MCA SEMESTER – III
SUBJECT : PYTHON PROGRAMMING

Teaching Scheme (Hours/Week)				Credits	Examination Scheme				
Lect	Tut	Prac	Total		Ext	Sess.	TW	Prac	Total
4	-	2	6	5	60	40	25	25	150

A. COURSE OVERVIEW

This course helps the learners build foundation in programming using Python. The course covers various Python standard libraries and object-oriented features. The course also covers working with Python modules, sequences, exception handling and interfacing databases.

B. COURSE CONTENT

NO	TOPIC	L+T (hrs)	Cos
[1]	Introduction to Python Programming Environment, Writing and Executing Basic Python Program. Data types: Built-in Types, str, bytes, Literals, type() function. Operators: Arithmetic, Assignment, Relational, Logical, Boolean, Bitwise, Membership, Identity. Input & Output statements, Command line arguments. Control Statements: if, else, elif, while, for, break, continue, pass, assert, return.	6	CO1 CO2
[2]	List: create, update, delete elements, list methods, indexing and slicing. Tuple: create, basic operations, functions to process tuple. Dictionary: create, update, delete elements, dictionary methods.	8	CO1
[3]	Difference between Function and Method, Create and Use Function, Return Multiple Results from Function, Pass by ObjectReference. Arguments: Positional, Keyword, Default, Variable length. Local and Global Variables, Global Keyword, Passing group of Elements to Function. Anonymous Functions: Using Lambdas with: filter(), map() and reduce()	10	CO1 CO2
[4]	Create Class and its Objects, Self variable, Constructor, Instance methods, Class methods, Static methods. Inheritance: Constructors in Inheritance, Overriding Super Class Constructors and Methods, super(), Method Overloading and Overriding. Abstract class, Interface.	8	CO1
[5]	Types of Errors, Exceptions, Handling Exceptions, Types of Exceptions, Assert and Except Statements.	4	CO1
[6]	Introduction, Working with MySQLdb module, Establish connection, Create database and table, CRUD operations, Invoke stored procedure.	6	CO1 CO3
[7]	Introduction: single and multi tasking, Difference between Process and Thread. Create Thread: Without Using a Class, Using a Thread Class. Thread Class Methods, Single Tasking Using a Thread, Multitasking Using Multiple Threads. Thread Synchronization, Communication between Threads.	6	CO1
[8]	numpy arrays: zeros(), ones(), reshape(), hstack(), vstack(), arange(), linspace(), logspace(), asarray(), dot(), matmul(), indexing and slicing.	6	CO1 CO2

	pandas: Work with Series and Dataframe: create, delete rows and columns, index and select data, handle missing data, iterate over rows and columns matplotlib: Plotting- bar graph, histogram, pie chart, line graph.		CO3
[9]	Django Introduction, Setup environment, Create project, Life Cycle, Admin Interface, Create Views, Models, Page Redirection, Process Form.	6	CO4

C. TEXT BOOKS

1. R Nageswara Rao. *Core Python Programming; 2nd Edition*; Dreamtech press

D. REFERENCE BOOKS

1. https://www/djangoproject.com
2. John V Guttag. *Introduction to Computation and Programming Using Python; 6th edition*; Prentice Hall of India
3. Sanjeev Jaiswal and Ratan Kumar. *Learning Django Web Development*; PACKT

E. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Create	Create Basic Desktop Applications using Python Programming Language
CO2	Create	Develop Scientific Programs using numpy and pandas
CO3	Apply	Plot Diversified Charts
CO4	Create	Create Basic Web Applications using Django Framework

F. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	3	2	3	2	2	-	2	-	2	1	2	1	2
CO2	3	3	2	2	3	-	2	-	2	3	2	3	2
CO3	2	1	1	2	3	-	2	-	2	1	2	2	2
CO4	2	2	2	2	2	-	2	-	2	3	2	2	2
Avg	2.5	2	2	2	2.5	-	2	-	2	2	2	2	2