GUJARAT UNIVERSITY
BCA V SYLLABUS

COURSE TITLE	
	CC302 Python Programming
COURSE CODE	CC-302
COURSE CREDIT	3
SESSIONS PER WEEK	4
TOTAL TEACHING HOURS	40 HOURS

AIM

This course introduces students the fundamentals of core python programming language and to use it for different applications development.

LEARNING OUTCOMES

On the completion of the course students will:
1. To recognize why python is extensively used by developers in the industry.
2. To study and employ different datatypes, operators, I/O and control statements.
3. To define & implement class and different levels of inheritance.
4. To learn creating modules and data structures like List, Tuples and Dictionaries
5. To handle exceptions and work with the built in standard libraries.
6. To create a virtual environment.
7. To implement python database connectivity.

DETAIL SYLLABUS

UNIT	TOPIC/SUB TOPIC	TEACHING HOURS
	❖ **Beginning with Python, Datatypes, Operators, I/O and Control statements**	**10**
1	❖ **Introduction to Python** Python, Features of Python, Viewing of Byte Code, Flavours of Python, PVM, Memory Management in Python, Garbage collection in python, Comparisons between C-Java-Python, Writing first Python program, Execution of a Python program (using command line, IDLE window and system prompt).	3
	❖ **Datatypes in Python** Built-in datatypes, None types, Numeric types, Explicit conversion of datatypes, Sequences in Python, str, bytes, bytearray, List, Tuple, range, Sets, set datatype, frozenset, mapping types, Determining the datatype of a variable, Identifiers and reserved words, Naming conventions in Python.	4
	❖ **Operators, I/O and control statements** Membership operators, Identity operators, Output statements, Input statements, Command line arguments, A word on Indentation, The if-elif-else statement, Infinite loops, Nested Loops, The else Suite, break, continue, pass, assert and return statements.	3

	❖ **Modules, Arrays, Functions, List, Tuples and Dictionaries**	**10**
2	❖ **Modules, Arrays and Functions** Creating our own modules in python, Advantages of Array, Creating an Array, Importing the array module, Indexing-Slicing and Processing the arrays, Difference between a function and a method, Defining-calling and returning(single and multiple) results from a function, Pass by Object Reference, Positional arguments, Keyword arguments, Default arguments, Variable length arguments, Anonymous Functions, Function Decorators.	4
	❖ **List and Tuples** Exploring List, Creating lists using range() function, Updating the elements of the list, Concatenation of two lists, Repetition of lists, Membership in lists, Aliasing and Cloning lists, Methods to process List, Nested Lists, Tuples, Creating and accessing Tuple elements, Basic operations on Tuples, Functions to process tuples, Nested Tuples and its sorting.	4
	❖ **Dictionaries** Introduction to Dictionaries, Operations on Dictionaries, Dictionary methods, Converting List into Dictionary, Passing dictionaries to functions.	2
	❖ **Classes, Inheritance and Polymorphism**	**10**
3	❖ **Classes** Creating a class, The Self variable, Constructor, Types of variables, Types of methods, Passing members of one class to another.	3
	❖ **Inheritance** Implementing inheritance, Constructors in inheritance, Overriding Super class constructors and methods, The super() method, Types of Inheritance, Single and multiple, problems in multiple inheritance, Method resolution order(MRO).	4
	❖ **Polymorphism** Introduction to polymorphism, Duck Typing Philosophy of Python, Operator overloading, method overloading, method overriding.	3
4	❖ **Exception Handling, Standard Library, Creating Virtual Environment and Python Database connectivity**	**10**
	❖ **Exception Handling and Standard Library** Exceptions, Exception handling, Types of exceptions, Operating System Interface, File wildcards, Command line arguments, String pattern matching, mathematics , internet access, dates and times, data compression, performance measurement.	4
	❖ **Creating virtual environment** Introduction, generating virtual environments, managing packages with pip(Python Package Index).	1
	❖ **Python and MySQL** Installing MySQL Connector, Verifying the Connector Installation, Using MySQL from Python, Retrieving all rows from a table, Inserting rows into a table, Deleting rows from	5

table, Updating rows in a table, Creating database tables through Python.	

TEXT BOOK:

1) Core Python Programming
By, Dr. R. Nageswara Rao, 2017 edition
2) Python Tutorial (Release 3.6.4)
By, Guido van Rossum and the Python development team

REFERENCE BOOK:

1) A Byte of Python,
   By Swaroop C H
2) Python Cookbook, Recipes of Mastering Python 3,
   By David Beazely & Brian K. Jones

WEB RESOURCES:

https://www.python.org/about/apps/
https://www.w3schools.com/python/default.asp
https://www.tutorialspoint.com/python3/index.htm
https://www.programiz.com/python-programming/tutorial

REQUIRED SOFTWARES:

Python 3.4.1 or higher
IDE: IDLE
Database: MySQL