Semester	**THREE**
Paper Number	**11A**
Paper Code	**MDTI 4311**
Paper Title	**Interdisciplinary Paper (Data Analytics)**
No. of Credits	**3 + 3**
Course description	Interdisciplinary Elective; 2 Theory + 2 Practical Classes/ week
Course Objective	**Interdisciplinary Paper** At the end of the course, a student is expected to 1. Identify the different forms of data. 2. Visually represent different types of data using standard softwares. 3. Carry out analysis of metric data by using different measures. 4. Learn the genesis of different probability distributions and choose them appropriately to fit a given data. 5. Fit simple linear regression models to multivariate data. 6. Understand the basic concepts of inferential statistics, estimate and test hypotheses of parameters of interest in different setups.
Syllabus	**Interdisciplinary Paper** **Data:** Population and Sample. Classification of data according to the nature of the characteristic being measured. Types of Data- Time Series, Cross Sectional, Categorical, Spatial, Longitudinal/Panel, Spatio Temporal. Scales of Measurement. (4L) **Diagrammatic Representation:** Exploratory Data Analysis. Visual Presentation of different types of data. (2L) **Descriptive Statistics:** Moment and Quantile Measures of univariate data. Product Moment correlation, linear regression, Odds Ratio of contingency tables. Multiple linear regression. Logistic regression. Outliers. (4L) **Probability Theory:** Random variable. Binomial, Poisson, Normal. (7L) **Statistical Methods:** Statistic and Parameter. Concept of Sampling distribution. Estimate and standard error. Confidence Intervals. Tests for means. Analysis of variance tests for one way and two way layout. Pearsonian chi-square tests in contingency tables. (9L)
List of Practical	Based on the theory topics
Reading/Reference Lists	**Interdisciplinary Paper** 1. The Visual Display of Quantitative Information (2nd Edition). E. Tufte. Graphics 2. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009): Probability and Statistical Inference, Seventh Ed, Pearson Education, New Delhi. 3. Moulin, P. and Venugopal, V.V., Statistical Inference for Engineers and Data Scientists, Cambridge University Press. 4. Ismay, C. and Kim, A.Y., Statistical Inference via Data Science, A ModernDive into R and the Tidyverse, CRC Press Talor and Francis group, 2020.

Evaluation	
Interdisciplinary Paper	
Theory CIA: 5 End Sem Exam: 25 Total : 30	Practical Continuous Assessment: 15 End Sem Viva: 5 Total: 20
Paper Structure	
Interdisciplinary Paper	
5 Marks question: 1 out of 2 10 Marks question: 2 out of 3	