

## STAT 480, Example and Homework 7, Spring 2003

A company produces plastic sheeting to be used in the manufacture of credit cards. The target value for the thickness of the sheeting is 0.055 mm with specification limits of 0.0525 mm and 0.0575 mm. The stability of the process that produces the sheets is to be investigated by selecting sample rolls of sheeting from the production line. The thickness values for 25 subgroups of size  $n=4$  are given below.

Subgroup	X1	X2	X3	X4
1	0.0574	0.0543	0.0554	0.0576
2	0.0568	0.0572	0.0576	0.0554
3	0.0555	0.0570	0.0551	0.0550
4	0.0556	0.0559	0.0557	0.0530
5	0.0542	0.0554	0.0565	0.0566
6	0.0555	0.0570	0.0573	0.0554
7	0.0561	0.0570	0.0585	0.0550
8	0.0580	0.0570	0.0580	0.0560
9	0.0560	0.0570	0.0566	0.0552
10	0.0552	0.0548	0.0550	0.0554
11	0.0535	0.0550	0.0560	0.0560
12	0.0560	0.0560	0.0580	0.0565
13	0.0573	0.0569	0.0565	0.0556
14	0.0555	0.0570	0.0560	0.0590
15	0.0570	0.0580	0.0560	0.0558
16	0.0556	0.0545	0.0545	0.0540
17	0.0548	0.0525	0.0560	0.0550
18	0.0550	0.0570	0.0570	0.0556
19	0.0566	0.0581	0.0587	0.0558
20	0.0551	0.0551	0.0580	0.0570
21	0.0580	0.0580	0.0580	0.0550
22	0.0550	0.0547	0.0551	0.0550
23	0.0538	0.0556	0.0546	0.0543
24	0.0570	0.0560	0.0560	0.0570
25	0.0559	0.0576	0.0570	0.0575

1. Construct an Excel spreadsheet that calculates the subgroup ranges and averages for each of the 25 subgroups and constructs appropriate  $R$  and  $\bar{X}$  charts. Turn in a copy of the spreadsheet with the calculated values and a copy of the final control charts.
2. Use JMP to construct  $R$  and  $\bar{X}$  charts. Turn in the output from JMP.