STATISTICAL QUALITY CONTROL

Course Code	19ME4601D	Year	III	Semester	II
Course Category:	Program Elective	Branch	ME	Course Type	Theory
Credits:	3	L – T – P	3 – 0 – 0	Prerequisites:	Nil
Continuous Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
O1	Familiarize students with some of Quality Basics and History	L2
CO2	To discus about Modeling Process Quality	L2
CO3	Imparted knowledge about Statistical Quality Control	L4
CO4	Awareness on basics of Control Charts for Attributes	L2
CO5	Attain basic knowledge on Acceptance Sampling	L2

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (H:High, M: Medium, L:Low)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1		1			2		2			3		1	3
CO2	1		1			2		2			3		1	3
CO3	1		1			2		2			3		1	3
CO4	1		1			2		2			3	3	1	3
CO5	1		1			2		2			3	3	1	3

Syllabus		
Unit No	Contents	Mapped CO
Unit-I	Quality Basics and History: Meaning of quality, Factors effecting quality, Quality Principles, Quality function, Quality control, Aims and objectives of quality control, Characteristics, Cost of quality, Value of quality, Seven QC tools, Need of management of product quality, Historical perspective of quality control.	CO1
Unit-II	Modeling Process Quality: Variation: Stem-leaf Plot, Frequency distribution Histogram, Box Plot, Discrete Distributions Hyper geometric Distribution, Binomial distribution, Poison Distribution, Continuous Distributions- Normal, Gamma, Exponential and Weibull's distribution.	CO2
Unit-III	Statistical Quality Control: Introduction, Concept of variability , Common vs. Special Causes, Types of Control charts, Measurement of control limits, Control charts for variables -large sample data, Warning limits, Revised control limits, Group control chart, Control chart with line trend.	CO3
Unit-IV	Control Charts for Attributes: Control charts for non-confirming Models, control charts for fraction non- conforming. Process and Measurement System Capability Analysis: Using Probability plot, process capability ratios, specification limits and Tolerances.	CO4

Unit-V	Acceptance Sampling: Introduction, Advantages and Disadvantages of Sampling methods, Sampling techniques, Sampling Risks and indices, Operating characteristic curves, Average outgoing quality Limit. Sampling plans Single, Double, Multiple and Sequential Sampling Plans Tightened Inspection, Dodge-Rooming system, Sequential plans.	**CO5**

Learning Resources	
Text Books:	1. E. L. Grant Richard, R.S. Leavenworth, Design Statistical Quality Control, 7th Edition, McGrawHill Pvt Ltd New Delhi, 2011. 2. D. C. Montgomery, Statistical Quality Control,7th Edition, John Wiley Sons, 2012.
Reference Books:	1. M. Mahajan, Statistical Quality Control, Revised Edition, Dhanapat Rai & Co, 2007. 2. W.W.Hines, D. C.Montgomery, Probability and Statistics in Engineering and Management Science, John Wiley and Sons, New York, 1990. 3. Kapoor, V.K. and Gupta, S.P. (1978): Fundamentals of applied statistics, Sultan Chand & Sons. Gupta, R.C.(1974): Statistical Quality Control.
E-Resources& other digital Material:	https://nptel.ac.in/courses/116/102/116102019/