



**Type of course:** Core

**Prerequisite:** Object Oriented Programming

**Rationale:** Python is a modern language useful for writing compact codes specifically for programming in the area of Server side Web development, Data Analytics, AI and scientific computing as well as production tools and game programming. This course covers the basics and advanced Python programming to harness its potential for modern computing requirements.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	-	0	3	50	-	-	-	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

**Contents:**

Sr. No.	Practical / Hands on Exercise	Teaching Hrs.	Module % Weightage
1	<b>UNIT-I</b> Familiarization with the basics of Python programming: a simple “hello world” program, process of writing a program, running it, and print statements; simple data-types: integer, float, string Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly) Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.	10	30
2	<b>UNIT-II</b> Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort numbers, and divisibility. Notion of iterative computation and control flow: for, while, flowcharts, decision trees and pseudo code; write a lot of programs: interest calculation, primarily testing, and factorials.	10	20
3	<b>UNIT-III</b> Idea of debugging: errors and exceptions; debugging: pdb, break points. Devices, Troubleshooting Devices & Drivers, and Managing system updates. Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary. Introduce the notion of accessing elements in a collection using numbers and names.	12	30
4	<b>UNIT-IV</b> Sorting algorithm: bubble and insertion sort; count the number of operations while sorting. Strings: compare, concat, substring; notion of states and transitions using state transition diagrams.	10	20



**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Syllabus for Bachelor of Vocation (B.Voc), 5<sup>th</sup> Semester**  
**Branch: Software Development**  
**Subject Name: Introduction Python Programming**  
**Subject Code: 1150203**

**With effective  
from academic  
year 2018-19**

<b>Total</b>	<b>42</b>
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**Reference Books:**

1. Python: The Complete Reference, Martin C. Brown, Mc Graw Hill
2. Introduction to Computation and Programming Using Python, John V Guttag, Prentice Hall of India
3. Introduction to Computing and Problem Solving With Python, Jeeva Jose, Khanna Publishing House
4. Taming Python by Programming, Jeeva Jose, Khanna Publishing House

**Suggested Specification table with Marks (Theory): (For BVOC only)**

<b>Distribution of Theory Marks</b>					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	0	0	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

**Course Outcomes:**

Sr. No.	CO Statement	Marks % Weightage
CO-1	Understand basics of Python Programming	30
CO-2	To be able to understand the various data structures available in Python programming language	20
CO-3	To be able to do testing and debugging of code written in Python	30
CO-4	To be able to understand sorting algorithms in Python	20

**List of Open Source Software/learning website :**

Students must refer to following sites to enhance their learning ability.

1. Turtle -<https://docs.python.org/2/library/turtle.html>
2. PyLab -<https://scipy.github.io/old-wiki/pages/PyLab>