|   | Certificat   | e Course on Python for Data Scien   | <u>nce</u>               |                                  |         |
|---|--------------|---|--------------------------|----------------------------------|---------|
| Course Objectives  Course Outcome  Evaluation Pattern |              | This course is designed to impart the language features of Python. It includes python data structures, regular expressions, data preprocessing, analysis and visualization.  >Develop simple Python programs using Python data structures |                          |                                  |         |
|   |              |   |                          | ➤Data preprocessing using python |         |
|   |              | ➤ Data analysis using python  |                          |                                  |         |
|   |              | ➤Data visualization using python  |                          |                                  |         |
|   |              | Attendance-10% Quiz-40%   |                          |                                  |         |
|   |              |   |                          | Assignment-50%                   |         |
|   |              |   |                          |                                  |         |
|   |              |   |                          | Course Plan                      |         |
|   |              | Date  | Period                   | Topic                            | Remarks |
|   |              | Module 1  |                          |                                  |         |
| 12-12-2021  | 3 to 4 pm    | Introduction to the course  |                          |                                  |         |
|   |              | What is Python – History of Python – Features of Python   |                          |                                  |         |
|   |              | Concept of high-level language, steps<br>involved in the development of a Program - Compilers and<br>Interpreters   |                          |                                  |         |
| 16-12-2021  | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   | •            | Introduction to Python  |                          |                                  |         |
|   |              | language: Inputs and Outputs  |                          |                                  |         |
|   |              | Variables, operators, expressions and statements -  | Programming Assignment 1 |                                  |         |
|   |              | Quiz -1   |                          |                                  |         |
| 3-12-2021   | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Strings, Lists,   |                          |                                  |         |
|   |              | Tuples, and Dictionaries  | Programming Assignment 2 |                                  |         |
| 0-12-2021   | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Conditionals,   |                          |                                  |         |
|   |              | Iteration and looping   | Programming Assignment 3 |                                  |         |
| 6-1-2022  | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Functions and Modules   |                          |                                  |         |
|   |              | Mathematical functions (math module)  | Programming Assignment 4 |                                  |         |
|   |              | Quiz-2  |                          |                                  |         |
| 13-1-2022   | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | File input and Output,  |                          |                                  |         |
|   |              | Pickling, Formatted Printing.   | Programming Assignment 5 |                                  |         |
| 20-1-2022   | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Module - 2  | 1                        |                                  |         |
|   |              | Numpy module:- Arrays and Matrices: creation of arrays and matrices ( arange, linspace, zeros, ones, random, reshape, copying)  | Programming Assignment 6 |                                  |         |
| 27-1-2022   | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Arithmetic Operations, cross product, dot product, Saving and Restoring   | Programming Assignment 7 |                                  |         |
| 3-2-2022  | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Matrix inversion, solution of simultaneous equations.   | Programming Assignment 8 |                                  |         |
|   |              | Quiz - 3  |                          |                                  |         |
| 10-2-2022   | 7 pm to 8 pm | Live session-Discussion   |                          |                                  |         |
|   |              | Pandas : Introduction , Series, Data Frame  |                          |                                  |         |
|   |              | Indexing and Slicing of Data Frame, handling missing Data   | Programming Assignment 9 |                                  |         |

| 17.2.2022 | 7 +- 0       | Live session-Discussion   |                           |
|-----------|--------------|---|---------------------------|
| 17-2-2022 | 7 pm to 8 pm | Group By , Merge Join and concatenate   | Programming Assignment 10 |
|           |              |   | Programming Assignment 10 |
|           | T            | Quiz - 4  |                           |
| 24-2-2022 | 7 pm to 8 pm | Live session-Discussion   |                           |
|           |              | Data visualization using Matplotlib: Simple line plot, Polar plots, Pie Charts , Simple scatter plot, |                           |
|           |              | visualizing error, density and contour plot,  | Programming Assignment 11 |
| 3-3-2022  | 7 pm to 8 pm | Live session-Discussion   |                           |
|           |              | histogram, binning and density, multiple subplot.   | Programming Assignment 12 |
| 10-3-2022 | 7 pm to 8 pm | Live session-Discussion   |                           |
|           |              | Plotting mathematical functions, Sine and other functions.  | Programming Assignment 13 |
|           |              | Quiz - 5  |                           |
| 17-3-2022 |              | Buffer  |                           |
| 24-3-2022 |              | Buffer  |                           |
| 31-3-2022 |              | Buffer  |                           |
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