Statistics and Experimental Design   **Academic Year: 2018/2019**

Directions for Minitab Assessment 1

1. Assessment is worth 8% of the overall module mark.
2. Assessment was given on the 7th Nov 18.
3. Assessment is due on Wed 28th November 18.
4. Upload your Minitab file and Word file to the assessment location on the Statistics and Experimental Design Moodle page by 11:59pm on the 28th Nov – not acceptable by email.
5. Include your name in both the file names.
6. If you have a question about the Assessment, ask it on the Assessment Forum
   https://learnonline.gmit.ie/mod/forum/view.php?id=125928

In a cereal factory, three (3) batches of Cornflakes were manufactured on three production lines.
In each batch, 25 boxes of Cornflakes were filled and weighed (a total of 75 boxes).
The weight of the Cornflakes boxes is on page 2.

You are the Quality Engineer for the Cornflakes production line. There has been an increase in customer complaints in the last two months. The production manager has asked you to look at the data from the three most recent batches to determine what could be causing the increase in complaints. You will need to analyse the data and write a report including recommendations for improving the process. The average target weight for the Cornflakes boxes is 500g.

Part A: 4 marks

Perform a **<u>Minitab analysis</u>** on the data.

For <u>each</u> of the three data sets: Batch 1, Batch 2 and Batch 3, perform the following, using Minitab:
1. Do a Dot Plot
2. Do a Time Series Plot
3. Do a Normality test
4. "Display Descriptive Statistics"
5. Compare the three batches using a relevant graphical tool on Minitab.

Part B: 4 marks

"Send" all the above graphs and statistical summaries from Minitab to Microsoft Word and write a **<u>Quality Report</u>** describing your data analysis of the 3 Batches and summarise your conclusions.

Include any recommendations that you would make to the production manager of the Cornflakes dept.

Statistics and Experimental Design
Data for Minitab Assessment 1

Weights of Boxes of Cornflakes in grammes (g)

Time Order	Batch 1	Batch 2	Batch 3
1	489.41	491.34	490.93
2	489.67	486.09	490.76
3	487.04	489.51	488.23
4	490.96	488.60	488.79
5	493.85	486.91	432.50
6	489.97	487.77	484.88
7	489.30	490.02	489.89
8	492.65	490.89	489.47
9	486.81	488.41	491.55
10	489.75	490.23	490.64
11	489.57	490.73	491.63
12	489.55	490.41	488.60
13	491.61	490.77	489.22
14	486.82	490.84	488.85
15	488.79	484.42	493.23
16	490.97	488.34	489.33
17	489.92	487.41	487.74
18	490.20	492.29	492.87
19	490.84	492.30	487.33
20	492.24	487.48	452.50
21	493.81	489.25	493.08
22	490.05	487.63	491.05
23	492.03	489.00	488.91
24	488.77	486.64	488.65
25	490.12	487.24	488.75