Diploma Course: 2024-2025

Department Of Artificial Intelligence

Syllabus of Diploma-I

Data gathering using Python

Course Objective: - Students should be able to…

1. Equip students with foundational skills in data gathering using Python, including reading and writing data files.

2. Efficiently extract, store, and process data from various sources using basic Python tools.

Credits=2	**Data gathering using Python**	**No. of hours per unit/ credits (30)**
Unit I:	**Basic Data Handling with Python**	**(8)**
	1.Python Basics 1.1 Introduction to python syntax and data types. 1.2 Data Collection an types of data 1.3 Data Collection Tools	
Unit II:	**Introduction to Data Formats**	**(8)**
	2.Understanding Data Formats 2.1 Understanding CSV , JSON , XML formats 2.2 Handling data storage in different formats 2.3 Reading and writing text and CSV files. 2.4 Basic Techniques for Organizing data for analysis	

Course Outcomes:

Students are able to:

1. Write simple Python programs, understand basic data types, and use Python for collecting and storing various types of data.
2. Learn how to efficiently read, write, and manipulate data in different formats such as text, CSV, JSON, and XML using Python.
3. Develop the ability to collect, clean, and convert data, preparing it for further analysis and processing.

References Books

1. "Python Crash Course" by Eric Matthes
2. "Automate the Boring Stuff with Python" by Al Sweigart
3. 3."Python for Data Analysis" by Wes McKinney

Practical – I

Course Objectives: students will be able to:

1. Write simple Python programs and work with basic data types.
2. Gain experience in collecting, storing, and working with data in formats like text, CSV, JSON, and XML.
3. Clean, transform, and convert data, preparing it for further analysis.

Credits=2	**SEMESTER – I** **BAIP 119: Lab (Based on BAIT 117 and BAIT 118)**	**No. of hours per unit/ credits (30)**
	1. Using concepts of data used in python 2. Understanding how to collect data using differnet techniques 3. Collecting data from open source websites. 4. Collecting data from Kaggle webite 5. Collecting data using Google Forms. 6. To create CSV file with sample data 7. Creating python program and converting it into JSON file. 8. Converting JSON file to CSV file. 9. Organizing data of CSV file using sorting . 10. Creating basic visualization using Matplotlib	

Course Outcomes:

Students are able to:

1. Learn to read, write, and convert data between CSV and JSON formats using Python

2. Develop skills in organizing data, including sorting and summarizing.

Reference Books:

1. Python Cookbook by David Beazley and Brian K. Jones

2.Learning Python by Mark Lutz

3.Data Wrangling with Python" by Jacqueline Kazil and Katharine Jarmul

Diploma Course: 2024-2025

Department Of Artificial Intelligence

Syllabus of Diploma-II

Data Preprocessing using Python

Course Objective: - Students should be able to…

1. To equip students with foundational skills in data gathering using Python, including reading and writing data files.

2. Efficiently extract, store, and process data from various sources using basic Python tools.

Credits=2	**Data Preprocessing Techniques**	**No. of hours per unit/ credits (30)**
Unit I:	**Introduction to Data Pre-Processing**	**(8)**
	1.Use of Data Preprocessing 1.1 Use of data preprocessing 1.2 Data Cleaning and steps involved in data cleaning 1.3 Introduction of Data Integration	
Unit II:	**Data preprocessing techniques**	**(8)**
	2.Techniques used in preprocessing 2.1 Issues in Data Integration , types of Integration 2.2 Data Transformation 2.3 Introduction to Data Reduction 2.4 Data Reduction Techniques	

Course Outcomes: Students are able to:

1. Understand the importance and applications of data preprocessing in data science and machine learning projects.
2. Apply various data cleaning techniques to ensure data quality and consistency.
3. Transform data using methoda to improve model performance.

Reference Books:

1. Data Mining: Concepts and Techniques" by Jiawei Han, Micheline Kamber, and Jian Pei
2. "Data Preprocessing for Data Mining" by Salvador García, Julián Luengo, and Francisco Herrera

Practical – II

Course Objectives: students will be able to:

1. Write simple Python programs and work with basic data types.
2. Gain experience in collecting, storing, and working with data in formats like text, CSV, JSON, and XML.
3. Clean, transform, and convert data, preparing it for further analysis.

Credits=2	**SEMESTER – I** **BAIP 119: Lab (Based on BAIT 117 and BAIT 118)**	**No. of hours per unit/ credits (30)**
	1. Using data frames to clean data and save it into CSV file. 2. Using different methods for data cleaning using data frames. 3. Using data integration with dictionaries to create data set. 4. Developing python program to integrate data frames. 5. Reducing Data Dimensionality using python program. 6. Creating python program to reduce dimensionality. 7. Converting Fahrenheit into Celsius using python. 8. Using Conversion Techniques for Product Prices using Preprocessing Techniques. 9. Developing Python programming to create standard format for dates. 10. Using python program to create range of scaling of prices of product	

Course Outcomes:

Students are able to:

1. Clean and preprocess data effectively using Python dataframes, saving the cleaned data into CSV files for further analysis.

2. Apply various data cleaning methods to create and modify dataset.

Reference Books:

1.Data Wrangling with Python" by Jacqueline Kazil and Katharine Jarmul

2.Hands-On Data Preprocessing in Python" by Roy Jafari

3.Data Science from Scratch by Joel Grus