



1.	Introduction Introduction to Data Science, Components of Data Science, Data Science process, Data Science Roles, Difference between Data Science and Business Intelligence, Applications of Data Science in various fields, Challenges of Data Science Technology.	9
2.	Data Collection and Data Pre-Processing. Data Collection Methods, Data Pre-processing, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization.	9
<b>Section - II</b>		
3.	Exploratory Data Analysis and Model Development Exploratory Data Analysis (EDA), Types of Exploratory Data Analysis, Various Steps involved in EDA, Exploratory Data Analysis Tools (Python, R), Box Plots, Pivot Table, Heat Map, Histograms, Line Graphs. Model Development: Linear Regression (Simple and Multiple Regression), Logistic Regression, Ridge regression, Lasso Regression, Polynomial Regression, and Stepwise Regression.	9
4.	Model Evaluation Generalization Error, Out-of-Sample Evaluation Metrics, Cross Validation, Over fitting, Under Fitting, Prediction by using Ridge Regression, Testing Multiple Parameters by using Grid Search.	9

#### **Practical Content:**

List of programs specified by the subject teacher based on above mentioned topics.

#### **Text Books:**

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| 1 | "Doing Data Science: Straight Talk from the Frontline" by Cathy O'Neil and Rachel Schutt |
| 2 | "The Art of Data Science" by Roger D. Peng and Elizabeth Matsui                          |

#### **MOOC/Certification Courses:**

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|---|---|
| 1 | <a href="https://www.coursera.org/specializations/introduction-data-science">https://www.coursera.org/specializations/introduction-data-science</a> |
| 2 | <a href="https://www.edx.org/course/intro-to-data-science">https://www.edx.org/course/intro-to-data-science</a>                                     |
| 3 | <a href="https://nptel.ac.in/courses/106107220">https://nptel.ac.in/courses/106107220</a>   |

#### **Question Paper Scheme:**

##### **University Examination Duration: 3 Hours**

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

##### **SECTION – I**

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

##### **SECTION - II**

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks