GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Computer Application
Semester	I	**Version**	1.0.0.1
Effective from Academic Year	2022-23	**Effective for the batch Admitted in**	June 2022
Subject Code	P11A2PP	**Subject Name**	Python Programming

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	40	60	100
Hours	3	0	4	0	7	Practical	20	30	50

Objective:

Students can learn Basics of Python Programming, Arrays, Functions, Modules, Packages, Object Oriented Programming, Exception Handling, Data Science and Data Visualization.

Pre-requisites:

Basic knowledge of programming.

Course Outcomes:

Name of CO	Description
CO1	Explain and apply fundamental Python constructs including variables, data types, operators, and control flow statements.
CO2	Develop and analyze Python programs using arrays, functions, recursion, modules, and packages
CO3	Apply object-oriented concepts, exception handling, file operations, multithreading, and device communication techniques in Python applications.
CO4	Create and interpret DataFrames and generate visualizations such as bar charts, histograms, pie charts, stacked charts, and line graphs.

Mapping of CO and PO								
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	1	1	0	0	0	1
CO2	3	3	2	2	0	0	0	1
CO3	3	3	2	3	1	1	1	1
CO4	2	3	2	3	1	0	0	2

Content:

Unit	SECTION – I	Hrs
1	**Basics of Python Programming:** History of Python, Python Features, Installation and Working with Python, Understanding Python variables, Python basic Operators, Understanding python blocks, Python data types, Declaring and using Numeric data types, using string data type and string operations, Defining list and list slicing, Use of Tuple data type. Python program flow control, Conditional blocks using if, else and elif, simple for loops, for loop using ranges, string, list and dictionaries, Use of while loops, Loop manipulation using pass, continue, break and else statement, Programming using Python conditional and loops block, Python - Date & Time.	11
2	**Python Arrays, Functions, Modules and Packages:** Python arrays, create an array, accessing array elements, looping array elements, adding and removing an array element, array methods. Creating a function, calling a function, passing parameters to function, how to define default value of parameters of a function, passing a list as a parameter, function returning a value, Recursive function, Lambda function. Creating and using module, built-in modules, importing own module as well as external modules, Understanding Packages, Programming using functions, modules and external packages.	10
	SECTION – II	
3	**OOPS, Exception Handling, File Handling, Thread, Pytest and working with Device:** Concept of class, object and instances, Constructor, class attributes and destructors, Inheritance, Adding and retrieving dynamic attributes of classes, Programming using Oops support and exception handling. Pytest, Threads & Locks, File Handling, Logging, Working with devices using paramiko ssh, telent, adb and serial.	13
4	**Data Science and Data Visualization:** Data Frame - Creating Data Frame from an Excel Spreadsheet, Creating Data Frame from .csv Files, Creating Data Frame from a Python Dictionary, Creating Data from Python List of Tuples, Operations on Data Frames, Bar Graph, Histogram, creating a Pie Chart, Stack chart, Creating Line Graph.	11

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics

Text/Reference Books:

1	Title: Zero To Mastery In Python Programming, Author: Monu Singh Rakesh K. Yadav, Srinivas Arukonda, Publisher: Vayu Education Of India
2	Title: Let Us Python, Author: Aditya Kanetkar Yashavant Kanetkar, Publisher: BPB Publications
3	Title: Python Data Analytics: With Pandas, NumPy, and Matplotlib, Author:Fabio Nelli, Publisher: Apress
4	Title: Python Data Science Handbook: Essential Tools for Working with Data, Author: Jake VanderPlas, Publisher: O'Reilly

Web References / MOOC / Certification Course

1	https://www.python.org/doc/
2	https://www.w3schools.com/python/default.asp
3	https://www.w3schools.com/python/pandas/default.asp
4	https://www.w3schools.com/python/matplotlib_intro.asp
5	https://www.geeksforgeeks.org/python-programming-language/learn-python-tutorial/
6	https://www.tutorialspoint.com/python/index.htm
7	https://www.javatpoint.com/python-tutorial
Question Paper Scheme:	
	University Examination Duration: 3 Hours Note for Examiner: - (I) Questions 1 and 4 are compulsory with no options. (II) Internal options should be given in questions 2, 3, 5 and 6. **SECTION – I** Q.1 –8 Marks Q.2 –11 Marks Q.3 –11 Marks **SECTION - II** Q.4 –8 Marks Q.5 –11 Marks Q.6 –11 Marks