

23AD22P2 - DATA SCIENCE USING PYTHON LAB

(AI&DS)

Course Category:	Professional Core	Credits:	1.5
Course Type:	Practical	Lecture-Tutorial-Practical:	0-0-3
Prerequisite:	Familiarity with Jupyter Notebooks for interactive coding and data analysis	Sessional Evaluation: Univ. Exam Evaluation: Total Marks:	30 70 100
Objectives:	Students undergoing this course are expected: The main objective of the course is to inculcate the basic understanding of Data Science and its practical implementation using Python.		

Course Outcomes	Upon successful completion of the course, the students will be able to:	
	CO1	Apply principles and techniques for optimizing the performance of Python applications
	CO2	Implement parallel computing applications using Python
	CO3	Develop GPU accelerated Python applications
Course Content	<u>List of Experiments</u> Creating a NumPy Array - Basic ndarray - Array of zeros - Array of ones - Random numbers in ndarray - An array of your choice - Imatrix in NumPy - Evenly spaced ndarray The Shape and Reshaping of NumPy Array - Dimensions of NumPy array - Shape of NumPy array - Size of NumPy array - Reshaping a NumPy array - Flattening a NumPy array - Transpose of a NumPy array Expanding and Squeezing a NumPy Array - Expanding a NumPy array - Squeezing a NumPy array - Sorting in NumPy Arrays Indexing and Slicing of NumPy Array - Slicing 1-D NumPy arrays - Slicing 2-D NumPy arrays - Slicing 3-D NumPy arrays - Negative slicing of NumPy arrays Stacking and Concatenating Numpy Arrays - Stacking ndarrays - Concatenating ndarrays	

	c. Broadcasting in Numpy Arrays 6. Perform following operations using pandas a. Creating dataframe b. concat() c. Setting conditions d. Adding a new column 7. Perform following operations using pandas a. Filling NaN with string. b. Sorting based on column values c. groupby() 8. Read the following file formats using pandas a. Text files b. CSV files c. Excel files d. JSON files 9. Read the following file formats a. Pickle files b. Image files using PIL c. Multiple files using Glob d. Importing data from database 10. Demonstrate web scraping using python 11. Perform following preprocessing techniques on loan prediction dataset a. Feature Scaling b. Feature Standardization c. Label Encoding d. One Hot Encoding 12. Perform following visualizations using matplotlib a. Bar Graph b. Pie Chart c. Box Plot d. Histogram e. Line Chart and Subplots f. Scatter Plot 13. Getting started with NLTK, install NLTK using PIP 14. Python program to implement with Python Sci Kit-Learn & NLTK 15. Python program to implement with Python NLTK/Spicy/Py NLPI
E-Resources	1.https://www.analyticsvidhya.com/blog/2020/04/the-ultimate-numpy-tutorial-for-datascience-beginners/ 2.https://www.analyticsvidhya.com/blog/2021/07/data-science-with-pandas-2-minutesguide-to-key-concepts/ 3.https://www.analyticsvidhya.com/blog/2020/04/how-to-read-common-file-formatspython/ 4.https://www.analyticsvidhya.com/blog/2016/07/practical-guide-data-pre-processing-python-scikit-learn/ 5.https://www.analyticsvidhya.com/blog/2020/02/beginner-guide-matplotlib-datavisualization-exploration-python/6. 6. https://www.nltk.org/book/ch01.html