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| **Week/**  **Lecture No.** | **Topic Description** | **Reading/Remarks** |
| 1 | * Introduction to Data analytics * Python Fundamental-I * Python Fundamental-II | Class lecture interactive discussion, PPT and Reference links |
| 2 | * Central Tendency and Dispersion-I * Central Tendency and Dispersion-II * Introduction to Probability-I * Introduction to Probability-II | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 3 | * Probability Distribution-I * Probability Distribution-II & III * Python demo for distribution | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 4 | * Sampling and sampling distribution * Distribution of sample, means, population and variance * Confidence interval estimation | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 5 | * Hypothesis Testing-I, II and III | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 6 | * Errors in Hypothesis Testing * Hypothesis testing about the difference in sampling | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 7 | * Hypothesis testing: Two Sample test * ANOVA-I * ANOVA-II | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 8 | * Post Hoc Analysis (Tukey’s test) * Randomize block design (RBD) * Two way ANOVA | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| **Mid-Term Exam** | | |
| 9 | * Linear Regression-I * Linear Regression -II and III * Estimation, prediction of regression model residual analysis I | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 10 | * Estimation, prediction of regression model residual analysis-II * Multiple regression model – I | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 11 | * Multiple regression model – II * Categorical variable regression * Maximum Likelihood Estimation-I | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 12 | * Maximum Likelihood Estimation-II * Logistic Regression -I * Logistic Regression-II | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 13 | * Confusion Matrix and ROC * Performance of Logistic Model | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 14 | * Regression analysis model building * Chi-square test of independence * Chi-square goodness of fit test | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 15 | * Cluster analysis | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| 16 | * K-Means clustering * Hierarchical method of clustering * Classification and Regression Trees (CART-I) | Lecture/ Programing Exercises from reference material and Problem solving in Lab Work |
| **Final Exam** | | |