PROGRAMMING WITH PYTHON

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Core Theory -8	6	90	6	90	0	0	4

COURSE OBJECTIVE

- This course helps students to Understand Python programming concept.
- It helps students to implement python concepts in real world applications like Machine Learning and Data science.

COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1- K4)
CO1	Understanding Basis of Python Programming.	**K1**
CO2	Read, write, execute by hand simple Python programs. Structure simple Python programs for solving problems.	**K2**
CO3	Decompose a Python program into functions and Represent compound data using Python lists, tuples, dictionaries	**K3**
CO4	Read and write data from/to files in Python programs	**K3**
CO	Develop CRUD applications in python and Data visualization concept using various Ad-ons.	**K3**

Knowledge Level- K1- Remember, K2- Understand, K3- Apply, K4- Analyze

MAPPING WITH PROGRAME OUTCOME

COS	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6

CO1	M	M	S	S	S	M
CO2	S	M	S	M	S	M
CO3	S	S	S	M	S	S
CO4	M	S	S	S	S	S
CO5	M	M	S	M	S	M

S- Strong; M- Medium; L- Low

SYLLABUS

UNIT I: PYTHON FUNDAMENTALS 18 Hrs

Introduction – Python interpreter and interactive mode – Character set – Tokens- Input and output functions – Data types –Mutable and Immutable Data type -Variables- Expressions- Statements – Operators- Comments

UNIT II: CONTROL FLOW, FUNCTIONS 19 Hrs

Conditionals: Boolean values and operators – Conditional (if) – Alternative (if- else) – Chained conditional (if-elif-else) – Iteration: While, For, Break, Continue, Pass; Fruitful functions: Return values, Parameters, Local and Global scope, Recursion; Strings: String slices, Immutability, String functions and methods; Lists as arrays. Illustrative programs: square root, GCD.

UNIT III: LISTS, TUPLES, DICTIONARIES 17 Hrs

Lists: List operations – List slices – List methods – List loop – Mutability – Aliasing – Cloning lists, List parameters – Tuples: Tuple assignment – Tuple as return value – Dictionaries: Operations and methods – Illustrative programs: Selection Sort – Histogram.

UNIT IV: FILES, MODULES, PACKAGES 18 Hrs

Files and exception – Text files – Reading and Writing files – Command line arguments, Errors and Exceptions, Handling exceptions, Modules, Packages; Illustrative programs: Copy file.

UNIT V: DATA BASE USING SQLite AND DATA VISUALISATION 19 Hrs

CRUD Operations in python using SQLite : Create Table, Insert, Delete, Select, Update Queries – Add on Third Party Libraries : Numpy – Keras – Pantas – Matplotilb- Seaborn

Distribution of Marks: Theory 75% and Problems

25% TEXT BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	Allen B. Downey	Think Python: How toProgram	Shroff/O'Reilly Publishers, 2nd edition, Updated for Python 3	2016

REFERENCE BOOKS

S. No	Authors	Title	Publishers	Year of publication
1.	John V Guttag	Introduction to Computation and Programming Using Python, Revised and expanded Edition	MIT Press	2013
2.	Robert Sedgewick, Kevin Wayne, Robert Dondero	Introduction to Programming in Python: An Inter-disciplinary Approach	Pearson India Education Services Pvt. Ltd	2016

3.	Timothy A. Budd	Exploring Python II	Mc- Graw Hill Education (India) Private Ltd	2015
4.	Paul Barry	Head-First Python	O'Reilly Publishers	2016
5.	Zed A. Shaw	Learn Python3 The Hard way	Addison-Wesley	2016
6.	Guidovan Rossum and Fred L. Drake Jr.	An Introduction to Python- Revised and updated for Python 3.2	Network Theory Ltd	2011
7.	avid Ascher and MARK LUTZ	Learning Python	O'Reilly Media	1999
8.	Wes McKinney	Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython	O'Reilly Media	2011

WEB SOURCES

1. http://greenteapress.com/wp/think- python/
2. http://www.guru99.com/python-tutorials.html

TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

SYLLABUS DESIGNER

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