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| Semester | **TWO** | |
| Paper Number | **C1ST230212T / C1ST230212P** | |
| Paper Title | **Descriptive Statistics II** | |
| No. of Credits | **Theory(3)+Practical(1) = 4 Credits** | |
| Theory/Composite | **Composite** | |
| No. of periods assigned | Th: 3<br>Pr: 2 | |
| Module | Single | |
| Course description/objective | *At the end of the course a student should be able to understand*<br>o Non-linear regression and its applications.<br>o Different measures of association for metric data and qualitative data.<br>o The applications of regression with multiple predictors. | |
| Syllabus | **UNIT 1:**<br>***Non-linear regression:*** Polynomial regression and correlation index. Exponential curves. Transformation to linearity: log-linear and power transformations. [5]<br><br>**UNIT 2:**<br>***Different types of correlation:*** Correlation ratio. Intra-class correlation. Rank correlation (Spearman's and Kendall's). [9]<br><br>**UNIT 3:**<br>***Association in two way tables:*** 2x2 contingency table. Notion of independence & association; ideas of complete and absolute association. Yules and Cramer's measures of association. Concept of odds ratio. Extension to kxl contingency table: Pearson's chi-square, Kendall's $\tau$ & $\tau_b$, Goodman Kruskal's gamma, [10]<br><br>**UNIT 4:**<br>***Multivariate Data:*** Least squares and multiple linear regression; multiple and partial correlation. Multiple linear regression with qualitative predictors. [15] | |
| **PRACTICAL** | Based on Theory topics using Excel/Minitab | |
| Reading/Reference Lists | 1. Goon A.M., Gupta M.K., Dasgupta, B. (2005), Fundamentals of Statistics, Vol II, World Press, Calcutta.<br>2. Michael S. Lewis Beck (1993): Basic Statistics. Sage Publication.<br>3. James, G., Witten, D., Hastie, T. & Tibshirani, R. (2015): An Introduction to Statistical learning with applications in R (chapter 3), Springer. | |
| Evaluation | **Theory**<br>CIA:15<br>Semester Exam: 45 | **Practical**<br>CA: 40<br>Semester Exam: NA |
| Paper Structure for End Semester | 5 Marks Questions | 15 Marks Questions |
| | 3 out of 5 | 2 out of 3 |