FACULTY OF COMPUTER SCIENCE

Branch Name:	MCA
Program Code:	CS201
Course Name:	Programming with Python
Course Code:	3CS2010204T
Pre-requisite Course:	Knowledge of some programming language like C, Java

Course Objective:

1. To develop proficiency in creating based applications using the Python Programming Language.
2. To be able to understand the various data structures available in Python programming language and apply them in solving computational problems.
3. To be able to do testing and debugging of code written in Python.
4. To be able to draw various kinds of plots using PyLab.
5. To be able to use generators for generating series like Fibonacci.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
4	-	-	4	60	40	-	-	100

Course Contents:			
Unit No	**Topics**	**Total Hours**	**Weightage (%)**
1	**INTRODUCTION DATA, EXPRESSIONS, STATEMENTS** **Introduction** to Python and installation, data types: Int, float, Boolean, string, tuple, list; variables, expressions, statements, precedence of operators, comments; modules, functions--- function and its use, flow of execution, parameters and arguments.	10	20
2	**CONTROL FLOW, LOOPS** **Conditionals**: 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, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Python arrays, Access the Elements of an Array, array methods	10	20
3	**LISTS, TUPLES, DICTIONARIES** Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters, list comprehension; Tuples: tuple assignment, tuple as return value, tuple comprehension; Dictionaries: operations and methods, comprehension;	10	20

4	**Classes and Object-oriented Programming** Abstract Data Types and Classes, Inheritance, Encapsulation and information hiding **Some Simple Algorithms and Data Structures:** Search Algorithms, Sorting Algorithms, Hash tables	10	20
5	**FILES, MODULES, PACKAGES** Files and exception: text files, reading and writing files, command line arguments, errors and exceptions, handling exceptions, modules (datetime, time, OS, calendar, math module), Explore packages. **Exceptions and assertions:** Handling exceptions, Exceptions as a control flow mechanism, Assertions	10	20

Text Books:

1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist ‘‘, 2nd edition, updated for Python 3, Shroff/O‘Reilly Publishers, 2016.
2. R. Nageswara Rao, “Core Python Programming”, dreamtech
3. Python Programming: A Modern Approach, Vamsi Kurama, Pearson

References Books:

1. Core Python Programming, W.Chun, Pearson.
2. Introduction to Python, Kenneth A. Lambert, Cengage
3. Learning Python, Mark Lutz, Orielly

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom’s Taxonomy Level
CLO1	To **read, write, execute** by hand simple Python programs.	2 Understanding
CLO2	To **study** simple Python programs for solving problems.	1 Remembering 2 Understanding 3 Applying
CLO3	To **decompose** a Python program into functions.	3 Applying 2 Remembering
CLO4	To **represent** compound data using Python lists, tuples, and dictionaries.	2 Understanding,
CLO5	To **read and write** data from/to files in Python Programs	1 Remembering 2 Understanding
CLO6	To **understand** Exception handling and **create** a program using it.	3 Applying

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Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Out comes (POs)												Program Specific Outcomes (PSOs)	
	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PS O2
CLO1		M	L	M		M	H	L	M		M		H	M
CLO2	M	L			H	L		L		M	L	L	M	M
CLO3		L	M		M	M		L	M	M		L	M	L
CLO4	L		M	L	M		M		L		L		M	M
CLO5	M	L		M	L			M		L		L	M	L
CLO6	M		M		L	M			M	M		L	L	M

H:High, M:Medium, L:Low