

COURSE CODE	COURSE TITLE	L	T	P	C
1152CS307	Python Programming with Data Analytics Lab	0	0	4	2

Course Category: Program Elective

• **Preamble :**

Python is a very powerful programming language used for many different applications. Analyze data using Python will take you from the basics of Python to exploring many different types of data. Data Analysis libraries: will learn to use Pandas DataFrames, Numpy multi dimensional arrays, and SciPy libraries to work with a various datasets. We will introduce you to pandas, an open-source library, and we will use it to load, manipulate, analyze, and visualize cool datasets. Then we will introduce you to another open-source library, scikit-learn, and we will use some of its machine learning algorithms to build smart models and make cool predictions.

A. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1150CS201	Problem Solving Using C

B. Related Courses:

Sl. No	Course Code	Course Name
1	1152CS140	Machine Learning Techniques

D. Course Outcomes:

Upon the successful completion of the course, learners will be able to

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Demonstrated understanding of Python concepts	S3
CO2	Create and manipulate regular Python variables	S3
CO3	Implement the various oops concept and looping statements	S3
CO4	Demonstrated understanding of pandas, NumPy, and matplotlib concepts	S3
CO5	Demonstrate the various machine learning techniques using Scikit	S3

K2-Understand, K3-Apply, S3-Processes

E. Correlation of COs with Programme Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	M	M							L						
CO2	M	M	M						L					L	
CO3	M	M	M		L			L	L		M	L	L	M	L
CO4	M	M	L	M	L			L	L		M	L	L	M	L
CO5	M	M	L	M	L			L	L		M	L	L	M	L

F. Course Content:

1. Simple python Applications
 - Understanding Types, Expressions and variables
 - Handling Strings in python
2. Data structures in python
 - Implement mutable variables(list ,set,dictionaries)
 - Implement immutable variable(tuple)
3. Conditional and looping statements in python
 - Simple applications using object oriented concepts
 - Implement looping statements (while,for..)
4. Scientific libraries in python
 - Use mathematic functions for scientific numerical operations by importing NumPy and SciPy libraries
 - Use Matplotlib to plot the 2D graph and images
 - Use Pandas for implementing Data Analysis
5. Machine Learning using python
 - Implement the supervised learning(classification) using Scikit
 - Implement unsupervised learning (clustering) using Scikit
6. Twitter data analysis
7. Sentimental analysis based on review
8. Mini project

Total : 60

G. Learning Resources:

i. Reference Books:

- i. Mark Lutz, “Learning Python”, 5th Edition, O’Reilly Media, 2013.
- ii. Wes McKinny “Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython”, O’Reilly Media, 2012.
- iii. Jake VanderPlas , “Python Data Science Handbook Essential Tools for Working with Data”, O’Reilly Media, 2017.