Semester	**ONE**
Paper Number	**HSTCR1012T & HSTCR1012P**
Paper Title	**Descriptive Statistics**
No. of Credits	**6**
Theory/Composite	**Composite**
No. of periods assigned	Th: 4 Pr: 3
Modules	Single
Course description/objective	*At the end of this course a student should be able to understand* o Different types of data and the art of data handling. o The techniques of summarization and identification of the salient features of the data through graphical displays and other descriptive measures. o The salient features of metric data related to a single variable, two variables and three variables.
Syllabus	**UNIT 1:** *Statistical Methods:* Definition and scope of Statistics, concepts of statistical population and sample. Data: quantitative and qualitative, attributes, variables, scales of measurement: nominal, ordinal, interval and ratio. Presentation: tabular and graphical, including histogram and ogives, column diagram and step diagrams. Stem and Leaf display. [12L] **UNIT 2:** *Univariate data:* Measures of Central Tendency: mathematical and positional. Measures of Dispersion: range, quartile deviation, mean deviation, standard deviation, coefficient of variation, Moments, absolute moments, factorial moments, Measures of skewness and kurtosis. Box Plot. Sheppard's corrections. [17L] **UNIT 3:** *Bivariate data:* Definition, scatter diagram, simple correlation, Simple linear regression, principle of least squares, Fitting of polynomials and exponential curves, Transformation to linearity: log-linear and power transformations , Rank correlation, Correlation ratio, Intra-class correlation. [15L] **UNIT 4:** *Trivariate data:* multiple linear regression, partial and multiple correlation. [8L]
List of Practical	1. Graphical representation of data. 2. Problems based on measures of central tendency. 3. Problems based on measures of dispersion. 4. Problems based on combined mean and variance and coefficient of variation.

	5. Problems based on moments, skewness and kurtosis.
	6. Fitting of polynomials, exponential curves.
	7. Karl Pearson correlation coefficient.
	8. Correlation coefficient for a bivariate frequency distribution.
	9. Lines of regression, angle between lines and estimated values of variables.
	10. Spearman rank correlation with and without ties.
	11. Partial and multiple correlations.
	12. Planes of regression and variances of residuals for given simple correlations.
	13. Planes of regression and variances of residuals for raw data.
	14. Computation of correlation ratio.
	15. Computation of intra class correlation coefficient
Reading/Reference Lists	1. Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. I, & II, 8th Edn. The World Press, Kolkata. 2. Yule G.U. and Kendall M.G (1994) : An Introduction to the theory of Statistics. 14th Edn. Universal Book stall, Delhi. 3. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009): Probability and Statistical Inference, Seventh Ed, Pearson Education, New Delhi.

Evaluation	**Theory** CIA: 10 End-Sem: 50 Total: 60	**Practical** Continuous assessment: 40
Paper Structure for End Sem Theory	Short questions (5 marks each)	Long questions (15 marks each)
	4 out of 6	2 out of 3