BANGALORE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, UVCE, BENGALURU
B.Tech. PROGRAMME IN COMPUTER SCIENCE AND ENGINEERING

Course Code	**18CIOE51B**					
Category	Engineering Science Courses : Open Elective					
Course title	**PYTHON PROGRAMMING - THEORY**					
Scheme and Credits	No. of Hours/Week					Semester - V CSE/ISE
	L	T	P	SS	Credits	
	2	2	0	0	3	
CIE Marks: 50	SEE Marks: 50		Total Max. Marks: 100			Duration of SEE: 03 Hours
Prerequisites (if any): NIL						

COURSE OBJECTIVES:

The course will enable the students to

1. Understand the Syntax and Semantics to write Functions in Python.
2. Handle Strings and Files in Python.
3. Demonstrate usage of Lists, Dictionaries and Regular expressions in Python.
4. Apply Object Oriented Programming Concepts in Python.
5. Design projects using python that access databases and perform operation on database.

UNIT I: **09 Hours**

Python Datatypes: Expressions, Variables and Assignments, Strings, Lists and Tuples, Objects and Classes, Python Standard library. Imperative Programming: Python Programs, Execution Control Structures, User Defined Functions, Python Variables and Assignments, Parameter Passing.

UNIT II: **10 hours**

Text Data, Files & Exceptions: Strings Revisited, Formatted output, Files, Errors & Exceptions. Execution Control Structures: Decision Control & the if Statement, for Loop and Iteration Patterns, Two-dimensional Lists, while loop, More Loop Patterns, Additional Iteration Control Statements.

UNIT III: **09 Hours**

Container & Randomness: Dictionaries, Sets, Character Encodings and Strings, Module random. Namespaces: Encapsulation in Functions, Global versus Local Namespaces, Exception Control Flow, Modules as Namespaces, Classes as Namespaces.

UNIT IV: **10 hours**

Object Oriented Programming: Defining a New Python Class, Examples of User-Defined Classes, Designing New Container Classes, Overloaded Operators, Inheritance, and User-Defined Exceptions. Graphical User Interfaces: Basics of tkinter, GUI Development, Event-Based tkinter Widgets, Designing GUIs, OOP for GUIs.

UNIT V: **10 hours**

Recursion: Introduction to Recursion, Examples of Recursion, Run Time Analysis, Searching. The Web & Search: The World Wide Web, Python WWWAPI, String Pattern Matching. Databases & Data Processing: Databases and SQL, Database Programming in Python, Functional Language Approach, Parallel Computing.

TEXT BOOKS:

1. Ljubomir Perkovic, "Introduction to Computing Using Python: An Application Development Focus", John Wiley & Sons, 2012.
2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016. (http://greenteapress.com/wp/think- python/).

REFERENCE BOOKS:

1. Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

e-BOOKS/ONLINE RESOURCES:

1. https://medium.mybridge.co/19-free-ebooks-to-learn-programming-with-python-8f6f0ad4a7f8
2. https://www.digitalocean.com/community/tutorials/digitalocean-ebook-how-to-code-in-python

MOOCs:

1. https://www.datacamp.com/courses/intro-to-python-for-data-science.
2. https://www.edx.org/course/introduction-to-computer-science-and-programming-using-python-0.

COURSE OUTCOMES:

The students at the end of the course, will be able to

CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

CO2: Demonstrate proficiency in handling Strings and File Systems.

CO3: Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.

CO4: Interpret the concepts of Object-Oriented Programming as used in Python.

CO5: Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

SCHEME OF EXAMINATION:

<table>
<tr><td rowspan="2">CIE – 50 Marks</td><td>Test I (Any Three Units) - 20 Marks</td><td>Quiz I – 5 Marks</td><td>25 Marks</td><td rowspan="2">Total: 50 Marks</td></tr>
<tr><td>Test II (Remaining Two Units) - 20 Marks</td><td>Quiz II – 5 Marks</td><td>25 Marks</td></tr>
<tr><td rowspan="3">SEE – 100 Marks</td><td colspan="2">Q1 (Compulsory): MCQs or Short answer type questions for 15 Marks covering entire syllabus.</td><td>15 Marks</td><td rowspan="3">Total: 100 Marks</td></tr>
<tr><td colspan="2">Q2 & Q3 from Units which have 09 Hours are compulsory.</td><td>17 * 2 = 34 Marks</td></tr>
<tr><td colspan="2">Q4 or Q5, Q6 or Q7 and Q8 or Q9 from Units which have 10 Hours shall have Internal Choice.</td><td>17 * 3 = 51 Marks</td></tr>
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Note: SEE shall be conducted for 100 Marks and the Marks obtained is scaled down to 50 Marks.

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