	9	7	9	9.5	6.9	7
Non-Engg.	8.5	7.5	8	7.5	5.8	7.5
Non-Engg.	7	7.5	7.5	6.5	5.8	6.5
Non-Engg.	6	7.5	7.5	5	5.1	5.5
Non-Engg.	9	7.5	8	8	6.5	7
Non-Engg.	7.5	7.5	7	6.5	6	6.5
Non-Engg.	7	6.8	6	9	6.5	6
Non-Engg.	8	6	8.5	7	5.4	6

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Column 1	10	79	7.9	0.988889
Column 2	10	72.3	7.23	0.306778
Column 3	10	75.5	7.55	0.747222
Column 4	10	75	7.5	1.944444
Column 5	10	61.1	6.11	0.336778
Column 6	10	66.5	6.65	0.558333

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	21.82733	5	4.365467	5.362493	0.00045	2.38607
Within Groups	43.96	54	0.814074			
Total	65.78733	59				

ANOVA MANUAL CALCULATION VS EXCEL VS MATLAB FOR NONENGINEERING ALL WERE INLINE