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| Semester | **Seven** |
| Course | **Major** |
| Paper Number | |
| Paper Title | **Data Analysis 3** |
| No. of Credits | **6** |
| Theory/Composite/Practical | **Practical** |
| Minimum No. of preparatory hours per week a student has to devote | **6** |
| Module | **NIL** |
| Syllabus | **Suggested Problems**<br><br>***Survey Sampling II***<br>1. Systematic Sampling: drawing of sample and estimation.<br>2. Ratio and Regression estimation: Estimation of population mean/ total and mean squares. Compare the efficiencies of ratio and regression estimators relative to SRS.<br>3. Cluster sampling: estimation of mean or total, variance of the estimate, estimate of intra-class correlation coefficient, efficiency as compared to SRS.<br>4. Two stage sampling.<br>5. Double Sampling.<br>6. RRT and Snowball sampling.<br>7. Probability Proportional to size sampling: drawing of sample and estimation of population total.<br><br>***Design of Experiments – II***<br>1. Problems on IBD<br>2. Problems on randomized response surface<br><br>***Categorical Data Analysis***<br><br>1. Measures of association for 3x3 contingency table.<br>2. Conditional and marginal odds ratio. Homogeneous association.<br>3. Fitting a logit model, Confusion matrix, ROC & AUC, Goodness-of-fit measures.<br>4. Fitting a probit model, Confusion matrix, ROC & AUC, Goodness-of-fit measure.<br>5. Fitting a Poisson regression model, Goodness-of-fit measure.<br><br>***Large Sample theory II***<br><br>1. Tests of significance and confidence intervals concerning sample standard deviation, coefficient of variation and correlation coefficient (both single sample and two sample cases).<br>2. Tests of significance and confidence intervals using variance stabilizing transformations.<br>3. Tests for goodness of fit, independence and homogeneity |

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| | using Pearsonian chi-square statistic<br><br>***Time Series Analysis II***<br><br>1. Test for randomness of a residual series<br>2. Fitting Box Jenkins models<br>3. Exponential smoothing, Holt Winters Method.<br><br>***Demography***<br><br>1. Measures of mortality<br>2. Life Tables<br>3. Measures of fertility and population growth<br>4. Population Estimation, Projection and Forecasting<br>5. Fitting of logistic equation by Rhode`s method |
| Learning Outcomes | 1. Application of Sample Survey Techniques<br>2. Application of Design of Experiments<br>3. Problems on Contingency Tables<br>4. Application of Generalized Linear Models<br>5. Application of Large Sample Theory<br>6. Application of Time Series<br>7. Application of Demography |
| Evaluation | Continuous Assessment |