MS4012 – Quality Control

Course Code	MS4012					
Course Title	Quality Control					
Pre-requisites	NIL					
Pre-requisite for	NIL					
No of AUs	3					
Contact Hours	LECTURES	26	TUTORIALS	13		

Course Aims

This course is about the modern use of quality management and statistical methods for quality control and improvement. The main objectives are two-fold, firstly, s to introduce statistical theory and methods used in quality control and quality assurance. Secondly, is to bring forth the importance of quality management as an essential part of manufacturing and business competitive strategy.

Intended Learning Outcomes (LO)

By the end of this course, you (as a student) would be able to:

1. Explain the concepts of probability and basic statistics
2. Identify the commonly used distributions and use them to calculate probabilities
3. Make statistical estimation of confidence limits and intervals
4. perform suitable hypothesis testing in a practical scenario
5. Describe the dynamic of quality management in modern manufacturing and business environment
6. Apply quality control techniques creatively to meet both manufacturing and business needs
7. Consciously apply the divergent thinking, convergent thinking and decision-making steps in quality analysis.
8. Work with specialists of their own discipline and other disciplines as well as leading project teams on quality related matters.
9. Arrive at practical solutions to quality problems through proper quality analysis.

Course Content

Concepts of probability and basic statistics (mean, median, variance, percentile, outlier) and discrete (Bernoulli, Binomial, Poisson, Hypergeometric) & continuous (Exponential, Normal, Student's) probability distributions. Statistical estimation of confidence limits and intervals. Tests of hypothesis. Type- I and II errors. Statistical process control, Basic quality concepts, quality management, quality costs and productivity improvement, and acceptance sampling.

Reading and References

Suggested reading:

1. Statistics for Engineers and Scientists, William Navidi, 3rd edition, McGraw-Hill International Edition
2. Statistical Quality Control, Douglas Montgomery, 7th edition, John Wiley & Sons, International Student Version

Additional reading:

1. Probability and Statistics for Engineers and Scientists, Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, 9th Edition, Pearson

Course Policies and Student Responsibilities

(1) CA

Absentees must be supported by a medical certificate or other valid official documents.

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.