

Python Programming Course Planning in Blended Learning Mode

Faculty/Instructor: (Your Name)	Prof.Sonali Bodekar , Prof.Prajakta Gotarne , Prof.Poonam More
Institute (Dept/College/Institute):	Usha Mittal Institute of Technology,SNDT WU.
Programme:	B.tech
Course Topic:	Mastering Data Analysis with Python
Intended participants' size per batch:	60
Duration:	(45 hours for learning from resources, live sessions, active participation in individual and group activities, assignments, mini projects,hands-on training etc.)

Course Objectives :

This course is designed to teach students how to analyze different types of data using Python. Students will learn how to prepare data for analysis, perform simple statistical analysis, create meaningful data visualizations and analyze the trends from data.

Learning Outcomes (LO):

After completing this course, participants will be able to:

- Understanding python for performing data analysis.
- Master your skills in NumPy by learning how to create, sort, filter, and update arrays
- Learn to import data into Python from various sources, such as Excel and right from the web.
- Learn to combine data from multiple tables by joining data together using pandas.
- Learn how to effectively analyze and visualize your data

Course Structure

	Modules and sub-topics	Hours	Weightage (%)
	Module 1:		25
1.1	Python Fundamentals for Data Analysis: Python data structures, Functions, Object Oriented programming concepts using classes , Exception handling, Implementation of user-defined Modules and Package, File handling in python.	2+4	
1.2	Learning Numpy: Introduction to numpy, Array creation, Array Operations, Numpy methods, functions Pandas in Python: Python packages,Python standard library and Python Package index,Install and Import packages, series, Dataframes, index object, Reindex, Dropentry,selecting entries, Data alignment, rank and sort, Summary statistics.	4+8	
	Module 2 :		25
2.1	Introduction to Data Understanding and Preprocessing : Understanding structured and unstructured data, Data Analysis process, Dataset- Introduction to Github, Kaggle Importing Dataset: Importing and Exporting Data, Basic Insights from Datasets, Cleaning and Preparing the Data: Identify and Handle Missing Values.	4+8	
2.2	Data Processing and Visualization: Data Formatting, Combining and merging data sets, Reshaping and pivoting, Data transformation, Filtering using Pandas. Data Visualization: Basic Visualization Tools, Seaborn, Creating and Plotting charts.	5+10	



Course Plan

(1/2 credit: 15 hours including reading, viewing hours, activities)

- All activities should be described appropriately
- Write every single activity in separate rows and mention required minutes, e.g. If resource URL given, approx. reading/listening/watching time in one row. Describe activity such as DF or Quiz based on it in the next row.
- Pl mention nature of **OER** such as video/audio/infographic, etc.

* Copyrighted with permission (CP), * Instructor Made: (IM) * Discussion Forum: (DF)

Sr. No. of Module	Number of related LO	Week/Dates	Out-of-class Mode		ICT Tool/ Platform/ LMS	In-class Mode		Duration in Min.
			Resources (Digital/Non-digital) Books/ articles/ pdf/ URL/ OER*/ CP*/ IM*)	*Activity (Field work/ project/ collaboration on DF* etc./ Creative products, etc.)		Resources (digital/non-digital resources to be provided in the class for group-work)	*Activity (CLS group-work/ instructor-led methods such as lectorettes, demo/ Concept-mapping/ Quiz/ Games, etc.	
1.1								
1.2								