PYTHON
PYTHON
[ELECTIVE COURSE]

Semester: V	Credits: 3	Subject Code: BC52204	Lectures: 48

Course Outcomes:

At the end of this course, the learner will be able to,

- Identify and recognize Python programming basics and paradigm.
- Relate and identify python looping, control statements and string manipulations.
- Design and manipulate the concepts of GUI controls and applications.
- Analyze and apply the concepts of file handling, exception handling.

Unit 1: Introduction to Python, Modules and Packages	22

- History, feature of Python, setting up path, working with python Interpreter, basic syntax, variable and data types, operators
- Conditional statements-If, If-Else, nested if-else, Examples.
- Looping-For,While,Nested loops, Examples
- Control Statements-Break, Continue, Pass.
- String Manipulation-Accessing String, Basic Operations, String Slices, Function and Methods, Examples.
- Lists-
  - Introduction
  - Accessing list
  - Operations
  - Working with lists
  - Function & Methods.
- Tuple
  - Introduction,
  - accessing tuples
  - operations working,
  - function & methods
  - Examples.
- Dictionaries
  - Introduction
  - Accessing values in dictionaries
  - working with dictionaries,
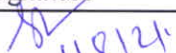 - Properties,
  - Function,
    - Examples.

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- Functions
  - Defining a function
  - Calling a function,
  - Types of function
  - Function arguments
  - Anonymous function
  - Global & local variable
  - Examples.
- Built in Modules
- Importing modules in python program
- Working with Random Modules.
  - E.g. - built-ins, time, date time, calendar, sys, etc
- User Defined functions
- Structure of Python Modules
- Packages
  - Predefined Packages
  - User defined Packages

Unit 2: Classes, Objects and Inheritance	8

- Classes and Objects
  - Classes as User Defined Data Type
  - Objects as Instances of Classes
  - Creating Class and Objects
  - Creating Objects By Passing Values
  - Variables & Methods in a Class
- Inheritance
  - Single Inheritance
  - Multilevel Inheritance
  - Multiple Inheritance
  - Hybrid Inheritance
  - Hierarchical Inheritance
  - IS-A Relationship and HAS-A Relationship

Unit 3: Exception Handling and GUI Programming	14

- Python Exception
- Common Exception
- Exception handling in Python (try-except-else)
- The except statement with no exception
- Multiple Exception
- The try-finally clause
- Custom Exception and assert statement
- Introduction

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- Tkinter programming
- Tkinter widgets
- Frame
- Button
- Label
- Entry

Unit 4: Python Libraries	4

- Statistical Analysis
  - NumPy
  - SciPy
  - Pandas
  - StatsModels
- Data Visualization
  - Matplotlib
  - Seaborn,
  - Plotly
- Data Modelling and Machine Learning
  - Scikit-learn,
  - XGBoost
  - Eli5

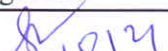**#12 hours for Library work, assignments, practical or field work**

Recommended Text Books:

- John Zelle , *Python Programming:An introduction to computer*
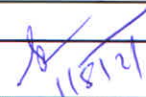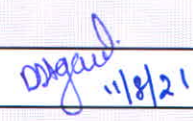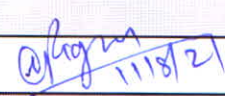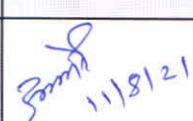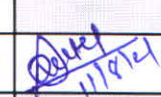- Mark Lutz, *Programming Python* 4th Edition

Reference Books:

- Mark Lutz, *Programming Python*, O`Reilly, 4th Edition, 2010
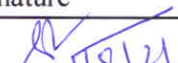- Mike ,*Dive into Python*
- Mark Lutz , *Learning Python*

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Websites:

- www.w3cschool.com

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