

Semester	FIVE
Course	Major (Paper 3)
Paper Code	C3ST230531T
Paper Title	Economic Statistics and Statistical Quality Control
No. of Credits	4
Theory/Composition/ Practical	Theory
Minimum No. of preparatory hours per week a student has to devote	4
Number of Module	TWO
Syllabus	<u>MODULE 1:</u> UNIT 1: Price, quantity and value indices, choice of weights, different indices and their comparisons. Tests of index numbers. Errors in index numbers. Chain Index Number. [10L] Some important indices: Cost of living index, Wholesale price index, Index of industrial Production- methods of construction and uses. [3L] National accounts: Definition of national income. A brief account of product, expenditure and income approaches for estimation of National Income. [3L] UNIT 2: Measures of income inequality and their desirable properties (Gini's coefficient, Lorenz curve). Income distributions. Measures of unemployment. [7L] Comparative Social Statistics: Indices related to human development and gender disparity. [3L] <u>MODULE 2:</u> UNIT 1: Definition, dimensions of quality, Statistical Process Control - Seven tools of SPC, chance and assignable causes of quality variation. Rational Sub-grouping. Statistical Control Charts- Construction and Statistical basis of 3-σ Control charts. [4L] Control charts: X-bar & R-chart, X-bar & s-chart. Control charts for attributes: np-chart, p-chart, c-chart and u-chart. Comparison between control charts for variables and control charts for attributes. Analysis of patterns on control chart. Estimation of process capability. [9L] UNIT 2: Acceptance sampling plan for attributes: Principle of acceptance sampling plans. Single and Double sampling plans - OC, AQL, LTPD, AOQ, AOQL, ASN, ATI

	functions with graphical interpretations, use and interpretation of Dodge and Romig's sampling inspection plan tables. [9L] Total quality management (TQM). Overview of Six Sigma. DMAIC using one case study. [4L]	
Learning Outcomes	○ To have preliminary ideas of formulating statistical measures to account for inflation/deflation and economic growth of a country. ○ To have knowledge on comparative social statistics. ○ To have exposure to the application of statistical theory in the industry. ○ To distinguish the various phases of SQC and capture the variation in quality of the manufactured items. ○ To learn about statistical techniques used in various phases, namely Control Charts in Process Control and Sampling Inspection Techniques in Product Control. ○ To learn to measure process capability. ○ To learn about recent developments in SQC – Six Sigma	
Reading/Reference List	1. Mudgett Bruce D (1951): Index Numbers, N.Y: Wiley. 2. Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. II, 8th Edn. The World Press, Kolkata. 3. Nagar A.L, Das R.K (1997): Basic statistics, Oxford University Press. 4. Montgomery, D.C. (2009): Introduction to Statistical Quality control, 6th edition, Wiley India, Pvt Ltd. 5. Mukhopadhyay, P. (2011): Applied Statistics, 2nd edition revised reprint, Books and Allied(P) Ltd. 6. Montgomery, D.C. and Runger, G.C. (2008): Applied Statistics and Probability for Engineers, 3rd edition reprint, Wiley India Pvt Ltd. 7. Ehrlich, B. Harris (2002): Transactional Six sigma and Lean Servicing, 2nd edition, St Lucie Press. 8. Hoyle, David (1995): ISO Quality systems Handbook, 2nd edition, Butterworth Heinemann Publication.	
Evaluation	CIA: 30 End-Sem: 70 Total: 100	
Paper Structure for Theory Semester Exam	Module – 1 (35 marks)	Module – 2 (35 marks)
	Short Questions: 4 out of 6 (5 Marks Each) Long Questions: 1 out of 2 (15 Marks)	Short Questions: 4 out of 6 (5 Marks Each) Long Questions: 1 out of 2 (15 Marks)