II B.Tech - I Semester
(17CS301) PYTHON PROGRAMMING

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
40	60	100	3	1	-	3

Pre-Requisites: Basic mathematics

Course Objectives:
- Introduction to Scripting Language
- Exposure to various problems solving approaches of computer science

UNIT-I:
Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

UNIT-II:
Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass

UNIT-III:
Data Structures Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions.

UNIT-IV:
Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions(Function Returning Values), Scope of the Variables in a Function - Global and Local Variables. Modules: Creating modules, import statement, from. Import statement, name spacing, Python packages Introduction to PIP, Installing Packages via PIP, Using Python Packages

UNIT-V:
Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding, Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions

UNIT-VI:
Regular Expressions: Introduction, Using r"RE", +, {m}, |, {m,n}, {m,n}?, Positive Look Behind Assertion, Negative Look Behind Assertion, Positive Look Ahead Assertion, Negative Look Ahead Assertion
Brief Tour of the Standard Library - Operating System Interface - String Pattern Matching, Mathematics, Internet Access, Dates and Times, Data Compression, Multithreading.

Course Outcomes:

CO-1	Understand variables, keywords in python.	L2
CO-2	Elaborate operators, expressions and control flow in python.	L2
CO-3	Comparing Tuples, Sets, Dictionaries, Sequences.	L2
CO-4	Building applications using python functions and packages.	L3
CO-5	Developing object-oriented principles in python.	L3
CO-6	Building python programs using Regular Expressions.	L3

Correlation of COs with POs & PSOs:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1	3	2	1	1	1	-	-	-	-	-	1	1	-	2	-
CO-2	3	2	1	1	1	-	-	-	-	-	1	1	-	2	-
CO-3	3	2	1	1	1	-	-	-	-	-	1	1	-	2	-
CO-4	3	2	2	3	2	-	-	-	-	-	1	1	-	2	-
CO-5	3	2	2	3	2	-	-	-	-	-	1	1	-	2	-
CO-6	3	2	2	3	2	-	-	-	-	-	1	1	-	2	-

Text Books:

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
2. Learning Python, Mark Lutz, Orielly

Reference Books:

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage