

Branch Name:	MCA
Program Code:	CS201
Course Name:	Python Programming
Course Code:	4CS2010101T
Pre-requisite Course:	Knowledge of some programming languages like C, Java

Course Objective:

1. To develop proficiency in creating based applications using 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)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	-	3	60	40	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	INTRODUCTION, DATA, EXPRESSIONS, STATEMENTS Introduction To Python, Installation of Python, Data Types: Int, Float, Boolean, String, Tuple, List, Set, Dictionary; Variables, Expressions, Statements, Precedence of Operators, Comments.	08	20
2	CONTROL FLOW, LOOPS, FUNCTIONS, STRINGS, ARRAYS Conditionals: Conditional (If), Alternative (If-Else), Chained Conditional (If-Elif- Else) Iteration: While, For, Break, Continue, Pass. 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, Lambda Function.	08	20
3	LISTS, TUPLES, SET, DICTIONARIES Lists: Access List Items, Change List Items, Delete List Item, List Slices, List Methods, List Loop, List Parameters, List Comprehension Tuples: Tuple Assignment, Tuple as Return Value, Tuple Comprehension Set: Set Assignment, Set Operations	08	15

	Dictionaries: Operations And Methods, Comprehension		
4	Advanced Topics I: Data Science and Data Visualization using Python Data Science Using Python: 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) Data Visualization: Bar Graph, Histogram, creating a Pie Chart, Creating Line Graph Plotting: Plotting using PyLab, Plotting mortgages and extended examples	08	15
5	Advanced Topics II: Regular Expressions REs and Python: Regular Expressions, Sequence Characters in Regular Expressions, Quantifiers in Regular Expressions, Special Characters in Regular Expressions, Using Regular Expressions on Files, Retrieving Information from a HTML File Case Study: Screen Scrapping	08	15
6	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.	08	15

Textbooks:

1. John V Guttag. "Introduction to Computation and Programming Using Python", 2 nd Edition, Prentice Hall of India.
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

Web Resources

1. <http://docs.python.org/library/csv>
2. <http://docs.python.org/library/json>
3. <http://docs.python.org/library/ext>
4. http://en.wikibooks.org/wiki/Python_Programming
5. <http://learnpythonthehardway.org/>
6. <http://jason.org>
7. [Nosql-database.org](http://nosql-database.org)
8. www.mongodb.org/
9. W3schools.com

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 for solving problems.	1 Remembering 2 Understanding 3 Applying
CLO2	To decompose a Python program into functions, string, array.	1 Remembering 3 Applying
CLO3	To represent compound data using Python lists, tuples, and dictionaries.	3 Applying 2 Understanding,
CLO4	To read and write data from Data Science and Data Visualization	1 Remembering 2 Understanding 3 Applying
CLO5	To Formulating data from Regular Expressions using Python.	3 Applying
CLO6	To read and write data from files in Python Programs & understand Exception handling and create a program using it.	3 Applying

Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Out comes (POs)												Program Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
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