

MFE 3100 – Tutorial Sheet Dec 09

1. Quality Management Systems

What elements make up the main components of the ISO 9001 Management System, and how does this system work?

2. Cost of Quality

A laptop manufacturer sells 10,000 products per year. The costs for the products sold are detailed in the table below. The products are sold at the price of €1,200 per laptop. Analyze these costs. All the costs listed are in ($\times 10^3$) €.

Cost Centre	R&D	QA	Production	Logistics
Calibration		€ 50		
Inspection of product		€ 400		
Sales & Distribution			€ 50	€ 1,000
Product Development	€ 980		€ 1,020	€ 290
Production	€ 60		€ 2,500	€ 150
Supplier monitoring		€ 100		€ 100
Scrap disposal		€ 250		€ 50
Training	€ 50	€ 50	€ 50	€ 100
Product Replacement		€ 250		€ 150
Product testing		€ 300		

3. Variation

- What are the types of variation that are encountered when analyzing a process?
- Give some examples of common and special causes of variation.

4. Problem Solving Techniques – Old Quality Tools

- Why do we need to use these ‘old’ quality tools in problem solving?
- Why is it important to identify the root-cause of a problem?

5. Problem Solving Techniques – New Quality Tools

- Why do we need to use these ‘new’ quality tools in problem solving?
- Which tools would you use to plan and implement solutions?

6. Kaizen

- What is the main Kaizen philosophy?
- Mention some main differences between Kaizen and Innovation

7. SPC

Use the following data in the table to plot an SPC chart by variable. The specification for the dimension is given as 29.5 ± 0.5

Sample no.	Data (mm)		
1	29.60	29.65	29.50
2	29.55	29.49	29.65
3	29.95	29.70	29.60
4	29.80	29.95	29.87
5	29.92	29.56	29.90
6	29.50	29.56	29.60
7	29.65	29.75	29.83
8	29.63	29.50	29.77
9	29.90	29.65	29.85
10	29.88	29.78	29.83

- Is the Process in Statistical Control?
- Is the Process Capable?